Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Thursday, 29 February 2024; 9:30am
Meeting Number: MOJDAP/301
Meeting Venue: Electronic Means

To connect to the meeting via your computer - https://us06web.zoom.us/j/84205015890

To connect to the meeting via teleconference dial the following phone number - +61 8 7150 1149
Insert Meeting ID followed by the hash (#) key when prompted - 842 0501 5890

This DAP meeting will be conducted by electronic means (Zoom) open to the public rather than requiring attendance in person.

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Attendance

DAP Members

Eugene Koltasz (Presiding Member)
Karen Hyde (Deputy Presiding Member)
Jason Hick (Third Specialist Member)

Item 8.1
Cr Tom Widenbar (Local Government Member, City of Cockburn)
Cr Tarun Dewan (Local Government Member, City of Cockburn)

Item 9.1a & 9.1b
Cr David Bolt (Local Government Member, Shire of Murray)
Cr Ange Rogers (Local Government Member, Shire of Murray)

Officers in attendance

Item 8.1
Ellie Kennedy (City of Cockburn)

Item 9.1a & 9.1b
Gregory Delahunty (Shire of Murray)
Pasutadoll Seangsong (Western Australian Planning Commission)
Cale Luxton (Western Australian Planning Commission)

Minute Secretary

Claire Ortlepp (DAP Secretariat)

Applicants and Submitters

Item 8.1
David Read (element)
Anthony Cirprian (Milieux PM)
John Collier (Collier Architects)
Andrew Baranowski (PLAN E)

Item 9.1a & 9.1b
Jayde Sleight (Harley Dykstra)
Clayton Plug (Harley Dykstra)

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being conducted by electronic means (Zoom) open to the public. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Nil.

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

5. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Member	Item	Nature of Interest
Eugene Koltasz	9.1b	Impartiality Interest – Mr Koltasz is a member of the Western Australian Planning Commission, which is the Responsible Authority for this application.

7. Deputations and Presentations

7.1 David Read (element), Anthony Ciprian (Milieux PM), John Colliere (Colliere Architecture), Andrew Baranowski (PLAN-E) presenting in support of the recommendation for the application at Item 8.1. The presentation will address the project context, architectural merits, landscaping concept and planning compliance, with a request for one minor change to a condition.

7.2 Clayton Plug (Harley Dykstra) presenting in support of the recommendation for the application at Item 9.1. The presentation will address support for the officer recommendation and brief project history and background.

The City of Cockburn, Shire of Murray and Western Australian Planning Commission may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lots 100 and 9000 Kentucky Court, Cockburn Central

Development Description:	Two residential towers and associated parking
Applicant:	David Read (element)
Owner:	Harvest Properties (WA) Pty Ltd
Responsible Authority:	City of Cockburn
DAP File No:	DAP/24/02628

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

9.1a Lots 71, 72, 73 Corio Road, Ravenswood

Development Description:	Proposed Modification to Intensive Agriculture (Poultry Farm)
Proposed Amendments:	• Change the type of poultry farm from 'broiler' (meat production) to 'fertile egg production'; • Construction of 16 tunnel ventilated sheds located on two (2) farms of eight (8) sheds each; • Construction of two 15m x 60m egg packing and amenities buildings; • Construction of an additional dwelling for a manager's residence; • Retention three existing poultry sheds for 'storage' as well as retention of existing ancillary buildings
Applicant:	Jayde Sleight (Harley Dykstra)
Owner:	Sprock Group Pty Ltd
Responsible Authority:	Shire of Murray
DAP File No:	DAP/21/01966

9.1b Lots 71, 72, 73 Corio Road, Ravenswood

Development Description:	Change of use from Broiler Farm (Meat Production) to Fertile Egg Production and Extra Sheds
Proposed Amendments:	Change to fertile egg production and extra sheds
Applicant:	Jayde Sleight (Harley Dykstra Pty Ltd)
Owner:	Sprock Group Pty Ltd
Responsible Authority:	Western Australian Planning Commission
DAP File No:	DAP/21/01966

10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DR75/2022 DAP/18/01543	City of Joondalup	Portion of 9040 (34) Kallatina Drive, Iluka	Mixed Commercial Centre (Iluka Plaza)	02/05/2022
DR135/2023 DAP/23/02447	City of Rockingham	Lot 622 (No.2) Aurea Boulevard, Golden Bay	Proposed mixed commercial development (Golden Bay Neighbourhood Centre)	11/08/2023
DR169/2023 DAP/23/02486	City of Swan	Lot 1 (No.9) Waterhall Road, South Guildford	Child Care Premises	13/11/2023
DR175/2023 DAP/22/02166	City of Joondalup	1 Lyell Grove (Lot 2), Woodvale	Child Care Premises	30/11/2023
DR193/2023 DAP/23/02545	Shire of Serpentine Jarrahdale	575 (Lot 218) Abernethy Road, Oakford	Proposed Educational Establishment	19/12/2023

Current Supreme Court Appeals				
File No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DAP/23/02496 CIV 2251 of 2023	City of Swan	Lot 2 & 67 (No.163) and Lot 18 (No.159) James Street, Guildford	Proposed redevelopment of Vaudeville Theatre	03/11/2023

11. General Business

In accordance with Section 7.3 of the DAP Standing Orders 2020 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

12. Meeting Closure

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Anthony Ciprian, John Colliere, Andrew Baranowski and David Read **15 minutes in Total respectfully requested.**
Company (if applicable)	Milieux PM, Collière Architecture, Plan E and element
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer
Meeting Date	29 February 2024
DAP Application Number	DAP/MOJDAP/301
Property Location	Online
Agenda Item Number	Item 8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☒** **AGAINST ☐**
Will the presentation require power-point facilities?	**YES ☒** **NO ☐** **If yes, please attach**

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Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* The project context, architectural merits, landscaping concept and planning compliance, with a request for one minor change to a condition.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Anthony Ciprian (Client representative)

- Brief introduction to the proposal and Project Context
    - Deliver Buildings 2 and 3 to Stage 1 Harmony development including bringing amenities to Building 1.
    - Capitalise on the Cockburn Central amenities
    - Pushing for market to sell each unit type ~$100,000 above historic market with well designed, compact apartments with good amenity, that are affordable and benefit from generous quality roof top amenities
    - Needing to work with approved Strata Plan constraints, the team explored every option for the redevelopment including basements and decked parking, but we have landed on the optimal outcome for the delivery of Buildings 2 and 3.

John Collière (Architect)

Built form:

- Compact but efficient apartments
- Quality articulated facades with varied built form
- Highly efficient building with stacked services
- Need for 1 bay per unit for saleability, but worked with Plan E on designing an aesthetically pleasing car parking outlook.
- Whilst DRP wanted a basement or townhouse development that was precluded by strata restrictions and cost implications. There were nevertheless a lot of positive changes coming out of DRP with the final Minutes not reflecting the solution that was tabled at the meeting and before DAP today.

- Proposed amendments following DRP feedback:
    - Greater connectivity between the existing and proposed buildings and to street
    - Significant landscaping added and streetscape enhancements
    - More generous walkways and stronger focus on communal amenities and connectivity
    - Redesigned units to provide enhanced internal amenity.

Andrew Baranowski (Landscape Architect)

- Deep soil compliance
- Generous verge planting and fence treatments
- Landscaped car park and Dampalon enhanced amenity and outlook
- Intensive landscaping of the walkway and the quality of the rooftop amenities not previously delivered in Cockburn.

David Read (Town planner)

- Building is largely compliant with very minor variations to setbacks, building depth, dwelling mix, motor cycle parking and a small reliance on some visitor parking on street, all of which is supported by the City.
    - Visitor parking on street is a more convenient and if reciprocal parking with Building 1 commercial is considered then visitor parking is more than provided for on-site.
- Worked with the City resolving condition wording, especially traffic conditions:
    - Wording of Condition 9 that requires the northern road to be constructed as part of Building 3 and not Building 2 is important; and
    - Allowing us to work with the City over existing Stage 1 access as we can't cede any land for a deceleration lane due to the subdivision and strata constraints.
- The only modification we are seeking is to ensure the parking can be staged:

17. *Prior to occupation or use of the relevant stage of the development, vehicle parking, manoeuvring and circulation areas shall be designed, constructed, sealed, drained, line marked (including directional arrows) and kerbed in accordance with:*
    a. *The approved plan;*
    b. *Council's engineering requirements and design guidelines.*

    The areas must be sealed in bitumen or brick paving in accordance with City's specifications, unless otherwise approved by the City.

Otherwise we thank the City for all its assistance and the team is available for any questions.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

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Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Clayton Plug
Company (if applicable)	Harley Dykstra Pty Ltd
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP
Meeting Date	29th February 2024
DAP Application Number	DAP/21/01966
Property Location	LOTS 71, 72, & 73 CORIO ROAD, RAVENSWOOD
Agenda Item Number	9.1a & 9.1b

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☒ **AGAINST** ☐
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Support for Officer Recommendation and brief project history and background.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Presentation will generally cover the following details:

- Support for officers' recommendation, with thanks to the Shire of Murray & DPLH Staff.
- Brief description of project amendments.
- Summary of development design process and a confirmation of positive impact of the proposed development.
- Request support for officers recommendation & note availability for questions in respect of proposed development.

LOTS 100 AND 900 KENTUCKY COURT, COCKBURN CENTRAL – TWO RESIDENTIAL APARTMENT TOWERS AND ASSOCIATED PARKING

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer	
Local Government Area:	City of Cockburn	
Applicant:	element	
Owner:	Harvest Lakes (WA) Pty Ltd	
Value of Development:	$49,979,000 million ☒ Mandatory (Regulation 5) ☐ Opt In (Regulation 6)	
Responsible Authority:	City of Cockburn	
Authorising Officer:	Ellie Kennedy	
LG Reference:	DAP23/006	
DAP File No:	DAP/24/02628	
Application Received Date:	21 December 2023	
Report Due Date:	19 February 2024	
Application Statutory Process Timeframe:	60 Days	
Attachment(s):	1. Application Forms (Amended 16/02/2024) 2. Certificate of Title (Lot 9000) 3. Site Plan (Annotated 19/02/2024) 4. Ground Floor Plan (Amended 16/02/2024) 5. Waste Management Technical Note 6. Landscaping Package (Amended 16/02/2024) 7. Design Review Panel Report (23/08/2023) 8. Design Review Panel Report (25/10/2023) 9. Development Plans and Design Statement 10. Traffic Impact Statement 11. ESD Report 12. Waste Management Plan 13. Acoustic Report and Noise Management Plan 14. Bushfire Management Plan 15. Strata Plan 68908	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer JDAP resolves to:

1. **Accept** that the DAP Application reference DAP/24/02628 is appropriate for consideration as a "Multiple Dwelling" land use and compatible with the objectives of the zoning table in accordance with Clause 3.4.2 of the City of Cockburn Town Planning Scheme No. 3;

2. **Approve** DAP Application reference DAP/24/02628 and accompanying plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Cockburn Town Planning Scheme No. 3, subject to the following conditions:

Conditions:

1. Pursuant to clause 26 of the Metropolitan Region Scheme, this approval is deemed to be an approval under clause 24(1) of the Metropolitan Region Scheme.

2. This decision constitutes planning approval only and is valid for a period of four (4) years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

3. Development shall be carried out in accordance with the approved plans.

4. Within 90 days of the issue of this approval, or as otherwise agreed with the City of Cockburn, an application for the subdivision of land, to create a road reserve is to be lodged to the Western Australian Planning Commission (WAPC), consistent with the movement network identified within the WAPC approved *Cockburn Central North (Muriel Court) Structure Plan.*

5. Prior to the lodgement of a Building Permit, a revised Traffic Impact Assessment being submitted to the City which considers the altered traffic impacts of inclusion of the road reserve required by Condition 4 and pursuant to the *Cockburn Central North (Muriel Court) Structure Plan.*

6. Suitable arrangements being made with the City for any upgrade works to Kentucky Court, where applicable, as required by the revised Traffic Impact Assessment required by Condition 5.

7. Prior to occupation of the Building 3, suitable arrangements to be made with the City for the construction of the northern access road in accordance with the Cockburn Central North (Muriel Court) Structure Plan.

8. **Prior to the issue of a Building Permit**, the landowner/applicant contributing towards development infrastructure provisions pursuant to the City's Town Planning Scheme No. 3, to the City's satisfaction.

9. The applicant must implement all of the recommendations (*Section 6: Responsibilities*) contained in the Bushfire Management Plan prepared by

Element Advisory Pty Ltd, reference number 21-264 dated 19 December 2023 and approved by the Local Government for the duration of the development.

10. **Prior to the issue of a Building Permit**, a detailed material, colours and finishes schedule for the development, to be provided to the City's satisfaction. The details as agreed by the City are to be implemented in the development.

11. **Prior to issue of a Building Permit application**, a Construction Management Plan shall be submitted to and approved by the City detailing management of:

    i. access to and from the site;
    ii. the delivery of materials and equipment to the site;
    iii. the storage of materials and equipment on the site;
    iv. the parking arrangements for contractors and subcontractors;
    v. other matters likely to impact on surrounding properties; and
    vi. management of construction waste.

    The Construction Management Plan shall be implemented at all times during the construction phase.

12. Prior to the commencement of any site works:

    i. A self-assessment shall be undertaken on the advice of the Department of Water and Environmental Regulation to determine whether acid sulfate soils are present on the land, and if present, their extent and severity;
    ii. If the site is found to contain acid sulfate soils, an Acid Sulfate Soils Management Plan shall be submitted to and assessed by the Department of Water and Environmental Regulation;
    iii. All development shall be carried out in accordance with the provisions of the approved Management Plan.

13. All stormwater to be contained on site. Stormwater drainage to be able to contain a 1 in 100 year, critical storm event.

14. **Prior to the lodgement of a Building Permit**, details about the stormwater drainage design intended for the proposed development shall be submitted to the City for review and approval, consistent with the Cockburn Central North (Muriel Court) Structure Plan.

15. **Prior to the lodgement of a Building Permit**, for each approved building, revised plans detailing the proposed 36 universally designed apartments have been designed to the Silver Level requirements of the Liveable Housing Design Guidelines (Liveable Housing Australia).

16. **Prior to the issue of a Building Permit,** the owner/applicant shall submit to the City for approval a preliminary proposal for an art work designed be a professional artist at a cost of 1% of the total project cost (to a maximum of $250,000), to be to be located within the subject site as an integral part of the development;

    i. submit to the City for approval an 'Application for Art Work Design';
    ii. enter into a contract with a professional artist/s to design and install (if appropriate) the art work approved by the City.

The art work shall then be installed prior to occupation of the building/development and maintained thereafter to the satisfaction of the City.

17. Prior to occupation or use of the development, vehicle parking, manoeuvring and circulation areas shall be designed, constructed, sealed, drained, line marked (including directional arrows) and kerbed in accordance with:

    i. The approved plan;
    ii. Council's engineering requirements and design guidelines.

    The areas must be sealed in bitumen or brick paving in accordance with City's specifications, unless otherwise approved by the City.

18. The 17 visitor parking bays shall be permanently marked, maintained and accessible at all times for use exclusively by visitors to the property, be clearly visible or suitably sign posted from the street or communal driveway and be located, together with the reversing area, in front of any security gates or barrier for the development unless otherwise approved by the City of Cockburn.

19. All proposed vehicle crossover/s are to meet the City's Vehicle Crossover Specifications, or as otherwise approved by the City of Cockburn.

20. Engineering drawings and specifications are to be submitted and approved, and works undertaken in accordance with the approved engineering drawings and specifications, for the filling and/or draining of the land, including ensuring that stormwater is contained on-site (1 in 100-year, 24 hour storm event) to the satisfaction of the City.

21. Prior to the occupation of Building 3, a dedicated bicycle store, accommodating a minimum of 53 bicycle bays, shall be constructed as shown on the approved plans.

22. The 107 bicycle parking bays are to be designed to comply with Australian Standard 2890.3 within the designated bicycle parking areas marked on the site plan. Details of the bicycle parking shall be submitted to the City for assessment and approval **prior to lodgement of a Building Permit.**

23. A notification, pursuant to Section 70A of the *Transfer of Land Act 1893* shall be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a hazard or other factor. Notice of this notification to be included on the deposited plan. The notification to state as follows:

    "This lot is situated in the vicinity of a transport corridor and is currently affected, or may in the future be affected, by transport noise."

24. A further Acoustic Report shall be submitted to and approved by the City, **prior to the submission of a Building Permit application** and implemented thereafter, to the satisfaction of the City.

25. All noise attenuation measures, identified by the Herring Storer Acoustics Development Application Acoustic Report "*Harmony Apartments Stage 2 and 3 Cockburn Central"* (Ref 23016-1-23404; dated 14th December 2023) and

Herring Storer SPP 5.4 Noise Management Plan "*Harmony Apartments Stage 2 and 3 884-888 North Lake Road, Cockburn Central*" (Ref 32033-1-23404 dated 14 December 2023) the further acoustic report required under condition 24, are to be implemented prior to occupancy of the development and the requirements of the Acoustic Report are to be observed at all times.

26. Written confirmation from the builder that all recommendations made in the Acoustic Report required under condition 24 have been incorporated into the proposed development, shall be submitted to the City with the Building Permit Application.

27. Written confirmation from the builder that all recommendations made in the Acoustic Report required under condition 24 have been incorporated into the completed development, prior to occupation of the development.

28. **Prior to lodgement of a Building Permit Application**, a detailed landscaping plan shall be submitted to and approved by the City, and shall include the following:-

    i. Minimum sixteen (16) street trees to be located along Kentucky Court and the frontage adjacent the proposed northern access road;
    ii. Uncovered at-grade parking is planted with trees at a minimum rate of one tree per four bays.
    iii. the location, number, size and species type of existing and proposed trees and shrubs, including calculations for the landscaping area;
    iv. any lawns to be established;
    v. any existing landscape areas to be retained;
    vi. those areas to be reticulated or irrigated; and
    vii. verge treatments.

29. Prior to the occupation of the buildings hereby approved, the minimum number of street trees shall be planted within the areas indicated on the approved landscaping plan, relevant to the development staging.

30. Prior to the occupation of the buildings hereby approved, the minimum number of shade trees shall be planted within the car park areas indicated on the approved landscaping plan, relevant to the development staging.

31. Landscaping including verge planting shall be installed, reticulated and/or irrigated in accordance with the/an approved plan and maintained thereafter to the satisfaction of the City. The landscaping shall be implemented during the first available planting season post completion of development and any species which fail to establish within a period of 12 months from planting shall be replaced to the satisfaction of the City.

32. **Prior to the lodgement of a Building Permit,** an amended Waste Management Plan to be submitted to and approved by the City, which includes recycling measures and management of commercial and residential waste. The approved

Waste Management Plan is to be implemented and maintained thereafter to the satisfaction of the City.

33. No building or construction activities shall be carried out before 7.00am or after 7.00pm, Monday to Saturday, and not at all on Sunday or Public Holidays.

34. All outdoor lighting shall be installed and maintained in accordance with Australian Standard AS 4282 - 1997 "Control of the Obtrusive Effects of Outdoor Lighting".

35. All services areas and service related hardware, including antennae, satellite dishes and air conditioning units, being suitably located away from public view and/or screened to the satisfaction of the City.

36. The premises shall be kept in a neat and tidy condition at all times by the owner/occupier to the satisfaction of the City.

37. The approved development must clearly display the street number/s.

Advice Notes

1. This development has been assessed and approved as 'multiple dwellings' and should not be construed as an approval to subdivide the land which will be assessed if and when an application is referred from the Western Australian Planning Commission.

2. All earthworks and/or associated drainage details shall be in accordance AS3500 with plans and specifications certified by a suitably qualified practicing Engineer to the satisfaction of the City.

3. With regard to 8, the City advises the liability for DCA may be staged via a legal agreement in accordance with clauses 5.3.14 .2 and 5.3.15 of Town Planning Scheme No. 3. The owner shall be responsible to pay all costs of and incidental to the preparation of the legal agreement. The legal agreement shall be submitted to and approved to the satisfaction of the CIty and the CEO.

4. The City envisages the provision of the on-street visitor bays to be constructed within the proposed lower order road, rather than Kentucky Court as the requirements for the construction to ultimate design may not support the provision of on-street bays.

5. With regard to Conditions 4, 5 and 6, the applicant is advised that the future road extension and works within the reserve are subject to the design requirements of *Local Planning Policy 4.2 – Cockburn Central North (Muriel Court) Structure Plan Design Guidelines*. The applicant is to submit to the City's Development Services team a revised plan addressing the future road upgrade needs for the Kentucky Court frontage, in liaison with the City of Cockburn and consistent with the recommendations of the approved TIA.

6. With regard to Condition 15, details should include information on storage volumes to be contained within the drainage cells and soakwells, drainage

calculations with catchment area and rainfall intensity. The overall drainage plan is not to overrule the existing drainage plan applicable to Cockburn Central North (Muriel Court) Structure Plan.

7. With regard to Condition 16, swept path movements are to demonstrate all vehicles remaining 'lane correct'. Overall crossover width to be increased where necessary to allow concurrent movements.

8. With regard to Condition 18, the art work shall be in accordance with Council' Local Planning Policy 5.13 Percent for Art and the 'Application for Art Work Design' and shall include a contract between the owner/applicant and the artists full working drawings (including an indication of where the art work is located) and a detailed budget being submitted to and approved by the City. Further information regarding the provision of art work can be obtained from the City's Community Arts Officer on 9411 3444.

9. The dimensions of all car parking bays, aisle widths, wheel stops, columns, ramps and circulation areas complying with the Australian Standards AS/NZS 2890.1:2004 and AS/NZS 2890.6:2009.

10. A separate crossover application is required to be submitted to the City, via the City's website, including a detailed site plan. A 1.5m x 1.5m sightline shall be provided at the intersection of the crossover and the front boundary for standard crossovers. All sightlines shall be maintained clear of obstructions above a height of 0.75m. Copies of crossover specifications are available from the City's Engineering Services or from the City's website www.cockburn.wa.gov.au .

11. With regard to Condition 26, the additional Acoustic Report must be prepared by a suitably qualified and recognised acoustic consultant and demonstrate that the design of the development meets the following requirements:

    i. the design and location of plant and other sources of noise within the development (such as air-conditioners, entry gates and break out noise, use of communal areas) will not exceed the assigned noise levels set out in the Environmental Protection (Noise) Regulations 1997 (as amended); and
    ii. that indoor noise levels will meet the recommended design sound levels in Table 1 of AS/ANS 2107:2000 entitled "Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors"; and
    iii. that indoor noise levels will comply with the requirements of the National Construction Code (Building Code of Australia) with regard to sound transmission between units and floors of the development.

12. With regard to Condition 33, the City requires tree protection areas around proposed or existing street trees, your attention is drawn to the Parks Department on 9411 3444.

13. This approval should not be construed as approval to install the swimming pool which requires a Building Permit from the City's Building Services.

14. An application for the construction of the swimming pool and/or aquatic facility shall be made to the state Department of Health's Executive Director, Public

Health ("EDPH"). Construction shall not commence until formal approval from the EDPH is granted.

15. All toilets, ensuites and kitchen facilities in the development are to be provided with mechanical ventilation flued to the outside air, in accordance with the requirements of the National Construction Code (Building Code of Australia), the Sewerage (Lighting, Ventilation and Construction) Regulations 1971, Australian Standard S1668.2-1991 "The use of mechanical ventilation for acceptable indoor air quality" and the City of Cockburn Health Local Laws 2000. The City's Health Service further recommends that laundries without external windows and doors should be ventilated to external air and condensating clothes dryers installed.

16. All bin storage areas must be of an adequate size to contain all waste bins, and be provided with a hose cock, a concrete wash-down pad graded to a 100mm diameter industrial floor waste, and connected to an approved waste water disposal system. If external, the bin storage area can be centrally located within the development but must be appropriately screened to a height of 1.8m.

17. A plan or description of all signs for the proposed development (including signs painted on a building) shall be submitted to and approved by the City as a separate application. The application, including detailed plans, must be submitted to the City prior to the erection of any signage on the site/building.

18. Floodlights shall not be illuminated after 10.00pm with all illumination being confined to the limits of the development. Light spill shall be contained on site in accordance with AS 4282 - 1997.

19. With regards to street numbering of this proposal, you are advised to contact the City's Strategic Planning team on 9411 3444 or email streetnumbers@cockburn.wa.gov to ensure that any street numbers used comply with the City's requirements. This should be done prior to any sales contracts being drawn up.

20. As part of transitioning Australia to the National Broadband Network (NBN), developers are encouraged to engage early with NBN, at least six months before the required service date, to understand requirements around future connections and the timing of infrastructure provision. This will ensure a connection is ready when residents move in. For more information please refer to https://www.nbnco.com.au/develop-orplan-with-the-nbn/new-developments or contact NBN on newdevelopments@nbnco.com.au or 1800 687 626.

21. You are advised to contact Jandakot Airport prior to the commencement of construction and as soon as possible, please see the following link for further information - http://www.jandakotairport.com.au/development/airspace-protection.html"

Details: outline of development application

Region Scheme	Perth Metropolitan Region Scheme
Region Scheme - Zone/Reserve	Urban

Local Planning Scheme	City of Cockburn Town Planning Scheme No. 3
Local Planning Scheme - Zone/Reserve	Development Zone
Structure Plan/Precinct Plan	Cockburn Central North (Muriel Court)
Structure Plan/Precinct Plan - Land Use Designation	Residential R160 Mixed Business
Use Class and permissibility:	'P'
Lot Size:	12,007m^2
Existing Land Use:	Mixed Use / Residential
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☐ N/A ☒ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The proposal is for the development of land with two (2) residential towers, consisting of a total of 173 multiple dwellings, for the land at Lot 100 (1) Kentucky Court, Cockburn Central. The development is for the completion of the existing Harmony Apartments development as approved under DAP13/009.

The residential towers are proposed to be raised in levelling with access provided by way of a raised walkway to Kentucky Court.

The development will be completed within two stages, consisting of:

Stage 2

- The construction of Building 2, a seven (7) storey residential tower, comprised of 90 multiple dwellings and a rooftop communal open space, including a swimming pool, to be shared facilities for all buildings.
- Construction of 122 car parking bays, 10 motorcycle bays and 51 bicycle bays (communal bicycle store).
- Bin stores to be utilised for Building 2 and 3.
- Site landscaping within the delegated Stage 2 area.
- Fencing and screening to existing transformer and fire pump.
- Construction of communal entry way.

Stage 3

- The construction of Building 3, an eight (8) storey residential tower, comprised of 83 multiple dwellings.
- Construction of a further 75 car parking bays;

- Eight (8) motorcycle bays;
- The proposed future northern access road and associated crossover to the secure gated vehicle entry; and
- Additional fencing and landscaping along Kentucky Court and the proposed Future Road.

Proposed Land Use	Multiple Dwellings
Proposed Net Lettable Area	N/A
Proposed No. Storeys	Max eight (8) storeys
Proposed No. Dwellings	173 dwellings

Background:

The subject site encompasses two (2) lots, comprised of a 5,639m^2 portion of Lot 100 (#1) Kentucky Court and 6,368m^2 (9000L Kentucky Court) for a total size of 12,007m^2. The subject site is proposed to be the final two stages of the broader Harvest Properties (WA) high density development Harmony Apartments. The development site has access and road frontage via Kentucky Court (east), constructed during the initial stage of the development, fronting North Lake Road. Sites immediately adjacent the subject land are located within the Cockburn Central North (Muriel Court) Structure Plan (MCLSP) Area and are yet to be developed. The subject site is located immediately north of the Cockburn Central Regional Centre and within 800m of the the Cockburn Central Town Centre and Train Station, Cockburn Gateways Shopping Centre, the Cockburn Aquatic and Recreation Centre (Arc).

The subject land, previously known as Lots 16 and 17 Kentucky Court, Cockburn Central, previously received a JDAP approval for a mixed use development consisting of 77 multiple dwellings and six (6 commercial tenancies, this application has since been completed as Stage 1 of the proposed development.

The subject site was strata titled in 2017 and contains the existing mixed use development referred to as Building 1, which was constructed as part of Stage 1 of the Strata Plan 68908. Strata Plan 68908, however, defines the future buildings of Stages 2 and 3 within the strata management documentation. The proposed development has been prepared generally in accordance with Strata Plan 68908. Minor design amendments have been made to the Strata Plans to ensure that development is compliant with the current expectations of residential development and relevant legislature. A unanimous resolution from the strata company would be required if 'Significant Variation' is proposed, which is defined under R. 49 of the Strata Titles (General) Regulations 2019 (the Regulations) as:

i. Relative unit entitlement variation of 10% or more;
ii. Total number of lots variation of 10% or more; and,
iii. Change to a registered easement or restrictive covenant, unless the change does not hold a material adverse impact on the existing lots.

The proposed development has been prepared in accordance with the limitations of the strata management plan.

The MCLSP which applies to the land was endorsed by the Western Australian Planning Commission (WAPC) in 2010. The Muriel Court Structure Plan Design Guidelines was adopted in July 2010 in order to facilitate a high quality and functional built environment for Development Area 19 (Muriel Court land precinct). As part of this, each subdivision and development application is to achieve at least 75% of the potential number of dwellings under the applicable density code.

One of the requirements for such an application is a comprehensive pre-lodgement process and attendance at the Design Review Panel. Officers from the City's Development Services team, in conjunction with officers from the City's Strategic and Engineering departments, have met numerous times with the project manager, architect and planning consultants prior to receipt of the application. At these meetings, the merits of the proposal, along with a range of matters have been discussed at length, with the plans and elevations evolving over that period resulting in the plans subject of this application.

Legislation and Policy:

Legislation

Planning and Development Act 2005

Planning and Development (Local Planning Schemes) Regulations 2015

Planning and Development (Development Assessment Panels) Regulations 2011

State Government Policies

State Planning Policy 3.7 – Planning in the Bushfire Prone Area

State Planning Policy 5.4 – Road and Rail Noise

State Planning Policy 7.3 – Residential Design Codes Volume 2 - Apartments

Structure Plans/Activity Centre Plans

Cockburn Central North (Muriel Court) Structure Plan

Local Policies

Local Planning Policy 1.12 – Noise Attenuation

Local Planning Policy 1.14 – Waste Management

Local Planning Policy 3.7 – Signs and Advertising

Local Planning Policy 4.2 – Cockburn Central North (Muriel Court) Structure Plan Guidelines

Local Planning Policy 5.6 – Vehicle Access Policy

Local Planning Policy 5.13 – Percent for Art

Local Planning Policy 5.16 – Design Review Panel

Local Planning Policy 5.18 – Subdivision and Development - Street Trees

Consultation:

Public Consultation

The proposal was not publicly advertised due to its relative compliance with the applicable planning framework. The variations proposed, which are listed and detailed in the planning assessment section below, do not establish land use conflict or impact upon the amenity of adjoining properties nor the public realm.

Referrals/consultation with Government/Service Agencies

The application was referred to the Department of Planning, Lands and Heritage pursuant to Table 2 of the *Planning and Development Act 2005 Instrument of Delegation - Del 2022/03 Powers of Local Governments Metropolitan Region Scheme*.

At the time of submission of this report a referral response was yet to be received.

Design Review Panel Advice

The proposed development is subject to LPP 5.16, and the requirements to present at a Design Review Panel (DRP), for the following reasons:

- The proposal exceeds three (3) storeys in height;
- The proposal is for 173 multiple dwellings; and
- The proposal is classified as a Mandatory JDAP application.

The proposal was presented to the DRP twice, on the:

- 23 August 2023
- 25 October 2023

The initial DRP report referred to five design principles for which required further information to provide a response (Aesthetics, Community, Safety, Sustainability and Landscape Quality) and the remaining items were listed as ‘not yet supported’. The main concerns stated:

- The general organisation of the built form on the site (an apartment tower elevated above on-grade parking) generating a ground plane which is dominated by parking and a lack of interactivity to the streetscapes.
- Lack of site enhancement by way of landscaping design and amenity.
- No legible connectivity between first stage and proposed stages.
- No ESD reporting provided.

- Overall floor plan design for levels and individual units requiring amendments for privacy and convenience.
- Communal Open Space to provide better design.

The proposal was presented to a second DRP meeting on 25 October 2023. There was concern regarding the ability of the applicant to meet the document submission date which was communicated with the applicant. The plans provided at the submission date contained very minor, if any, amendments to the original plans. The applicant provided a revised set of plans on the day. The Panel took note of the design however, advised the applicant that the report and comments would be based upon the plans provided at the submission date.

The outcome of the second meeting was majority 'Not Yet Supported'. The majority of the issues and concerns raised at the initial DRP Meeting were not addressed and remained relevant. Concerns raised included:

- The general organisation of the built form on the site (an apartment tower elevated above on-grade parking) generating a ground plane which is dominated by parking and a lack of interactivity to the streetscapes.
- The lack of soft landscaping on the site.
- Pedestrian legibility between the existing Stage 1 and Kentucky Court.
- The general level of amenity generated for residents and the lack of a sustainability narrative for the project.

The applicant was encouraged to explore other built form organisation options for the site as DRP was unsupportive of the proposal in its proposed form. It was requested the proposal be brought to a third panel, the applicant opted not to attend a third session.

The application plans for assessment provide some further amendments to address the concerns raised above, including:

- Consideration for interconnectivity between the existing form and proposed forms by way of landscaping and dedicated pedestrian walkways.
- An amended pedestrian access design to Kentucky Court which incorporates greater landscaping design and overall frontage width to provide both an active frontage and a useable area of POS.
- Further deep soil and rooftop landscaping has been proposed and to be later defined by a revised landscaping plan.
- The City is generally supportive of the raised design of the proposal.

In consideration of the above, and further assessments against the relevant policies, the City is generally supportive of the overall design of the proposal and it's potential to activate future development within the MCLSP area.

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies, and the Cockburn Central North (Muriel Court) Structure Plan outlined in the Legislation and Policy section of this

report. The following matters have been identified as key considerations for the determination of this application.

Zoning

The subject site is zoned 'Urban' under the Metropolitan Region Scheme (MRS), Development Zone under the City of Cockburn Town Planning Scheme No.3 (TPS 3) and Mixed Business (Restricted Use – Office/Residential) and Residential R160 under the Cockburn Central North (Muriel Court) Local Structure Plan (MCLSP).

The MCLSP restricts use of within the Mixed Business (Restricted Use – Office/Residential) area however, due to the existing mixed use development fronting North Lake Road and the positioning of the final stages, the application has been assessed against the Residential - R160 zoning only.

The objective of the Residential Zone is –

i) to provide for a range of housing and a choice of residential densities to meet the needs of the community.
ii) To facilitate and encourage high quality design, built form and streetscapes throughout residential areas.
iii) To provide for a range of non-residential uses, which are compatible with and complementary to residential development

The proposal is consistent with the objective of the zone as it provides for a variety of high-density residential dwellings within an 800m catchment of the Cockburn Central Train Station, with adjoining mixed business uses. Additionally, the development is deemed to be a modern addition to MCLSP area which provides an opportunity to further activate residential development within the area.

The site is located within Development Area 19 and Development Contribution Areas 11 and 13 of the TPS 3.

Development Area 19 requires an approved structure plan to guide subdivision and development and includes development controls such as minimum density requirements, vehicle access plans and design guidelines. The MCLSP is the approved structure plan for DA 19 and applies to the land bound by the proposed Ngort Drive/Semple Court to the west, North Lake Road to the South, Kwinana Freeway to the east and Verna Court to the north.

Land Use

The MCLSP specifies Residential Uses within the Mixed Business portion of the site as being in accordance with the Mixed Business zone as per Table 1 of the TPS3.

Table 1 – Zoning Table of TPS 3 designates the use of land for Multiple Dwellings as a 'D' use within both the Residential and Mixed Business zones.

Residential Density

Provision	Requirement	Proposal	Assessment
TPS3 – DA19	Each subdivision and development application in the DA area shall achieve at least 75% of the potential number of dwellings achievable under the R-Code designated for the application area on the adopted Structure Plan.	173 dwellings.	Compliant.
LPP 4.2 (5)	75% of greater of the density code applicable to the zone – 160sqm (27.50 dwellings)	173 dwellings.	Compliant

Approximately 4,400 square metres of the site area is subject to the density requirements stated above, the Mixed Business portion of the site does not trigger a minimum density requirement under the Scheme.

Total development exceeds the minimum number of dwellings under the Scheme for Development Area 19.

Built Form

Local Planning Policy 4.2 Cockburn Central North (Muriel Court) Structure Plan - Design Guidelines (LPP 4.2) provides design guidance for the built form of developments within the MCLSP area. LPP 4.2 is to be read in conjunction with the R-Codes.

A thorough assessment of the proposal against both documents was conducted and deemed generally consistent, with exception to several variations, as discussed below.

- *Plot Ratio*

  LPP 4.2 refers to plot ratio requirements for R160 development as per the Residential Design Codes Vol. 2 (R-Codes). The R-Codes requires a plot ratio of 2.0 where the proposed plot ratio for the site is 1.37

  It is considered the proposal is of an appropriate scale, in relation to the site and surrounds, by way of implementation of a lesser plot ratio and appropriate setbacks and overall height. It is therefore considered consistent with Element Objective O2.5.1.

- *Height*

  The subject site is not affected by State Planning Policy 5.3 - Jandakot Airport (SPP 5.3) however, Jandakot Airport does control the height of buildings and structures around the airport to sure that it operates safely. The maximum height permitted at the site is determined by the Jandakot Airport Obstacle Limitation Surfaces (OLS), with the subject site being restricted to a maximum 73.5m AHD.

  The overall maximum height of the entire development equates to an AHD height of 55.80 AHD. The development is therefore within the applicable height limits.

- *Setbacks*

Provision	Requirement	Proposal	Assessment
Element 2.3 - A 2.3.1(R-Codes Vol. 2)	Min. Street Setback – 2m Min. Rear Setback – 6m	Primary Street – 12m Secondary Street – 1.50m Rear Setback – 22.40m	Variation – see below.
LPP 4.2 (9b)	As per R-Codes.		Variation – see below.

The applicant proposes a minimum secondary street setback of 1.50m in lieu of the required 2m to the northern lot boundary, for a total combined length of 6m.

The setback has been determined as a secondary street setback due to the intended future development of the northern access road.

The minor variation occurs due to the v-shape design of the building footprint which consequently allows for a greater than average setback for the remainder of the frontage. The raised design and setbacks create a positive impact to the streetscape as it establishes a spacious streetscape whilst allowing for a point of address to the proposed street frontage and opportunity for increased surveillance. Due to the nature of the proposal, in providing for the northern access road, the development is the first within the immediate area and is not required to meet an average requirement.

The proposed variation is considered minor, in consideration of the extent of the façade and is not expected to impose any undue amenity impacts for future developments and residents.

- *Building Depth*

Provision	Requirement	Proposal	Assessment
Element Objective – O.2.6.1	Building depth supports apartment	Max. Depth – 27m Avg. Depth – 21.5m	Variation – see below.

	layouts that optimise daylight and solar access and natural ventilation – Max. 20m.		
Element Objective – O.2.6.2	Articulation of building form to allow adequate access to daylight and natural ventilation where greater building depths are proposed.	Winged shape of development provides a lesser average depth.	Variation – see below.
Element Objective – O.2.6.3	Room depths and/or ceiling heights optimise daylight and solar access and natural ventilation		Variation – see below.

The applicant proposes a maximum building depth of 27m in lieu of the required 20m, as per Acceptable Outcome 2.6.1 of the R-Codes Vol. 2.

Due to the buildings wing shaped footprint an alternative to the maximum was considered where the average building depth was equal to 21.5m. This remains a variation to the requirement.

The building depth variation is considered more impactful to Building 3 due to the north-south facing orientation, where solar access to the southern facing dwellings may be impacted. The articulation to both buildings allows for the dwellings impacted by the maximum depth to capture solar access at varying times of the day. The positioning of each dwellings balcony and the internal door plans provides

In addition to the building articulation, the proposed design includes the provision of glazing to the end of each corridor, providing open and well-lit internal movement corridors for residents on all levels. The DRP was overall supportive of the proposed natural lighting and ventilation of the buildings, with suggestion for openable windows at the corridor ends.

- *Dwelling Mix*

Provision	**Requirement**	**Proposal**	**Assessment**
Element 4.8 – O 4.8.1(R-Codes Vol. 2)	A range of dwelling types, sizes and configurations is provided that caters for diverse	1x Beds – 144 2x Beds – 29 (17%)	Compliant.

	household types and changing community demographics	Two bedroom dwellings located on each level.	

The development proposes a dwelling mix percentage of 3% less than the required 20%, which amounts to approximately 5 dwellings.

Where the proposal fails to provide the appropriate dwelling mix in terms of bedrooms it does provide for dwelling diversity by way of four (4) alternate dwelling layouts for one-bedroom dwellings. This provides opportunity for a variety of household arrangements to utilise the spaces differently. In addition to this, the development provides a provision of 35 Silver Level accessible dwellings for residents requiring accessible housing.

In consideration of the above, it is considered the proposal is consistent with the objective of Element 4.8 by supplying a variety of housing options expected within the proposed high density area.

- *Size and Layout of Dwellings*

Provision	**Requirement**	**Proposal**	**Assessment**
Element Objective O4.3.1	The internal size and layout of dwellings is functional with the ability to flexibly accommodate furniture settings and personal goods, appropriate to the expected household size.	Variations to dwelling size and room dimensions.	Variation to the Acceptable Outcomes however, overall compliant with objective.
Element Objective O4.3.2	Ceiling heights and room dimensions provide for well-proportioned spaces that facilitate good natural ventilation and daylight access		
Element 4.3 - A 4.3.1(R-Codes Vol. 2)	Dwellings have a minimum internal floor area – 1x bed – 47m^2 2x bed – 67m^2	1 Bed: Type A – 43m^2 Type B – 56m^2 Type D – 47m^2 Type E – 55m^2 2 Bed: 70m^2	

The development proposes a 43m^2 minimum floor area, to Type-A dwelling floor plans, in lieu of the required 47m^2. The proposed variation has been considered an appropriate variation as each room meets the required minimum dimensions to allow for flexible furniture settings. The smallest dwelling type of the proposal is intended as a more affordable housing option for small or single households and provides an additional internal store and balcony.

The development also proposes a variation to the minimum master bedroom dimension of the Type-E floor plan of 2.80m in lieu of the required 3m. In consideration of this variation the variation occurs to a single wall which is impacted by the angled external wall of the building. This length of wall does not include the additional 630mm of built in wardrobe. Additionally, the floorplan meets the minimum floor area required for a master bedroom and is exceeds the min. dimensions on the adjacent wall.

It is considered the variations above to remain consistent with the objectives of the zone as the variations provide alternative design solutions in response to the building footprint.

Car and Bicycle Parking

Provision	**Requirement**	**Proposal**	**Assessment**
Element Objective O3.9.1	Parking and facilities are provided for cyclists and other modes of transport.	Requires 104 bicycle spaces – a singular external, covered and lockable bike store. Consisting of 51 spaces, 34 for residents. On-street visitor bays allows for ride share transport access.	Variation – see below.
Element Objective O3.9.2	Car parking provision is appropriate to the location, with reduced provision possible in areas that are highly walkable and/or have good public transport or cycle networks and/or are close to employment centres.	See individual assessments below.	Residential & Motorcycle - **Compliant.** Visitor Bays – **Variation.**
Element Objective O3.9.2	Car parking is designed to be	Car parking is to be constructed to	Compliant.

	safe and accessible.	Australian Standards.	
Element Objective O3.9.2	The design and location of car parking minimises negative visual and environmental impacts on amenity and the streetscape	Car parking is located on ground level and within the street setback. Adequate screening and landscaping proposed to limit view to the pedestrian access.	Compliant.

The subject site is located within the 800m walking catchment of Cockburn Central Train Station and is therefore subject to the parking requirements of Location A.

Resident Car Parking

The proposed development provides for a total of 175 residential car parking bays which is in surplus of the 138 space requirement. An additional three (3) bay dispensation may be applied for the provision of 18 motorcycle bays, as per table 3.9 of the R-Codes.

			The proposed car parking status is as follows:		
Stage	**Dwelling Type**	**# of Dwellings**	**R-Codes Vol. 2 Rate**	**Car bays Required**	**Car bays Provided**
1	1x Bed	75	0.75 / dwelling	57	105
	2x Bed	15	1.0 / dwelling	15	
2	1x Bed	69	0.75 / dwelling	52	70
	2x Bed	14	1.0 / dwelling	14	
			Total	138	175

Visitor Parking

The proposed development provides for a total of 17 onsite visitor bays in lieu of the required 24, as per Element 3.9 Car & Bicycle Parking of the R-Codes Vol. 2. The proposal includes the provision of seven (7) additional on-street visitor bays located within the Kentucky Court road reserve.

The City's initial position regarded the surplus of residential parking as an opportunity to provide for adequate on-site visitor bays in addition to on-street parking. It was however justified that the proposed provision of visitor bays could be considered acceptable in consideration of the Design Guidelines of Element 3.9 of the R-Codes Vol. 2.

The reduction of onsite visitor bays can be supported as the proposed total visitors bays remains consistent with the requirement. Additionally, it provides further opportunities for convenient access to alternative transport options, such as taxis and rideshare transport. The on-street bays alleviate unnecessary internal car park movements and provide immediate access to the building's entry. It is considered the provision of on-street bays is a positive outcome for the area and is encouraged whether visitor bay shortfalls are or are not proposed.

	The proposed visitor parking status is as follows:		
# of Dwellings	**R-Codes Vol. 2 Rate**	**Visitor bays Required**	**Visitor bays Provided**
173	1 bay per four dwellings up to 12 dwellings 1 bay per eight dwellings for the 13th dwelling and above	24	24
	Total	24	24

Motorcycle Bays

The proposal provides for ten (10) motorcycle spaces in lieu of the required 17.

Original development plans proposed a provision of 18 spaces however, discussions with the applicant ascertained that a variation to the motorcycle bays could be considered provided that the applicant meet the required bicycle provisions.

Please refer to Attachment 4 – Ground Floor Plan.

	The proposed motorcycle parking status is as follows:		
# of Dwellings	**R-Codes Vol. 2 Rate**	**Motorcycle bays Required**	**Motorcycle bays Provided**
173	Developments exceeding 20 dwellings provide 1 motorcycle/scooter space for every 10 car bays	17	10
	Total	17	10

Bicycle Parking

The original proposal provided for 51 bicycle bays, comprised of 34 resident bays and 17 visitor bays, located within a single external lockable store between Buildings 1 and 2. The applicant requested a variation of 53 ground floor residential bicycle spaces. Justification provided detailed that the remaining 53 spaces would be provided for within the 53 dwellings allocated with oversized internal stores.

It is considered the proposed variation is inconsistent with Acceptable Outcome 3.9.1 of Clause 3.9 (Car and Bicycle Parking) of the R-Codes Vol. 2, as it fails to provide for bicycle parking accessible via a continuous path of travel from the cycle entry point. It cannot be expected that all residents are capable, or willing, of transporting and storing a bicycle internally.

The variation is also considered excessive in consideration of the application of "Location A" parking requirements and the motorcycle dispensation. Pedestrian and bicycle travel is encouraged to a greater degree where parking is reduced due to proximity to public transport. As the dispensation of "Location A" has been applied it is expected that a further provision of bicycle spaces are provided.

In consideration of the above, the City advised the applicant that the variation would not be supported. Further discussions delivered an acceptable outcome of which an additional 56 space bicycle store would be constructed within the proximity of Building 3. The location for the bicycle store requires the removal of seven (7) motorcycle spaces, which is considered an acceptable variation as it is expected that residents will utilise their own parking spaces to store vehicles.

The total bicycle parking provision is now 107 spaces.

	The proposed bicycle parking status is as follows:		
Type	**R-Codes Vol. 2 Rate**	**Bicycle bays Required**	**Bicycle bays Provided**
Resident	0.5 space per dwelling	87	90
Visitor	1 space per 10 dwellings	18	17
	Total	105	107

Landscaping and Street Trees

Provision	**Requirement**	**Proposal**	**Assessment**
LPP 5.18 - 3.2.3	Street trees - One tree per 10m of linear lot width to a public road reserve or at a rate to be determined by the City. (16 street trees required)	Concept plans propose approximately	
Element Objective O3.3.1	Site planning maximises retention of existing healthy and appropriate trees and protects the viability of adjoining trees.	Site is currently levelled and cleared of all vegetation.	Not Applicable.
Element Objective O3.3.2	Adequate measures are taken to improve	Concept plans provided indicate an intention to	Plans insufficient for adequate assessment

	tree canopy (long term) or to offset reduction of tree canopy from pre-development condition.	ensure adequate tree canopy will be achieved, on structure and on ground.	- See assessment below.
Element Objective O3.3.3	Development includes deep soil areas, or other infrastructure to support planting on structures, with sufficient area and volume to sustain healthy plant and tree growth.	Concept plans provided indicate a total deep soil provision greater than required in addition to on structure planting.	Plans insufficient for adequate assessment - See assessment below.

The applicant has stated a provision of approximately 12% deep soil area in lieu of the required 10%, as per Acceptable Outcome 3.3.4 of the R-Codes Vol 2. A further 220m^2 of on-structure landscaping is proposed within the rooftop communal open space and along the proposed raised pedestrian entrance. Upon assessment of the plans, it is not clear as to whether a number of the proposed deep soil areas meet the minimum dimensions required under Table 3.3a.

The concept plans indicate an intention to provide for adequate ground and on-structure planting that provides an attractive co-space whilst encouraging further use of the raised entrance by residents for personal pursuits.

The applicant has provided detailed landscaping concepts, for both ground and on-structure planting details. The City notes that the plans are merely concept and do not provide adequate details to appropriately assess whether the proposed landscape proposed adequately addresses the relevant legislature. The applicant has however demonstrated intention to ensure the development meets the minimum requirements and has engaged a landscaping consultant, as per advice from the initial DRP session.

An amended landscaping package was provided on 16 February 2024 (see Attachment 6 – Landscaping Package). Unfortunately, due to restricted timeframes, the City is unable to provide further assessment of these documents. Therefore, a revised landscaping plan is recommended to address the following as required by LPP 5.18 and the R-Codes:

- Provision of a minimum of 16 street trees;
- location, number, size and species type of existing and proposed trees and shrubs, including calculations for the landscaping area;
- any lawns to be established;
- any existing landscape areas to be retained
- those areas to be reticulated or irrigated; and
- verge treatments

Transport & Traffic

A Traffic Impact Statement (TIS) prepared by Flyt was submitted with the application to address compliance with *Local Planning Policy 5.6 – Vehicle Access* (LPP5.6). The City's Transport Engineer considers the methodology, assumptions and findings of the TIA to be insufficient regarding trip distribution and vehicle access. An amended report was requested on 30 January 2024.

LPP 5.6 and Development Area 19 of the TPS3 refer to the implementation of the North Lake Road Vehicle Access Policy Plan (Access Plan) within development on the subject land.

In accordance with the Access Plan, the initial JDAP approval for Stage 1 of the development, a crossover was provided approximately 42m from the North Lake Road and Kentucky Court intersection with the intention for a second crossover to be located further along Kentucky Court. It is noted that the current proposal has removed the intended second crossover to provide for the raised platform design and pedestrian access, to ensure compliance with the Strata Management Plan and vehicle parking requirements. A second crossover is proposed to be constructed within Stage 3 of the development at the completion of the northern access road.

The City's Transport Engineer has noted that the removal of the secondary crossover along Kentucky Court, and delayed construction of the crossover to the north, has potential to disturb the flow of traffic along Kentucky Court due to the anticipated increase in peak PM traffic. In addition to this, Kentucky Court merges from two lanes within metres of the existing cross-over and therefore there is concern that this may potentially increase the rate of rear-end collisions at the location. The City has recommended the applicant further assess the proposed access arrangements to adequately cater for proposed turning movements and delineate priority at conflict points. Until this has been completed, it is recommended that a deceleration lane is incorporated within the Kentucky Court road reserve, with land ceded appropriately, in accordance with Austroads guidelines. A revised Traffic Impact Assessment may demonstrate that a deceleration lane is unnecessary, following construction of the 'northern access road.'

It is the City's preference that construction of the 'northern access road' will occur within Stage 2 and not Stage 3. The earlier construction of this road would be a more suitable outcome than that of a deceleration lane, should a revised TIA support this approach. The construction of the northern access road would provide further benefit to both the land owner and the City by allowing for adequate maintenance of the Asset Protection Zone and activation of development in line with the MCLSP and subsequently further residential development.

Regarding the above, the City proposes that a condition be applied to the approval which encourages the earlier construction of the northern access road and subsequent ceding of land for a road reserve. Additional conditions will be imposed which dictate the upgrading of Kentucky Court to City specifications which encompasses either the extension of or inclusion of a deceleration lane, informed

by a revised TIA. The City notes the applicant's preference not to deliver this road reserve, however it is considered that the provision of this road reserve is consistent with the Cockburn Central North (Muriel Court) Structure Plan and sufficient 'need vs nexus' exists to warrant construction. Ultimately, the lack road reserve at this location will constrain the ability for subdivision/development to occur on land to the west, due to the lack of access and ability to service development. The inability of subdivision/development to occur on the adjacent lots will have a flow on effect to the delivery of key infrastructure funded through the DCA, including the delivery of Kentucky Court to its ultimate design and the delivery of Public Open Space.

Noise Attenuation

The subject land is located within 300m of the Kwinana Freeway and North Lake Road. Pursuant to *Local Planning Policy 1.12 – Noise Attenuation* an acoustic report is required where –

> *"Noise sensitive developments are proposed in the vicinity of an existing or future major road or rail infrastructure as required by SPP 5.4 Noise sensitive developments are proposed in the vicinity of an existing or future major road or rail infrastructure as required by SPP 5.4."*

An Acoustic Report prepared by Herring Storer Acoustics was submitted with the application to address compliance with *State Planning Policy 5.4 – Road and Rail Noise* (SPP 5.4) and *Local Planning Policy 1.12 – Noise Attenuation (*LPP1.12). The results of the Herring Storer SPP 5.4 Noise Management Plan "*Harmony Apartments Stage 2 and 3 884-888 North Lake Road, Cockburn Central*" (Ref 32033-1-23404 dated 14 December 2023) acoustic assessment indicate that noise received at the development from future traffic, exceeds external noise level criteria. Therefore, noise amelioration in the form of quiet house design listed in Appendix B of the report, as well as notifications on the title is required.

Appropriate conditions are recommended to be imposed which dictate the requirement for a revised Acoustics Report to be provided and further conditions ensuring the implementation of such within the development.

Percent for Public Art

The proposed development of land for multiple dwellings is subject to the requirements of *Local Planning Policy 5.13 – Percent for Art* due to the total cost of development exceeding $2 million. Due to its location within the MCLSP, the proposed Percent for Art application shall be guided by the Cockburn Central Public Art Plan.

The applicant has stated a preference for the provision of art to be implemented in a staged approach, as per the proposed development.

The City notes there is no designated location for the required artwork however, this can be encompassed within the appropriate approval. A condition is recommended to be imposed to ensure the application has been submitted to the

City prior to the issue of a building permit and installed prior to the occupancy of the relevant development stage.

Waste Management

A Waste Management Plan (WMP), undertaken by Dallywater Consulting, has been prepared in accordance with the City's *Local Planning Policy 1.14 – Waste Management* (LPP 1.14). The WMP accounts for both Residential and Commercial waste generated by the entire development. The method of collection is proposed to occur in two stages:

- Stage 1: Waste collection vehicles will utilise the existing R.O.W access for collection from the existing bin store adjacent Building 1 and utilise a temporary cul-de-sac on the north west of the site to exit the site via Kentucky Road. Waste from Building 2 will be stored within 240L bins within a 63m^2 external bin store, located on the ground floor of Building 2 & 3, with waste relocated to large 660L or 1100L bins within Bin Store 1 for collection.

- Stage 2: Waste vehicle access via the existing crossover on Kentucky Court and exit from proposed crossover on the future northern access road. Collection as per Stage 1.

The City's LPP 1.14 requires a minimal communal bin store size of one (1) square metre per dwelling, with a two (2) square metre minimum length and width, in order for developments to adequately store one (1) weeks' worth of waste. The WMP proposes:

- A 63m^2 bin store for Buildings 2 and 3 in lieu of the required 173m^2; and
- an approximate total residential bin store area of 162m^2 in lieu of the required 250m^2.

In addition to the above, the proposed WMP fails to provide for a provision of space for bulky storage.

The applicant was advised that should the plans and WMP not be amended to include the appropriate provision of waste storage area a condition would be imposed on the recommendation. The applicant provided a Technical Note (see Attachment 5 – Waste Management Technical Note), prepared by Dallywater Consulting, which detailed that whilst the size of the bin areas does not meet the requirements under LPP 1.14 the use of 1100L bins would negate this. The footnote was accepted by the City and the applicant was advised that the WMP is required to be amended for endorsement.

Therefore, the City intends to impose a condition requiring a revised WMP be provided to the City prior to the lodgement of a building permit.

Bushfire Management Plan

The subject site is located within the Bushfire Prone Area and is therefore subject to the requirements of

A Bushfire Management Plan prepared by Element Advisory Pty Ltd was submitted with the application to address compliance with *State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7).* The results of the Bushfire Management Plan "*Harmony Apartments - Stages 2 & 3 Lot 100 (No. 1) Kentucky Court, Cockburn Central*" (Ref 21-264 dated 19 December 2023) indicated BAL-levels of BAL-12.5 and BAL-29 for Stages 2 and 3 respectively. The BMP identifies a number of management requirements including the provision of a 21m Asset Protection Zone (APZ) located on the adjacent Lot 9000.

The BMP refers to the required APZ being inclusive of the future 18 metre road reserve to the north. It is of the City's opinion that the construction of the northern access road within Stage 2 is a more effective management tool than that of the creation of an easement, as suggested within the BMP. The City therefore intends to impose a condition which refers to the management requirements specifically stated within *Section 6. Responsibilities* of the report.

In order to ensure the City can enforce the requirements identified within the BMP the applicant was requested to amend the application forms to include the adjacent Lot 9000. Amended plans were provided on 16 February 2024 (see Attachments 1 & 2 – Application Forms and Certificate of Title).

Acid Sulphate Soils

The subject site is Department of Water and Environmental Regulation (DWER) Acid Sulphate Soil Risk Map, Swan Coastal Plain, indicates the Site has a moderate to low risk of acid sulphate soils.

As the site is currently cleared for development the City's Environment and Engineering departments confirmed the imposition of a condition to ensure the applicant completes a self-assessment of the site under the advice of the Department of Water and Environmental Regulation.

Signage

Signage is not yet detailed at this level of development. However, it is anticipated signage will be required prior to occupation of the development. Some forms of signage are exempt from requiring a development application under the City's TPS 3, therefore a footnote is recommended to advise the developer to discuss with the City so it may be determined whether additional planning applications are required.

Conclusion:

The proposal seeks approval for a Multiple Dwelling development in Cockburn Central North (Muriel Court). The subject site provides a key linkage for pedestrian movement between Cockburn Central North and the Cockburn Central Train Station, the development will assist in the establishment of vital access for future surrounding development within the MCLSP.

Discretion is sought for the upgrading of Kentucky Court and construction of the northern access road, setbacks, landscaping and some elements of parking. Overall, however, the development is of a high quality that will assist in the activation of the

MCLSP area and subsequently encourage the further provision of accessible and affordable housing within the City of Cockburn.

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

MRS | Form 1 Application for Planning Approval

Owner/s details

Registered proprietor/s (landowner/s) or the authorised agent's details **must** be provided in this section. If there are more than two landowners please provide all relevant information on a separate page. Signature/s must be provided by all registered proprietors or by an authorised agent.

Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.

Full name	
Company/agency (if applicable)	Harvest Lakes (WA) Pty Ltd
ACN/ABN (if applicable)	161 065 381
Postal address	82/888 North Lake Road
Town/suburb	Cockburn Central Postcode 6164
Signature	The landowner/s or authorised agent consents to the applicant submitting this application Date 14/12/2023
Print name and position (if signing on behalf of a company or agency)	Elbert Tanuwidjaja, Secretary Frederik Van Der Walt, Director

Applicant details

Name/company	element
Contact person	David Read
Postal address	PO Box 7375 Cloisters Square
Town/suburb	Perth Postcode 6000
Phone	92898300 Email david.read@elementwa.com.au
Applicant signature	
Print name and position (if signing on behalf of a company or agency)	David Read - Director, Planning Date 20/12/23

Property details

Certificate of title description of land:	Lot No	100	Location No	1
Plan or diagram Strata Plan 68908	Vol	2934	Folio	164
Certificate of title description of land:	Lot No	9000	Location No	
Plan or diagram DP 402491	Vol	2929	Folio	663

Title encumbrances (e.g. easements, restrictive covenants)	Refer to Certifiate of Title
Locality of development (house no., street name, suburb, etc)	No. 1 Kentucky Court, Cockburn Central
Nearest street intersection	Kentucky Ct / North Lake Rd
Existing building/land use	Mixed Use Tower and vacant land
Description of proposed development and/or use	Two residential towers and associated car parking
Nature of any existing buildings and/or use	Mixed Use, Commercial and Residential
Approximate cost of proposed development (excl. gst) $	$49,979,000
Estimated time of completion	2 years from start of construction

Office use only

Acceptance officer's initials

Date received

Local government reference No.

Commission reference No.

Version: 9.2 (December 2018)

The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the application.

Additional Information to be provided on the MRS Form 1

Is the development within a designated Bushfire Prone Area?	✔ Yes ☐ No
If 'yes', have bushfire hazard issues been identified and addressed (e.g.by providing a BAL Assessment(s) or BAL Contour Map and a Bushfire Management Plan with the application)?	✔ Yes ☐ No ☐ N/A
If NA is selected and the development is in a designated bushfire prone area then a short statement justifying why SPP 3.7 does not apply should be included.	
Does your application require determination by a Development Assessment Panel? (DAP)	✔ Yes ☐ No

Please refer to the following website for DAP requirements: www.dplh.wa.gov.au/daps

If yes, please complete DAP Application Form as per DAP requirements.

Checklist (supporting information)

Please complete the checklist below and ensure that all the relevant information is provided with the application.

1. Completed Metropolitan Region Scheme (MRS) Form 1
2. Plans at a scale not less than 1:500 (A3) showing:-
   - (i) the location of the site including street names, lot number(s), north point and the dimensions of the site;
   - (ii) the existing and proposed ground and floor levels over the whole of the land that is the subject of the application, including details of proposed cut and fill, and retaining walls;
   - (iii) the location, metric dimensions, materials, finishes and type of all existing and proposed structures, including services, on the land that is the subject of the subject of the application and all existing structures and vegetation proposed to be removed;
   - (iv) the existing and proposed use of the site, including proposed hours of operation and buildings to be erected on the site;
   - (v) the existing and proposed means of access and egress for pedestrians and vehicles to and from the site;
   - (vi) the location, number, dimensions and layout of all car parking spaces intended to be provided, including provision for the disabled;
   - (vii) the location and dimensions of any area proposed to be provided for the loading and unloading of vehicles carrying goods or commodities to and from the site and the means of access to and from those areas;
   - (viii) the location, dimensions and design of any open storage or trade display area and particulars of the manner in which it is proposed to develop those areas;
   - (ix) the nature and extent of any open space and landscaping proposed for the site; and
   - (x) proposed external lighting and signage.
3. Plans, elevations and sections, as appropriate, of any building or structure proposed to be erected or altered and of any building or structure it is intended to retain;
4. Any specialist studies that the responsible authority may require the applicant to undertake in support of the application such as traffic, heritage, environmental, engineering or urban design studies;
5. Any management plans the responsible authority may require to support or implement the application; and
6. Any other plan or information that the responsible authority may require to enable the application to be determined. This may include scale models or information in digital formats.

For additional information please refer to Development Control Policy 1.2
www.dplh.wa.gov.au/getmedia/37533b97-e0ad-4947-9d00-c4d62fa92746/DCP_1-2_general_principles

The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the application.

Development application checklist - lodgement requirements

Application signatures	The MRS Form is to be signed by the registered proprietor/s as shown on the certificate/s of title. Where the landowner/s cannot sign, an authorised agent can sign and attach evidence of the authority. If the subject land is owned by a company, you must confirm whether it is a sole proprietorship company and state the full name/s and position/s of the company signatory/ies. Appropriate company signatory/ies include one director and the company seal, two directors, or one director and one secretary. Eg: _____ _____ John F. Smith - Director, Smith Pty Ltd; Peter S James - Director, Smith Pty Ltd Or _____ John F. Smith - Sole Director, Smith Pty Ltd If the subject land is owned by a strata company, consent can be signed by the strata company secretary or by an elected person of the strata company providing proof of authority either by letter of delegated authority, signed by all strata owners or minutes showing delegated authority.
Certificate of Title	Ensure the Certificate of Title/s is/are current (within 6 months) and provide copy/s.
Change of name	Applications made by either private owners or companies who have changed names to that depicted on the Certificate of Title, must provide supporting documentation showing the change of name such as: • a transfer of land document that incorporates a lodgement receipt, • a company search from the Australian Securities and Investment Commission, • a marriage certificate or • a change of name certificate.
Contacts	A contact name, phone and email address is essential, in the event more information is required and for issuing correspondence relating to the Department's decision.
Contracts of sale	Where the land is subject to a contract of sale or offer and acceptance, evidence of landowner's consent must be provided. Relevant evidence may include; • an express provision of consent by the vendor on the contract of sale or offer and acceptance, • a letter of consent from the registered proprietor/s giving prospective purchaser/s consent to lodge the application or • a copy of the transfer of land document that incorporates a lodgement receipt.
Crown land	Where the land is registered in the name of the Crown, the application form must be signed by an authorised officer of the Department of Lands, stating the name and position. Alternatively, a letter of consent from the authorised Crown land officer.
Deceased estates	Where the land is registered in joint tenants, a copy of the death certificate of the deceased landowner must be provided. Where the land is registered in tenants in common, a copy of the grant of probate or endorsed enduring power of attorney must be provided.
Designated Bushfire Prone Area	If the proposed development is located within a Bushfire Prone Area according to the Map of Bush Fire Prone Areas, then bushfire hazard issues should be identified and addressed (e.g. by providing a BAL assessment(s) or BAL Contour Map and a Bushfire Management Plan with the application). If NA is selected and the development is in a designated bushfire prone area then a short statement justifying why SPP 3.7 does not apply should be included.
Emailed documents	Emailed applications or documents are acceptable, however the application must be signed by the registered proprietor/s.
Government agencies	Where the land is registered in the name of a government authority, the application form must be signed by an authorised officer of the relevant authority, stating the name and position of the signatory/s. Alternatively, a letter of consent signed by an authorised officer.

The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the application.

Government of **Western Australia**
Development Assessment Panels

DAP FORM 1

Notice of Development Application to be Determined by a Development Assessment Panel

Planning and Development Act 2005
Planning and Development (Development Assessment Panel) Regulations 2011 – regulations 7, 10 and 21

Application Details

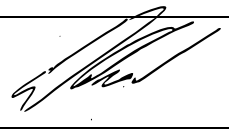
To	*Name of local government and/or Western Australian Planning Commission* City of Cockburn	
Planning Scheme(s)	*Name of planning scheme(s) that applies to the prescribed land* Local Planning Scheme No. 3	
Land	*Lot number, street name, town/suburb* Lot 100 and 9000 Kentucky Court, Cockburn Central	
Certificate of Title (provide copy)	*Volume Number* 2934 and 2929	*Folio* 164 and 663
	Location Number 1	*Plan / Diagram Number* Strata Plan 68908 and DP402491
Details of development application made to responsible authority	*Summary of Proposal* Two residential apartment towers and associated parking	
Development Use	*Residential / Commercial / Industrial / Rural / Mixed Use / Other* Residential	
Estimated cost of development (GST Exc)	$ 49,979,000	

Part A – Acknowledgement by Applicant and Landowner

Mandatory Application	☒ I give notice that I understand that this is a mandatory Development Assessment Panel application *(regulation 5)*
Optional Application	☐ I give notice that I have elected to have the development application that accompanies this form determined by a Development Assessment Panel *(regulation 6)*
Delegated Application	☐ I give notice that I understand that this is an application of a class delegated to a Development Assessment Panel for determination *(regulation 9)*

Applicant Details (to be completed and signed by applicant)

- By completing this notice, I declare that all the information provided in this application is true and correct.
- I understand that the information provided in this notice, and attached forming part of the development application will be made available to the public on the Development Assessment Panel and local government websites.

Name	David Read	
Company	element	
Address	*Street Number/PO Box number, street name, suburb, state, postcode* PO Box 7375, Cloisters Square, Perth WA 6000	
Contact Details	*Email* david.read@elementwa.com.au	*Phone* 9289 8300
Signature		*Date* 20/12/24

Landowner Details (to be completed and signed if landowner is different from applicant)

- By completing this notice, consent is provided to submitting this application.
- If there are more than two landowners, please provide all relevant information on a separate page.
- Signatures must be provided by all registered proprietors or by an authorised agent as shown on the Certificate of Title.
- Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.
- Companies, apart from sole directors, are required to provide signatories for two directors, a director and the company seal or a director and a company secretary.

Company (if applicable)	Harvest Properties (WA) Pty Ltd	
Contact Details	*Email* elbert@wtpartners.com.au	*Phone* 0894815995
Address	*Street Number/PO Box number, street name, suburb, state, postcode* 82/888 North Lake Road Cockburn Central WA 6164	
Name/s	Frederik Van Der Walt	Elbert Tanuwidjaja
Title/s	~~Landowner/Sole Director/Director~~ *(2 signatures required)* Director	~~Additional Landowner/ Director/Secretary~~ *(if applicable)* Secretary
Signature/s	SIGN HERE	
Date	18/12/23	18/12/23

Part B – Acknowledgement by Local Government

Responsible Authority	☐ Local Government (LG) ☐ * Western Australian Planning Commission (WAPC) ☐ * Dual – Local Government and Western Australian Planning Commission ☐ Department of Finance – *Public Primary School Applications*	
* WAPC/DUAL reporting details	*If WAPC or DUAL is selected, please provide details of relevant provision (or within covering letter)*	
Fees for applications *(DAP Regulations - Schedule 1)*	$ Amount that has been paid by the applicant $ Amount to be paid by local government *(delegated applications only - regulation 22)*	
Statutory Timeframe *(regulation 12)*	☐ 60 days (advertising not required) ☐ 90 days (advertising required or other scheme provision)	
LG Reference Number		
Name of planning officer *(Report Writer)*		
Position/Title		
Contact Details	*Email*	*Phone*
Planning Officer's Signature		*Date*

Please refer to the Guidance Note: Lodging a DAP Application for further information.

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
2929	**663**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 9000 ON DEPOSITED PLAN 402491

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

HARVEST PROPERTIES (WA) PTY LTD OF 29 OXFORD CLOSE, WEST LEEDERVILLE
(AF N659724) REGISTERED 28/6/2017

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

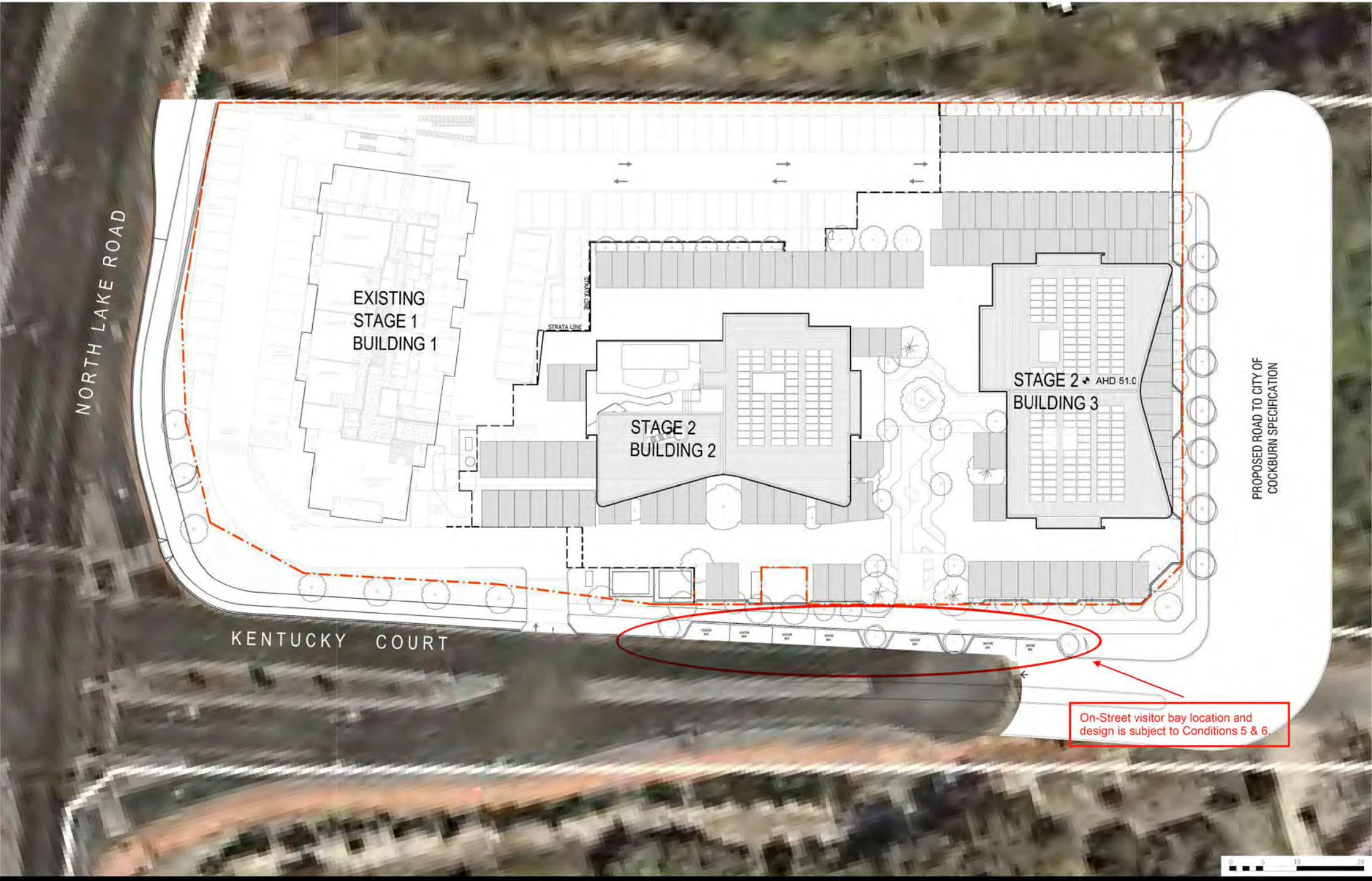
STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP402491
PREVIOUS TITLE:	1681-507
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF COCKBURN

LANDGATE COPY OF ORIGINAL NOT TO SCALE 14/02/2024 11:09 AM Request number: 66208245

Landgate
www.landgate.wa.gov.au

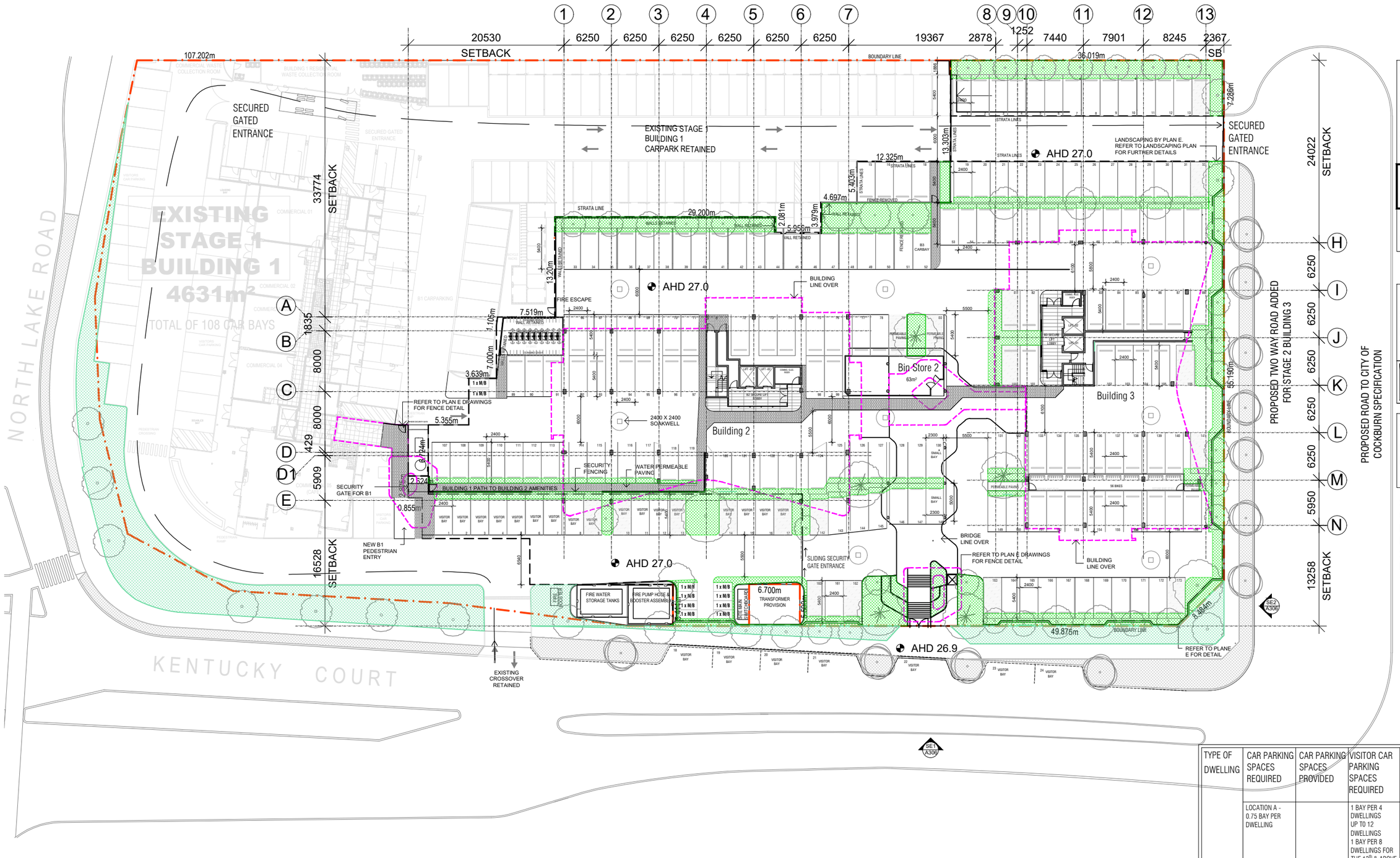


ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A200 - SITE PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



MAXIMUM YIELD: 173 Dwelling Units
- Building 2 - 90 D.U

90 Car Bays required (incl. 13 Visitor Bays)
- Building 3 - 83 D.U

83 Car Bays required (incl. 12 Visitor Bays)

198 Car Bays are required for Concept 4
(if calculated as 2 stages)

198 Car Bays provided on site
(Incl. 7 x embedded visitor bays)

TOTAL SITE AREA (STAGE 2 & 3): 5639 m²

REQUIRED DEEP SOIL:
10% OF SITE AREA = 563.9m²

TOTAL DEEP SOIL PROVIDED- 720m² (12.7% OF SITE AREA)

SITE PLAN LEGEND

Deep Soil Landscaping
Permeable Paving

SOAKWELL IS PROVIDED TO ADDRESS COUNCIL & HYDRAULIC REQUIREMENTS
IMPERVIOUS AREA = 6548m²
2400 x 2400 SOAKWELL = 868.56m²
NUMBER OF SOAKWELLS
1878/254.48 = 8 SOAKWELLS

TYPE OF DWELLING	CAR PARKING SPACES REQUIRED	CAR PARKING SPACES PROVIDED	VISITOR CAR PARKING SPACES REQUIRED	TOTAL CAR BAYS REQUIRED	TOTAL RACKS REQUIRED		MOTORCYCLE / SCOOTER REQUIRED
	LOCATION A - 0.75 BAY PER DWELLING		1 BAY PER 4 DWELLINGS UP TO 12 DWELLINGS 1 BAY PER 8 DWELLINGS FOR THE 13th & ABOVE		0.5 PER DWELLING (CITY OF COCKBURN LPS3)	1 PER 10 FOR VISITORS (CITY OF COCKBURN LPS3)	DEVELOPMENT EXCEEDING 20 DWELLINGS PROVIDE 1 MOTORCYCLE / SCOOTER SPACE FOR EVERY 10 CAR BAYS
1 x 1	75	100	HENCE, 3+21=24 BAYS REQUIRED		87	17	173 CAR BAYS PROVIDED
1 + 1 x 1	33	44					
2 x 2	29	29					
TOTAL	137 (R-CODE VOL.2)	173 (R-CODE VOL.2)	24 (R-CODE VOL.2)	197	104 (R-CODE VOL.2)		17

* 198 CAR BAYS REQUIRED IF CALCULATED AS 2 STAGES
- STAGE 2: 103 CAR BAYS REQUIRED (incl. 13 VISITOR BAYS)
- STAGE 3: 95 CAR BAYS REQUIRED (incl. 12 VISITOR BAYS)

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A201 - GROUND FLOOR PLAN B2 + B3 (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
14/02/24 DEVELOPMENT APPROVAL ISSUE - REV C

PRD. COLLIÈRE ARCHITECTURE

DALLYWATER CONSULTING

WASTE MANAGEMENT TECHNICAL NOTE

Project Name: **Buildings 2 and 3, Harmony development**
Kentucky Court & Tea Tree Close, Cockburn Central

14/2/24 Author: Gordon Houston

SUBJECT: Deemed to Meet Requirements – Bin Capacity in Case of Unseen Circumstance

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Milieux Project Management (on behalf of its client) has applied to the City of Cockburn (the "City") to develop Buildings 2 and 3 of the Harmony development on the corner of Kentucky Court and Tea Tree Close, Cockburn Central. Building 1 has already been constructed and consists of 77 residential apartments and some commercial premises. Building 2 is proposed to have 90 apartments and Building 3 is proposed to have 83 apartments.

The Waste Management Plan (WMP) has been submitted to the City for the entire development (including the already constructed first stage), and the City's waste officer has confirmed the City requires a minimum communal bin store of 1m2 per unit, or a total area of 250m2 for this development.

The current development however shows 2 bin store areas with a total floor space of approximately 146m2.

The WMP indicates the use of 1100 litre waste and recycling bins to cater for the proposed generation of that material from the development and based on the current bin store capacities, there is sufficient room to easily accommodate the required 19 waste 1100s and 19 recycling 1100s, based on weekly generation and collections.

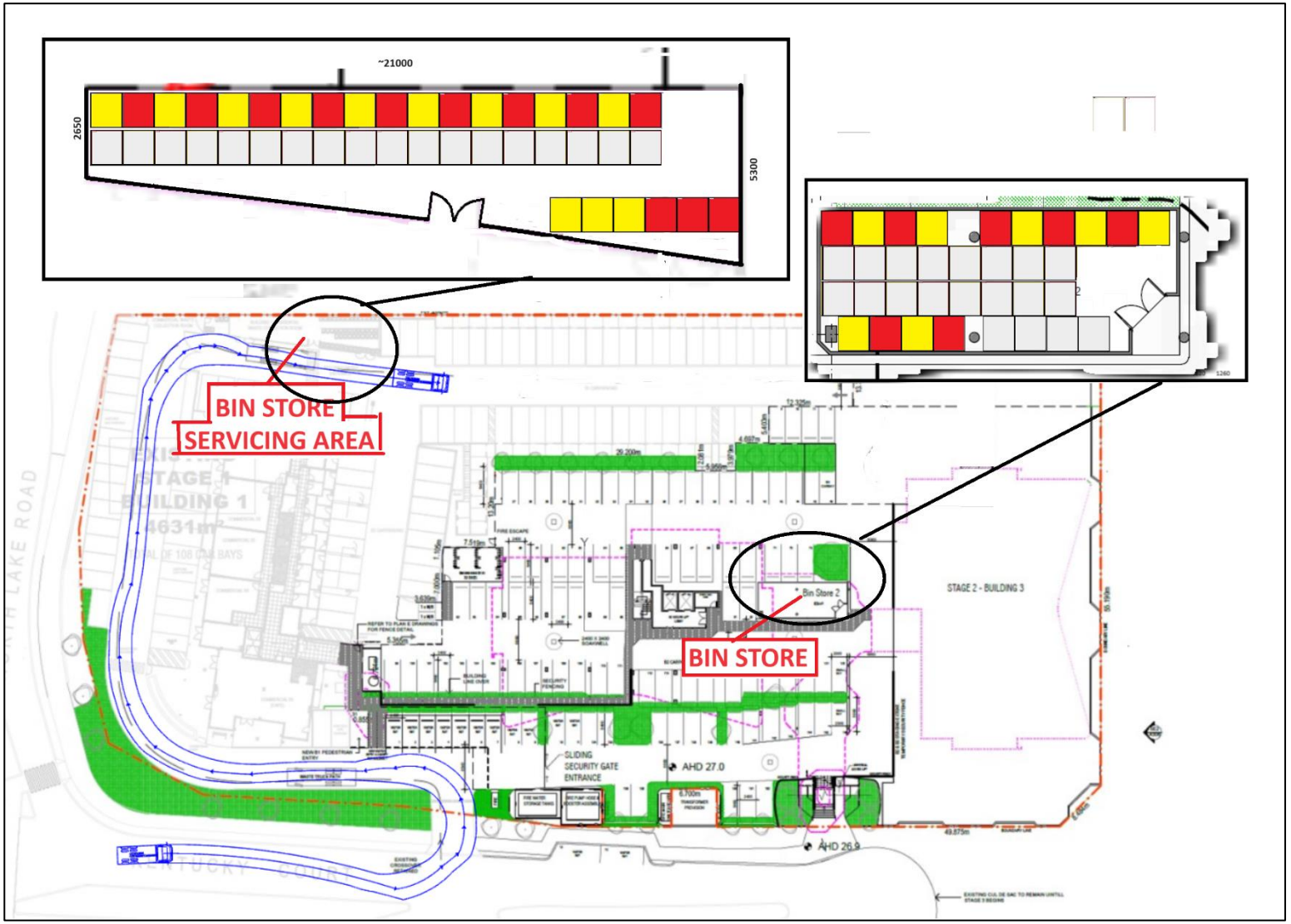
Discussions had with the City, on behalf of the proponent, with the City's Waste Officer have confirmed that the reason for the 1m2 per unit requirement is the potential for a catastrophic event which may see a failure in the waste collection services and the prescribed storage area per unit is ostensibly to provide capacity for the storage of an additional week's waste generation in case of such an event.

The provided square meterage does not meet the parameters of the LLP which states"

3. In the case of Residential Development only:
(a) On-site storage capable of containing a minimum of one (1) weeks' waste and recycled material within a communal bin store;
(b) The provision of a communal bin store that has a minimum size of one (1) square metre per dwelling, with a two (2) metre minimum length and width dimension. This requirement stands regardless of (2(d) above) where the reduction in bin numbers is 1 set of bins/3 residential units or the waste volume estimates;

However, the provided store areas comfortably accommodate the weekly generation in thirty-eight 1100 bins as demonstrated in the following diagram (red = waste, yellow – recycling).

Bin Stores – Storage Capacity



Also included in the preceding diagram are the footprints of an additional 38 bins, showing that the bin stores contain adequate space to accommodate a fortnight's waste and recycling generation in an additional 38 1100 litre bins, in the event of a failure in the collection systems. There is also additional capacity (~54m3) for additional materials or bulky waste if required.

It should also be noted that in extreme circumstances, there is the possibility of storing bagged materials on top of the 1100s which would dramatically increase the storage capacity in the event of a significant collection failure.

To this end, it is considered that while the square meterage of the two bins stores do not meet the LLP requirement, the size of the 2 stores and the use of 1100 bins reduces the bin footprint in the stores such that the additional capacity sought by the City for a calamitous event which impacts waste collection is more than adequately accommodated in WMP.

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harmony apartments

development application report

landscape package | feb 2024 [H]

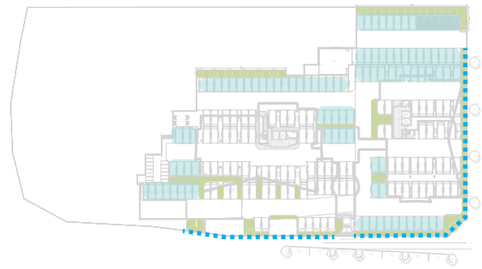
01 LANDSCAPE IMAGERY
perimeter screening fence

KEY PLAN
ground floor plan

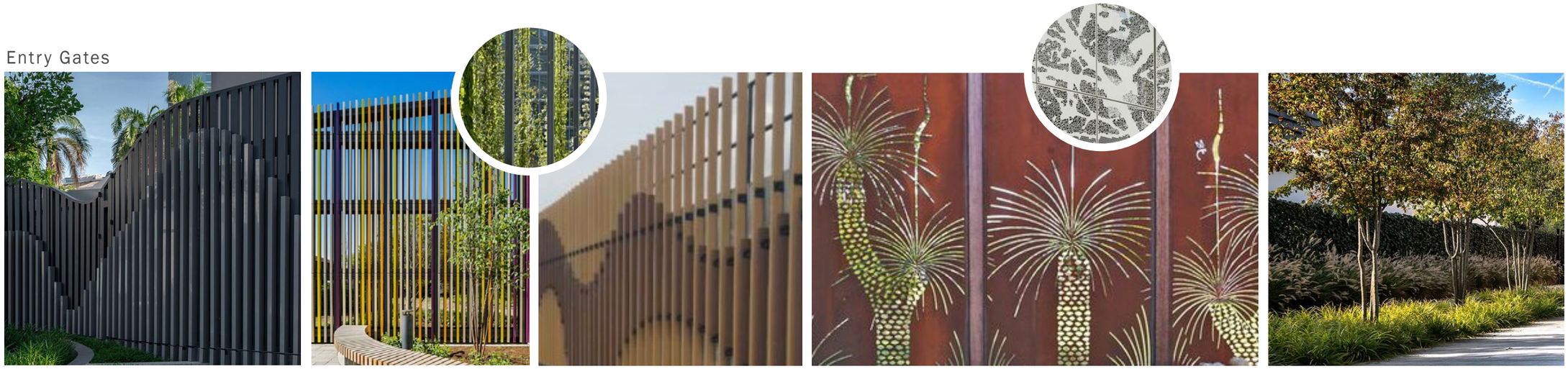
landscape in carpark

carport roofing

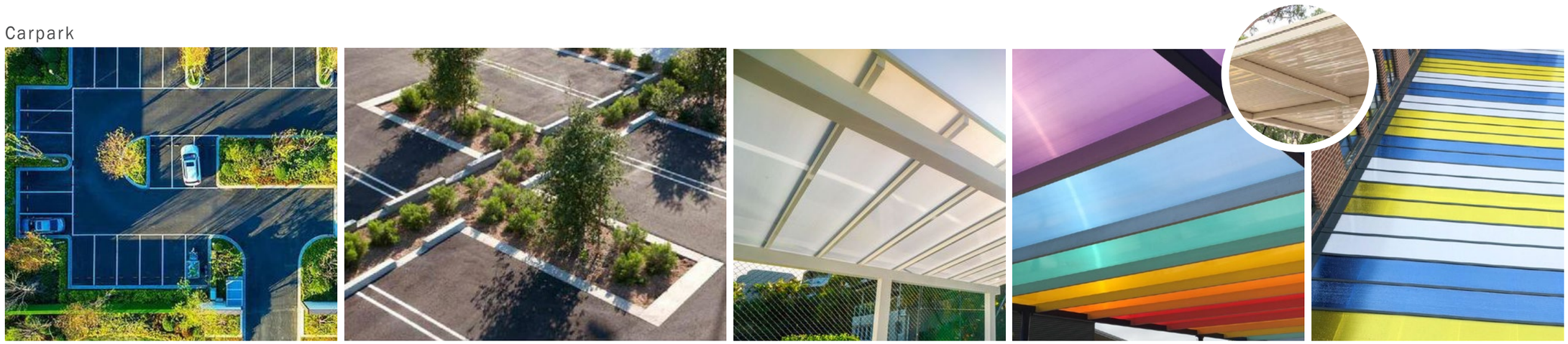
Perimeter screening fence



Entry Gates



Carpark



PLAN E

LANDSCAPE ARCHITECTS

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C1.102

REV H
NTS @ A3

© PLANE

0.4 LANDSCAPE IMAGERY
entry experience

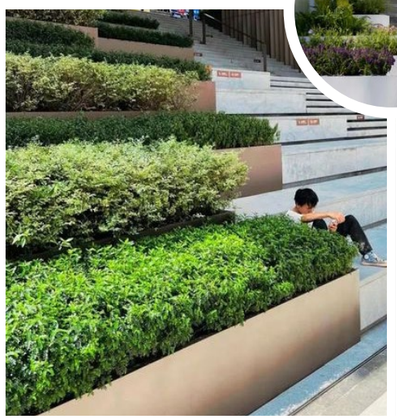
KEY PLAN
entry to first floor plan

Staircase

Bridge

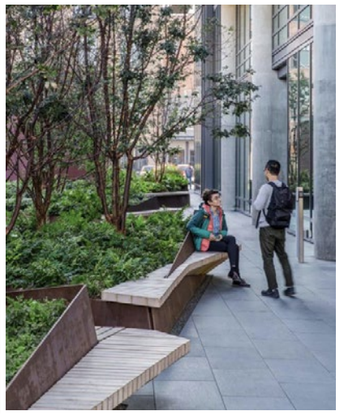
Lobby / meeting place

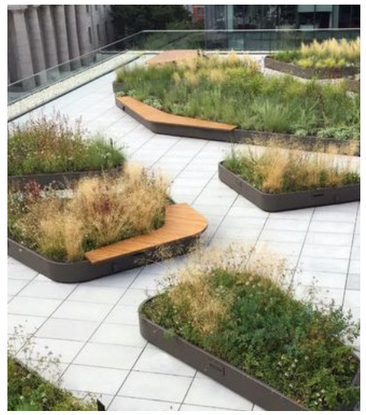
staircase

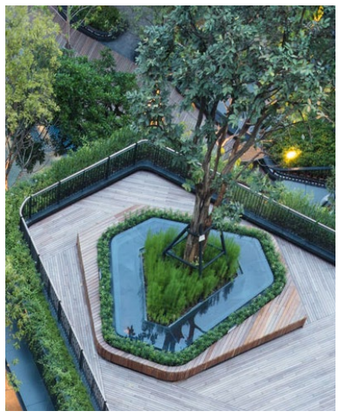


bridge

Lobby







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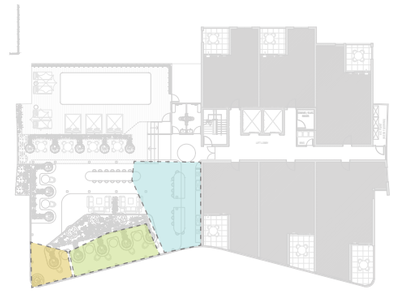
© PLAN E

0.6 LANDSCAPE IMAGERY
communal amenities

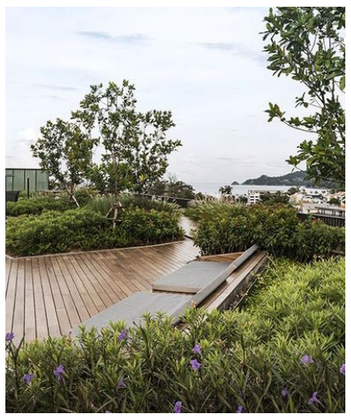
KEY PLAN
8th floor plan

flexible space
Lounging / boots
Sunset lookout



flexible space

sunset lookout



semi private lounging

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NTS @ A3

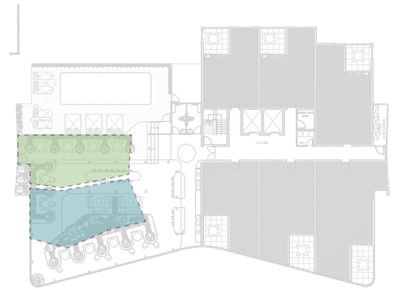
© PLANE

0.7 LANDSCAPE IMAGERY
communal amenities

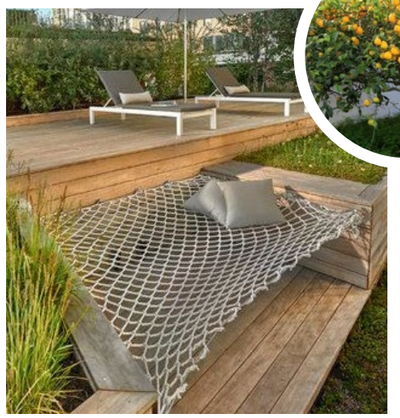
KEY PLAN
8th floor plan

Dinning

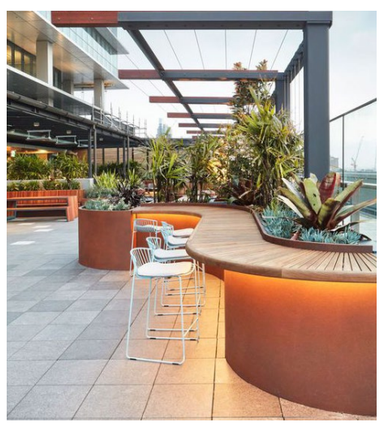
Terracing and edible garden



terracing and edible garden



dinning



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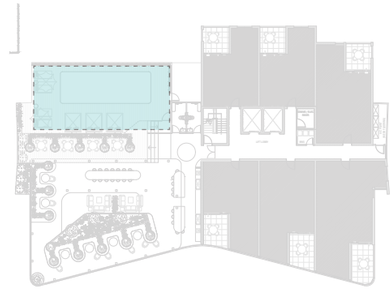
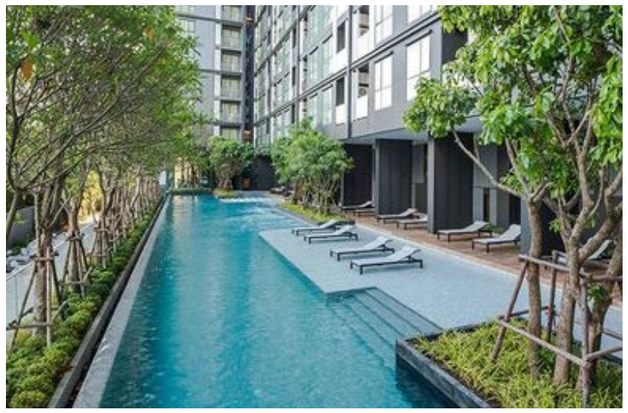
© PLANE

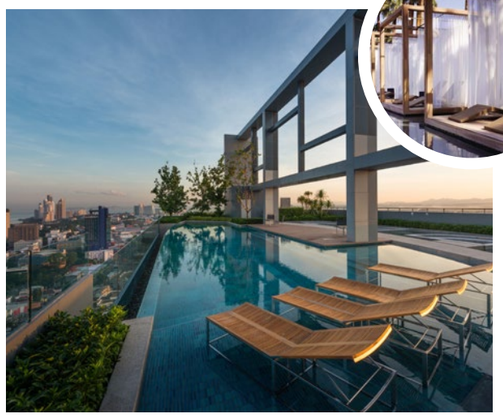
0.8 LANDSCAPE IMAGERY
pool

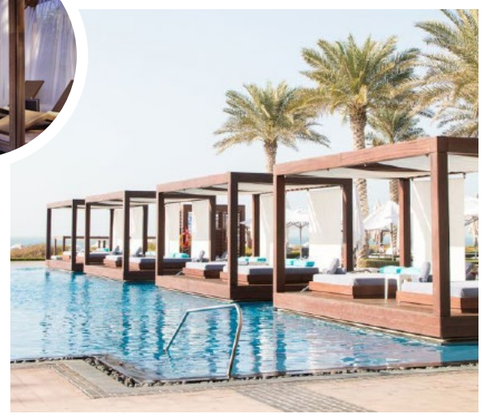
KEY PLAN
8th floor plan

pool









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NTS @ A3

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1.0

harmony apartments

concept

1.2 GROUND FLOOR & CANOPY PLAN
concept

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C1.108

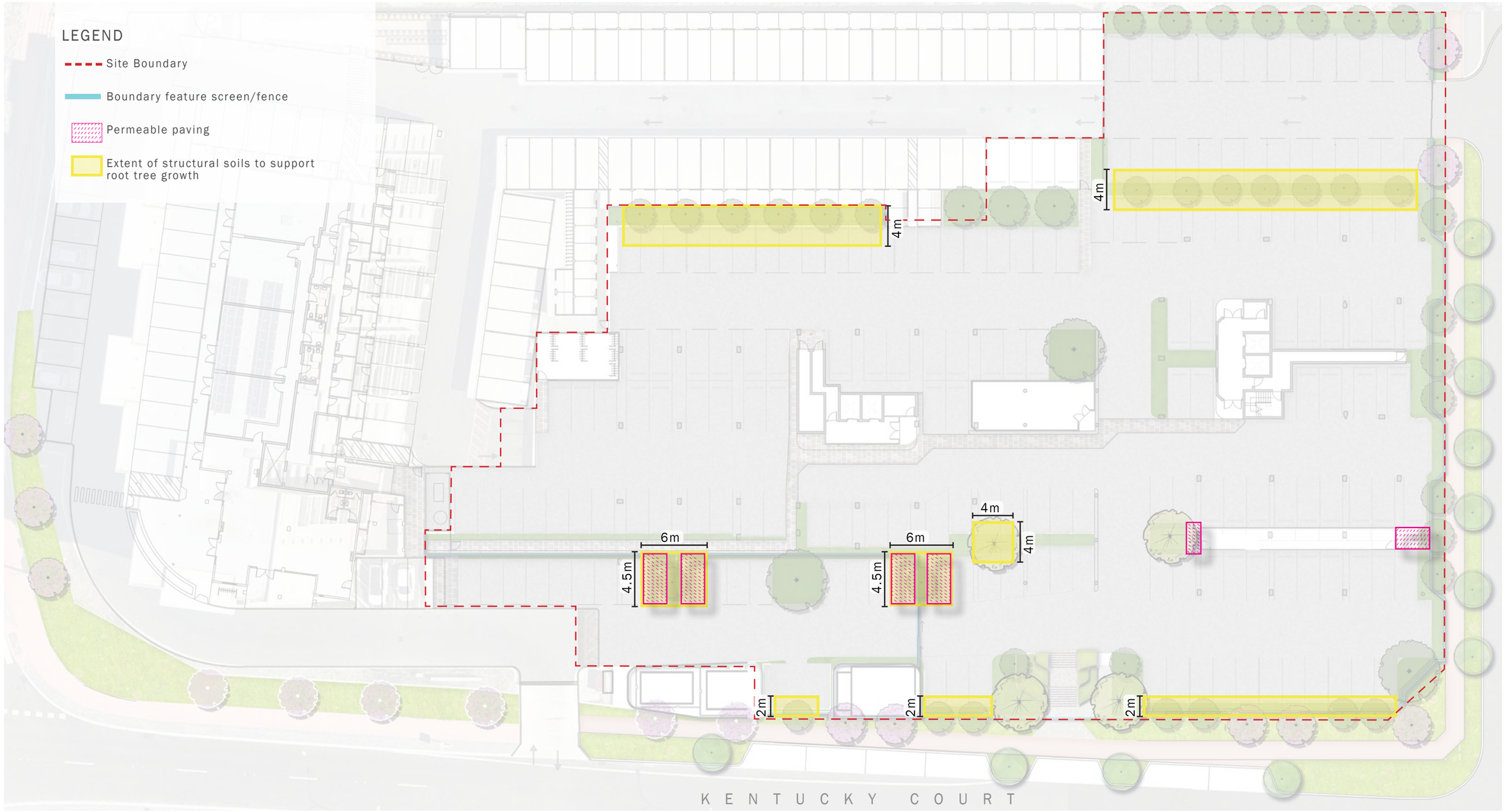
REV H
1400 @ A3

0 2 4 8 12 20m

2313301 HARMONY APARTMENTS - landscape concept

© PLAN E

1.3 GROUND FLOOR
structural soils and permeable paving



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C1.109

REV H
1400 @ A3

0 2 4 8 12 20m

2313301 HARMONY APARTMENTS - landscape concept

© PLAN E

1.4 ENTRY - LEVEL 1
concept

LEGEND

01 Entry staircase to Lobby

02 Pedestrian path entry to ground floor

03 Terracing planting

04 Pedestrian Lift

05 Elevated “bridge’ entry path

06 Raised planters with cascading and feature lush planting

07 Seating node - opportunity for artwork location

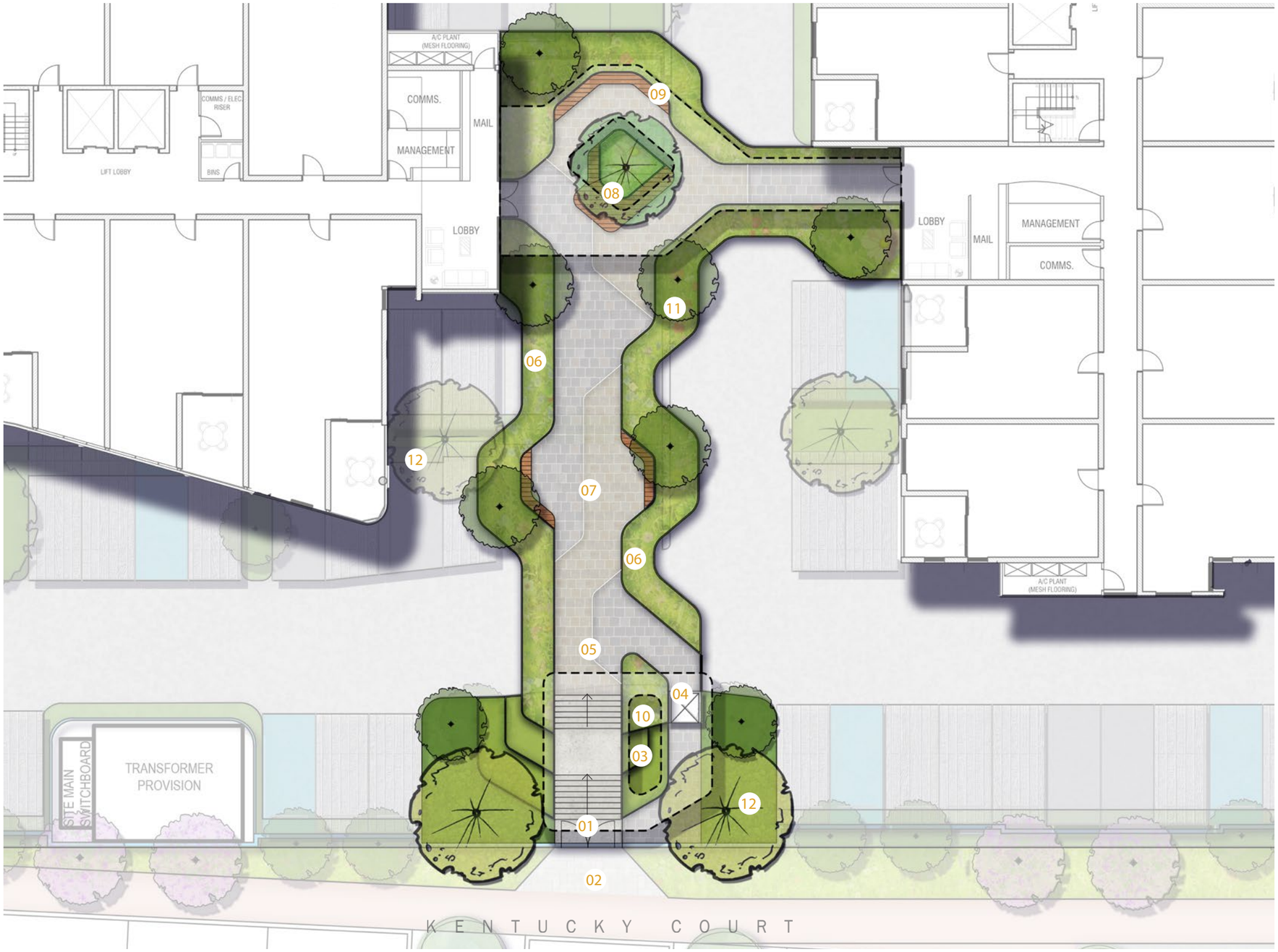
08 Feature node:
Raised planter with feature tree and seating deck

09 Roof over with opening for feature tree canopy shown dashed

10 Roof over stair entrance way

11 Small trees in raised planters

12 Large feature trees in ground floor to grow through to first level



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C1.1010

REV H
1:200 @ A3

0 1 2 4 6 10m

© PLAN E

1.5 AMENITIES LEVEL
concept

LEGEND

01 Flexible space:
Outdoor movies, passive recreation/sports in artificial turf

02 TV/Screen on Wall

03 Semi-private seating nodes

04 Sunset/Lookout lounging seat with movable tables

05 High bench table in planter with low planting to allow for views

06 Feature tree in raised planter

07 Low seating bench and dining furniture

08 BBQ bench with dining setting

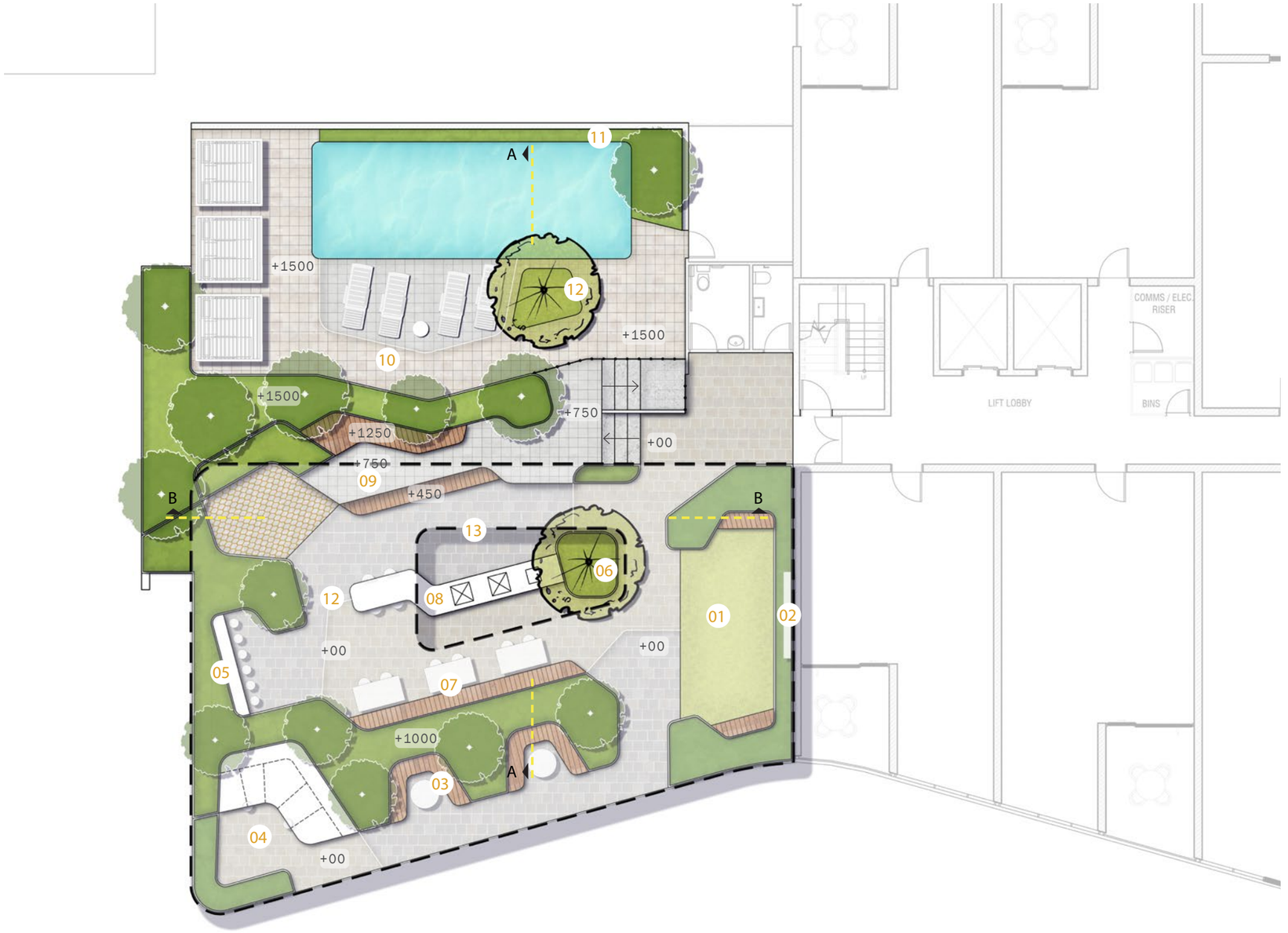
09 Terracing with seating/ lounging opportunities and hammock style lounging

10 Pool deck with sun beds and cabanas

11 Screening planting aorund pool

12 Feature tree in planter flushed with pool deck level

13 Roof over with opening shown dashed



KENTUCKY COURT

PLAN E

LANDSCAPE ARCHITECTS

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C1.1011

REV H
1:150 @ A3

2313301 HARMONY APARTMENTS - landscape concept

© PLAN E

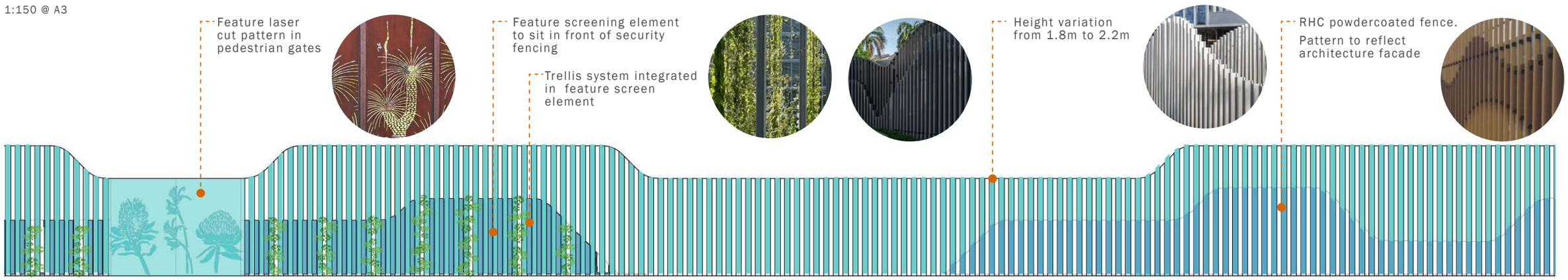
2.0

harmony apartments

sections and elevations

2.1 | FENCE
Kentucky Court

FENCE DETAIL
1:150 @ A3



FUTURE ROAD ELEVATION
1:300 @ A3

PLAN E

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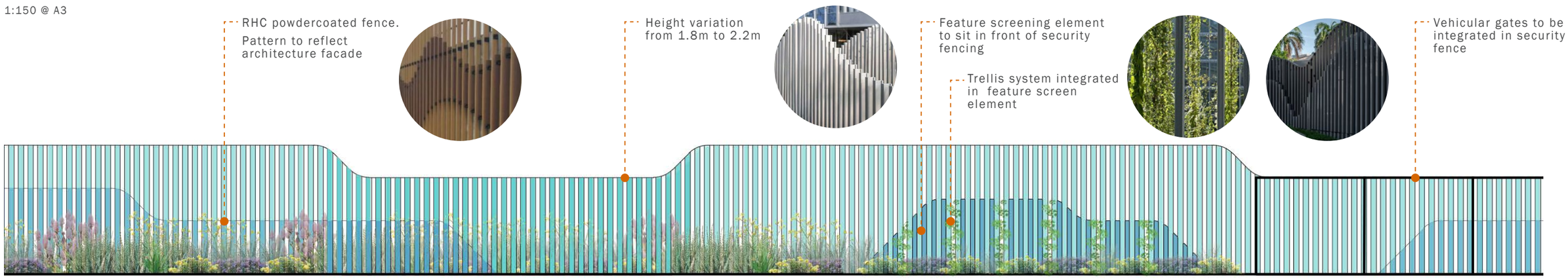
C1.1013

REV H
AS SHOWN

© PLANE

2.2 FENCE
Future road

FENCE DETAIL
1:150 @ A3



KENTUCKY ROAD ELEVATION
1:300 @ A3

PLAN E

LANDSCAPE ARCHITECTS

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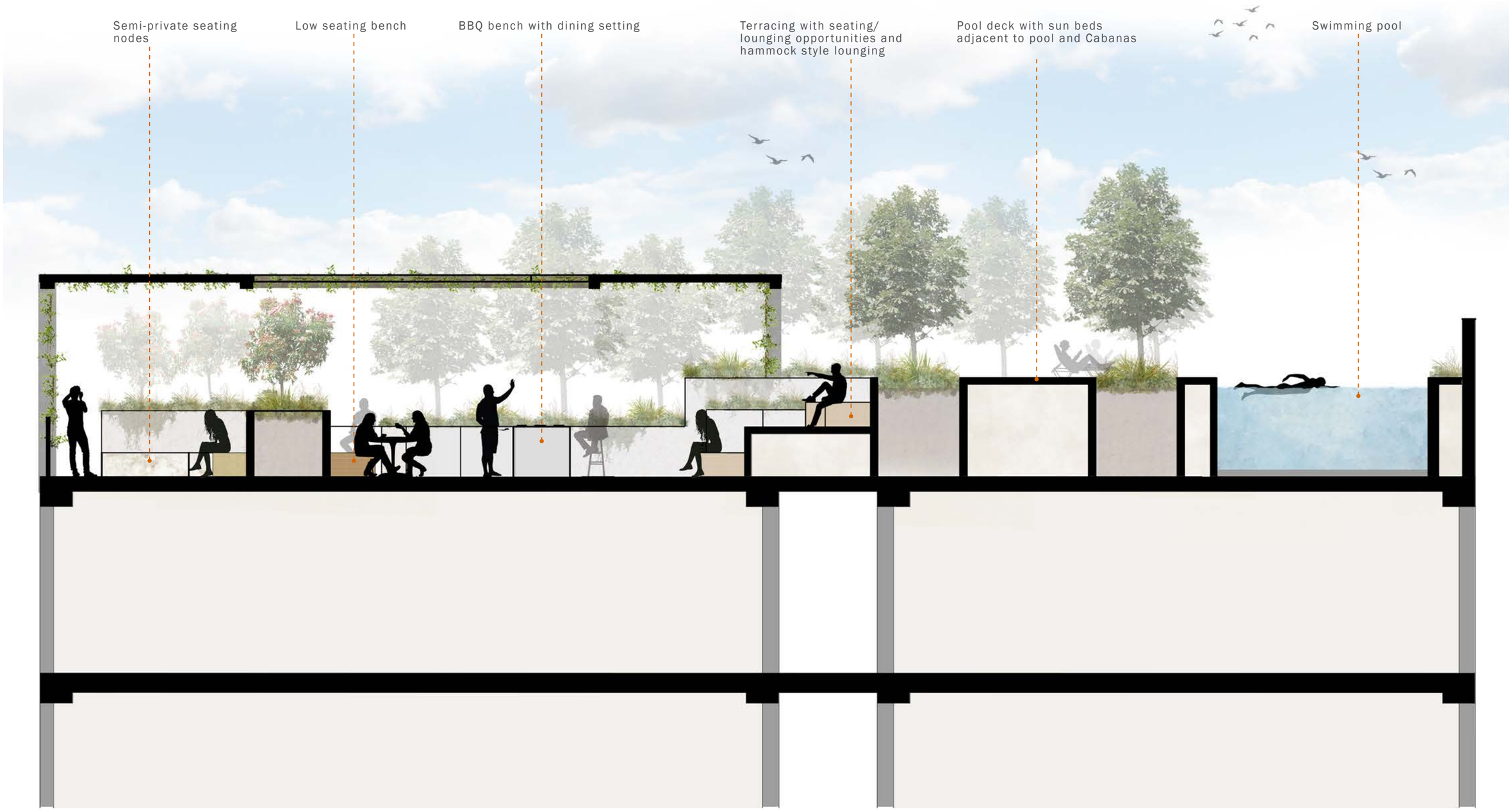
C1.1014

REV H
AS SHOWN

© PLAN E

2.3 AMENITIES LEVEL SECTION A-A



PLAN E

LANDSCAPE ARCHITECTS

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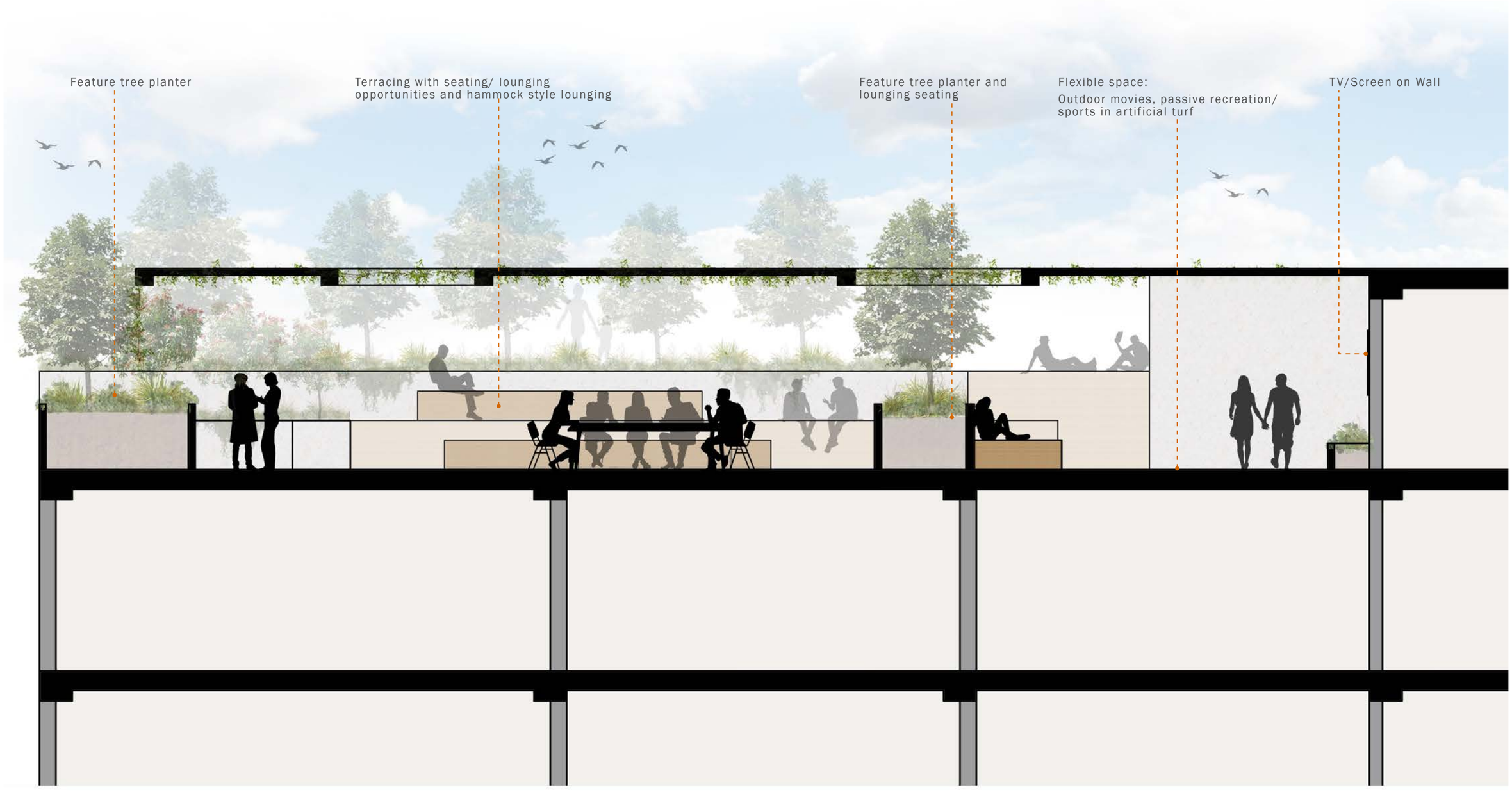
C1.1015

REV H
1:60 @ A3

0 0.6 1.2 1.8 3m

© PLANE

2.4 AMENITIES LEVEL SECTION B-B



PLAN E

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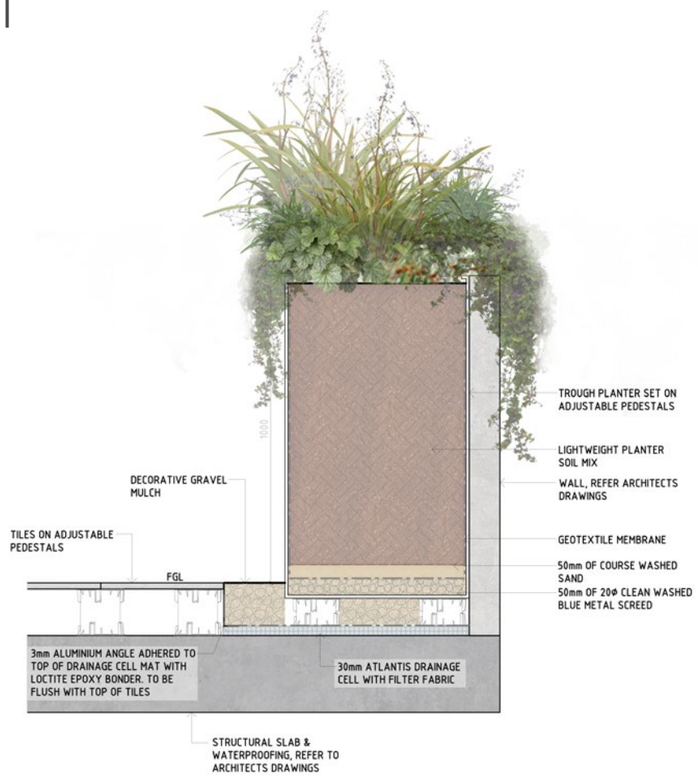
C1.1016

REV H
1:60 @ A3

0 0.6 1.2 1.8 3m

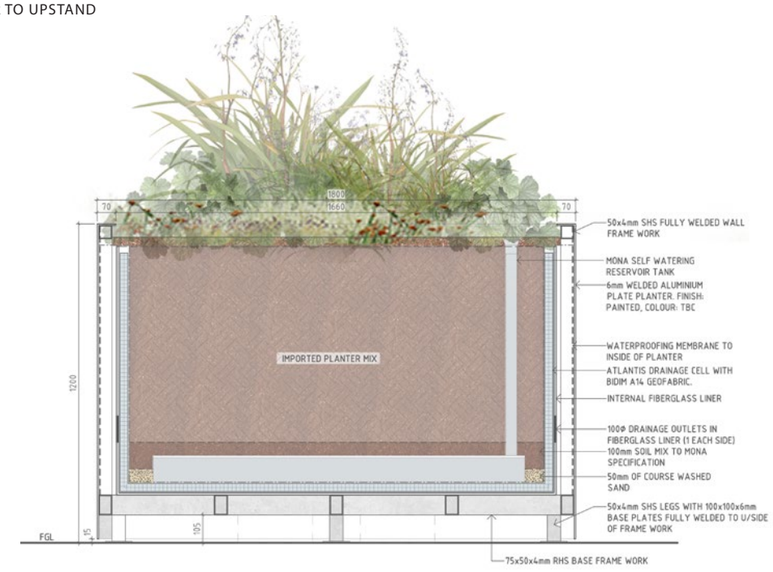
© PLAN E

2.5 TYPICAL SECTION DETAILS

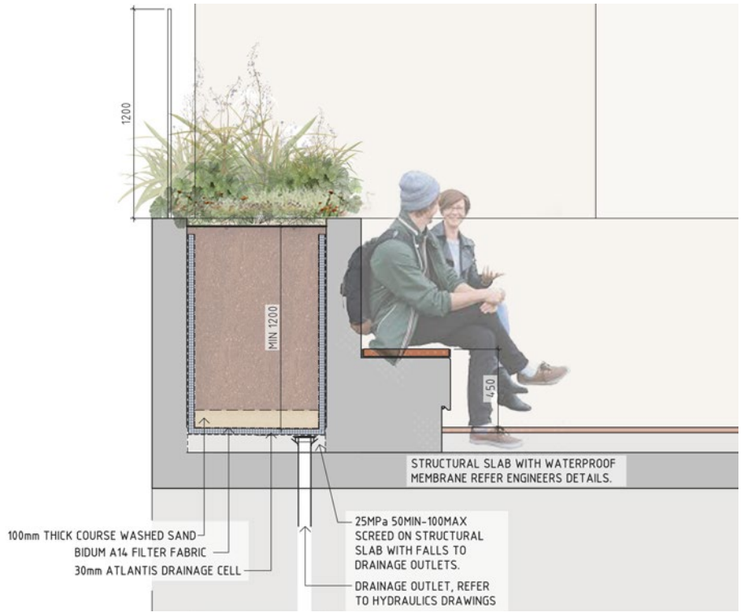


01 PLANTER TO UPSTAND

02 PLANTER ON STRUCTURE



03 PLANTER BOX TYPICAL SECTION



04 RAISED PLANTER WITH BUILT IN SEATING

PLAN E

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REV H
NTS @ A3

© PLANE

3.0

harmony apartments

planting

3.1 PLANTING PALETTE
TREES

Verge & streetscape

Jacaranda mimosaefolia
PURPLE JACARANDA
SIZE: 10 X 8 M

Cupaniopsis anacardioides
TUCKEROO
MATURE SIZE: 8 X 5 M

Entry feature

Corymbia ficifolia grafted
SUMMER RED
MATURE SIZE: 5 X 4M

Fraxinus oxycarpa aurea
GOLDEN STEM ASH
MATURE SIZE: 8 X 6M

Feature level 1

Cupaniopsis anacardioides
TUCKEROO
MATURE SIZE: 8 X 5 M

Carpark

Caesalpinia ferrara
LEOPARD TREE
SIZE: 7 X 4 M

Magnolia grandiflora
LITTLE GEM
SIZE: 6 X 3 M

Hymenosporum flavum
NATIVE FRANGIPANI
MATURE SIZE: 7 X 4 M

Pool

Cupaniopsis anacardioides
TUCKEROO
MATURE SIZE: 8 X 5 M

Archontophoenix alexandrae
ALEXANDER PALM
SIZE: 6 X 2 M

Amenities level & Pool

Olea europaea
KALAMATA OLIVE
SIZE: 6 X 4 M

Ficus benjamina
MIDNIGHT BEAUTY
SIZE: 5 X 4 M

Lagerstroemia indica x fauriei
ACOMA CREPE MYRTLE
MATURE SIZE: 4 X 3 M

Cupaniopsis anacardioides
TUCKEROO
MATURE SIZE: 8 X 5 M

Citrus limon
LEMON HEAVEN EUREKA SEEDLESS
MATURE SIZE: 4 X 3 M

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REV H
NTS @ A3

© PLAN E

3.2 PLANTING PALETTE
BOUNDARY, VERGE AND CAR PARK PLANTING

Hardenbergia comptoniana
NATIVE WISTERIA
MATURE SIZE: 3 X 3 M - CLIMBER

Hemiandra pungens
SNAKE BUSH
MATURE SIZE: 0.3 X 1.0 M

Conostylis candicans
GREY COTTONHEADS
MATURE SIZE: 0.3 X 0.5 M

Patersonia occidentalis
PURPLE FLAG, NATIVE IRIS
MATURE SIZE: 0.8 X 0.6 M

Calothamnus quadrifidus prostrate
ONE SIDED BOTTLEBRUSH/COMMON NET BUSH
MATURE SIZE: 0.8 X 2.0 M

Melaleuca trichophylla
SPIDER NET GREVILLEA
MATURE SIZE: 0.8 X 1.5M

Pimelea Marshmallow
RICE FLOWER
MATURE SIZE: 1.0 X 1.0 M

Westringia
COASTAL ROSEMARY
MATURE SIZE: 0.4 X 1.5 M

Leucophyta Silver Nugget
SILVER CUSHION BUSH
MATURE SIZE: 0.5 X 0.5 M

Adenanthos sericeus purpurea
WOOLY BUSH
MATURE SIZE: 1.0 X 1.0 M

Hypocalymma robustum
SWAN RIVER MYRTLE
MATURE SIZE: 1.2 X 1.0 M

Grevillea pilulifera
WOOLLY-FLOWERED GREVILLEA
MATURE SIZE: 1.2 X 1.5 M

Dianella Clarity Blue
BLUE FLAX LILLY
MATURE SIZE: 0.5 X 0.4 M

Anigozanthos humilis
CATSPAW
MATURE SIZE: 1.0 X 0.6 M

Anigozanthos Celebrations Masquerade
KANGAROO PAW
MATURE SIZE: 0.5 X 0.4 M

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C1.1020

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NTS @ A3

© PLANE

3.3 PLANTING PALETTE
ENTRY - LEVEL 1

Acacia cognata Limelight
NATIVE WISTERIABOWER OF BEAUTY WATTLEMATURE SIZE: 0.8 X 1.0 M

Hemiandra pungens
SNAKE BUSH
MATURE SIZE: 0.3 X 1.0 M

Conostylis candicans
GREY COTTONHEADS
MATURE SIZE: 0.3 X 0.5 M

Patersonia occidentalis
PURPLE FLAG, NATIVE IRIS
MATURE SIZE: 0.8 X 0.6 M

Casuarina glauca Cousin It
COUSIN IT CASUARINA
MATURE SIZE: 0.1 X 1.0 M

Melaleuca trichophylla
SPIDER NET GREVILLEA
MATURE SIZE: 0.8 X 1.5M

Lomandra fluvia Shara
MAT RUSH
MATURE SIZE: 0.4 X 0.5 M

Anigozanthos Bush Zest
KANGAROO PAW
MATURE SIZE: 0.4 X 0.45 M

Zamia furfuracea
CARDBOARD PALM
MATURE SIZE: 1.0 X 1.0 M

Sedum Gold Mound
SEDUM
MATURE SIZE: 0.2 X 1.5 M

Agapanthus orientalis blue
AFRICAN LILY
MATURE SIZE: 0.7 X 0.3 M

Dichondra silver falls
SILVER NICKEL VINE
MATURE SIZE: 0.1 X 2 M

Hibbertia scandens
SNAKE VINE
MATURE SIZE: 0.3 X 2.0 M

Anigozanthos Celebrations Masquerade
KANGAROO PAW
MATURE SIZE: 0.5 X 0.4 M

Dianella Clarity Blue
BLUE FLAX LILLY
MATURE SIZE: 0.5 X 0.4 M

PLAN E

LANDSCAPE ARCHITECTS

LEVEL 1 278 RAILWAY PDE WEST LEEDERVILLE WA 6007
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1708 HARMONY APARTMENTS, COCKBURN CENTRAL

PREPARED FOR MILIEUX PROJECT MANAGEMENT
FEBRUARY 2024

C1.1021

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NTS @ A3

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3.4 PLANTING PALETTE
ROOFTOP

Acacia cognata Limelight
NATIVE WISTERIABOWER OF BEAUTY WATTLEMATURE SIZE: 0.8 X 1.0 M

Stachys Moonlight
LAMBS EARS
MATURE SIZE: 0.3 X 0.3 M

Cotyledon orbiculata Delight
MATURE SIZE: 0.4 X 0.4M

Dietes grandiflora
FAIRY IRIS/ WILD IRIS
MATURE SIZE: 1.0 X 1.0M

Tulbaghia violacea variegata
SOCIETY GARLIC
MATURE SIZE: 0.4 X 0.3 M

Lavandula The Princess
THE PRINCESS LAVENDER
MATURE SIZE: 0.7 X 0.7M

Lomandra fluvia Shara
MAT RUSH
MATURE SIZE: 0.4 X 0.5 M

Anigozanthos Bush Pearl
KANGAROO PAW
MATURE SIZE: 0.5 X 0.45 M

Zamia furfuracea
CARDBOARD PALM
MATURE SIZE: 1.0 X 1.0 M

Casuarina glauca Cousin It
COUSIN IT CASUARINA
MATURE SIZE: 0.1 X 1.0 M

Agapanthus orientalis blue
AFRICAN LILY
MATURE SIZE: 0.7 X 0.3 M

Dichondra silver falls
SILVER NICKEL VINE
MATURE SIZE: 0.1 X 2 M

Hibbertia scandens
SNAKE VINE
MATURE SIZE: 0.3 X 2.0 M

Sedum Gold Mound
SEDUM
MATURE SIZE: 0.2 X 1.5 M

Eremophila Kalbarri Carpet
EMU BUSH
MATURE SIZE: 0.2 X 2.0 M

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3.5 PLANTING PALETTE
ROOFTOP EDIBLE

Citrus limon
LEMON HEAVEN EUREKA SEEDLESS
MATURE SIZE: 4 X 3 M

Citrus aurantium
MIDNIGHT SEEDLESS ORANGE
MATURE SIZE: 4 X 3 M

Salvia officinalis tricolor
COMMON SAGE
MATURE SIZE: 0.7 X 0.9M

Roman Chamomile
MATURE SIZE: 0.2 X 2.0M

Rosmarinus Santa Barbara
TRAILING ROSEMARY
MATURE SIZE: 0.3 X 0.3 M

Salvia officinalis
COMMON SAGE
MATURE SIZE: 0.4 X 0.3 M

Mint
COMMON MINT
MATURE SIZE: 0.3 X 0.3M

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3.6 DESIGN WA COMPLIANCE ITEMS
deep soil & tree canopy

ITEM 3.3A - TREE CANOPY & DEEP SOIL AREA

REQUIRED DEEP SOIL AREA: 564 SQ.M - BASED ON A SITE AREA OF 5639 SQ.M

REQUIRED TREE CANOPY AREA: 266 SQ.M - BASED ON A SITE AREA OF 5639 SQ.M

DEEP SOIL AREA & TREE CANOPY REQUIREMENTS - TABLE 01

THE DEVELOPMENT SEEKS TO PROVIDE SIGNIFICANT TREE CANOPY THROUGH ALL LEVELS OF LANDSCAPE, INCLUDING EXTERNAL LANDSCAPE SPACES.

THE TABLE BELOW OUTLINES MINIMUM REQUIREMENTS FOR DEEP SOIL AREAS AS DEFINED IN DESIGNWA.

TABLE 01: DEEP SOIL ZONE REQUIREMENTS

	LOT AREA: 5639 SQ.M	MINIMUM REQUIREMENTS	PROJECT REQUIREMENT FOR PROVISION
WAPC DEEP SOIL AREA REQUIREMENTS	MORE THAN 1000 SQ.M	10% OF DEEP SOIL AREA ON SITE (564 SQ.M)	PROVIDED DEEP SOIL AREA OF 720 SQ.M PROVIDED ADDITIONAL PLANTING ON STRUCTURE AS DEEP SOIL AREA OF 220 SQ.M PLANTING ON STRUCTURE (LESS THAN 1M DEPTH) 15 SQ.M ADDITIONAL PERMEABLE PAVING TO ALLOW FOR TREE ROOT GROWTH IN CARPARK 55 SQ.M ADDITIONAL STRUCTURAL SOILS TO ALLOW FOR TREE ROOT GROWTH IN CARPARK 390 SQ.M

LANDSCAPE AREA REQUIREMENTS - TABLE 02

THE DEVELOPMENT SEEKS TO EXCEED THE REQUIRED LANDSCAPE PROVISION FOR DEEP SOIL AREA AS DEFINED IN DESIGNWA THROUGH GENEROUSLY SCALED LANDSCAPE AREAS; ALLOWING SIGNIFICANT ROOTABLE DEEP SOIL AREAS ON STRUCTURE.

SOIL VOLUMES ARE CONSIDERED IN TREE PLACEMENT AND SELECTION OF TREE SPECIES.

THE TABLE BELOW SUMMARISES THE EXTENT OF LANDSCAPE AREAS, AND DEEP SOIL AREA OVER THE VARIOUS LANDSCAPE LEVELS.

TABLE 02: LANDSCAPE AREAS / DEEP SOIL AREAS

	DEEP SOIL AREA (IN GROUND)	PLANTING ON STRUCTURE (1M DEPTH) AS DEEP SOIL AREA	PLANTING ON STRUCTURE (LESS THAN 1 M DEPTH - NO DEEP SOIL)	SOFT LANDSCAPE GARDEN AREA
GROUND FLOOR	720 SQ.M	-	-	720 SQ.M
LEVEL 1	-	140 SQ.M	-	140 SQ.M
ROOF TOP	-	80 SQ.M	15 SQ.M	95 SQ.M
TOTAL	720 SQ.M	220 SQ.M	15 SQ.M	955 SQ.M

DEEP SOIL ZONE & TREE CANOPY REQUIREMENTS - TABLES 03-05

THE DEVELOPMENT SEEKS TO RETAIN EXISTING TREES WITHIN THE LOT AND ADJACENT STREETSCAPE AND TO PROVIDE SIGNIFICANT DEEP SOIL AREA, ROOTABLE SPACE, AND SOFT LANDSCAPE AREA THROUGH ALL LEVELS OF LANDSCAPE, INCLUDING EXTERNAL LANDSCAPE SPACES.

THE TABLE BELOW OUTLINES MINIMUM REQUIREMENTS FOR TREE CANOPY COVER AS DEFINED IN DESIGNWA.

TABLE 04: TREE CANOPY REQUIREMENTS

	LOT AREA: 5639 SQ.M	MINIMUM REQUIREMENTS	PROJECT REQUIREMENT FOR PROVISION
WAPC TREE CANOPY REQUIREMENTS	MORE THAN 1000 SQ.M	1 LARGE TREES AND 11 MEDIUM TREES (1 MEDIUM TREE FOR EACH ADDITIONAL 400 SQM IN EXCESS OF 1000 SQM)	MINIMUM OF 266 Q.M OF TREE CANOPY COVER WHICH EQUATES TO APPROX. 4.7% CANOPY COVER OF THE DEVELOPMENT SITE AREA TOTAL SURPLUS TREES: 60 NO. TOTAL CANOPY COVER: 666SQ.M WHICH EQUATES TO APPROX. 11.8% CANOPY COVER OF THE DEVELOPMENT SITE AREA

TABLE 05: TREE CANOPY COVER

	SMALL TREES: 2M DIAMETER 3.2 SQ.M CANOPY COVER AT MATURITY	MEDIUM TREES: 5M DIAMETER 19.6 SQ.M CANOPY COVER AT MATURITY	LARGE TREES: 8M DIAMETER 50 SQ.M CANOPY COVER AT MATURITY	TOTAL CANOPY COVER (NOT INCLUDING EXISTING TREES)
GROUND FLOOR	32	15	3	546.4 SQ.M
LEVEL 1	6	1	-	38.8 SQ.M
ROOFTOP	13	2	-	80.8 SQ.M
TOTAL	163.2 SQ.M CANOPY COVER AT MATURITY	352.8 SQ.M CANOPY COVER AT MATURITY	150 SQ.M CANOPY COVER AT MATURITY	666 SQ.M PROPOSED TREE CANOPY COVER

IRRIGATION REQUIREMENTS

A FULLY AUTOMATIC IRRIGATION SYSTEM WILL BE INSTALLED FOR THE HARMONY APARTMENTS PROJECT. THE SCOPE WILL INCLUDE:
- IRRIGATION TO ALL LANDSCAPE AREAS
- MOISTURE SENSORS THROUGHOUT, TO ENSURE WATER USE IS MINIMISED
- USE OF LOW WATER USE EMITTERS TO ENSURE ONLY SUFFICIENT WATER IS PROVIDED TO IRRIGATE PLANTING AREAS
- IN-LINE FERTILISATION UNIT TO ENSURE FERTILISING AND MOISTURE RETENTION IS CONTROLLED
- USE OF POP - UP FLOOD BUBBLERS TO SUIT SIZE OF GARDEN BEDS TO ENSURE ANY OVER-SPRAY AND WASTAGE IS MITIGATED, AND;
- A DETAILED DESIGN AND SPECIFICATION WILL BE PROVIDED AT BUILDING LICENSE APPLICATION STAGE.

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Design Review Report

Lot 1 Kentucky Court, Cockburn Central

City of Cockburn

August 2023

Design Review Report		
Subject	**Lot 1 Kentucky Court, Cockburn Central**	
Date	23-08-2023	
Time	4PM	
Location	City of Cockburn	
Design Reviewers	Name Lisa Shine Simon Venturi Annelise Safstrom	Role Panel Chair Panel Member Panel Member (via Microsoft Teams)
Proponent	Element	
Project Team		
Planning Authority	City of Cockburn	
Stakeholders		
Declarations	None	
Briefings		
Relevant Authorities Project Team		
Design Review Report endorsement		
Reviewer signature	 Lisa Shine	

Introductory Comments		
Design quality evaluation		
		Supported
		Pending further attention
		Not yet supported
		Yet to be addressed
Strengths of the Proposal		• Residential density close to train station and facilities. • Scale of two towers of 7-8 storeys appropriate. • Site response has logic with stage 2 addressing the street and stage 3, the northern aspect. • Communal open space facilities at roof level offer outlook. • Naturally lit and ventilated corridors. • Aspiration to build a quality development. *Note: feedback is based on documents received prior to the Review. Please provide 10 Design Principles response Presentation prior to DRP 2 review.*
Principle 1 **Context and character**		*Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*
		a) There was limited information on the existing built form and surrounding context which would have been useful in preparation for the design review. b) There is an opportunity to integrate existing development through enhanced landscape design and amenity. c) Opportunity to further understand the various view corridors. d) Strategy for legible pedestrian pathway from the street, between buildings and within the car parking area.
Recommendations		**1. Further develop site and context analysis to inform design thinking.** **2. Consider how the existing development may be enhanced through its integration with the proposed development.**
Principle 2 **Landscape quality**		*Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*
		a) Lacks landscape development. b) All green deep root area is on the edges i- s it really meaningful? Could there be an area within that is more for amenity to the residents on the ground floor. There is also a podium opportunity as well as the roof top.
Recommendations		**It is crucial that a landscape architect is engaged to develop the landscape strategy with a convincing landscape proposal that integrates all stages and delivers amenity for residents and the surrounds.**
Principle 3 **Built form and scale**		*Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*
		a) There is logic to the arrangement of the towers; although the raised approach lacks connection to the ground with resultant design and amenity challenges. b) Raising the apartment towers and entry points is problematic. The perched entry arrangement is suboptimal and the open space deck above the car park is not generous enough and may not allow enough space for amenity.

		c) Explore the overshadowing impact to the central tower from the north tower. d) The pitch roof form and suburban house scale of the central entrance building between the two towers is at odds in scale and form to the towers. e) Has thought been given to varying the dwelling typologies and perhaps incorporating some townhouses along a portion of the street within a podium form? This would improve the entrance experience, as well as provide an urban street edge for the development. This built edge could also incorporate existing services and screen car parking.
Recommendations		**1. Pursue alternatives to the raised towers strategy.** **2. If the raised tower strategy is pursued then consider linking between the towers with a generous landscape zone on slab for at least the width of Tower 2 to create a sense of ground level planting and connection, together with further podium treatments around tower perimeter.** **3. Consider introducing a townhouse type for a portion of the street to support raised entrance, screen car parks, integrate existing services and provide a more traditional street interface.**
Principle 4 **Functionality and build quality**		*Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*
		Site: a) Providing more bays than required by planning controls negatively impacts on the site layout. Consider innovative responses such as a small pool of (EV) cars for shared use by residents to reduce demand for parking space. b) Building is physically and visually disconnected from ground, impacting on its attractiveness. c) The design allows for views from the street and within the site of the underside of slab services and pipes. d) The main entrance walls are quite confining, suggest exploring an open view, or more generous scale and better integrate with a legible pedestrian network. Building: a) Condensers located on prominent corners of the building behind a feature screen may be more intrusive than anticipated. b) 3m floor to floor height on sections make it a challenge to achieve 2.7m ceiling in living spaces due to required sprinklers and services. c) It is assumed that double glazing will be provided to achieve adequate acoustic privacy and thermal comfort, particularly given location close to freeway and rail line. d) Ensure communal corridors to towers have openable windows at each end for natural cross ventilation. e) Seek opportunities to increase glazing and ventilation to apartments and open up corner balconies on two sides. f) Good to have additional space in front of the lifts for furniture moving, but on the ground level, lobby lacks sufficient space. g) To have only one option for stores is limiting when access is from inside the apartment. Consider stores on the ground level also to accommodate large items. h) Condensers are ideal on the roof, even though the proposed option is better than on a balcony. Apartment planning issues resulting in poor resident functionality and amenity: a) Tower layout of apartments does not comply with much of Design WA SPP 7.3 e.g. apartment mix and size, room dimensions, solar and daylight access, natural ventilation etc. b) Balconies may be a little tight, smaller ones are more functional if they are square and not rectangular.

		c) Type B both bathrooms disconnected from the bedroom, resulting in no ensuite option. d) There is concern around secondary glazing to internal large store rooms as this implies potential change of use to a bedroom/nursery without direct natural light and ventilation.
Recommendations		**1. Review Design WA Guidelines to ensure compliance requirements.** **2. Consider alternative site and parking layouts and level changes that reduce impact of parking and improves the entrance design.**
Principle 5 **Sustainability**		*Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.*
		a) NO ESD consultant on yet b) Layout of multiple single bed units along a corridor impacts on cross ventilation and should be tested. c) Deep balconies, loggias may compromise the access to natural light, seek more glazing and cross ventilation in the units.
Recommendations		**Need to engage an ESD professional to develop and include an ESD narrative and initiatives for the development.**
Principle 6 **Amenity**		Good design optimises internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.
		a) Amenity of residents impacted by outlook into carparks, heat island impact of hard stand, raised entry experience and lack of connection to ground level open space. b) Existing street front services will require further attention as they are bulky and visually dominant. c) Scope to improve apartment amenity for residents, suggest ensuring front doors are not directly opposite to enhance privacy; avoid views to the toilet from living/dining/kitchen areas; ensure adequate kitchen bench and cupboard space in smaller units; improve furnishability options in layout; rationalise bathroom/laundry layouts and proximity to bedroom. Communal roof top: d) Communal open space on roof will add amenity however the location and connection to this needs further thought as it is located on south side and potentially receiving limited north light access. e) Whilst meant to be shared by residents of all 3 towers, pedestrian access is not clear or convenient, which may limit use. f) Siting for a north aspect, long views, and visibility from adjacent towers that share this space are desirable but a balance will be needed.
Recommendations		**1. Improve amenity for residents in terms of visual outlook, comfort levels, attractiveness of setting, accessibility and apartment arrangement and facilities.** **2. Improve presentation and experience at street level for pedestrians.** **3. Provide a physical and visual connection and sense of shared ownership to communal open space.**
Principle 7 **Legibility**		*Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*
		a) Lacks a coherent pedestrian entry from the street. This needs to be more welcoming, and needs further design work within the site that adequately connects all buildings and supports legibility.

		b) Consider as part of wider pedestrian network of likely resident desire lines within and beyond the site. c) Visitor experience requires attention to improve legibility of vehicle and building entries, provide safe and attractive pathways to all towers from visitor car parking. Communal roof top: a) Ensure direct and pleasant access from the northern tower if this is their primary communal amenity. b) Facilitate access to communal facilities that are nominally available to all residents by integrating with stage 1.
Recommendations		**1. Diagrams are useful to explain proposed integration between existing and new development and also the connection between the two new towers. Provide a clear pedestrian network that links all development and takes account of internal and external movement patterns.** **2. Consider how the pedestrian entry could be improved.**
Principle 8 **Safety**		*Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.*
		a) Managing car bay security and visitor parking when all in one is a challenge b) Proposed strategy of enclosing the site with fencing/planting to block views of parking will remove street level interaction, reduce casual surveillance and result in a reduced perception of safety by pedestrians on street footpaths.
Recommendations		**More information is required**
Principle 9 **Community**		*Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*
Recommendations		**More information is required**
Principle 10 **Aesthetics**		*Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*
Recommendations		**More information is required**

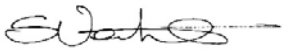
Concluding Remarks
Consultants, such as ESD and Landscape, should be engaged early for us to respond to the extent of feedback you are seeking in DRP 1. As outlined above, there are also design quality and resident amenity issues that need to be further addressed.

Design Review progress			
	Supported		
	Pending further attention		
	Not yet supported		
	Yet to be addressed		
	DR1	*DR2*	*DR3*
Principle 1 - **Context and character**			
Principle 2 - **Landscape quality**			
Principle 3 - **Built form and scale**			
Principle 4 - **Functionality and build quality**			
Principle 5 - **Sustainability**			
Principle 6 - **Amenity**			
Principle 7 - **Legibility**			
Principle 8 - **Safety**			
Principle 9 - **Community**			
Principle 10 - **Aesthetics**			

Design Review Report

Project Name: Lot 1 Kentucky Court Cockburn Central

October 2023

Design Review Report		
Subject	**Lot 1 Kentucky Court, Cockburn Central - Harmony Apartments**	
Date	25/10/23	
Time	3:00pm	
Location	City of Cockburn	
Design Reviewers	- Simon Venturi - Lisa Shine - Annelise Safstrom	Chair Panel Member Panel Member
Proponent Attendees	- Angus Murray - Anthony Ciprian - John Colliere - Nicole Cavanagh - Katherine Bohorquez - David Read - Emily Greenwood	Perth PRD Milieux Colliere Architects Plan E Plan E element element
Planning Authority	- Lucia Dunstan - Ellie Kennedy	City of Cockburn City of Cockburn
Stakeholders		
Declarations	None	
Design Review Report Endorsement		
Reviewer's signature	Simon Venturi 	

Introductory Comments		
Proposed Development: Lot 1 Kentucky Court, Cockburn Central - Harmony Apartments		
Design quality evaluation		
		Supported
		Pending further attention
		Not yet supported
		Insufficient Information / Yet to be addressed
Strengths of the Proposal		• The scale of the project is generally appropriate and density close to the train station is supported • A Landscape Architect has been engaged since the previous presentation • The apartment communal corridors have windows on both ends allowing natural light and potentially ventilation into these spaces • The layout of the B2 tower communal deck has a diversity spaces and a pool providing a good level of amenity for residents
Principle 1 **Context and character**		*Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*
		a) The apparent large resident parking over supply is hard to justify / support given the quality of the ground plane and streetscape interface proposed which is a key issue for the project b) The high walls around the perimeter of the site covered in vines lack interactivity with the surrounding context and are not an acceptable streetscape interface c) The proposal doesn't generally reference, reflect or contribute to the positive aspects of the surrounding area's built form character and sense of 'place'
Recommendations		**1. Consider alternative organisation of the built form on the site such as sleeving the parking areas behind built form to generate higher levels of interactivity with the streetscape** **2. If the current apartment tower elevated above on grade parking arrangement is retained increase the amount of soft landscaping in the parking area significantly, improve the experiential quality of the pedestrian entrance, create legible pedestrian movement pathways through the carpark and consider all strategies to improve the interactivity of the streetscape interface. This may require a reduction in parking bays or alternative parking options such as car stackers** **3. Undertake a surrounding built form character analysis and strategically introduce external materiality, textures and colours which relate to or reference the area's unique built form character and sense of 'place'**
Principle 2 **Landscape quality**		*Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*
		a) Very limited deep soil zones, soft planting and trees are proposed on the ground plane within the site, especially in the parking area. A high proportion of the landscaping is still located on the periphery or outside the boundary b) A proportion of the soft planting that is located within the site boundary is located underneath the apartment towers and elevated entrance walkway which requires careful species selection to ensure it's feasible c) The Landscape Plan lacks detail in relation to planting species, on-structure planter volumes / depths, reticulation, tree sizes and plant pot sizes etc.

Recommendations		**1. Look for all opportunities to increase the amount of trees and soft planting within the site which needs to be increased significantly** **2. Provide greater detail in relation to the Landscape Plan in terms of planting species, on-structure planter volumes / depths, reticulation, tree sizes, plant pot sizes etc.**
Principle 3 **Built form and scale**		*Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*
		a) Refer to comments in the Context and Character Principle relating to the arrangement of built form on the site
Recommendations		**1. Refer to comments in the Context and Character Principle relating to the arrangement of built form on the site**
Principle 4 **Functionality and build quality**		*Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*
		a) The AC plant located on prominent areas of the external façade of the apartment towers is not an optimum solution. In order to achieve the required ventilation the AC units are likely to be visible on the external façade of the building b) The location of the bin store presents a long journey for residents in both apartment towers to access it requiring residents to walk through the carpark with rubbish c) Visitor parking is shown on the verge however the City has indicated it is unlikely to support this
Recommendations		**1. Consider relocating AC plant to the roof of the towers or illustrate how the current plant locations can be achieved without the AC units being visible on the external facades of the building and impacting on surrounding resident's amenity** **2. Consider splitting the bin-store into two one for each apartment tower and locate them to reduce the length of the journey for residents to access them** **3. Liaise with the City in relation to visitor parking requirements and locations**
Principle 5 **Sustainability**		*Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.*
		a. Very limited ESD information has been included in the submission b. Solar panels and EV charging have been indicated which is supported however for a project of this size the applicant is encouraged to include a comprehensive ESD narrative and strategy for the project
Recommendations		**1. Engage an ESD professional and provide further detail on the ESD initiatives that will be incorporated into the project** **2. Consider using a recognised ESD rating tool such as Greenstar to illustrate the ESD outcome that will be achieved in a holistic sense**
Principle 6 **Amenity**		*Good design optimises internal and external amenity for occupants, visitors and neighbors, providing environments that are comfortable, productive and healthy.*
		a) The entry to the elevated pedestrian walkway appears blank / barren on renders. The precedent images included in the presentation don't reflect the proposal b) 3m floor to floor heights make it very difficult to achieve 2.7m ceiling levels in apartment living areas. A diagram was included showing 2.7m high ceiling levels however this didn't illustrate how services (lights, AC etc.) would be integrated c) Type B & E units still have the dining table in what is assumed to be the study. These layouts are labelled 1 Bed + Study however no study is shown d) The dining rooms in these apartments will receive limited natural light due to the diving wall e) The type E unit bedroom only achieves the 3m dimensions at one side of the room due to the angle of the external wall. This is very tight

		f) Type C kitchens will receive limited natural light g) All stores are located in the apartments meaning storing larger items such as bikes, canoes is not convenient h) Residents in the B3 tower have long journey to access communal deck in the B2 tower i) The B2 communal deck is located on the south side of the tower and will therefore receive limited north light access j) The B3 undercroft lobby appears to be fully bounded by solid walls and will therefore receive very limited natural light
Recommendations		**1. The applicant is encouraged to assess the proposal against Design WA SPP 7.3 Vol.2 principles and address the many issues notes above which are currently generating limited amenity for future residents**
Principle 7 **Legibility**		*Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*
		a) A diagram included in the presentation titled 'Residential journey' shows pedestrian movement pathways however the architectural plan doesn't include any provision to accommodate or define these pedestrian movement pathways. Residents are essentially walking through the carpark and vehicle movement areas b) The B3 undercroft lobby entry appears difficult to locate with one door located on one side of the lobby but no pedestrian pathways around the lobby to access it. Residents are therefore forced to walk through a busy carpark c) The main pedestrian entrance to both apartment blocks from the streetscape presents as a very long journey with dog-leg turns limiting its legibility and convenience
Recommendations		**1. Establish clear pedestrian movement pathways throughout the carpark area which are separated from vehicle movement areas** **2. Reconsider the layout and pedestrian pathways around the B3 undercroft lobby** **3. Improve the level of connection, legibility, accessibility and experiential quality of the raised pedestrian entrance walkway from the streetscape**
Principle 8 **Safety**		*Good design optimises safety and security, minimising the risk of personal harm and supporting safe behavior and use.*
		a) Pedestrian movement through the carpark area (ground plane) is not defined or separated from vehicular movement b) The B3 undercroft lobby has no windows and will therefore be a dark concealed space presenting a safety concern
Recommendations		**1. Establish clear pedestrian movement pathways throughout the carpark area which are separated from vehicle movement areas** **2. Reduce the amount of solid walls to the B3 undercroft lobby to make it less concealed and less reliant on artificial light**
Principle 9 **Community**		*Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*
		a) An opportunity for public art is notionally shown on the elevated entrance walkway roof and facades of the apartment towers b) The apartment product mix is limited, lacks diversity and is heavily reliant on a very high proportion of single bed apartments
Recommendations		**1. The applicant is encouraged to engage an artist at early stage to develop a public art concept that could reflect or reference the local community or surrounding area's unique sense of 'place'** **2. Consider introducing a greater mix of apartment types including more 2 bed apartments**
Principle 10 **Aesthetics**		*Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*

		a) The hand sketch included in the presentation has some positive aspects however this is not currently translating into the proposal's external elevations and 3d model / renders b) The diversity of external materiality is limited and doesn't currently reference or relate to positive aspects of the surrounding area's built form character and unique sense of 'place' c) The streetscape (front) elevations are being explored however the other rear and side elevations are basic. The apartment towers will be viewed from multiple directions d) The wave form public art indicatively shown on the external elevations of the apartment towers currently appears generic e) The underside of the floor slab in the carpark area will be highly visible to people entering the apartments by car
Recommendations		**1. Undertake additional surrounding built form character analysis, use it to inform the proposal and strategically introduce external materiality, textures and colours which relate to or reference the area's unique built form character and sense of 'place'** **2. Consider improving the aesthetic qualities of all elevations to the apartment towers** **3. Further develop the design direction for the public art that may be integrated into the apartment tower facades** **4. Investigate what areas of the carpark soffit will have services and consider introducing a soffit lining to conceal exposed services**

Concluding Remarks

The majority of the issues and concerns raised at the previous DRP Meeting have not been addressed and are still relevant. The DRP have a fundamental concern in relation to the general organisation of the built form on the site (an apartment tower elevated above on-grade parking) generating a ground plane which is dominated by parking and a lack of interactivity to the streetscapes. There are also concerns relating to the lack of soft landscaping on the site, pedestrian legibility, the general level of amenity generated for residents and the lack of a sustainability narrative for the project. The applicant is encouraged to explore other built form organisation options for the site as it is unlikely the DRP will support the proposal in its current form. To be returned to the DRP.

Design Review progress

	Supported
	Pending further attention
	Not yet supported
	Insufficient Information / Yet to be addressed

	DR1	*DR2*	*DR3*
Principle 1 - **Context and character**			
Principle 2 - **Landscape quality**			
Principle 3 - **Built form and scale**			
Principle 4 - **Functionality and build quality**			
Principle 5 - **Sustainability**			
Principle 6 - **Amenity**			
Principle 7 - **Legibility**			
Principle 8 - **Safety**			
Principle 9 - **Community**			
Principle 10 - **Aesthetics**			

KEY PLAN Scale 1:100000

ARCHITECTURE
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INTERIORS

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T (08) 9385 2858

DWG No. A100 - Key Plan
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

Version: 1, Version Date: 21/12/2023

PRD. COLLIÈRE ARCHITECTURE

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DWG No. A101 - LOCATION PLAN (SCALE 1:3000 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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PRD. COLLIÈRE ARCHITECTURE

EXISTING SURFACE LEVEL

STREET SIGN

LIGHT POLE

POWER POLE

POWER / LIGHT POLE

STAY POLE

CABLE PIT

TELSTRA MANHOLE

VALVE

WATER SERVICE / VALVE

HYDRANT

TREE
TRUNK TO APPROXIMATE DIAMETER

GULLY PIT

0.10m EXISTING SURFACE CONTOUR

0.50m EXISTING SURFACE CONTOUR

LANDGATE BOUNDARY - FROM DIGITAL PORTAL

COLOUR BOND FENCE LINE

TOP OF BATTER

BREAK LINE

BASE OF BATTER

OVER HEAD POWER

SEMI MOUNTABLE KERB

MOUNTABLE KERB

BRICK WALL

BRICK WALL

DENSE BUSH WITHIN THIS AREA. SURVEY COULD NOT BE UNDERTAKEN

FIRE BOSTER

EXISTING FIRE WATER TANK

EXISTING BUILDING

EXISTING SWITCH BOARD

TRANSFORMER SITE

KENTUCKY COURT

LARGE TELSTRA PIT BURIED

DS582
X=253595.933
Y=244566.592
Z=26.964

SURVEY CONTROL				
Point #	Eastings	Northings	Levels	Codes
1	52616.07	244433.79	33.79	SSM
424	52239.51	245095.09	22.40	SSM JAN17
582	53595.93	244566.59	26.96	DS
583	53572.17	244495.51	26.54	DS

NORTH

Meters
7.5 0 7.5 15

EXISTING FEATURE SURVEY
884-888 North Lake Rd Cockburn Centra

SURVEYOR - TODD JAMES
DRAFTED - MATHEW MATTABONI
GRID SYSTEM - PCG94
DATUM - A.H.D 71

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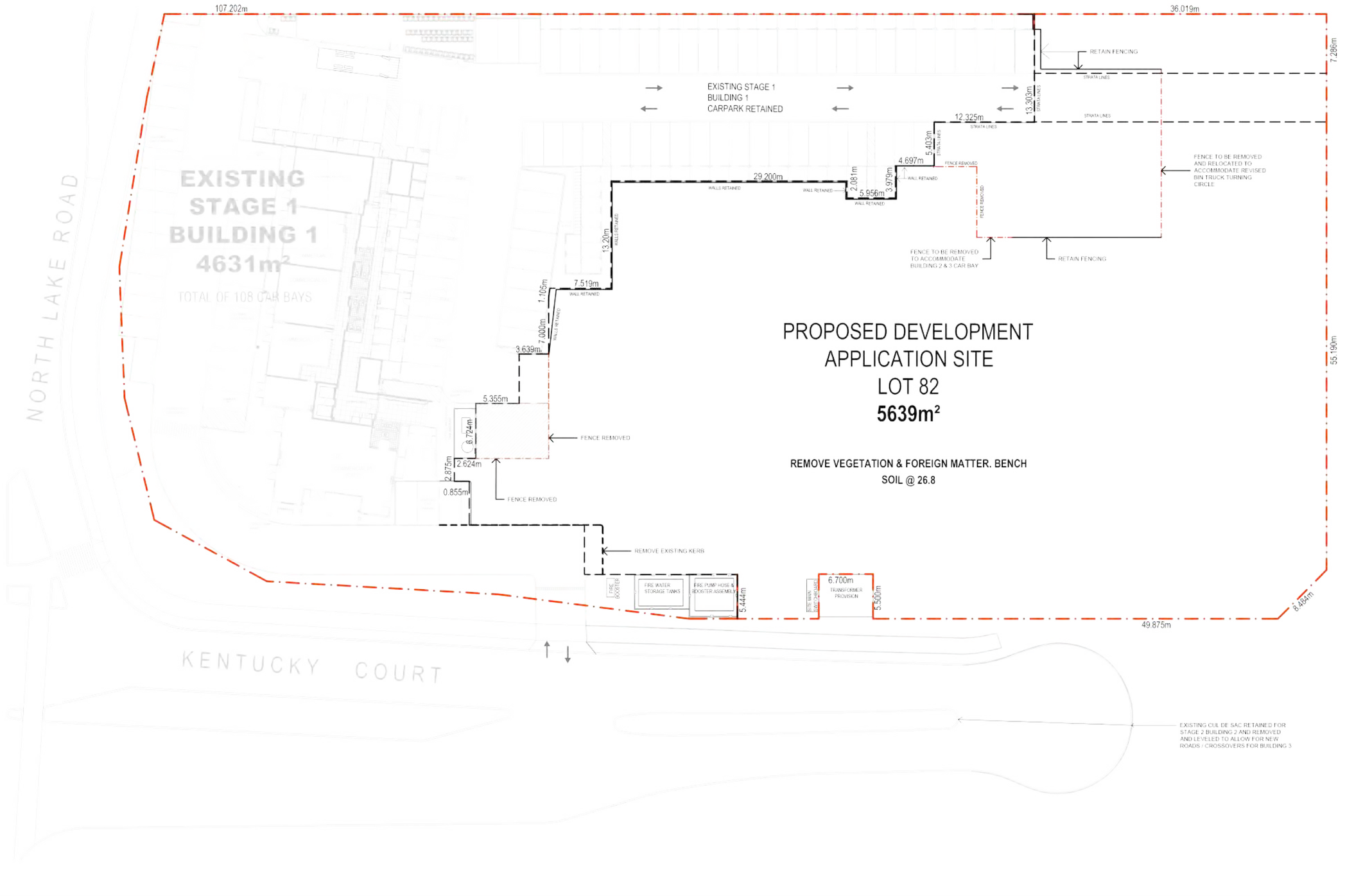
DWG No. A102 - EXISTING SURVEY (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



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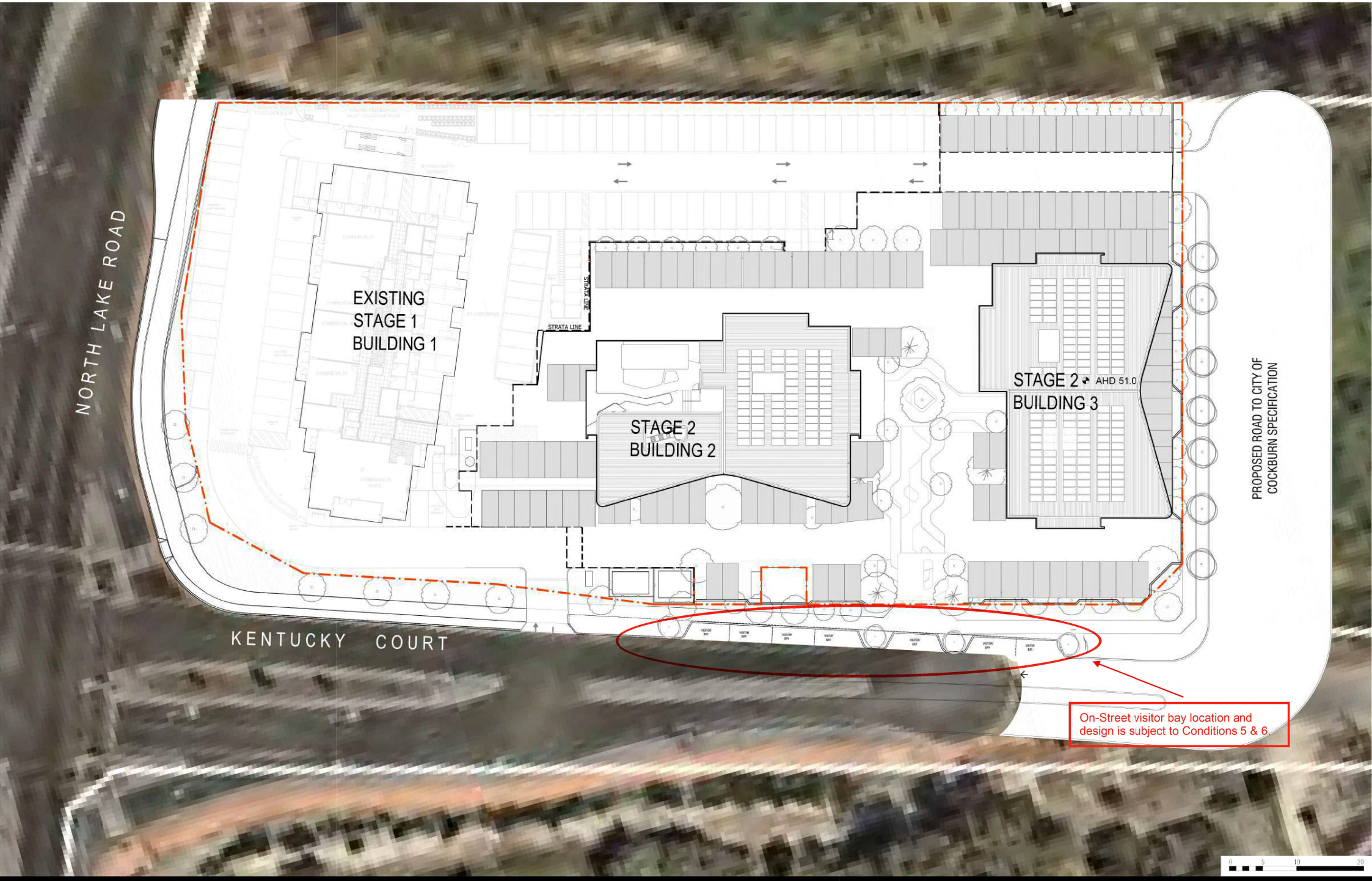
A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A103 - DEMOLITION PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



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INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
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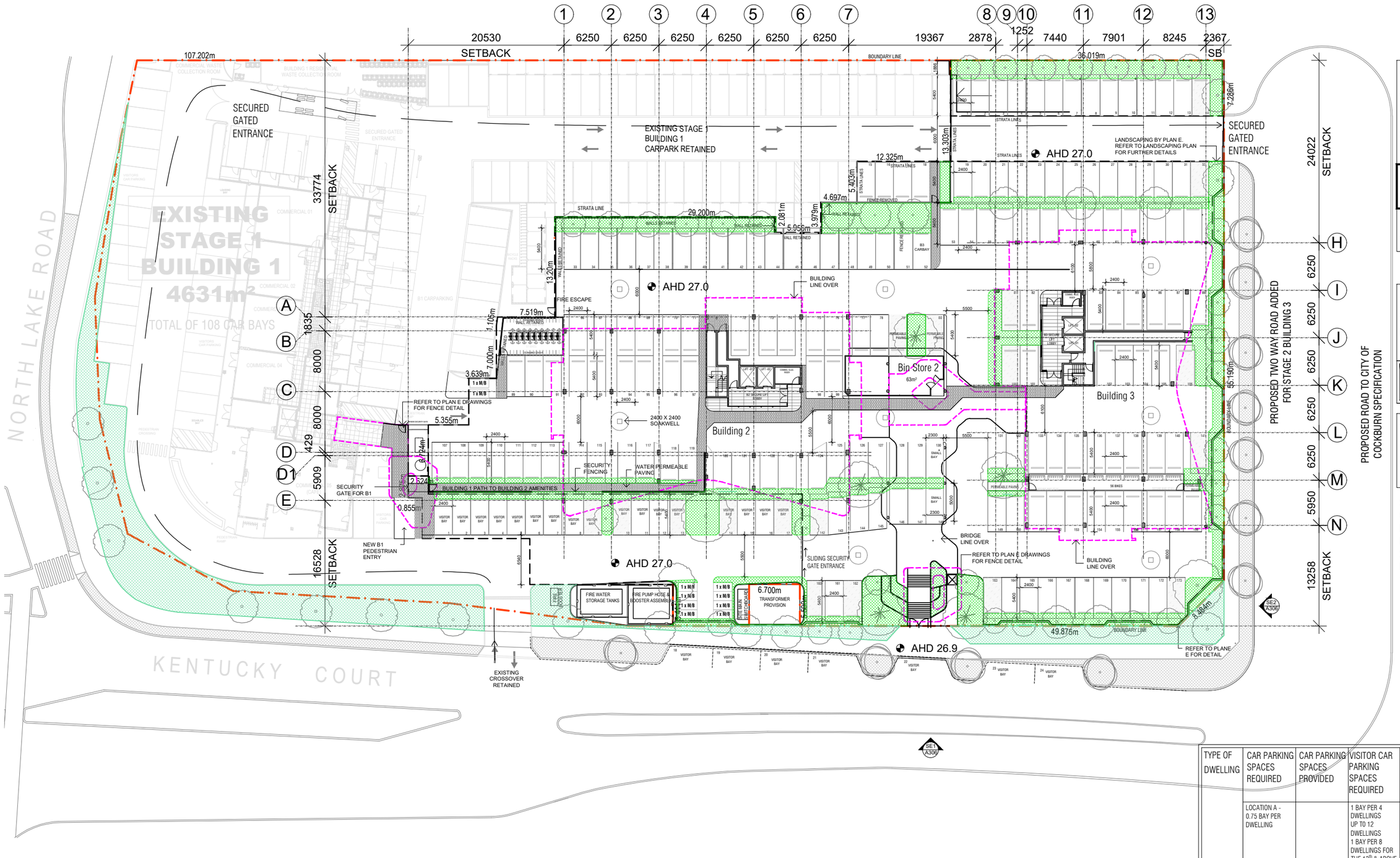
DWG No. A200 - SITE PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



MAXIMUM YIELD: 173 Dwelling Units
- Building 2 - 90 D.U

90 Car Bays required (incl. 13 Visitor Bays)
- Building 3 - 83 D.U

83 Car Bays required (incl. 12 Visitor Bays)

198 Car Bays are required for Concept 4
(if calculated as 2 stages)

198 Car Bays provided on site
(Incl. 7 x embedded visitor bays)

TOTAL SITE AREA (STAGE 2 & 3): 5639 m²

REQUIRED DEEP SOIL:
10% OF SITE AREA = 563.9m²

TOTAL DEEP SOIL PROVIDED- 720m² (12.7% OF SITE AREA)

SITE PLAN LEGEND

Deep Soil Landscaping
Permeable Paving

SOAKWELL IS PROVIDED TO ADDRESS COUNCIL & HYDRAULIC REQUIREMENTS
IMPERVIOUS AREA = 6548m²
2400 x 2400 SOAKWELL = 868.56m²
NUMBER OF SOAKWELLS
1878/254.48 = 8 SOAKWELLS

TYPE OF DWELLING	CAR PARKING SPACES REQUIRED	CAR PARKING SPACES PROVIDED	VISITOR CAR PARKING SPACES REQUIRED	TOTAL CAR BAYS REQUIRED	TOTAL RACKS REQUIRED		MOTORCYCLE / SCOOTER REQUIRED
	LOCATION A - 0.75 BAY PER DWELLING		1 BAY PER 4 DWELLINGS UP TO 12 DWELLINGS 1 BAY PER 8 DWELLINGS FOR THE 13th & ABOVE		0.5 PER DWELLING (CITY OF COCKBURN LPS3)	1 PER 10 FOR VISITORS (CITY OF COCKBURN LPS3)	DEVELOPMENT EXCEEDING 20 DWELLINGS PROVIDE 1 MOTORCYCLE / SCOOTER SPACE FOR EVERY 10 CAR BAYS
1 x 1	75	100	HENCE, 3+21=24 BAYS REQUIRED		87	17	173 CAR BAYS PROVIDED
1 + 1 x 1	33	44					
2 x 2	29	29					
TOTAL	137 (R-CODE VOL.2)	173 (R-CODE VOL.2)	24 (R-CODE VOL.2)	197	104 (R-CODE VOL.2)		17

* 198 CAR BAYS REQUIRED IF CALCULATED AS 2 STAGES
- STAGE 2: 103 CAR BAYS REQUIRED (incl. 13 VISITOR BAYS)
- STAGE 3: 95 CAR BAYS REQUIRED (incl. 12 VISITOR BAYS)

0 5 10 20

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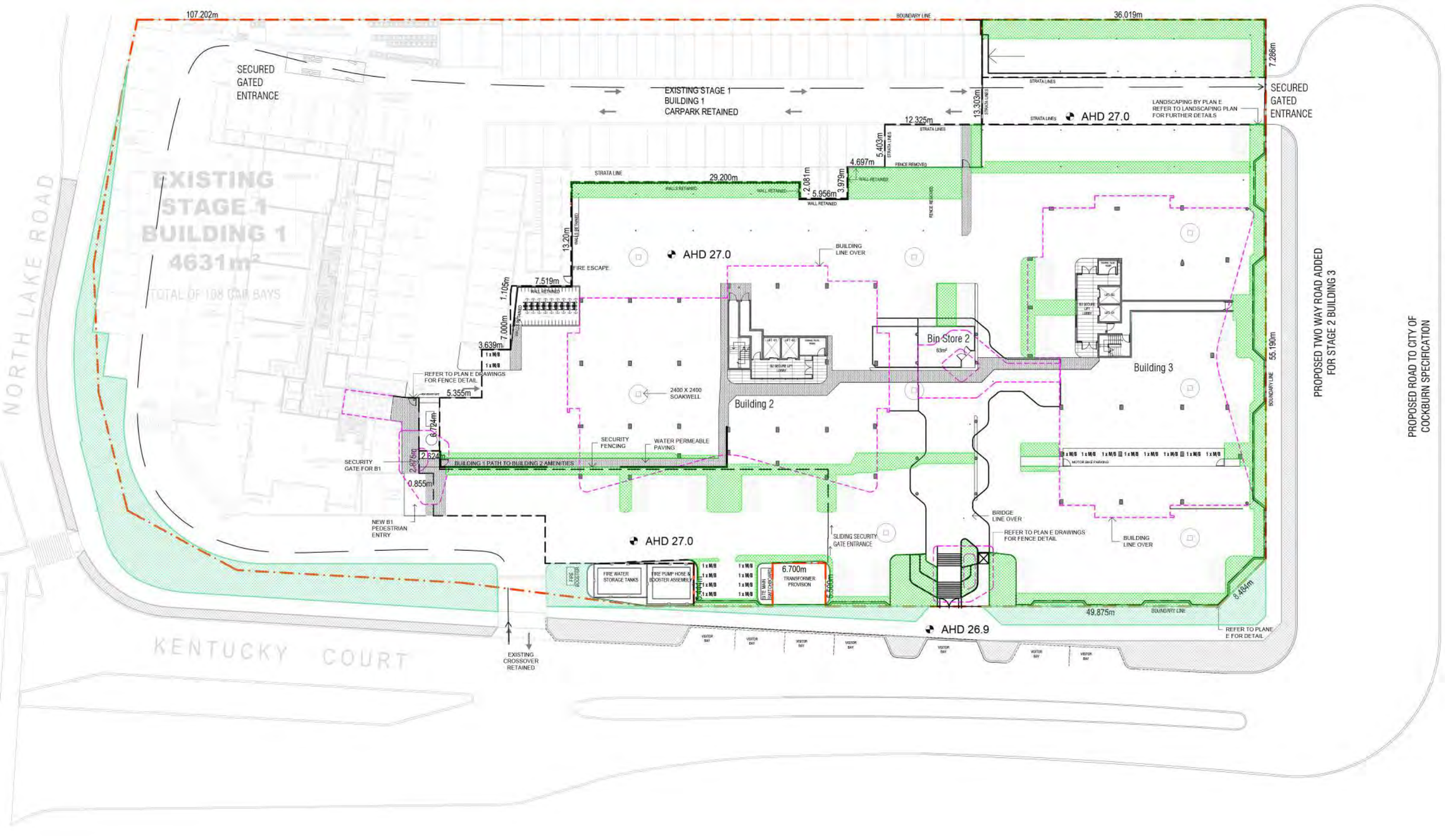
DWG No. A201 - GROUND FLOOR PLAN B2 + B3 (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
14/02/24 DEVELOPMENT APPROVAL ISSUE - REV C

PRD. COLLIÈRE ARCHITECTURE



TOTAL SITE AREA (STAGE 2 & 3):
5639 m²

REQUIRED DEEP SOIL:
10% OF SITE AREA = 563.9m²

TOTAL DEEP SOIL PROVIDED-
720m² (12.7% OF SITE AREA)

SITE PLAN LEGEND

Deep Soil Landscaping
Permeable Paving

SOAKWELL IS PROVIDED TO ADDRESS COUNCIL & HYDRAULIC REQUIREMENTS
IMPERVIOUS AREA = 6548m²
2400 x 2400 SOAKWELL = 868.56m²
NUMBER OF SOAKWELLS
1878/254.48 = 8 SOAKWELLS

0 5 10 20

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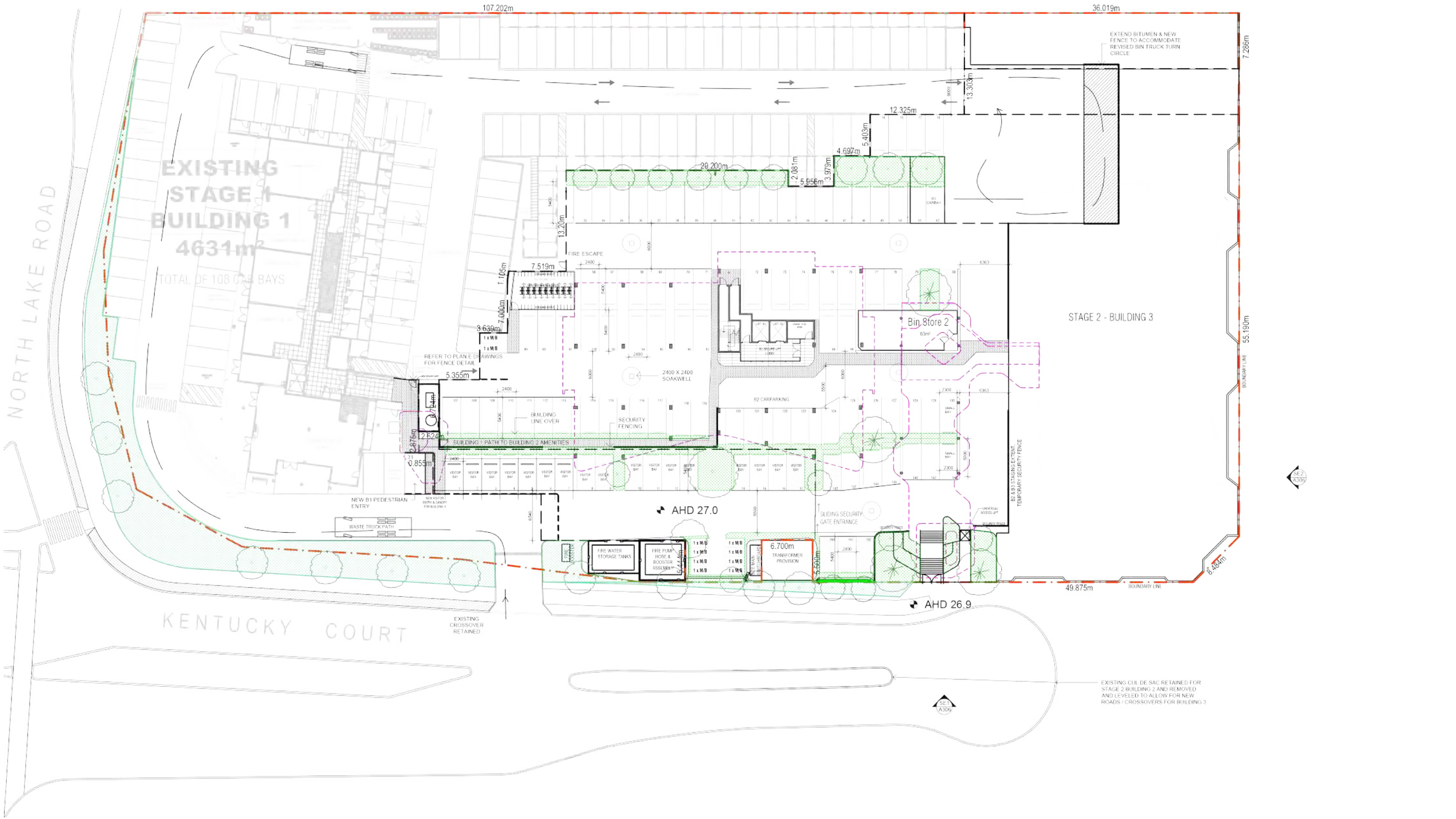
DWG No. A202 - DEEP EARTH PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



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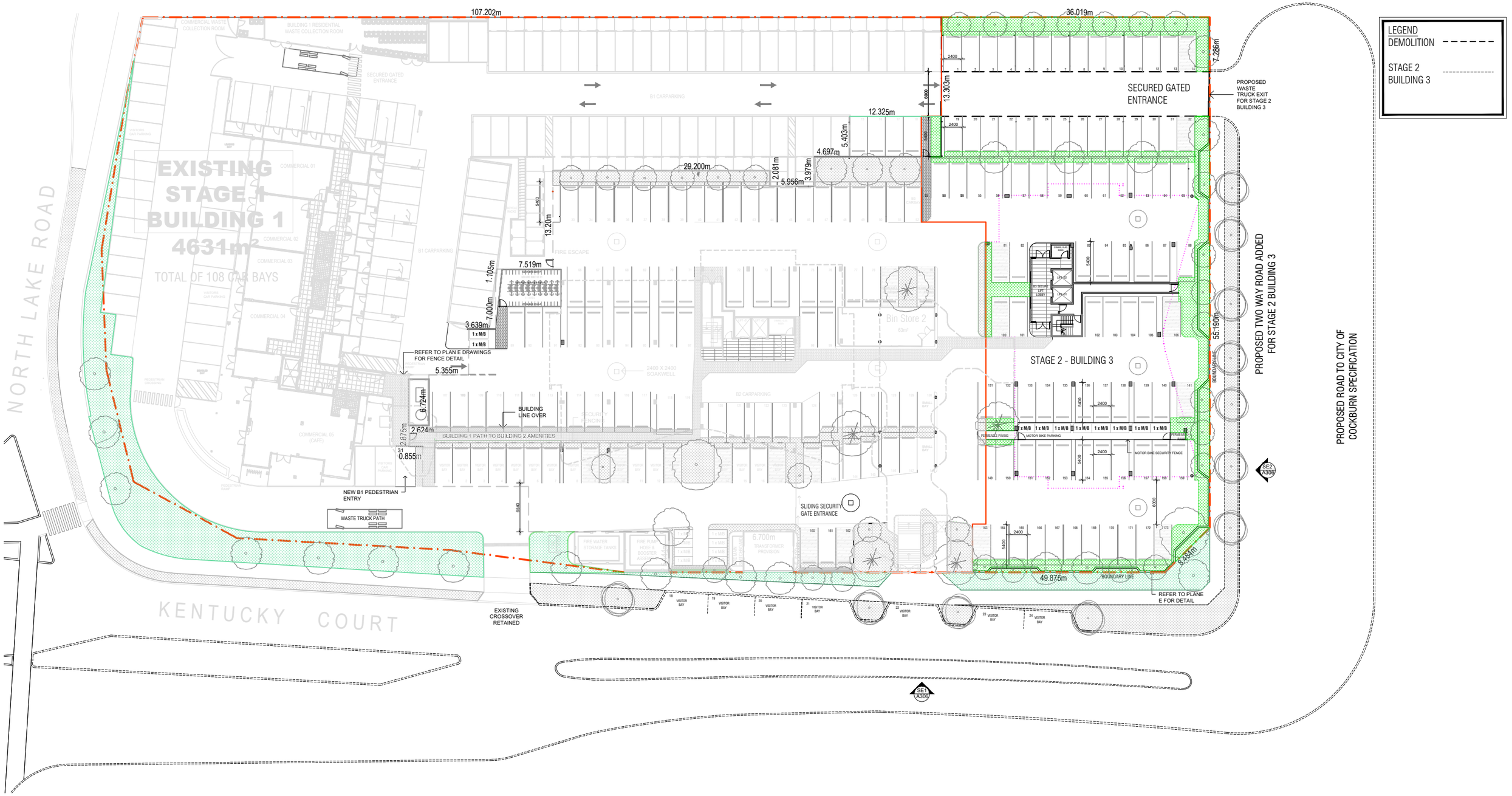
DWG No. A203 - STAGE 2 BUILDING 2 PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



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DWG No. A204 - STAGE 2 BUILDING 3 PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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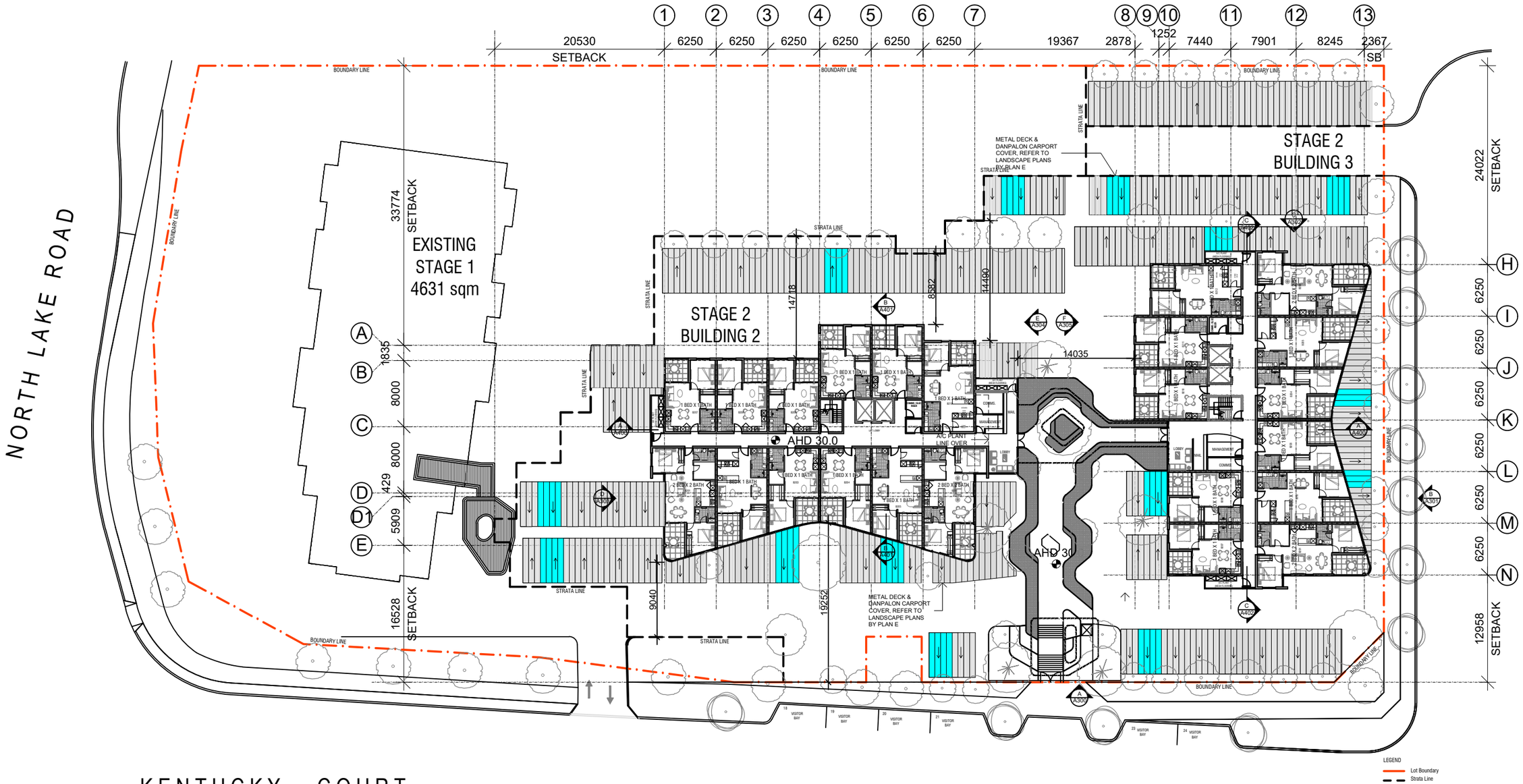

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DWG No. A205 - FIRST FLOOR PLAN (SCALE 1:500 @ A3)

884-888 NORTH LAKE ROAD

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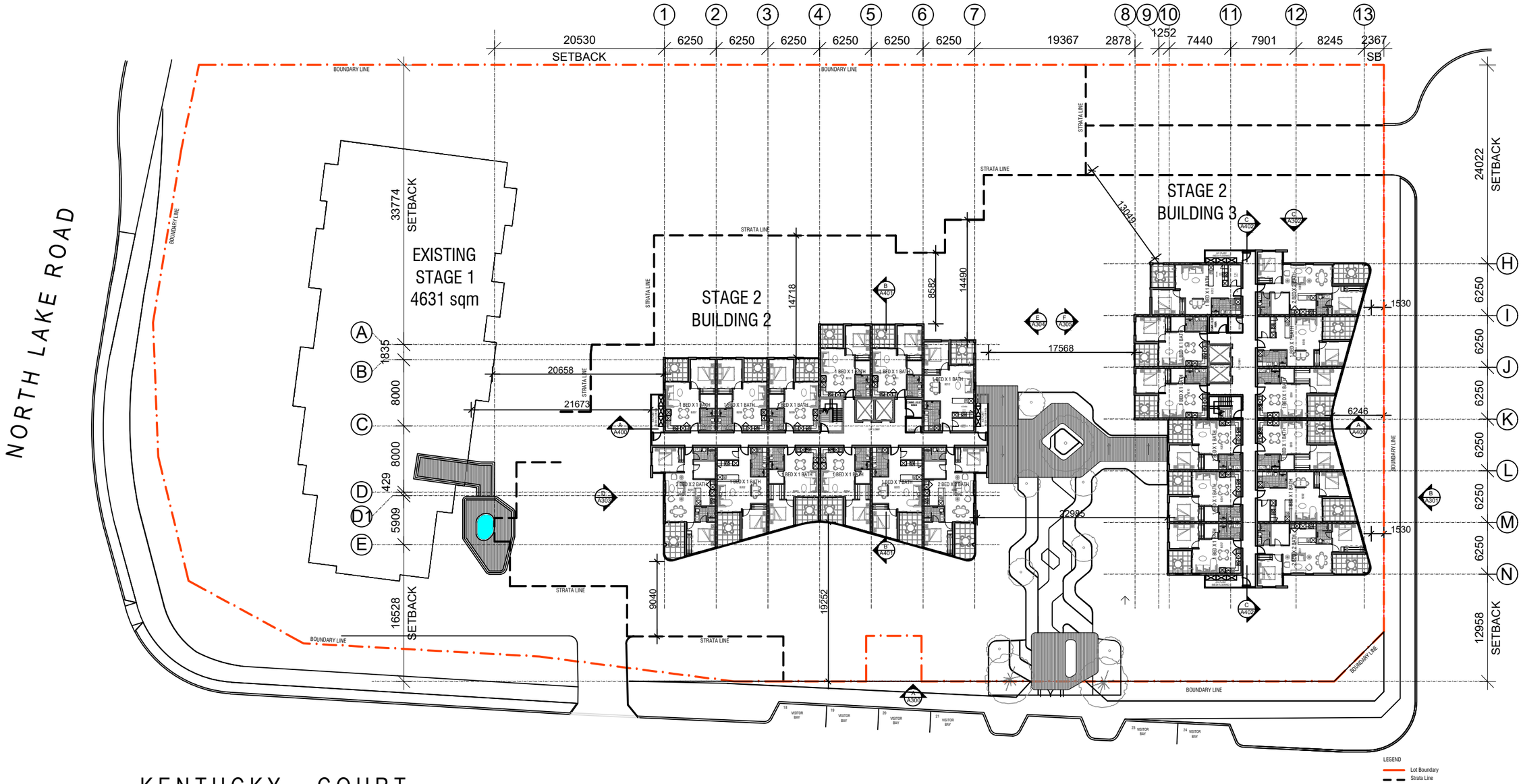

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DWG No. A206 - 2nd FLOOR PLAN (SCALE 1:500 @ A3)
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Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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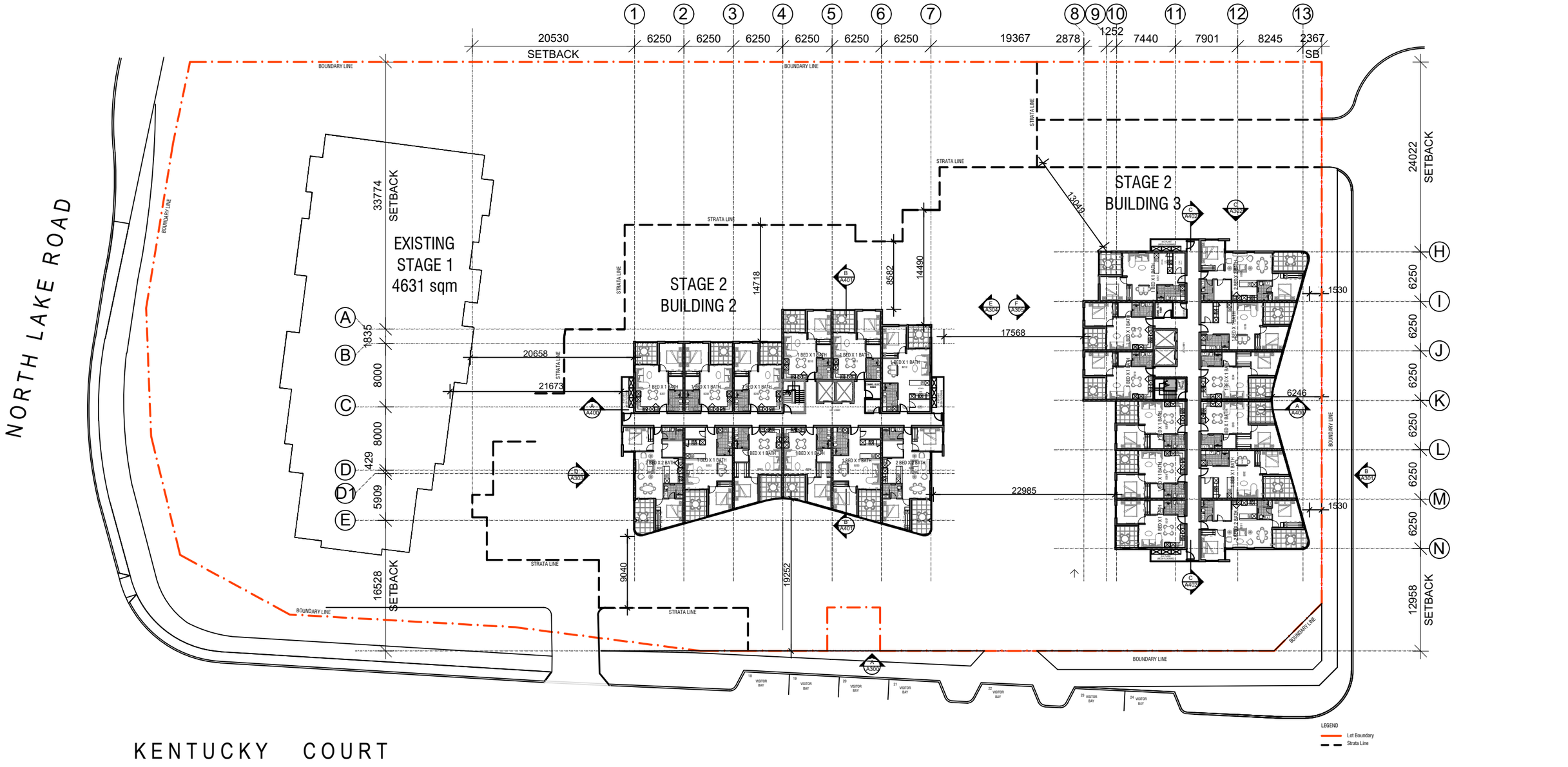

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DWG No. A207 - TYPICAL FLOOR PLAN 3rd - 7th (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

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Do
Version: 1, Version Date: 21/12/2023

NORTH LAKE ROAD

KENTUCKY COURT

EXISTING STAGE 1 4631 sqm

STAGE 2 BUILDING 2

STAGE 2 BUILDING 3

AHD 51.0

AHD 54.0

SETBACK

BOUNDARY LINE

STRATA LINE

LEGEND
Lot Boundary
Strata Line

0 5 10 20

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DWG No. A208 - AMENITIES / ROOF / 8th FLOOR PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

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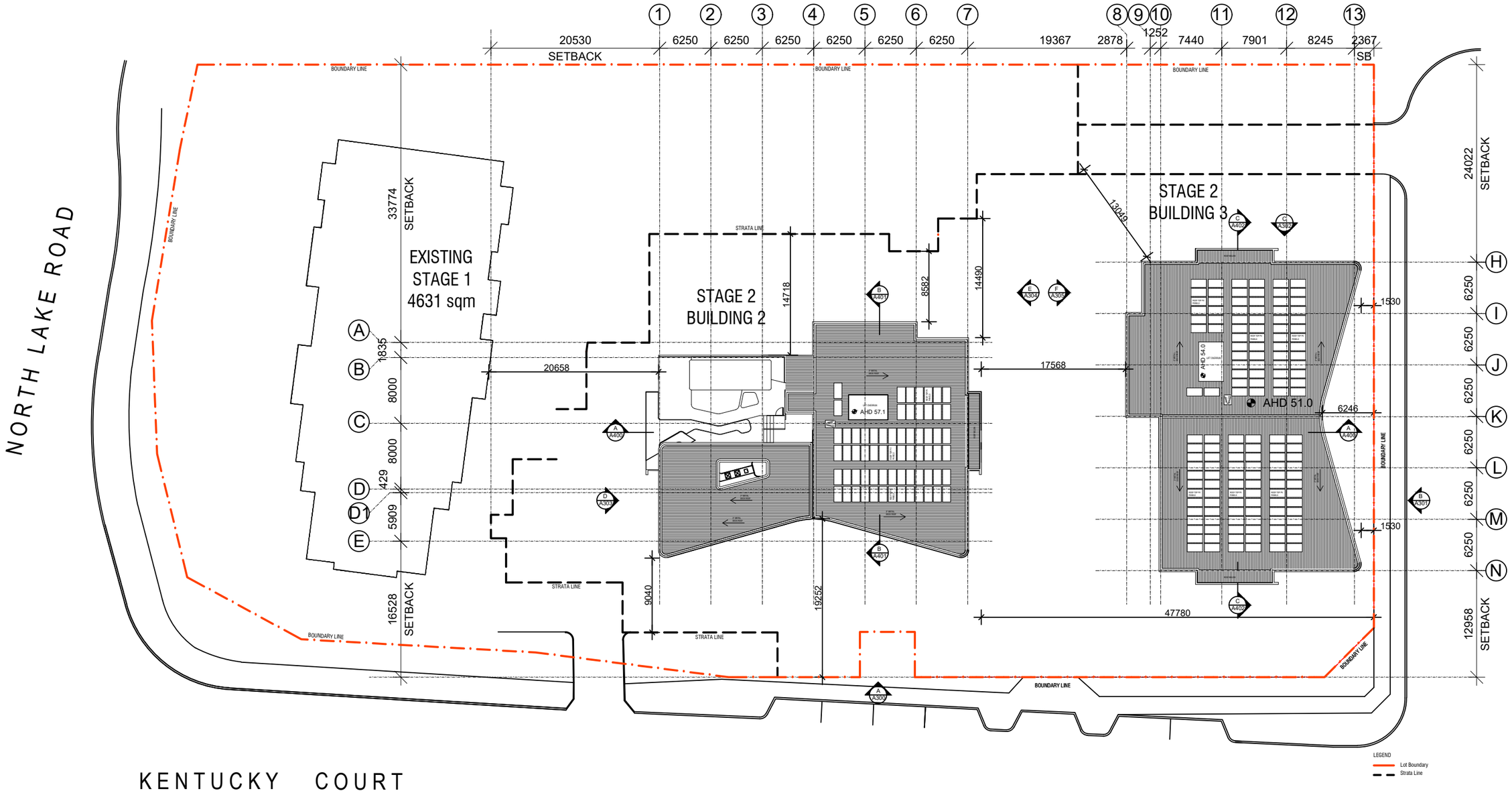

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DWG No. A209 - ROOF (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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PRD. COLLIERE ARCHITECTURE

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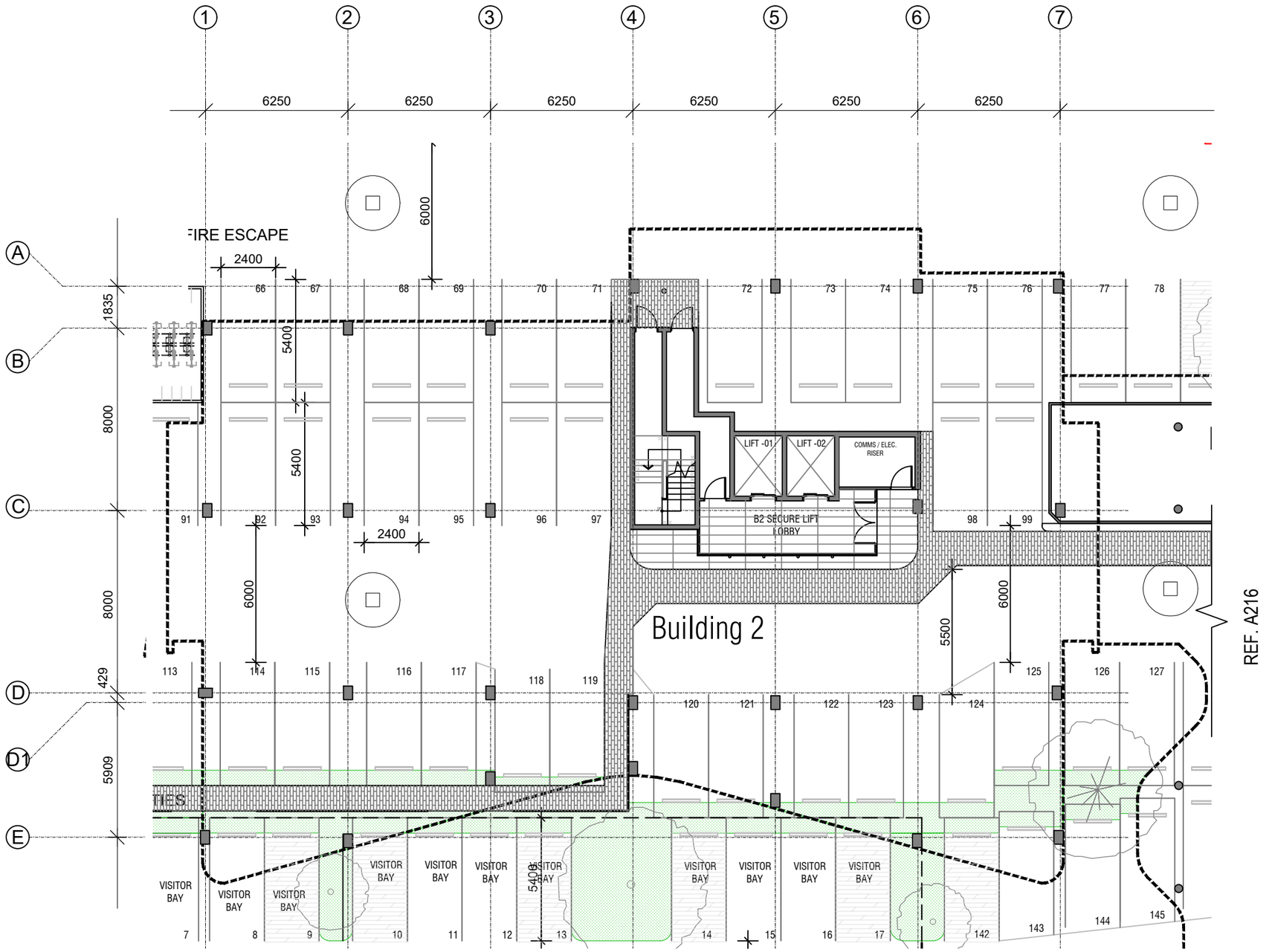

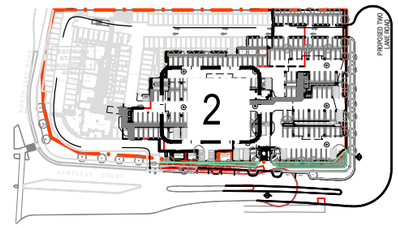

KEY MARKER

0 5 10 20

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DWG No. A210 - BUILDING 2 - GROUND FLOOR / CARPARK PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIERE ARCHITECTURE

Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2

KEY MARKER

0 5 10 20

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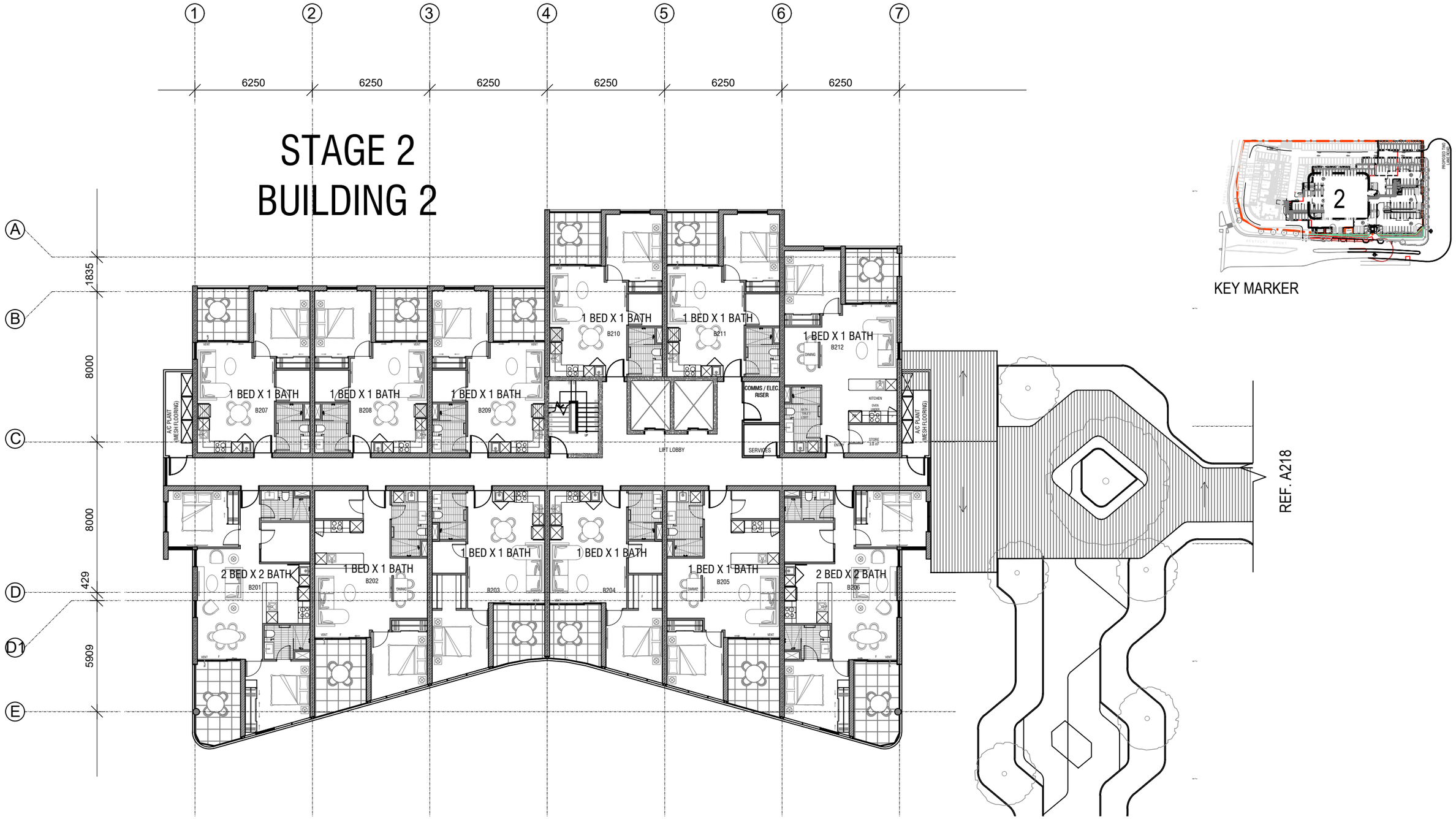
DWG No. A211 - BUILDING 2 - FIRST FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIERE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2



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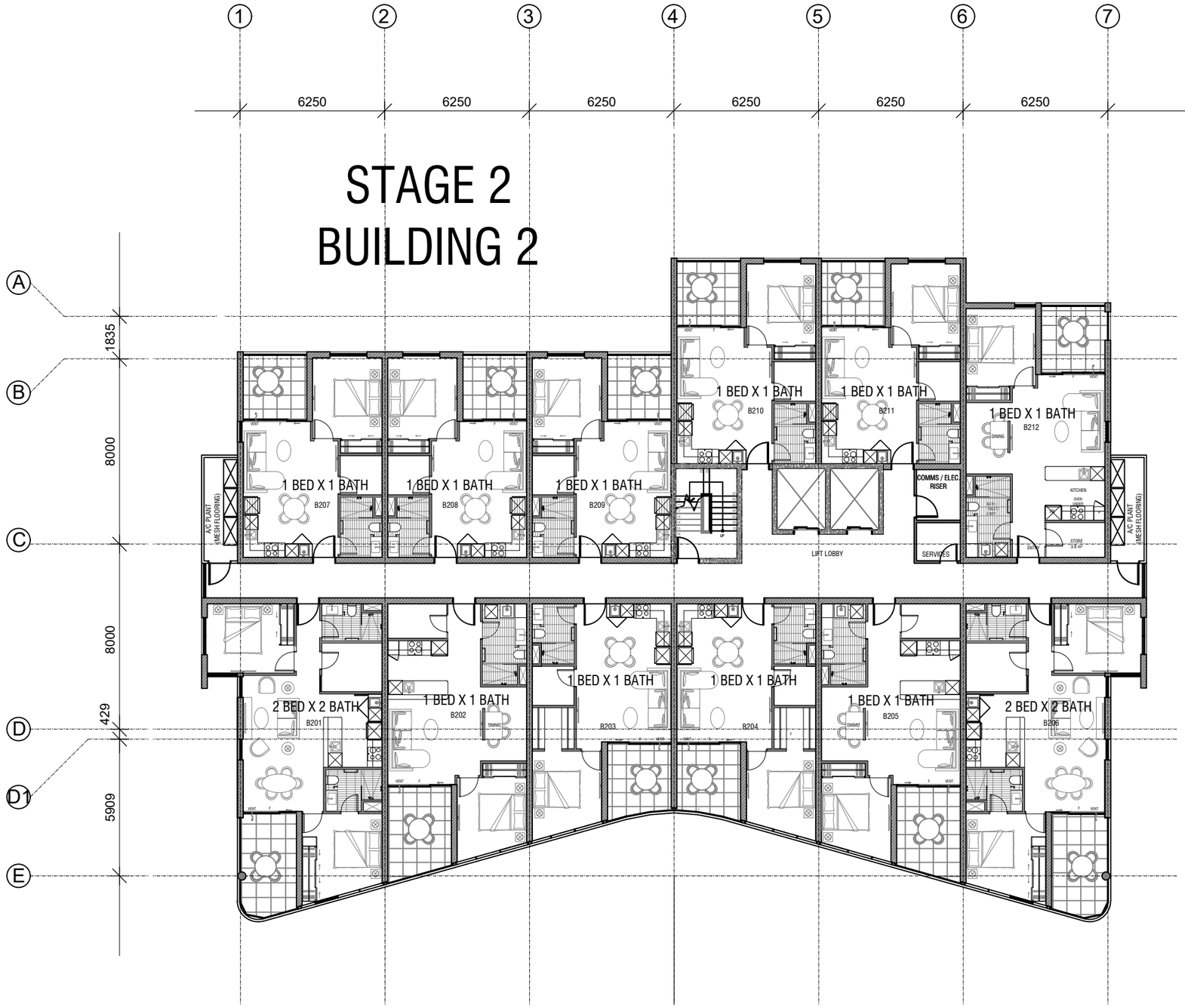
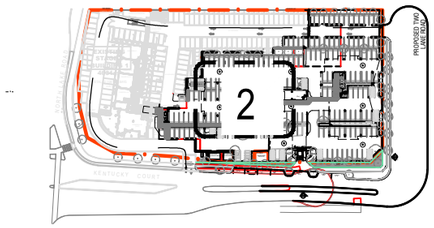
DWG No. A212 - BUILDING 2 - 2nd FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2





KEY MARKER

REF. A219

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ARCHITECTURE
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URBAN DESIGN
INTERIORS

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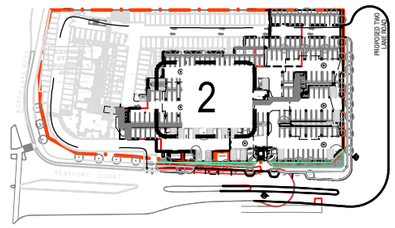
DWG No. A213 - BUILDING 2 - TYPICAL 3rd - 7th FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2



KEY MARKER

0 5 10 20

ARCHITECTURE
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INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
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DWG No. A214 - BUILDING 2 - COMMUNAL AMENITIES & 8th FLOOR PLAN (SCALE 1:200 @ A3)

884-888 NORTH LAKE ROAD

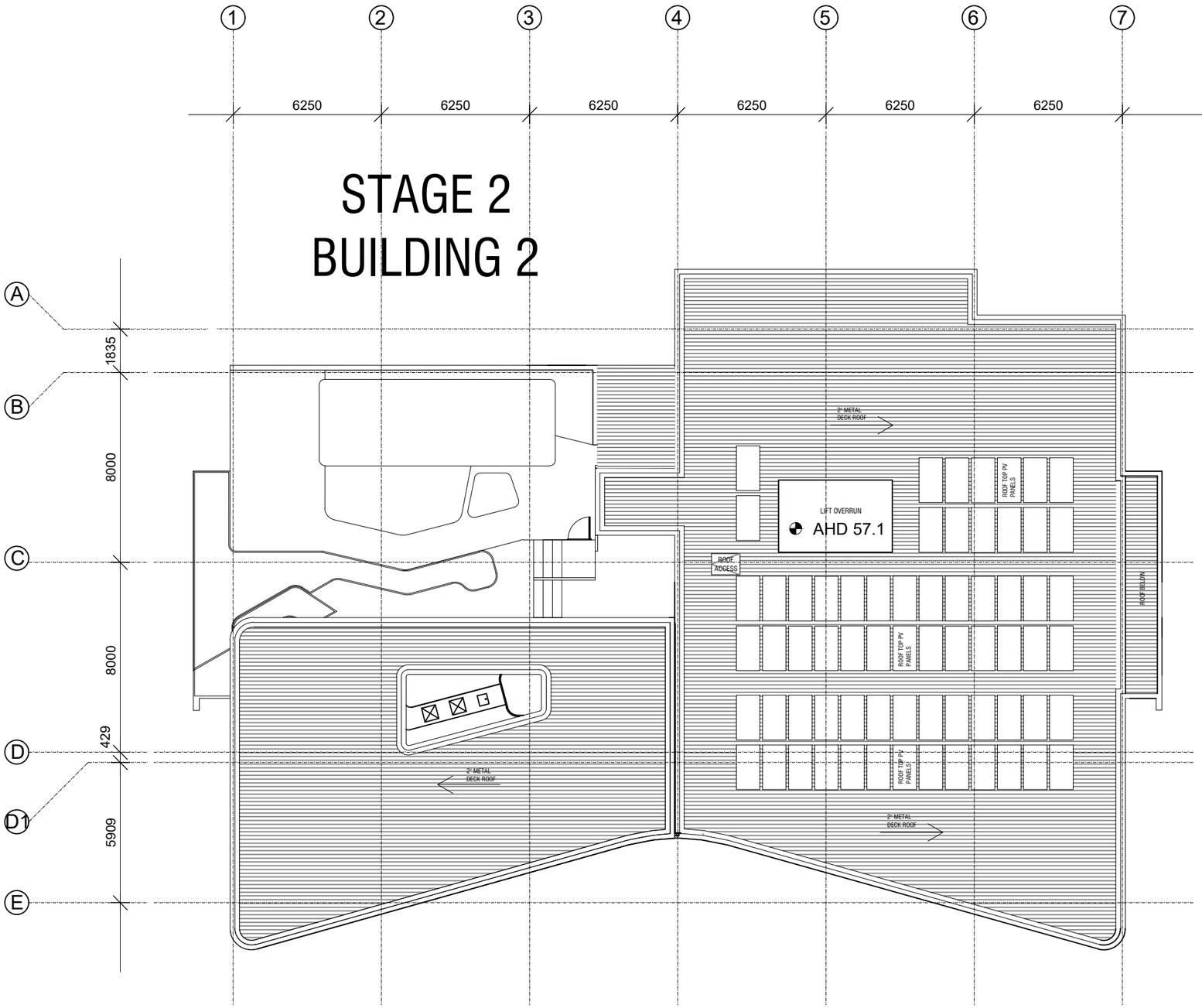
Project No. 1708 HARMONY APARTMENTS STAGE 2

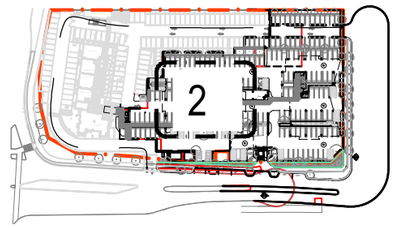
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2





KEY MARKER

0 5 10 20

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INTERIORS

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DWG No. A215 - BUILDING 2 - COMMUNAL AMENITIES & 8th FLOOR PLAN (SCALE 1:200 @ A3)

884-888 NORTH LAKE ROAD

Project No. 1708 HARMONY APARTMENTS STAGE 2

18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

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Do
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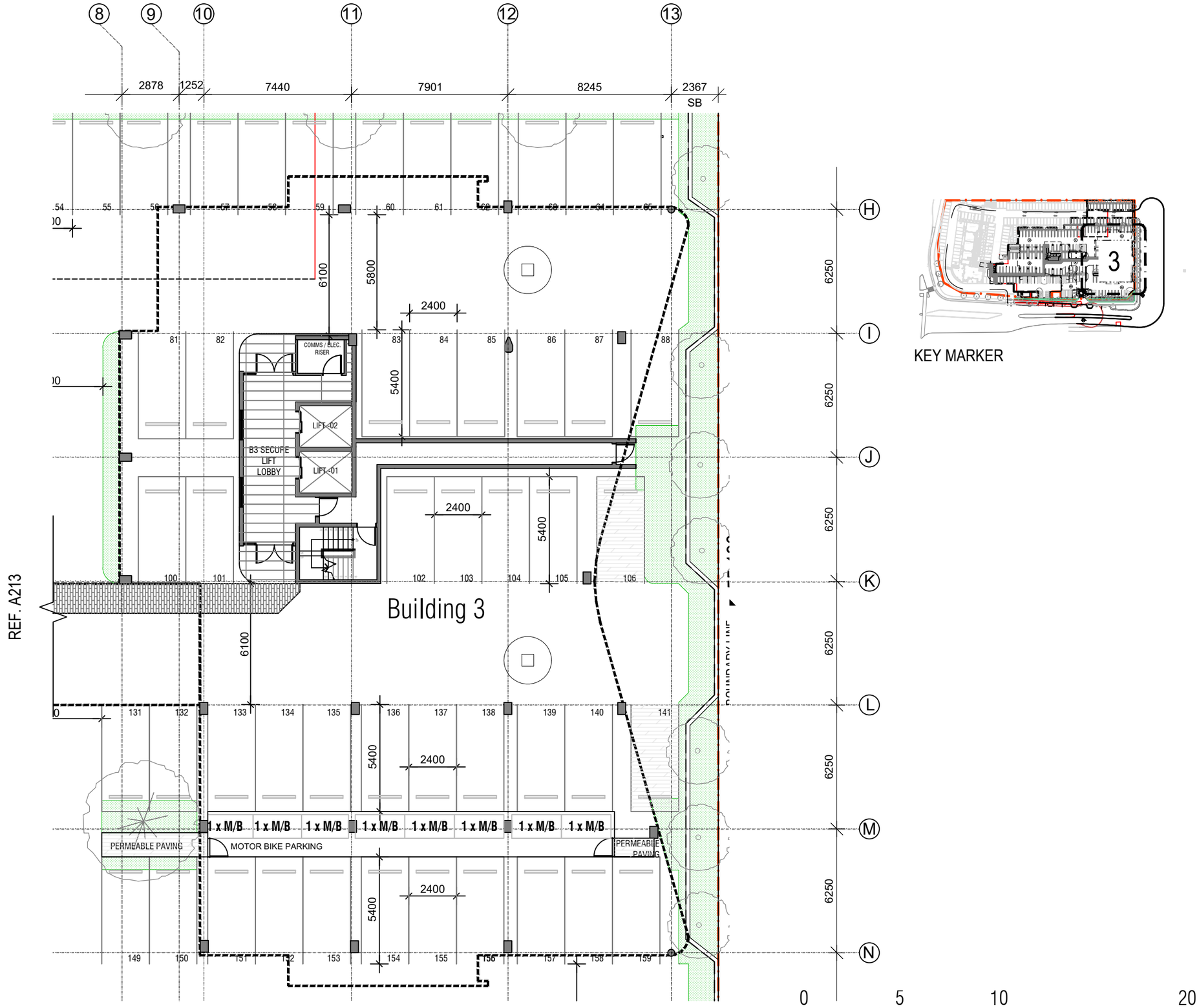

KEY MARKER

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DWG No. A216 - BUILDING 3 - GROUND FLOOR / CARPARK PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

KEY MARKER

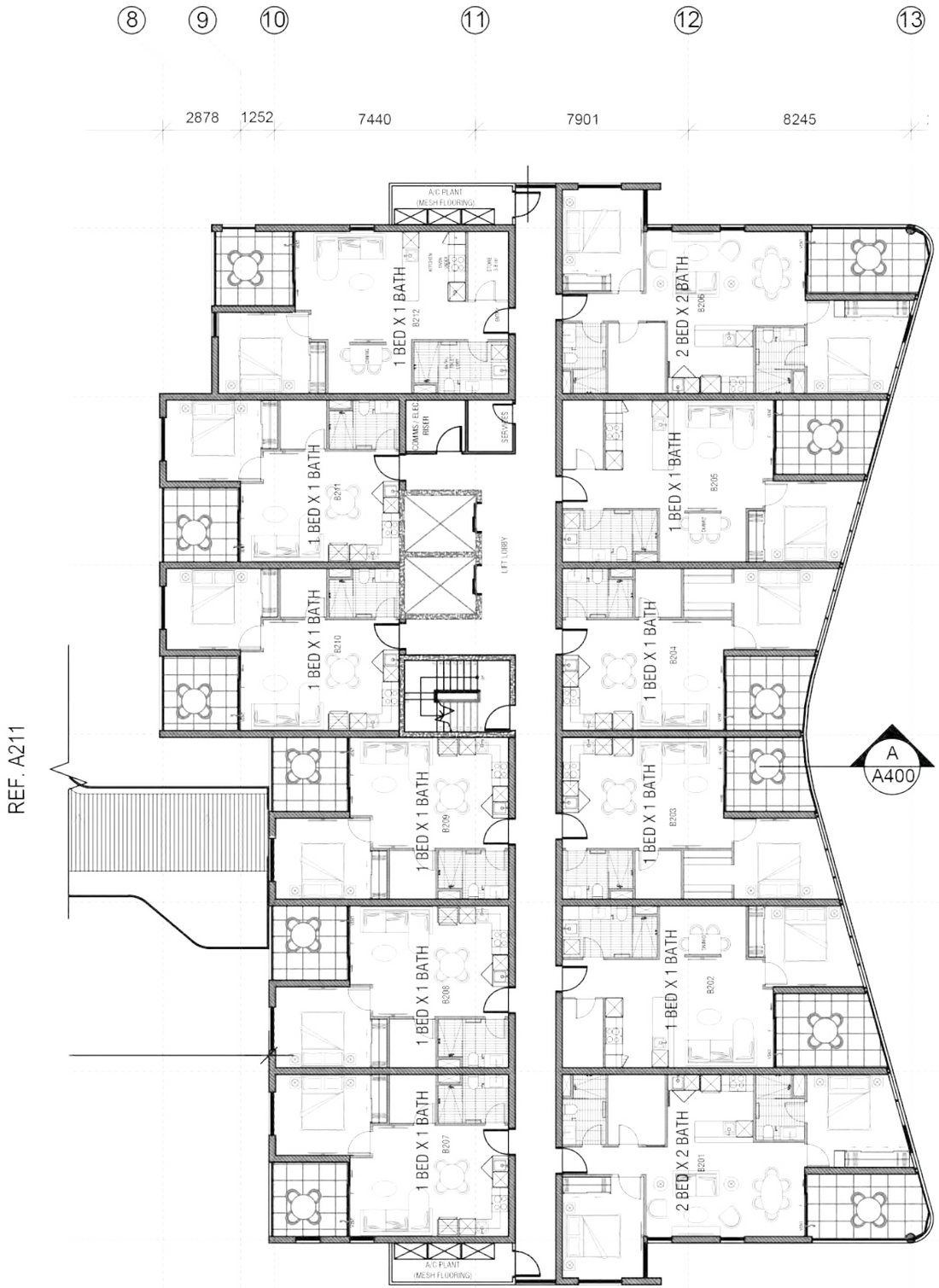
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

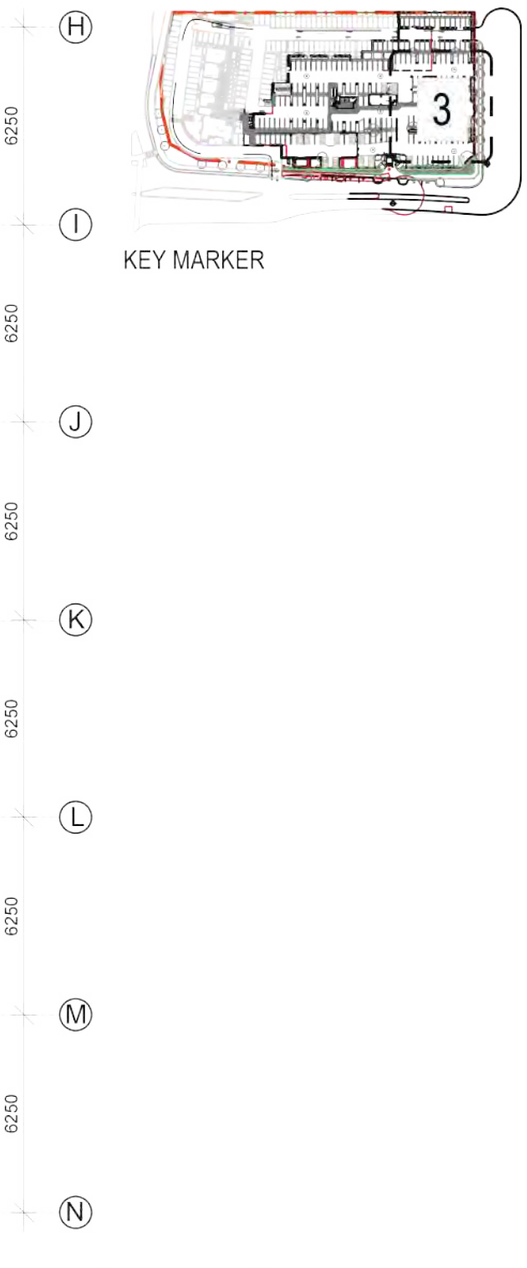
A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A217 - BUILDING 3 - FIRST FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023



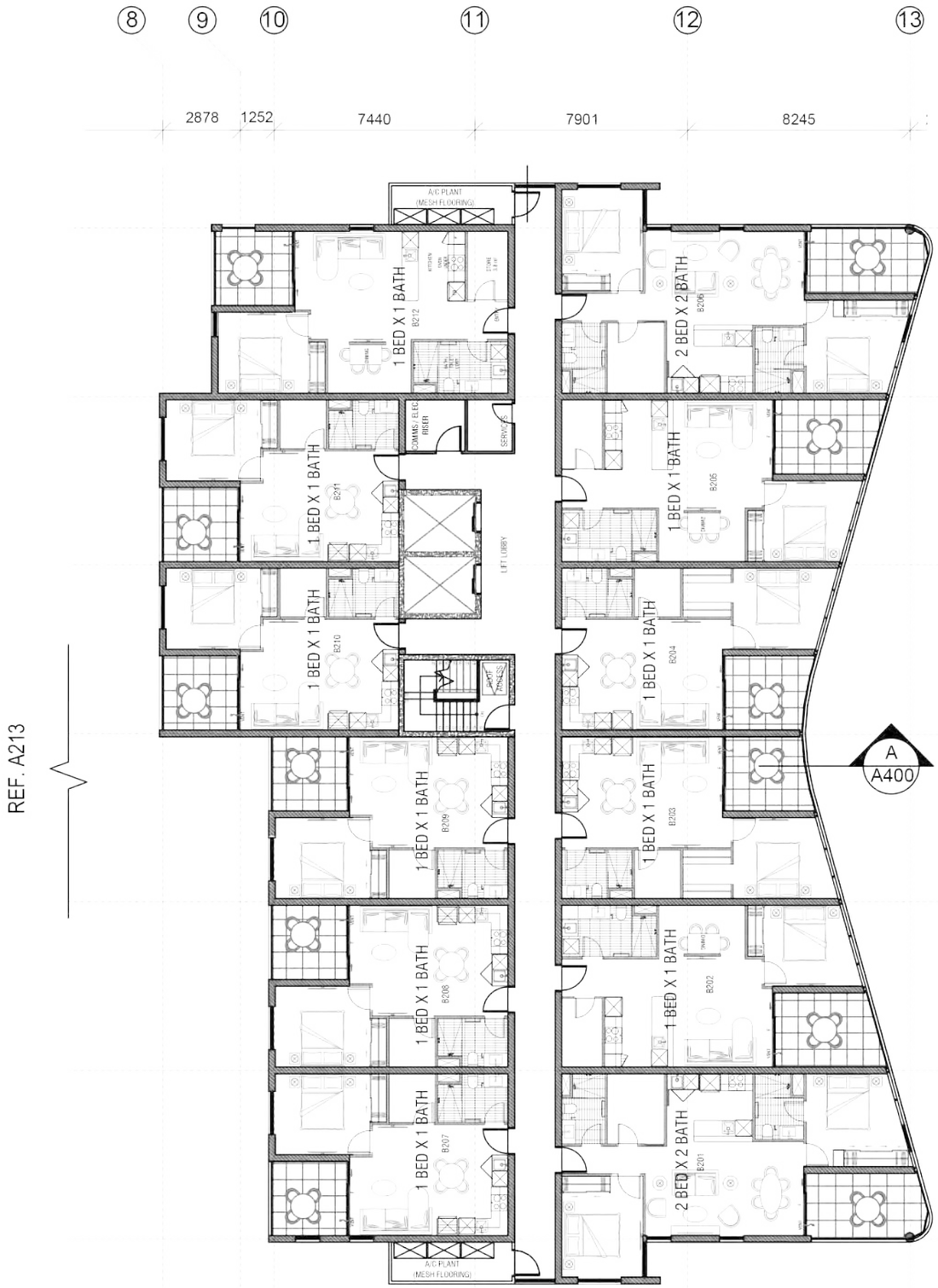


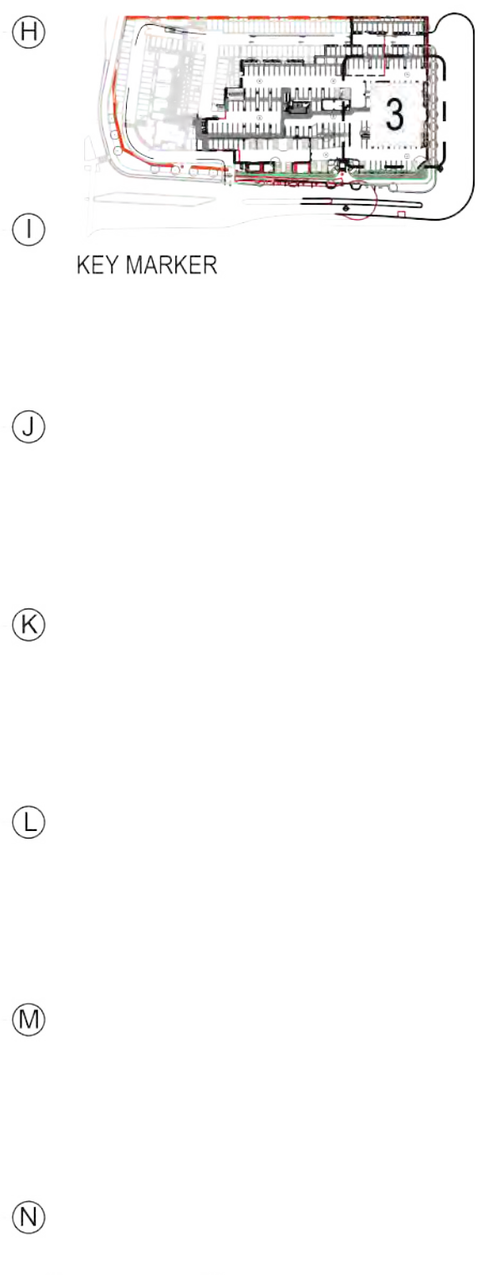
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A218 - BUILDING 3 - 2nd FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE





KEY MARKER

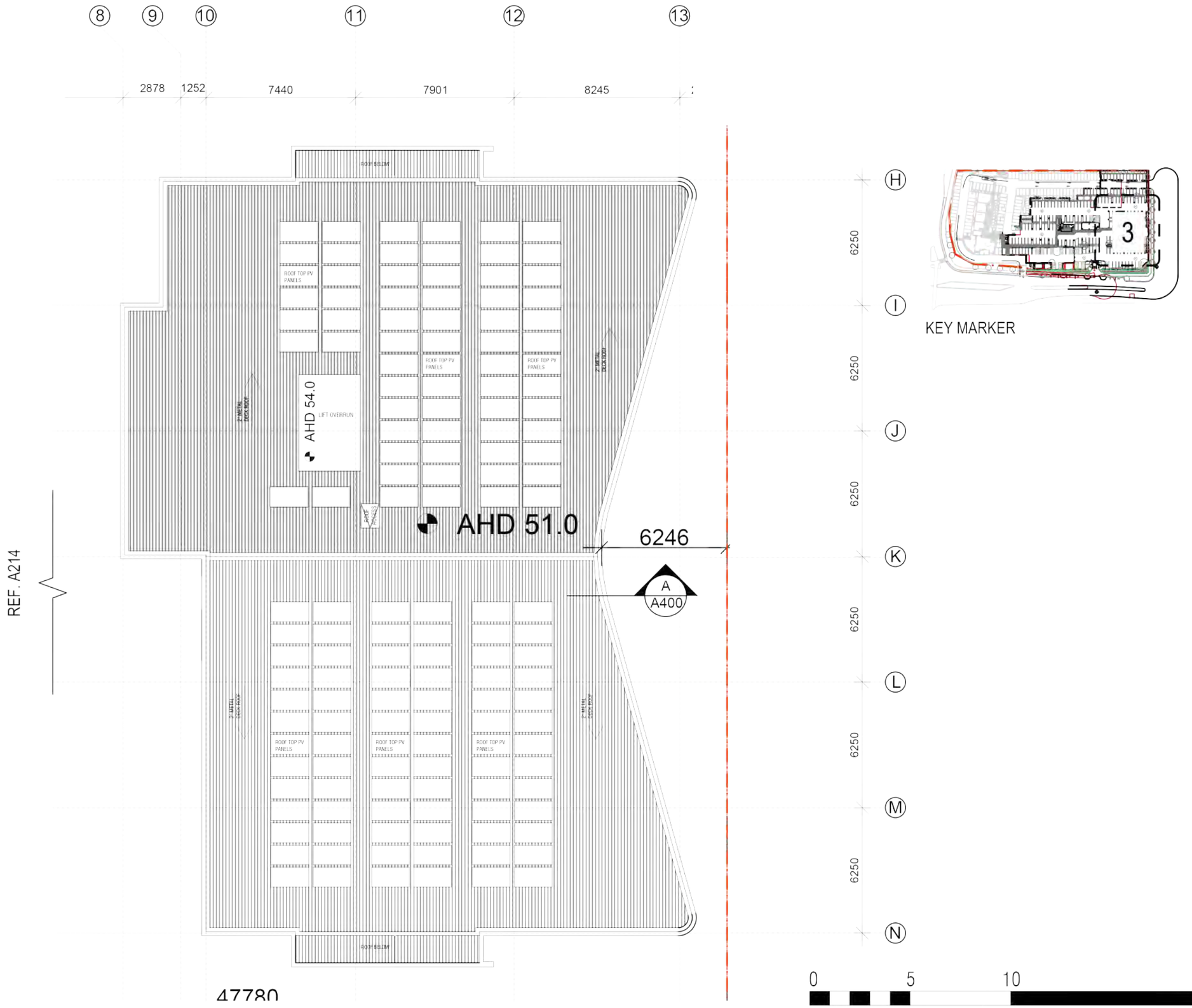
0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A219 - BUILDING 3 - TYPICAL 3rd - 7th FLOOR PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

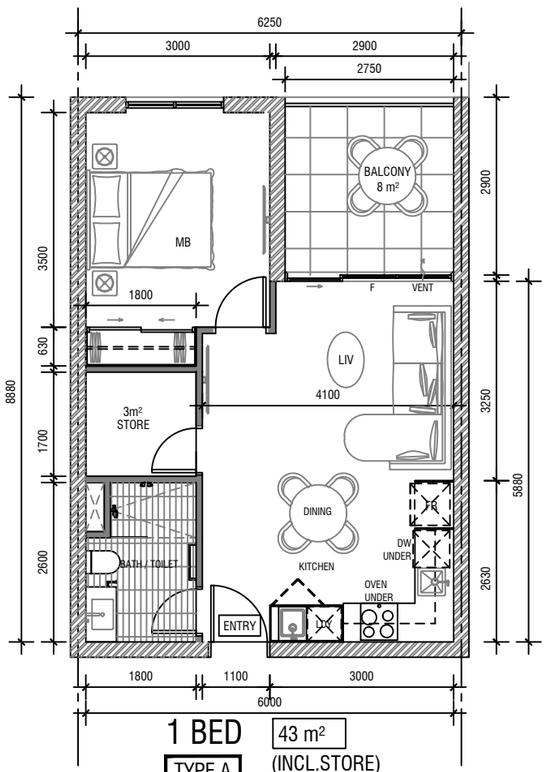


ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

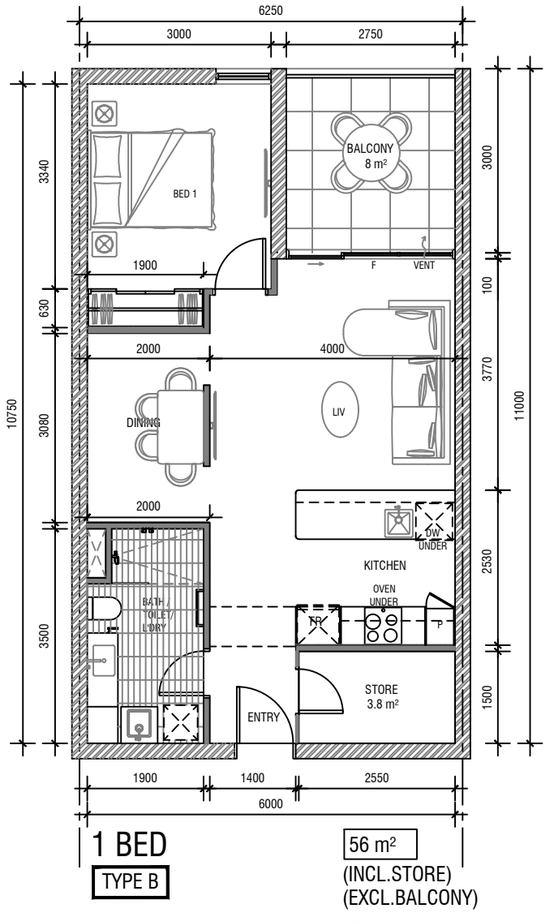
DWG No. A220 - BUILDING 3 - ROOF PLAN (SCALE 1:200 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE



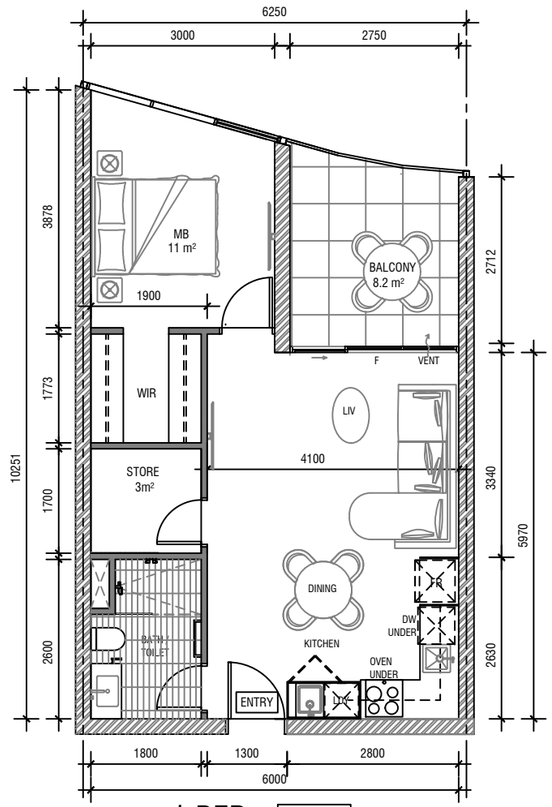
1 BED
TYPE A

43 m²
(INCL.STORE)
(EXCL.BALCONY)



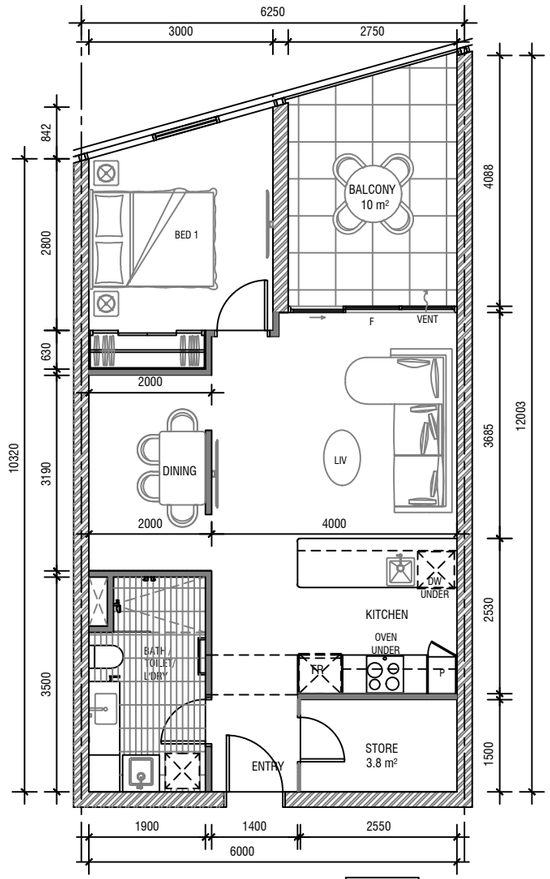
1 BED
TYPE B

56 m²
(INCL.STORE)
(EXCL.BALCONY)



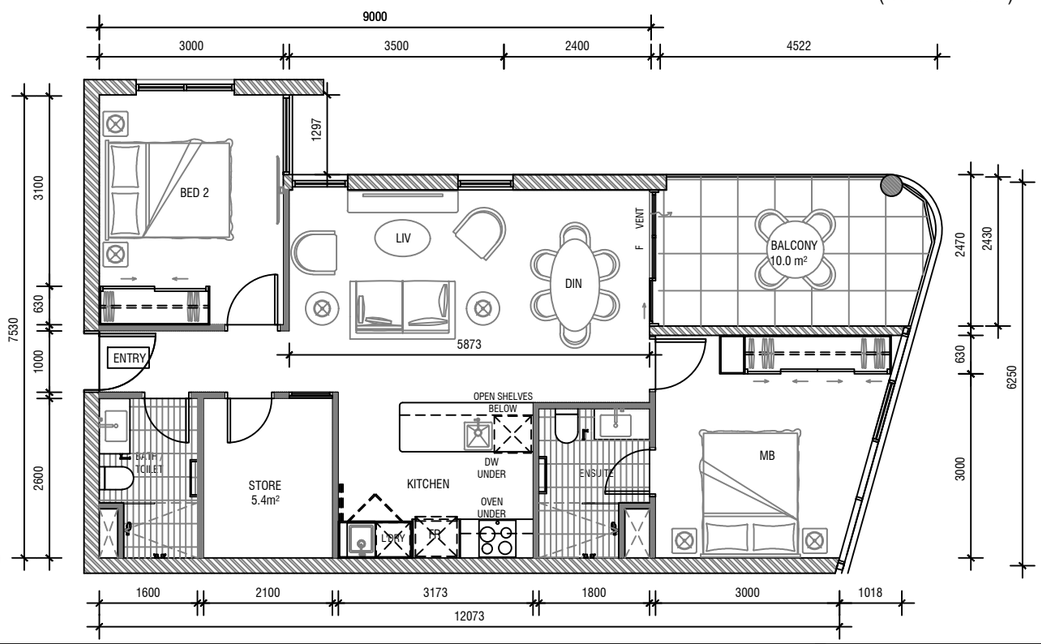
1 BED
TYPE D

47 m²
(INCL.STORE)
(EXCL.BALCONY)



1 BED
TYPE E

55.0 m²
(INCL.STORE)
(EXCL.BALCONY)



2 BED 2 BATH
TYPE C

70.0 m²
(INCL.STORE)
(EXCL.BALCONY)

0 5 10

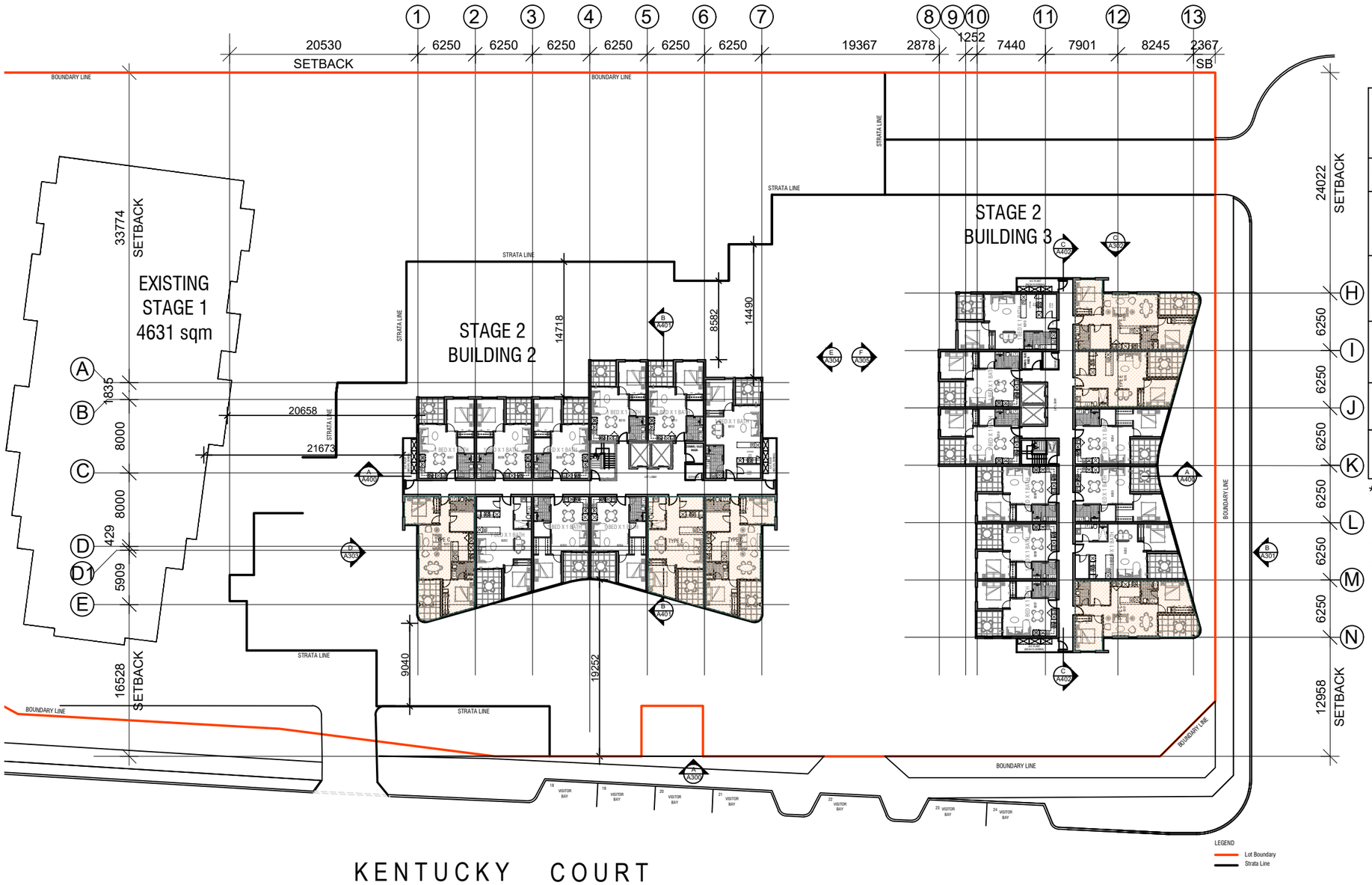
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A221 - UNIT PLANS (SCALE 1:100 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIERE ARCHITECTURE

Version: 1, Version Date: 21/12/2023



LIVABLE HOUSING DESIGN GUIDELINES - SILVER STANDARD APARTMENTS (MIN REQUIREMENT OF 20% OF TOTAL APARTMENTS) 173 x 20% = 34.6 DWELLING UNITS	
BUILDING 2	BUILDING 3
1ST FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*	1ST FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*
2ND FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*	2ND FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*
3rd TO 6th FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*	3rd TO 6th FLOOR x 3 SILVER STANDARD 2x TYPE C* 1x TYPE E*
TOTAL 18 APARTMENTS IN BUILDING 2	TOTAL 18 APARTMENTS IN BUILDING 3
TOTAL DWELLINGS PROVIDED AT SILVER STANDARD IS 18 + 18 = 36 DWELLING UNITS 36 / 173 = 20.8% THEREFORE COMPLIANT	

* ALL INTERNAL DOORS 820MM MIN WIDE

LEGEND

- TYPE E - 1 Bed x 1 Bath
- TYPE C - 2 Bed x 2 Bath

TYPICAL (1st - 6th)FLOOR PLAN
BUILDING 2 & BUILDING 3

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A222 - SILVER STANDARD APARTMENTS BUILDING 2 & 3
1ST TO 6TH FLOOR (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

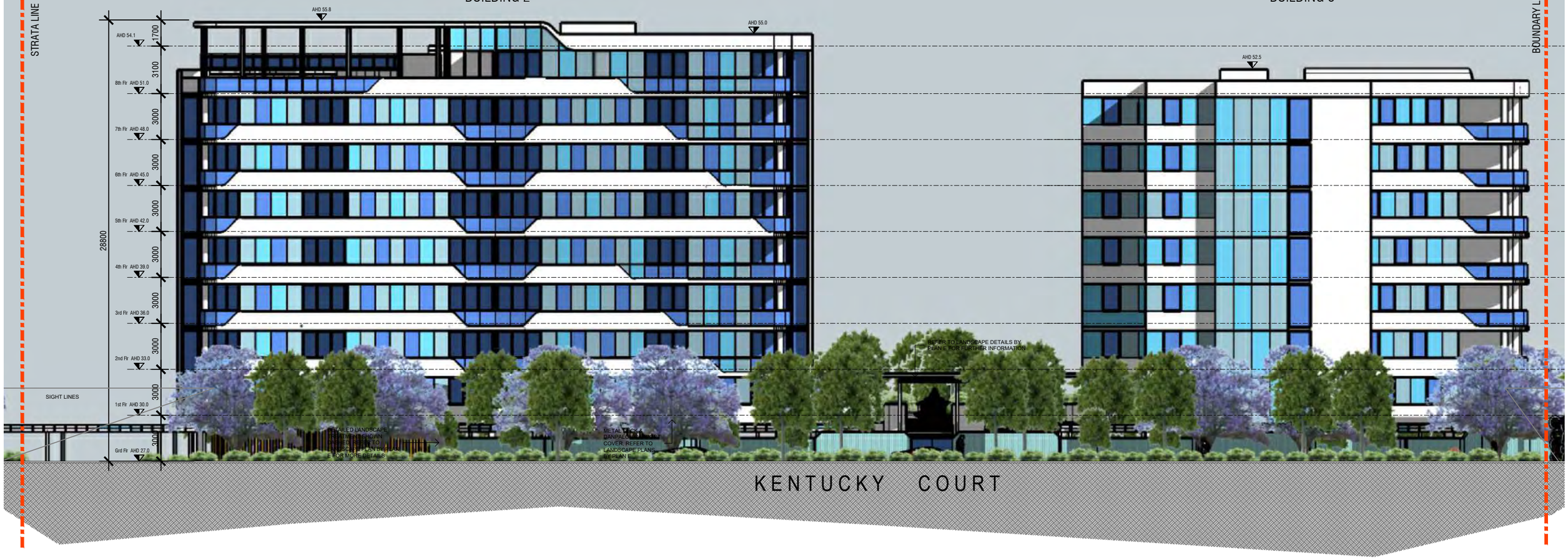
D
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2

STAGE 2
BUILDING 3

STRATA LINE

BOUNDARY LINE



KENTUCKY COURT

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A300 - EAST ELEVATION (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
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STAGE 2
BUILDING 3

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A301 - NORTH ELEVATIONS (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

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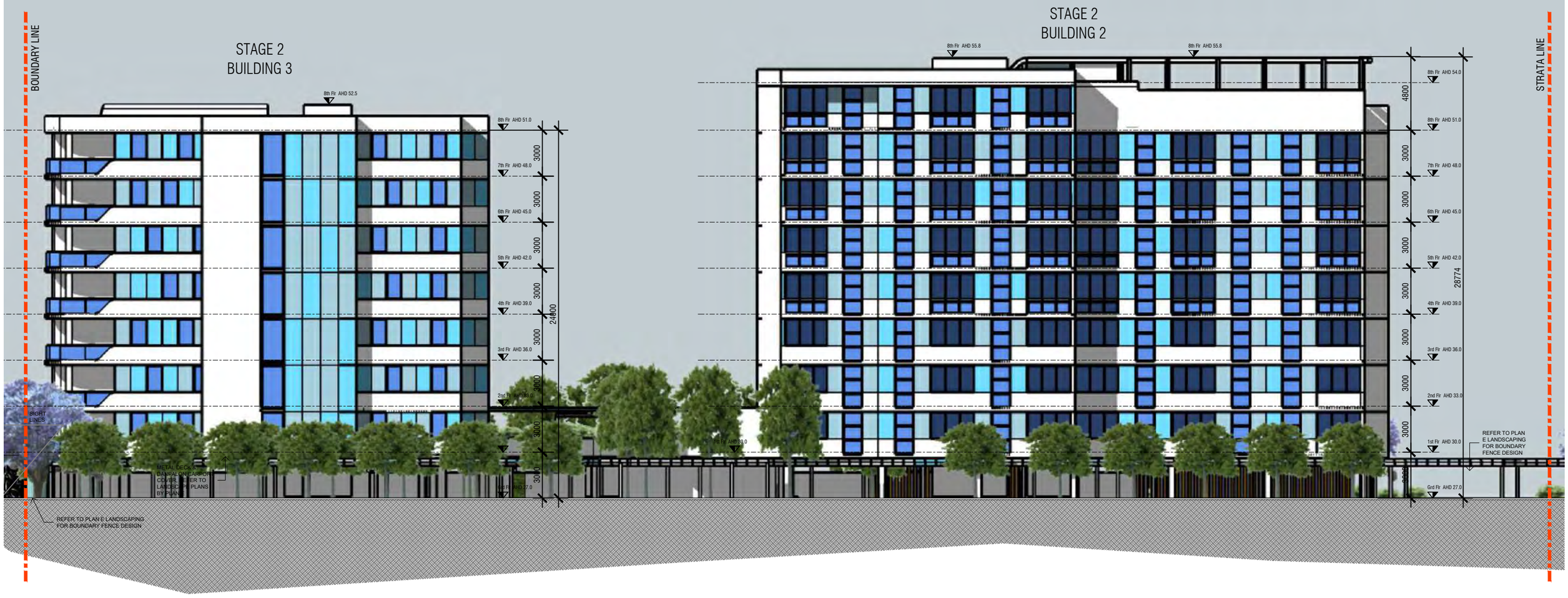

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A302 - WEST ELEVATION (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A303 - SOUTH ELEVATION (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 3

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A304 - NORTH ELEVATION (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

BOUNDARY LINE

STAGE 2
BUILDING 2

BOUNDARY LINE

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A305 - SOUTH ELEVATION (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

STAGE 2
BUILDING 2

STAGE 2
BUILDING 3

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. 400 - SECTION A-A (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

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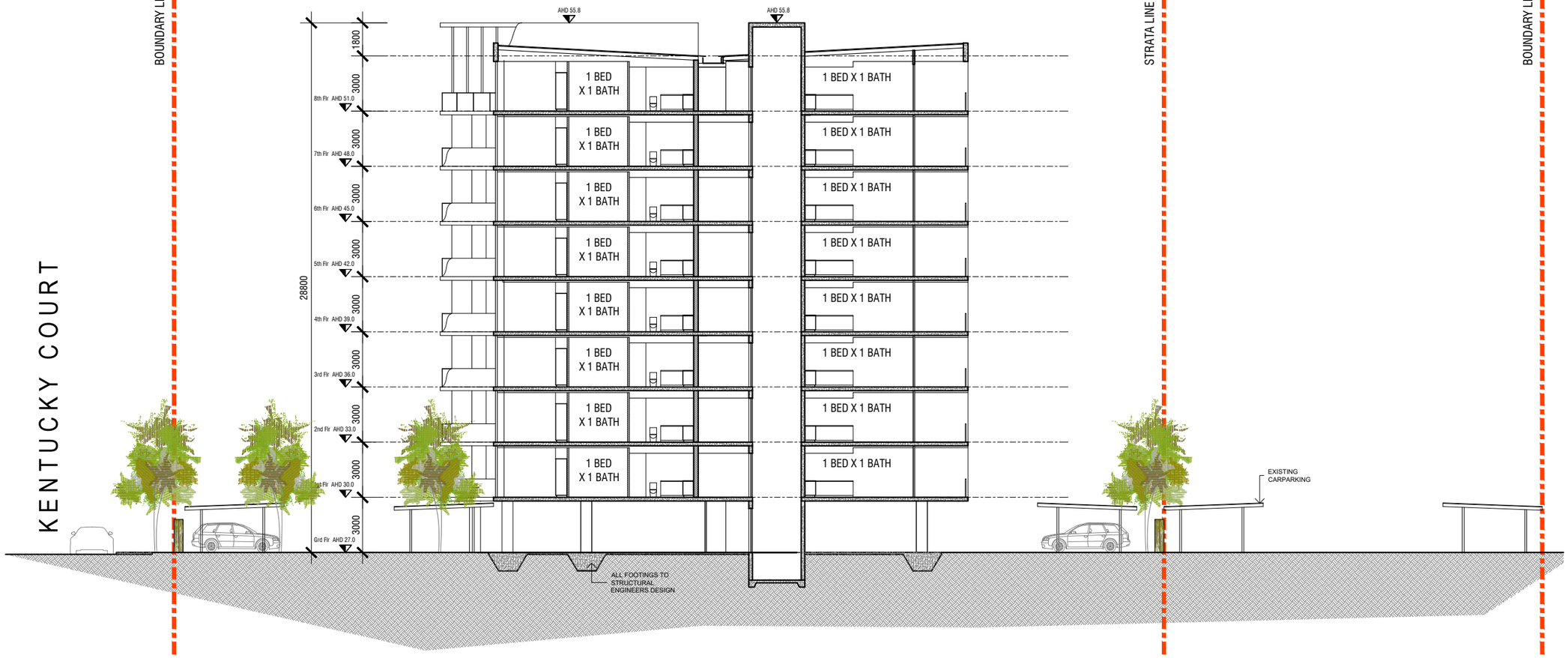
Version: 1, Version Date: 21/12/2023



0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. 401 - SECTION B-B (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. 402 - SECTION C-C (SCALE 1:250 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

3pm DECEMBER

3pm JANUARY

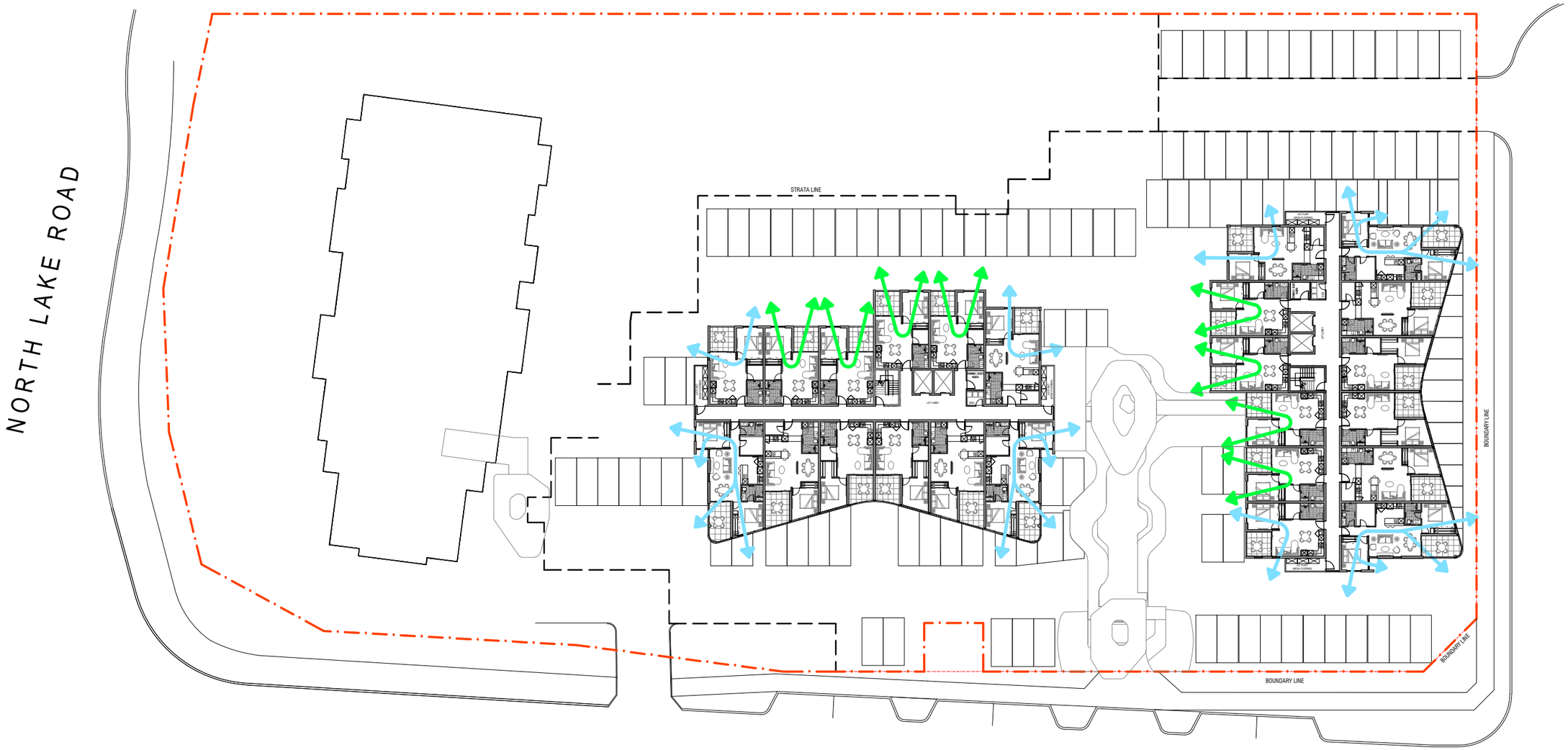
3pm FEBRUARY

A 4.2.2 (a) A minimum 60 per cent of dwellings are, or are capable of, being naturally cross ventilated in the first nine storeys of the building

(b) Single aspect apartments included within the 60 per cent minimum at (a) above must have:
- Ventilation openings oriented between 45°-90° of the prevailing cooling wind direction AND
- room depth no greater than 3 x ceiling height

	BUILDING 2	BUILDING 3	TOTAL	PERCENTAGES
NATURALLY VENTILATED APARTMENTS	31	28	59	34%
SINGLE ASPECT APARTMENTS WITH PREVAILING BREEZES	30	28	58	33%
SINGLE ASPECT APARTMENTS	29	27	56	32%
NATURAL & PREVAILING BREEZE COMPLIANT			117	67%

COOLING BREEZES



0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. 500 - CROSS VENTILATION PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

BEDROOM
LIVING ROOM
BALCONY

NORTH LAKE ROAD

KENTUCKY COURT

EXISTING STAGE 1 4631 sqm

STAGE 2 BUILDING 2

STAGE 2 BUILDING 3

STRATA LINE

PRIVACY CONE

BOUNDARY LINE

SETBACK

0 5 10 20

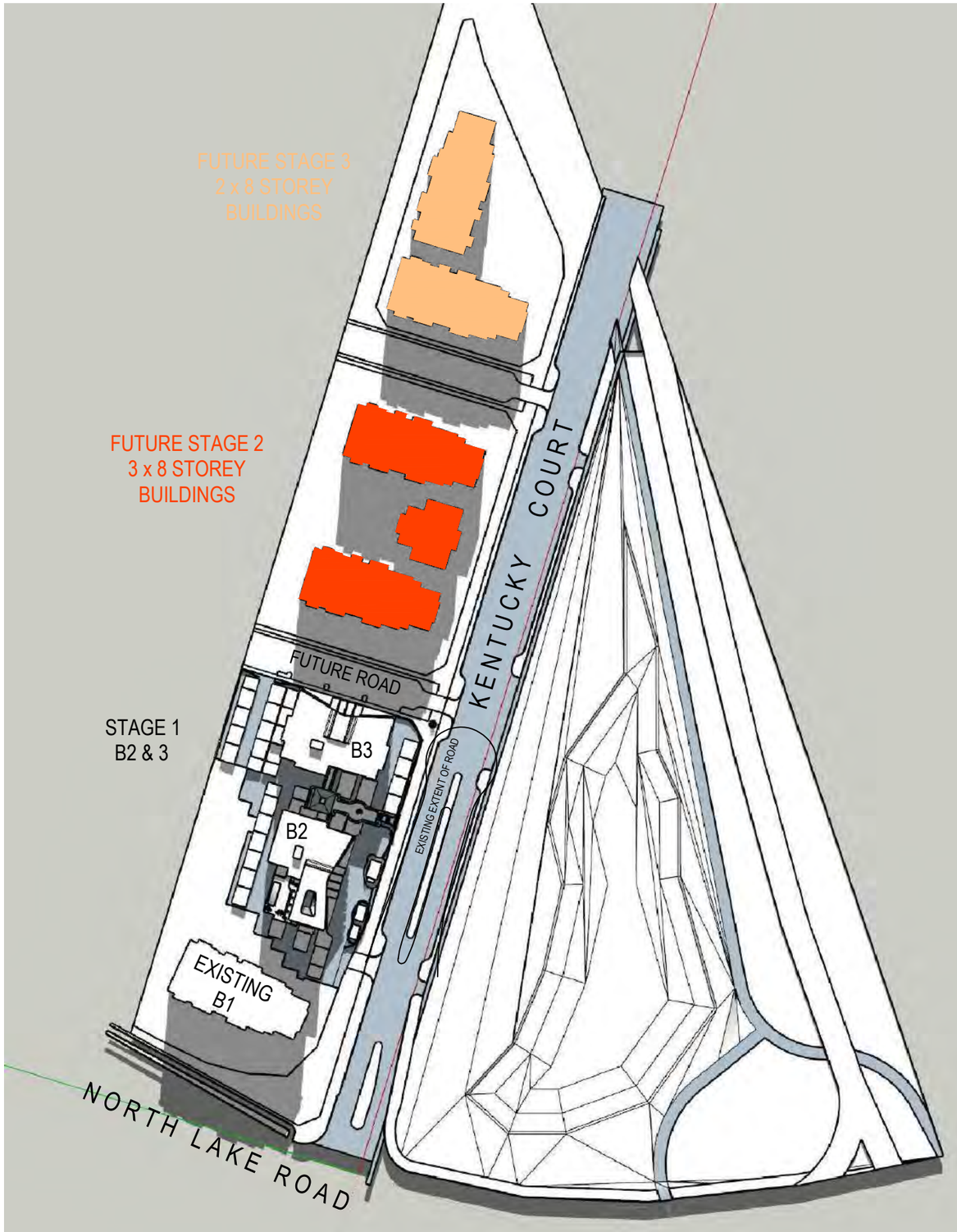
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

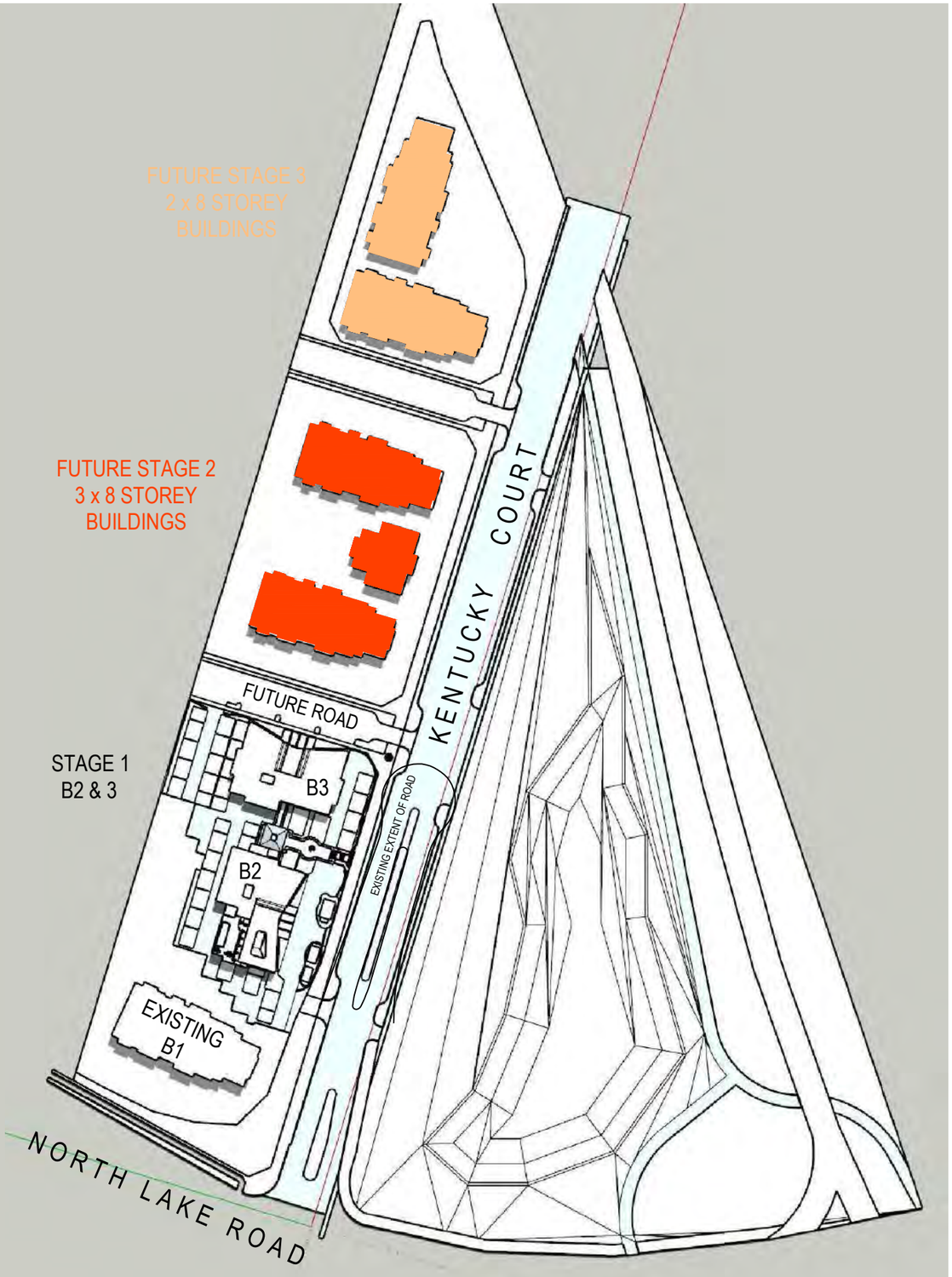
DWG No. 501 - CONE OF VISION (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Version: 1, Version Date: 21/12/2023



21st June - MIDDAY



21st December - MIDDAY

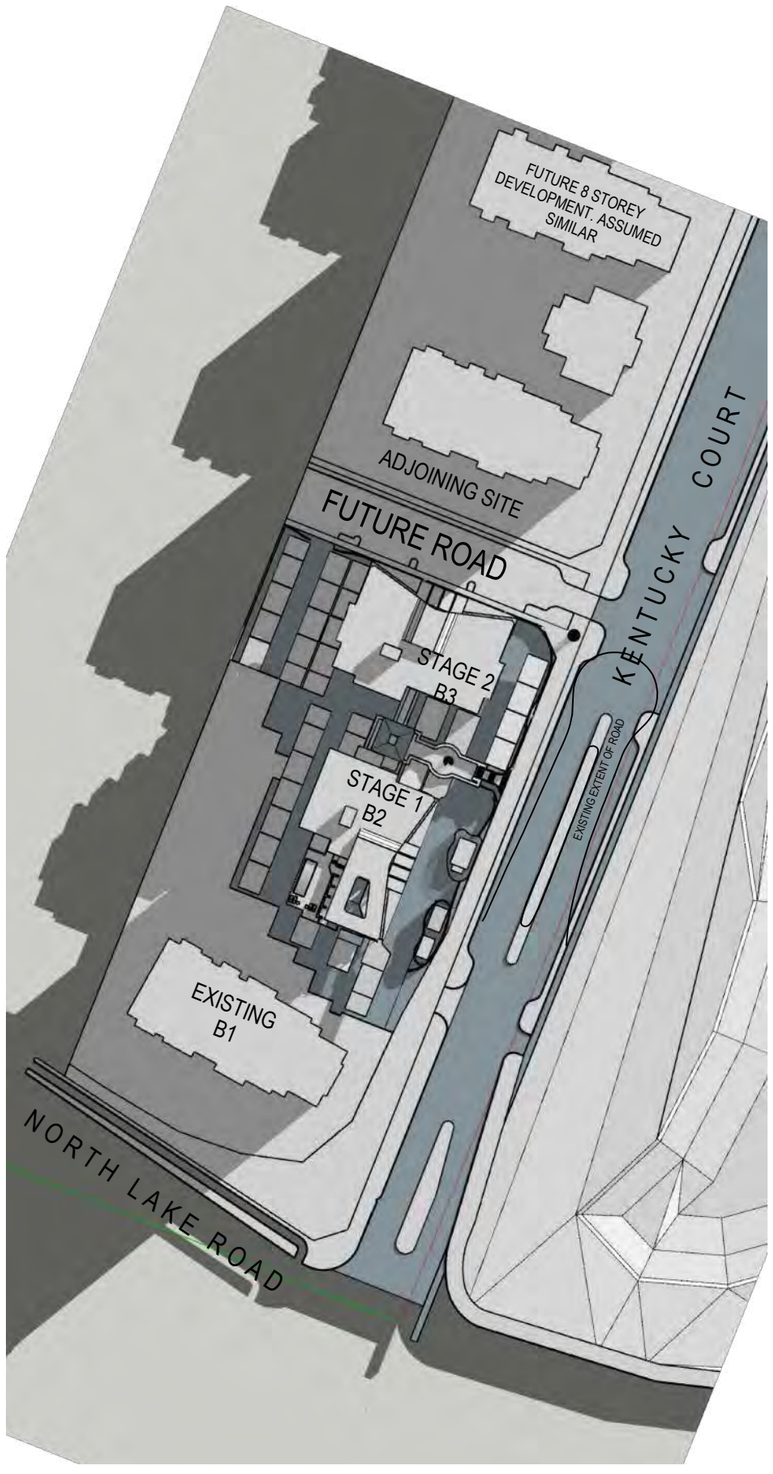
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

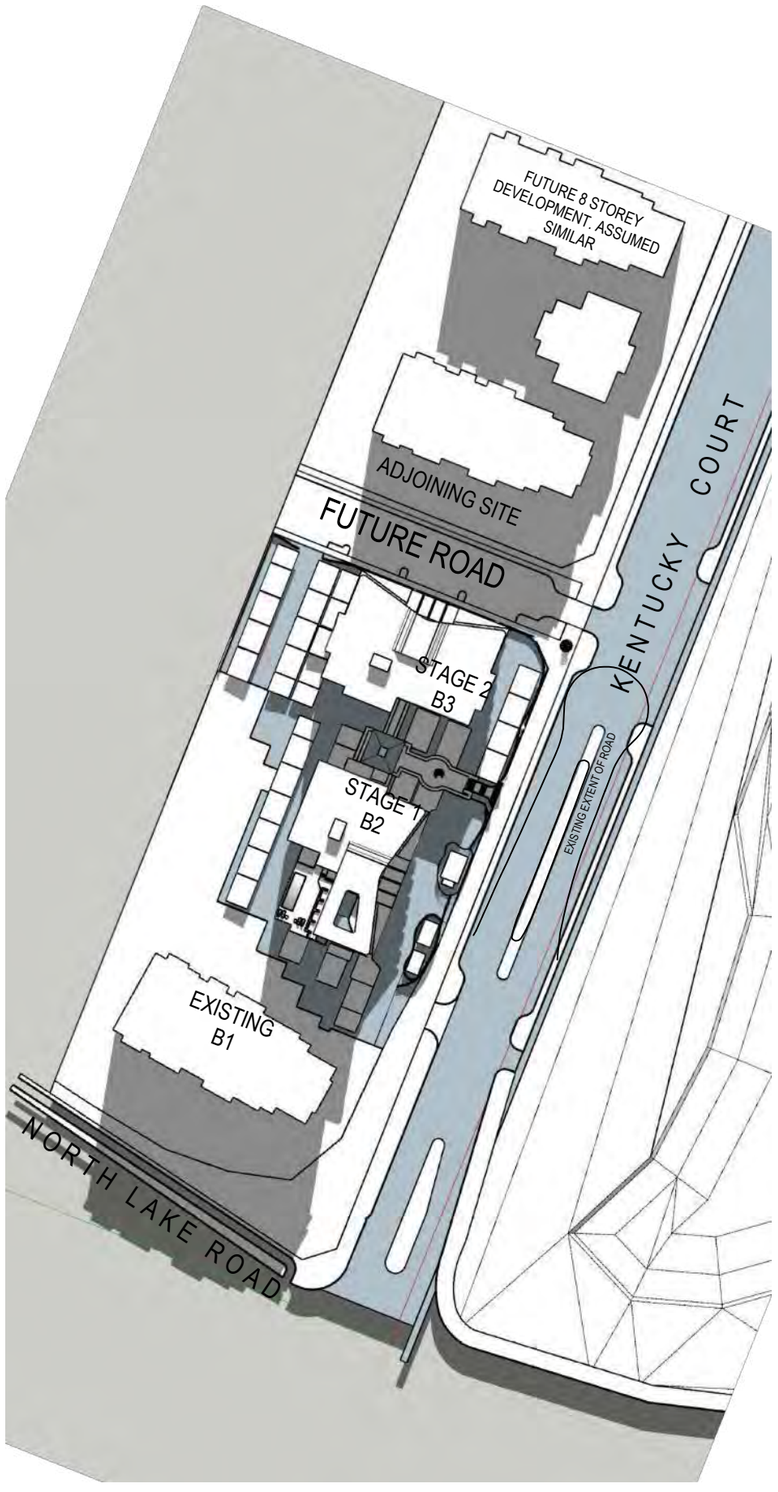
DWG No. 502 - SHADOW DIAGRAMS -21 JUNE & 21 DEC (SCALE NA @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023



21st June - 9am



21st June - 12pm

21st June - 3pm

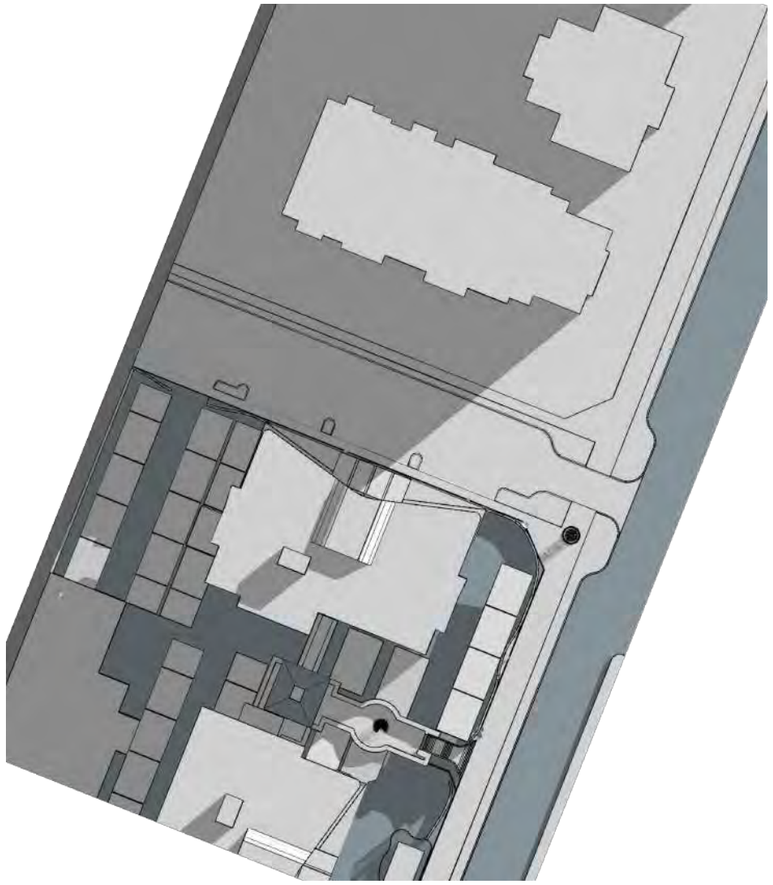
ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

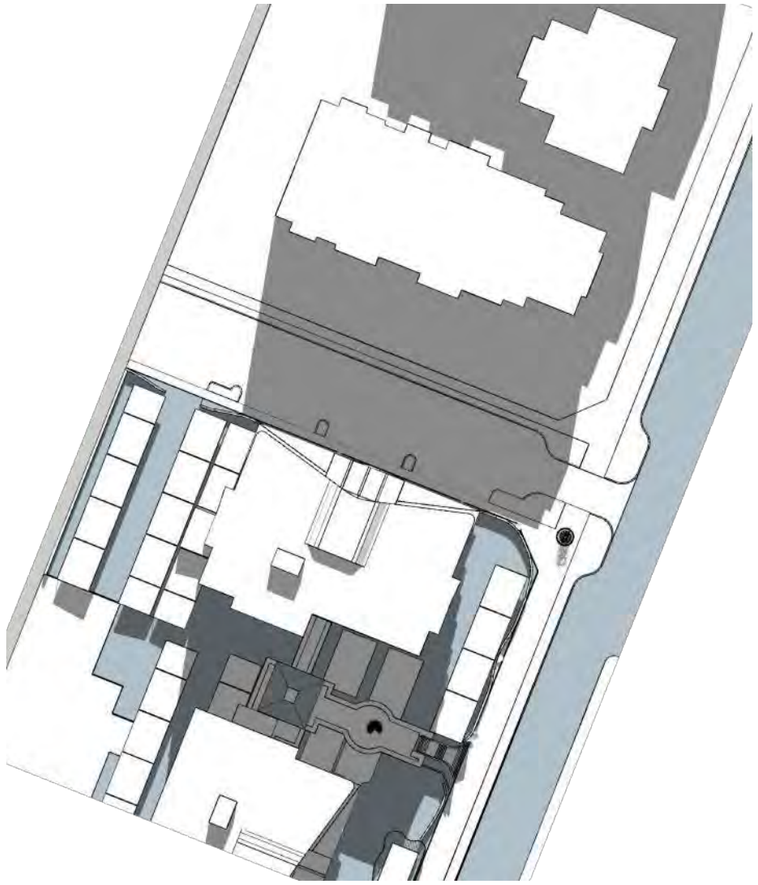
A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

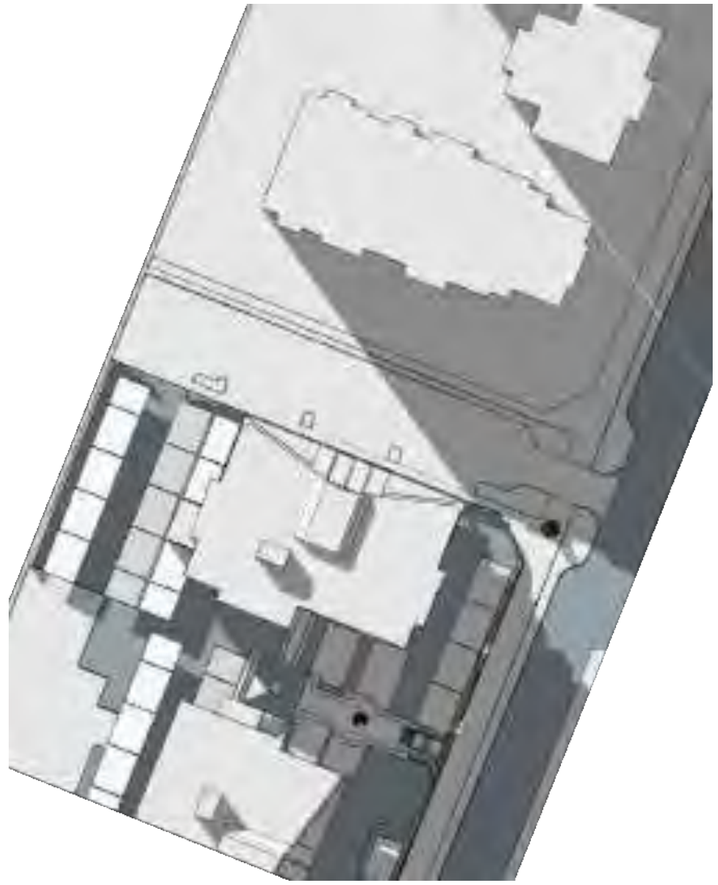
DWG No. 503 - SHADOW DIAGRAMS - 21 JUNE (SCALE 1500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023







21st June - 9am - VIEW FROM KENTUCKY COURT

21st June - 12pm

21st June - 3pm

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. 504 - SHADOW DIAGRAMS - 21 JUNE (SCALE 1:1000 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

	FLOOR PLATE / ITEMS	MATERIAL	COLOUR	FINISH	LOCATION / COMMENTS
		EXTERNAL			
CAR PARK LEVEL					
1	CAR CANOPY	Danpalon	Grey, Blue, White		Throughout carpark
2	BOUNDARY FENCE	Painted mesh steel cage	Refer to Plan E drawings	Matte	
3	WALL	Precast Concrete Panels	White/Grey	Paint Finish	Throughout carpark
FIRST FLOOR					
4	FEATURE WALLS / BANDS	Precast Concrete Panels	White	Dulux ACRASHIELD ADVANCE	Level 1 to Level 8
5	BALUSTRADE	Glass	Clear	Glass	Stainless Steel Capping
6	CLADDING	Compressed Decorative Cladding	Grey/Blue	Paint Finish	Refer to elevations
7	WINDOW	Aluminium	Grey/Blue	Powdercoated	
10	SERVICES / PLANT DECK	Aluminium Cage, desgined by local artist	To be confirmed by artist	To be confirmed by artist	Sides of both apartments
11	PEDESTRIAN BRIDGE	Concrete	To be confirmed by PLAN E	To be confirmed by PLAN E	Between two apartments
2nd - 7th FLOOR					
4	FEATURE WALLS / BANDS	Precast Concrete Panels	White	DULUX ACRASHIELD ADVANCE	Level 1 to Level 8
5	BALUSTRADE	Glass	Clear	Glass	Stainless Steel Capping
6	CLADDING	Compressed Decorative Cladding	Grey/Blue	Paint Finish	Refer to elevations
7	WINDOW	Aluminium	Grey/Blue	Powdercoated	
10	SERVICES / PLANT DECK	Aluminium Cage, desgined by local artist	To be confirmed by artist	To be confirmed by artist	Sides of both apartments
8th / AMENITIES FLOOR					
4	FEATURE WALLS / BANDS	Precast Concrete Panels	White	DULUX ACRASHIELD ADVANCE	Level 1 to Level 8
5	BALUSTRADE	Glass	Clear	Glass	Stainless Steel Capping
6	CLADDING	Compressed Decorative Cladding	Grey/Blue	Paint Finish	Refer to elevations
7	WINDOW	Aluminium	Grey/Blue	Powdercoated	
10	SERVICES / PLANT DECK	Aluminium Cage, desgined by local artist	To be confirmed by artist	To be confirmed by artist	Sides of both apartments
12	ROOF / CANOPY	Compressed Fibre cement	White	Paint Finish	
13	LIFT OVERRUN	Precast Concrete Panels	White	Dulux ACRASHIELD ADVANCE	
14	FENCE @ POOL	Vertical Aluminium Slats	Dark Bronze	Paint Finish	
15	LEVEL 8 AMENITIES	To be confirmed by PLAN E	To be confirmed by PLAN E	To be confirmed by PLAN E	
	FLOOR PLATE / ITEMS	MATERIAL	COLOUR	FINISH	LOCATION / COMMENTS
		INTERNAL			
CAR PARK LEVEL					
3	WALL	Precast Concrete Panels	White/Grey	Paint Finish	Throughout carpark
FIRST FLOOR					
8	DOOR	Timber Veneer Metal Frame Fire Door	grey	Paint Finish	Entry to Apartment
9	INTERIOR WALL	Lightweight Aluminium walls with plasterboard	White	Paint Finish	
2nd - 7th FLOOR					
8	DOOR	Timber Veneer Metal Frame Fire Door	grey	Paint Finish	Entry to Apartment
9	INTERIOR WALL	Lightweight Aluminium walls with plasterboard	White	Paint Finish	
8th / AMENITIES FLOOR					
8	DOOR	Timber Veneer Metal Frame Fire Door	grey	Paint Finish	Entry to Apartment
9	INTERIOR WALL	Lightweight Aluminium walls with plasterboard	White	Paint Finish	

COLOUR REFERENCE BY VIRIDIAN GLASS

COLOUR REFERENCE BY DALPALON

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

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DWG No. 505 - MATERIALITY (SCALE NA @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGE 2
18/12/23 PRELIMINARY DA ISSUE - REV 0

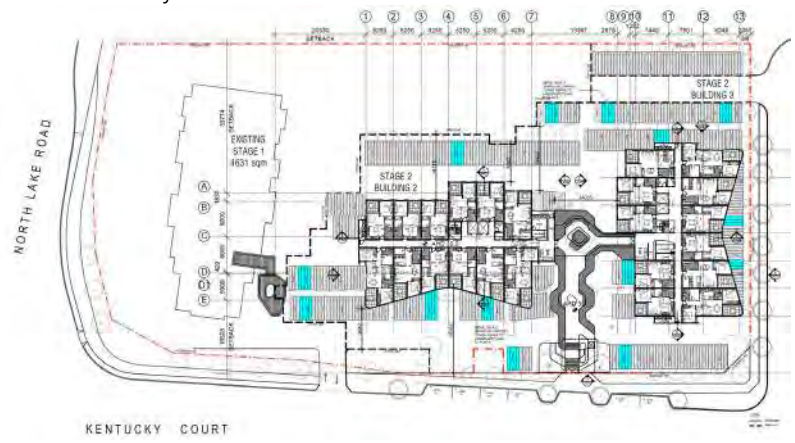
PRD. COLLIÈRE ARCHITECTURE

Do
Version: 1, Version Date: 21/12/2023

Architectural Statement

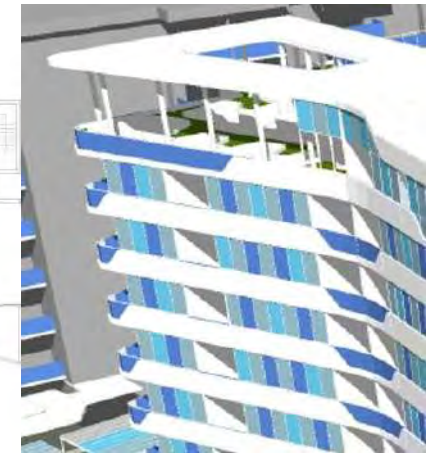
Whilst affordability is key to developing the site and meeting the market, affordability doesn't mean every building has to be 'earthy tones'. This development sits as one of the first in the Residential Precinct where the development can set a new tone that will hopefully act as a catalyst for others to follow. Based on the context of the local community, we have taken a lighter, brighter approach that hopefully helps lift the vibe of its residents adds to the enjoyment of the local community.

The facades of the development therefore draw cues from the adjoining Wave Park currently under construction, introducing some curves reflected in the built form, the balcony design and repeated and reinforced in the street fencing. The curves then combine with a variety of blue ocean tones within the façade that will lift the building façade away from the typical earthy concrete colours to add some vibrancy and point of difference to the skyline. The coarse grain details will ensure that the buildings can be enjoyed from the distant views from the Kwinana Freeway, North Lake Road and beyond.



Given the driving need for affordability, comes the driving need for efficiency and functionality to ensure the compact designs maximise the useability to future residents. Highly efficient bedrooms, functions, built in wardrobes, compact but effective kitchens, separate dining rooms and regular shaped balconies all work together to provide maximin furnishing opportunities for future residents. To optimise efficiency an offset building design has been used to push building separation, privacy objectives and to provide each apartment with excellent access to natural light, direct sunlight and the maximum number of apartments with cross ventilation opportunities to minimise air conditioning use. Power use will further be reduced by an extensive solar array, optimising the solar benefits for residents.

Whilst the car park design has to be at grade due to cost restrictions, this doesn't mean consideration isn't given to the streetscape. We have elected for a landscaped streetscape typical of residential neighbourhoods where the ground level is fenced and shaded footpaths provided to enhance the pedestrian experience. Security and safety is also key. Surveillance is provided over the public domain from apartments above who will look over the landscaped and coloured car park to the streets beyond from their elevated and secure apartments. Pedestrian access is promoted through the use of an elevated landscaped walkway with areas for seating to offer respite, meeting of friends or simply waiting for your delivery or ride share to arrive.



The jewel of the development is however, the roof top terrace. This level of amenity never been seen before in Cockburn will offer residents the enjoyment of swimming in a private pool, outdoor movies, BBQ facilities and private outdoor dining which will provide a breathing and entertainment space for residents and guests, or even a bit of socialising with residents so that a strong community bond is formed.

The development is considered to make a valuable contribution to the Cockburn community.

Cockburn harmony stage two Design statement

1. Built form Context.

Harmony's stage one building one:

A well-built eight level apartment building featuring generously sized well appointed, apartments with commercial tenancies to the ground floor, facing south with excellent access to bus, train station and freeway links and within 600 m of other amenities provided by Cockburn's mixed use Development area. The Harmony site fronts North Lake Road to the south and on the east boundary a seldom used cul-de-sac that addresses on its east side a naturalistic, green reserve that does an admirable job of buffering the nearby freeway and railway line. To the north. There is vacant land to the sites west.

Harmony's Stage one; building 1 lacked sufficient emotional appeal for its location contributing to slower sales rate than hoped.

For stage 2 of the Harmony project creative input was sought to address the lack of vibrancy of the existing building 1.

In response, PRD Nationwide, Milieux consulting, Colliere Architecture, Element WA and plan E were engaged to design a contemporary, aesthetically appealing pair of buildings for stage 2 of Harmony that would appeal to the predominately younger buyer group providing a well-priced, energetic, and youthful design that provides the high level of security, comfort, and amenities, sought by the buyers in this part of Cockburn.

Stage two comprises two new dynamically designed separate eight story apartment buildings placed within in a garden scape edged secure setting to provide a solution to this brief.

This dynamic solution providing a high-level of security for the owners and visitors. a grand visitor entry located on Kentucky Court with adjacent visitor bays providing a high visibility secure access to a resort style landscaped elevated walkway and communal space providing an approach to a large, covered entry feature providing undercover access to both private lobbies of buildings two and three. In addition, an oversized roof level amenities area with swimming pool, alfresco kitchen and multiple seating and lounging areas within a lush Plan E designed landscaped environment are provided for the comfort and amenity of all the Harmony development's owners.

This elevated level 9 amenities deck will be highly viable to users of the Freeway, trainline and North Lake Road providing a beacon of recognition day or night for the new development that will, become the envy of Cockburn.

2. Cockburn existing multi res. Built form context:

The urban infrastructure of the neighbouring existing multi residential/ mixed use Cockburn built form is in the main, boxy and uninspiring. The existing street interfaces lack energy and aesthetic appeal.

The images demonstrate that the street interface/public realm are comprise a collection of mainly unoccupied commercial spaces, and a hotch potch of signage. There are brief moments of exceptions to this rule, but inconsistent enough to provide an overall feeling of delight, comfort, or aesthetics to the street scapes.

3. The elevated public accessway:

Cockburn developments do feature differing existing examples of pedestrian access to elevated public areas or walkways and public spaces. Examples attached from Cockburn and other president projects that demonstrate effective design concepts.

4. "Green edge" inspiration:

There are glimmers of where the combination of greenery and street edge interface provides a sense of comfort and visual delight to pedestrians whilst providing visual privacy. These existing built forms have provided a core element of inspiration for the street /public interface solution for the Harmony development.

4 Cont. Cockburn's existing green public interface example.

Public interface treatments of the street edges, as proposed by Plan E.

We feel that these public edge interface proposal as designed with its lush green interface combined with security screening, art forms, night lighting and variety of plantings will create a delightful public interface with the built form edge.

And will provide visual interest and compatibility with its railway and highway, and native treed reserve interface.

Transport Impact Statement

884-888 NORTH LAKE ROAD

Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

PROJECT	884 – 888 North Lake Road – Transport Impact Statement			
FILE NAME	81113-865-FLYT-TIA-0003			
Revision	**Description**	**Originator**	**Review**	**Date**
0	Issued	CAS	CXS	14/12/23

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1. INTRODUCTION

1.1 Development Introduction

This Transport Impact Statement (TIS) has been prepared by Flyt in support of the Development Application (DA) submitted for a proposed development at 884 – 888 North Lake Road in Cockburn Centre. This development focuses on the delivery of two separate residential buildings comprising 173 total units. The proposed development will be delivered in two stages but this assessment focuses on the outcomes and impacts of the total site development. Where required, specific issues are addressed for each individual building (such as staging of servicing) throughout this TIS.

The location of the proposed development is shown in Figure 1.

Figure 1 Location of the subject site (source: Metromap)

1.2 Transport Impact Statement

This TIS has been prepared in accordance with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments). The Guidelines promote a three level assessment process, where the required level of assessment is dependent on the likely level of impact, as follows (and as shown in Figure 2):

- Low impact – less than 10 peak hour trips, no assessment required.
- Moderate impact – between 10 and 100 peak hour trips, Transport Impact Statement required.
- High impact – more than 100 peak hour trips, full Transport Impact Assessment required.

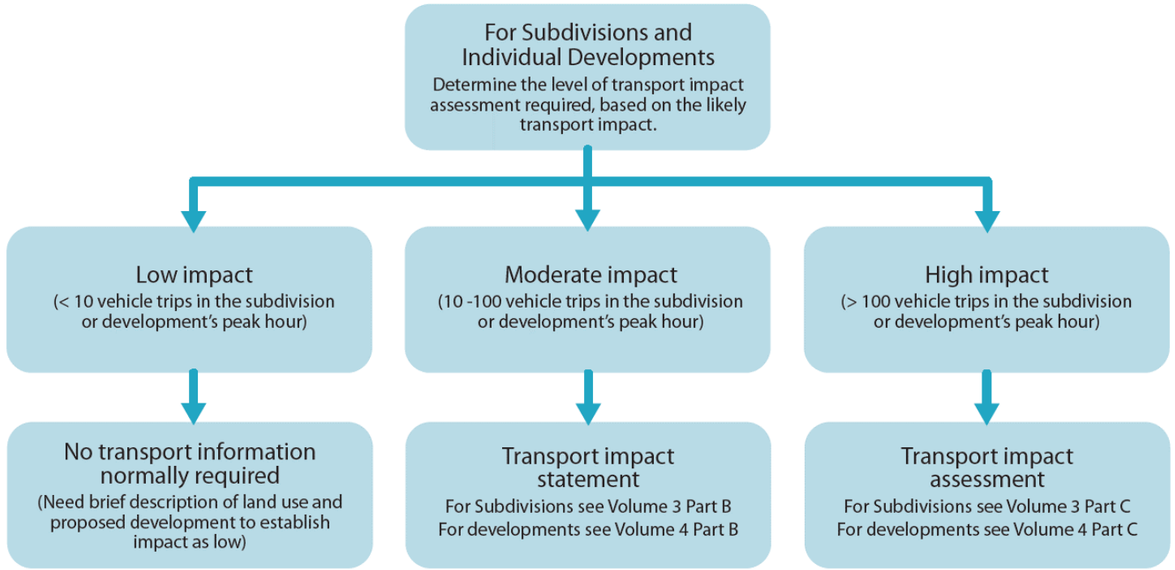

Figure 2 Level of transport impact assessment required (source: WAPC Transport Impact Assessment Guidelines, 2016)

As set out in section 5, the traffic attributable to the proposed development has been determined to have a moderate impact with less than 100 vehicle trips generated by the proposed structure plan area during the development's peak hour, therefore the required level of assessment is a TIS.

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1.3 Report Structure

The report is structured as required by the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments), with the following items addressed:

- Development proposals and site context (Section 2)
- Vehicle access and parking (Section 3)
- Provision for service vehicles (Section 4)
- Traffic volumes and vehicle types (Section 5)
- Pedestrian access and amenity (Section 6)
- Bicycle access and amenity (Section 7)
- Public transport access (Section 8)
- Site specific issues (Section 9)
- Summary (Section 10).

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2. PROPOSED DEVELOPMENT AND SITE CONTEXT

2.1 Development Site Context

The subject site is located on the corner of North Lake Road and Kentucky Court in Cockburn Central and as indicated by the South West Aboriginal Land and Sea Council website; the development lot subject to this assessment sits within the Whadjuk Region.

The site is zoned within the Development Zone as set out in the City of Cockburn (CoC) online mapping tool (Figure 3). The site is surrounded by vacant land to the east, north and west and the Cockburn Central West development project of DevelopmentWA to the south.

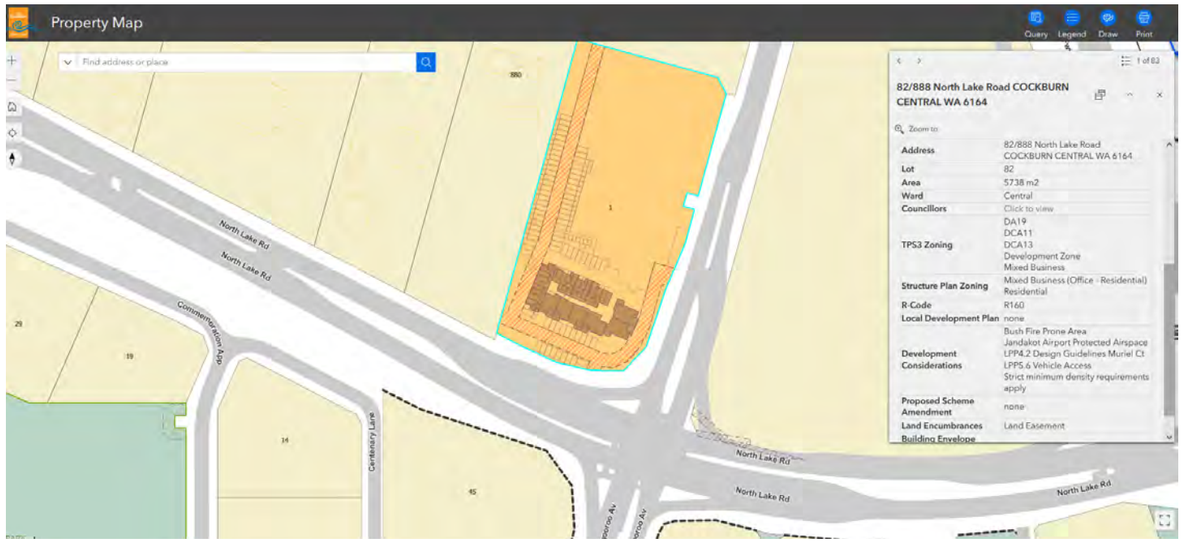

Figure 3 Property map extract from City of Cockburn mapping centre (source: City of Cockburn)

The subject site is centrally located to all amenities within the core of the Cockburn Activity Centre, ranging from employment, retail, commercial, employment, health, entertainment and recreational land uses.

The site has excellent public transport accessibility, as well as access to the existing pedestrian and cycling networks. The site is located close to the interchange of the Kwinana Freeway, affording it excellent access to the regional road network.

2.2 Muriel Court Structure Plan

The site is located within the Muriel Court Structure Plan boundaries, as set out in Figure 4, with a residential coding of R160 for high density residential development attached. The planning assessment and reporting for the DA sets out the implications relating to the Structure Plan in detail. Kentucky Court is classified as being a Neighbourhood Connector Road which performs a distribution role over the entire Structure Plan area.

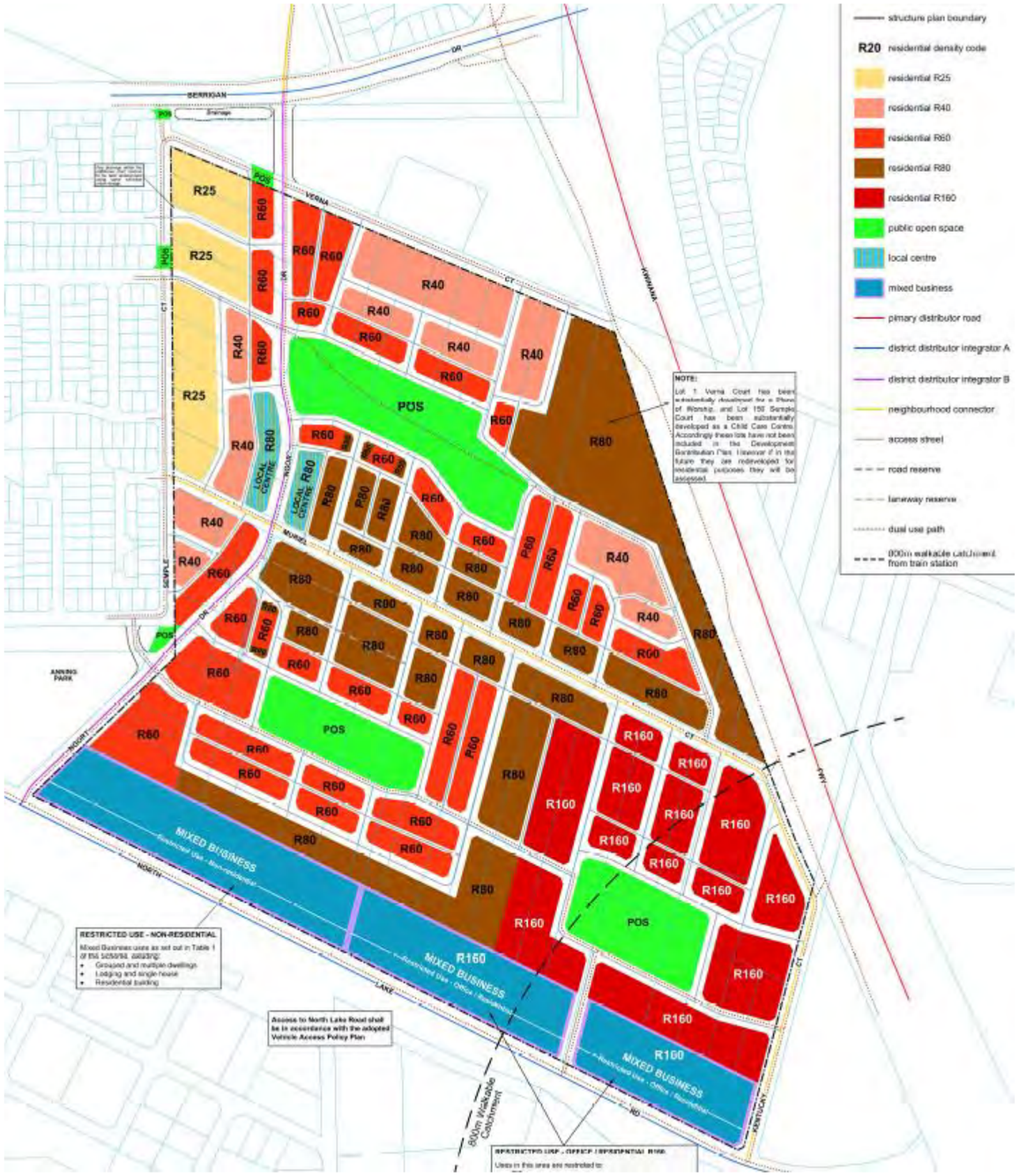

Figure 4 Muriel Court Structure Plan (source: CoC)

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2.3 Development Site Current Usage

The site is presently vacant, with the first stage of the Harmony development already constructed to the south, as shown in an aerial image from October 2023 set out in Figure 5.

Figure 5 Aerial image of site October 2023 (source: Metromap)

2.4 Proposed Development

The proposed development will consist of two residential towers located to the north of an existing mixed use building on the corner of North Lake Road and Kentucky Court which was developed as Stage 1, Building 1. The development will be comprised of Stage 2 Building 2 and Stage 2 Building 3, as set out in Figure 6. The intent of this assessment is to examine the impact of the entre site development – that is Building 2 and 3 being fully constructed, including the adjoining street to the north.

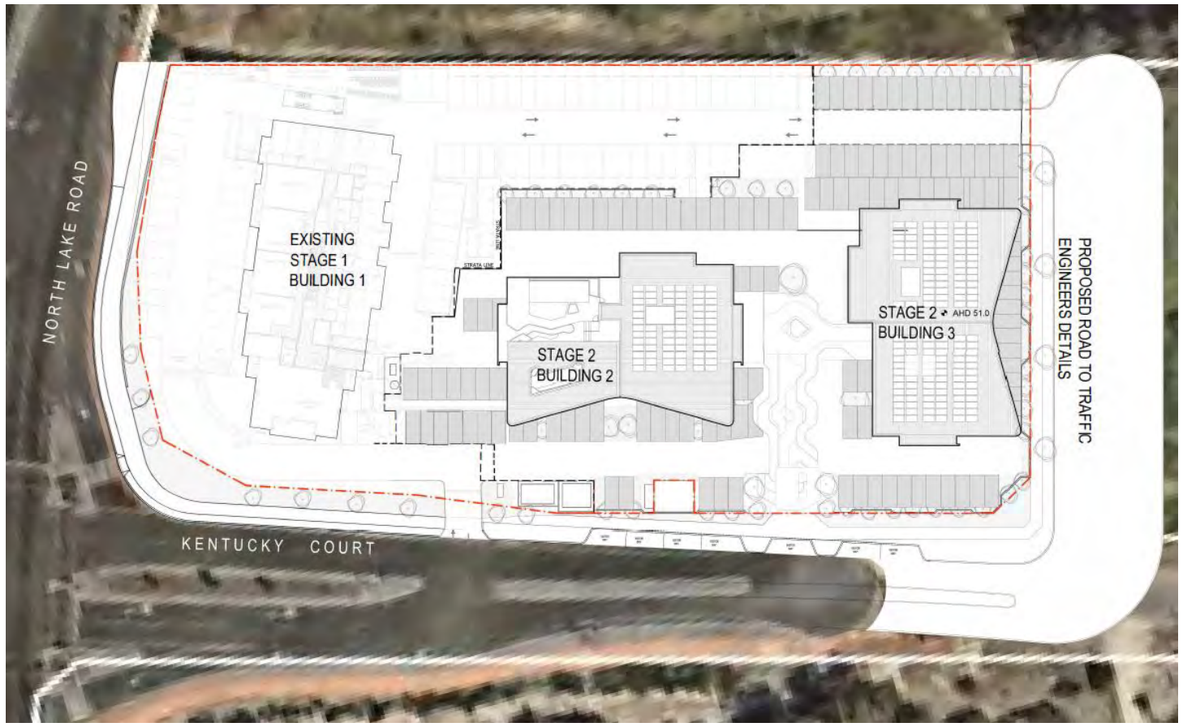

Figure 6 Staging of proposed development (source: Colliere Architecture)

The proposed development includes the following facilities which have all been considered within this TIA:

- 173 residential dwellings across two separate buildings
- On-site amenities
- 51 bicycle parking spaces within secure facilities including workshops
- On-site parking comprised of 173 residential bays accessed via an existing crossover off Kentucky Court and a new proposed crossover via an unnamed carriageway to the north of the development site.
- 18 visitor bays, all accessed off Kentucky Court and external to a secure gate provided as part of Stage 2, Building 2
- 18 motorcycle bays
- Servicing area also accessed from the existing carriageway off Kentucky Court
- Pedestrian connection to Kentucky Court
- New access crossover and street connection to the north of the site.

The ground floor plan for Stage 2, Building 2 is shown in Figure 7 and the ground floor of the proposed development for both Building 2 and 3 is shown in Figure 8 – other site details are referred to throughout this TIS where required.

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Figure 7 Proposed development layout – Ground Floor Stage 2 Building 2 (source: Colliere Architecture)

Figure 8 Proposed development layout – Ground Floor Stage 2 Buildings 2 and 3 (source: Colliere Architecture)

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3. VEHICLE ACCESS AND PARKING

3.1 Existing Road Network

The road hierarchy surrounding the subject site is shown in Figure 9 and posted speed limits are shown in Figure 10.

Figure 9 Road hierarchy surrounding the site (source: Main Roads WA)

Figure 10 Speed zoning surrounding the site (source: Main Roads WA)

3.2 Street Frontage

The site has direct frontage to two adjacent roads, Kentucky Court and North Lake Road. The following sections detail the characteristics of the frontage streets.

3.2.1 Kentucky Court

The site has direct access to Kentucky Court, which is currently an access street which sits in a 24.4m wide road reserve past the site, with a splayed reserve to cater for the intersection with North Lake Road. The street provides direct access to development sites and has on-street parking on the western side. The carriageway provides for a single lane in each direction south of the intersection of North Lake Road.

The reserve has been configured to cater for a higher future volume of traffic associated with the Muriel Court Structure Plan area and was classified as a Neighbourhood Connector A road within the Muriel Court Structure Plan. There is a 2m wide footpath running past the site on Kentucky Court (as seen in Figure 11) with a 3m wide shared path on the eastern side of the reserve. Street lights extend along the median. Kentucky Court current ends in a cul-de-sac head approximately 130m south of North Lake Road.

Figure 11 Kentucky Court in front of subject site looking south from existing crossover (source: Flyt)

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3.2.2 North Lake Road

North Lake Road is a District Distributor Road A that borders the southern end of the site and intersects Kentucky Court at a set traffic signals (TCS 1091). The reserve for North Lake Road is between 41-44m in width opposite the site, with variable widths to cater for the intersection of Kentucky Court. North Lake Road is a major east-west traffic route that has recently been reconfigured at the interchange of the Kwinana Freeway to cater for significant volumes of traffic. There is no frontage of the subject site to North Lake Road.

3.3 Traffic Volumes

Main Roads WA collects traffic count information at all signalised intersections thorough SCATS loops. MRWA also collect and collate count information at non-signalised intersections with current and historical data being made available through https://trafficmap.mainroads.wa.gov.au/map. In addition, the CoC has mapping resources for traffic counts that were referenced for the purpose of this TIS. The immediate area around the subject site is set out in Figure 12.

Figure 12 City of Cockburn traffic count information (source: CoC)

The available locations for TrafficMap data is shown in Figure 13. The SCATS data at the signalised intersection of North Lake Road and Kentucky Court was collected and processed for the purpose of this TIS, alongside on-site observations. Signal data was available from August 2023 and is considered to be suitable for the purposes of the assessment.

Figure 13 Main Roads WA TrafficMap count information (source: Main Roads WA)

3.4 Existing On-Site Access and Parking

The subject site currently has an existing crossover located on Kentucky Court, as shown in Figure 14. This crossover is located approximately 60m to the north of the intersection of Kentucky Court and North Lake Road. This crossover location is proposed to be retained and used for vehicle access to the development site.

On-site parking for Stage 1 of the Harmony development is also accessed via this crossover. Parking is at-grade, with three visitor bays along the Kentucky Court frontage and a total of 29 bays along the North Lake Road frontage for commercial tenancies and visitors. That parking area is shown in Figure 15. Parking associated with the residential units is contained on-site behind secure gates which are not accessible for general use.

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Figure 14 Existing crossover access to site off Kentucky Court (source: Metromap)

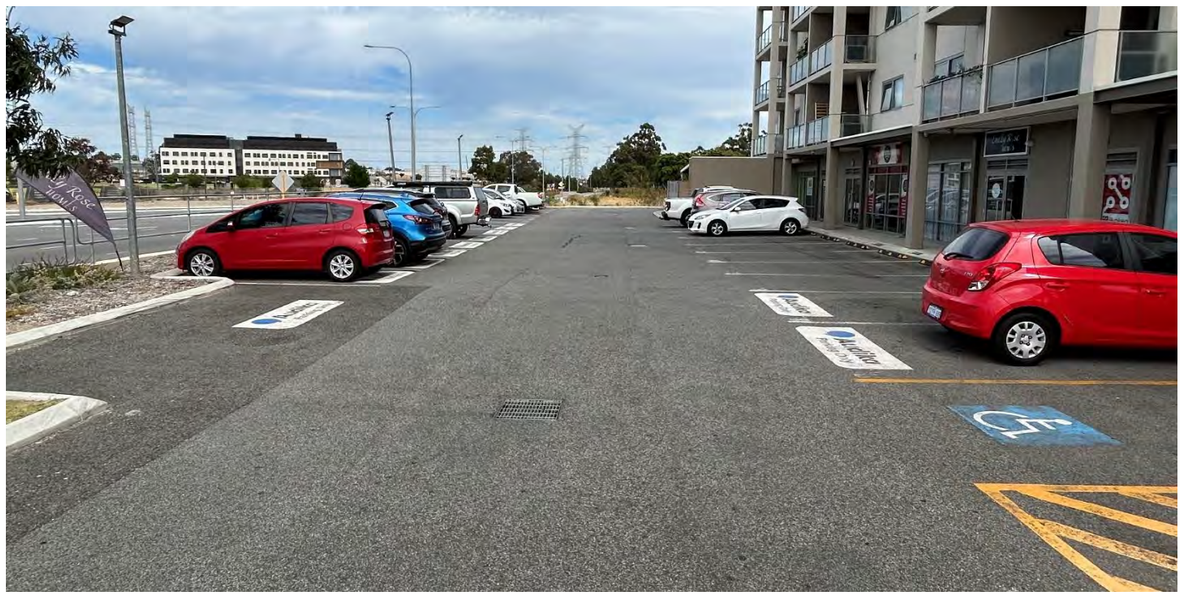

Figure 15 Existing visitor and tenancy parking - Stage 1 Harmony development (source: Flyt)

3.5 Proposed Vehicle Access

The development of the site proposes to retain the existing crossover location along Kentucky Court. This crossover will also continue to provide access to Stage 1 of the Harmony development. The location of the crossover is shown in Figure 14.

The existing crossover on Kentucky Court will allow for all vehicle movements associated with Stage 2, Building 2 of the Harmony Development, including service movements which are discussed in section 4.

For Stage 2, Building 3 of the proposed development, access is proposed by a new crossover accessed from a new street constructed to the north of the proposed development. This will allow for a spreading of access trips and refinement to servicing arrangements. This access point is shown alongside the access points for Stage 1, Building 1 and Stage 2, Building 2 in Figure 16. This arrangement also complies with the LPP 5.6 covering the North Lake Road Vehicle Access Policy (shown in Figure 17) given the crossover is greater than 30m back from North Lake Road.

Figure 16 Proposed new access for Stage 3 of development (source: Colliere Architecture)

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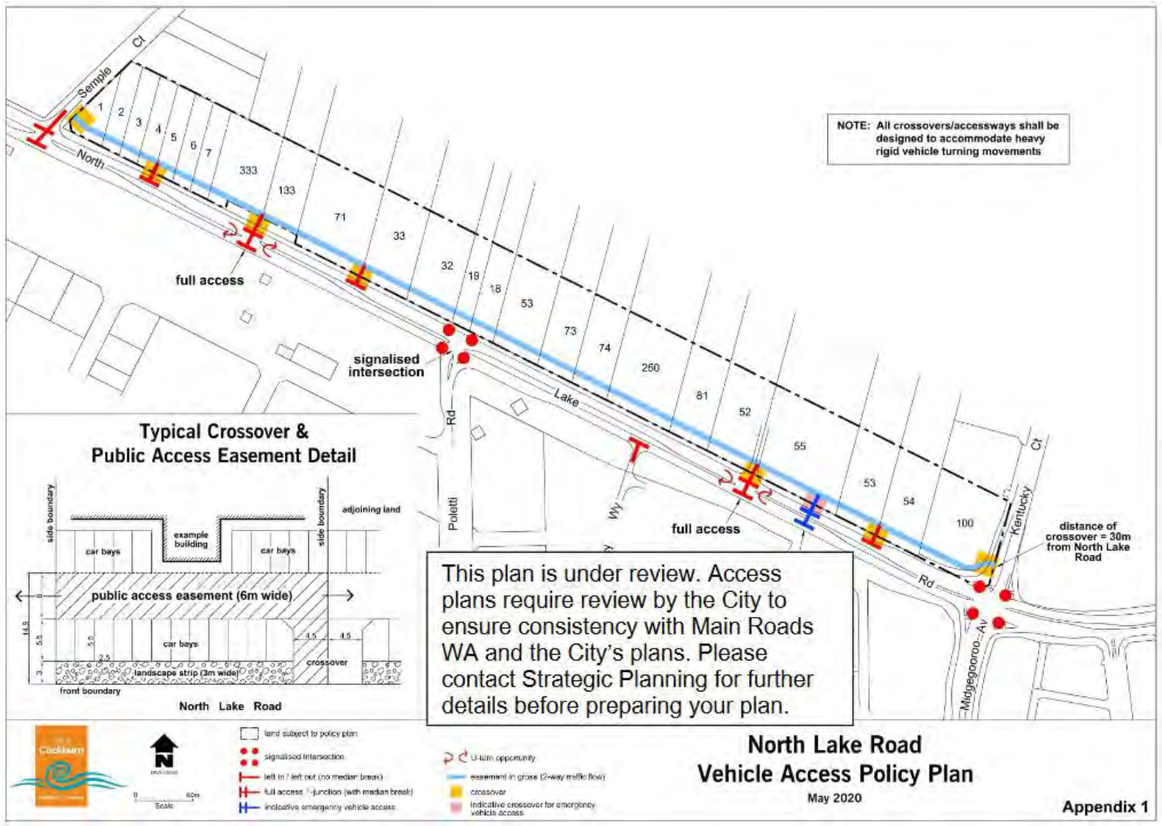

Figure 17 LPP 5.6 - North Lake Road Vehicle Access Policy

3.6 Proposed Parking

The site is proposing to provide 173 residential bays in total, resulting in a ratio of 1 bays per unit, which is an acceptable outcome for SPP 7.3. There will be 18 visitor bays provided on the development site alongside 18 motorcycle bays and 7 new on-street embayments along Kentucky Court for a total of 216 vehicle spaces.

Table 1 Parking provision – Stage 2 Buildings 2 and 3

Building	Residential	Visitor	On-Street Embayments	Motorcycle
2	90	18	7	0
3	83	0	0	18
Total	**173**	**18**	**7**	**18**

SPP 7.3 requires four visitor bays for the first 12 units and then 1 bay per 8 units for 13 or more units. This would equate to a total of 24, 25 if rounded up. The combination of 18 on site bays and 7 on-street embayed parking bays directly in front of the site (bearing in mind that there will be no development ever on the opposite side of Kentucky Court) complies with this requirement.

Notwithstanding that requirement, within State Planning Policy 7.3 – Residential Design Codes, reduced levels of parking (down to zero) are also considered an alternative solution to satisfy Element Objectives using a performance basis criteria of:

"*DG 3.9.5 Consideration may be given to the reduction of resident parking (including to zero bays) subject to an assessment of the location, the likely current and future demand for parking spaces, the likely impact on neighbouring land uses and whether it is suitable to allow the supply of fewer spaces.*".

This site location, with excellent overall transport access, alongside the product type and developer profile, matches the performance basis criteria through:

- Still providing a level of parking that is commensurate with demand from the product type
- Having good pedestrian and cycling accessibility which will only improve within the immediate neighbourhood
- Being located within an Activity Centre with excellent walking access to a range of facilities, opportunities and services in a 10-15 minute walking catchment
- Availability of on-street parking for visitation and servicing.

The level of parking proposed for the full build out of the development is appropriate and will all be provided within the Stage 2 Building 2 construction.

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4. PROVISION FOR SERVICE VEHICLES

4.1 Service Movements

Waste collection will be conducted by the City of Cockburn and largely replicate the existing regime in place to cater for the servicing of Building 1 which is in situ. Access to and from the bin areas will be via the existing development crossover located off Kentucky Court. This access is used for the existing bins that service Building 1 and are serviced by the CoC.

The proposed service arrangements for Building 2 and 3 will be:

- Access from the existing crossover on Kentucky Court and gate adjacent to the western boundary of the site. The service vehicle would then progress into the existing lane and complete a turning manoeuvre at the northern end of the property within an area specifically designed to cater for the design vehicle. Swept paths for an 8m truck and a 12.5m truck have been provided in Figure 18 and Figure 19 to show the general path of trucks in the turnaround area. Bins taken from bin store 2 would then be serviced and the truck exit the same way as present
- For Building 3, the truck would access as per Building 1 and 2 via Kentucky Court and then progress down the parking aisle to pick up bins. The truck would then exit via the crossover at the northern end of the development site and on to the new street developed to CoC specifications.

More detail in relation to the specifics of the waste management are provided in the development application report and the Waste Management Plan that accompanies the proposed development.

Figure 18 Waste service collection 8m truck base (source: autoturnonline)

Figure 19 Waste service collection 12.5m truck base (source: autoturnonline)

Other smaller service vehicle movements, such as deliveries or visitation by trades, could be facilitated through the visitor bays associated with the respective buildings.

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5. TRAFFIC VOLUMES AND VEHICLE TYPES

5.1 Assessment Introduction

In order to inform the assessment of the impacts of the proposed development on the surrounding network, the level of analysis covered the following information:

- Examination of strategic reporting and modelling for the adjoining network and structure plans
- Completion of on-site traffic data review for the immediate intersection at North Lake Road and Kentucky Court, including turning movements
- Review of information from City of Cockburn mapping and Main Roads TrafficMap, including all count data and signal data for the intersection at North Lake Road and Kentucky Court
- Development of 2023 Base Year site and network models for the AM and PM peak hour in SIDRA Intersection 9.1 for the intersection at North Lake Road and Kentucky Court
- Development of Opening Year site and network models for the AM and PM peak hour in SIDRA Intersection 9.1 for the intersection at North Lake Road and Kentucky Court if the development was completed as a single stage
- No 10 year horizon model was completed given the wide ranging forecast year scenarios already undertaken for adjoining structure plans and that the development does not represent a high impact on the surrounding network and the form of development or network in ten years may vary depending on a range of factors.

All SIDRA outputs are included within Appendix A.

5.2 Muriel Court Structure Plan

The subject site sits within the Muriel Court Structure Plan, as discussed in section 2.2. A transport assessment was completed for the structure plan which was updated in 2017. That report covers the entirety of the structure plan area, including the subject site which is in the south-eastern corner of the Structure Plan boundaries.

The report for the Structure Plan considered the intersection of Kentucky Court and North Lake Road as a T-intersection only, with no southern extension which connects through to Midgegooroo Avenue. The forecast year assessment for the intersection is set out in Figure 20, which illustrates a good level of service using that configuration.

The assessment for the Muriel Court Structure Plan also includes future total traffic flows for the Structure Plan area which are illustrated in Figure 21. These values were applied to an assessment for the forecast year set against the peak flows of the site to illustrate the relative level of impact on the network given that the Muriel Court Structure Plan formed the basis of decisions relating to the configuration and vehicle capacity of Kentucky Court.

OPERATIONAL CHARACTERISTICS FOR UNSIGNALISED NORTH LAKE ROAD - KENTUCKY COURT JUNCTION – LONG TERM THURSDAY PM PEAK HOUR

ITEMS	OPERATIONAL CHARACTERISTICS Thursday PM Peak Hour					
No. of Approach Lanes: N E S W	1 3 - 3					
Approach	Move-ment	X-Value	Max. Queue (veh)	Max. Queue m	Avrge Delay (sec)	Level of Serv.
Kentucky Court - north	LR	0.308	1.3	9.5	14.8	B
North Lake Road - east	T	0.576	0.0	0.0	0.0	A
	T	0.576	0.0	0.0	0.0	A
	R	0.450	3.1	22.3	16.8	C
North Lake Road - west	L	0.007	0.0	0.0	7.6	A
	T	0.288	0.0	0.0	0.0	A
	T	0.288	0.0	0.0	0.0	A

Notes: Level of Service calculations are based on Average Delay and Degree of Saturation.
Underlined X-values denote maximum values.

Source: Uloth and Associates

Figure 20 Muriel Court Structure Plan - forecast operational outputs for Kentucky Court / North Lake Road (source: Uloth)

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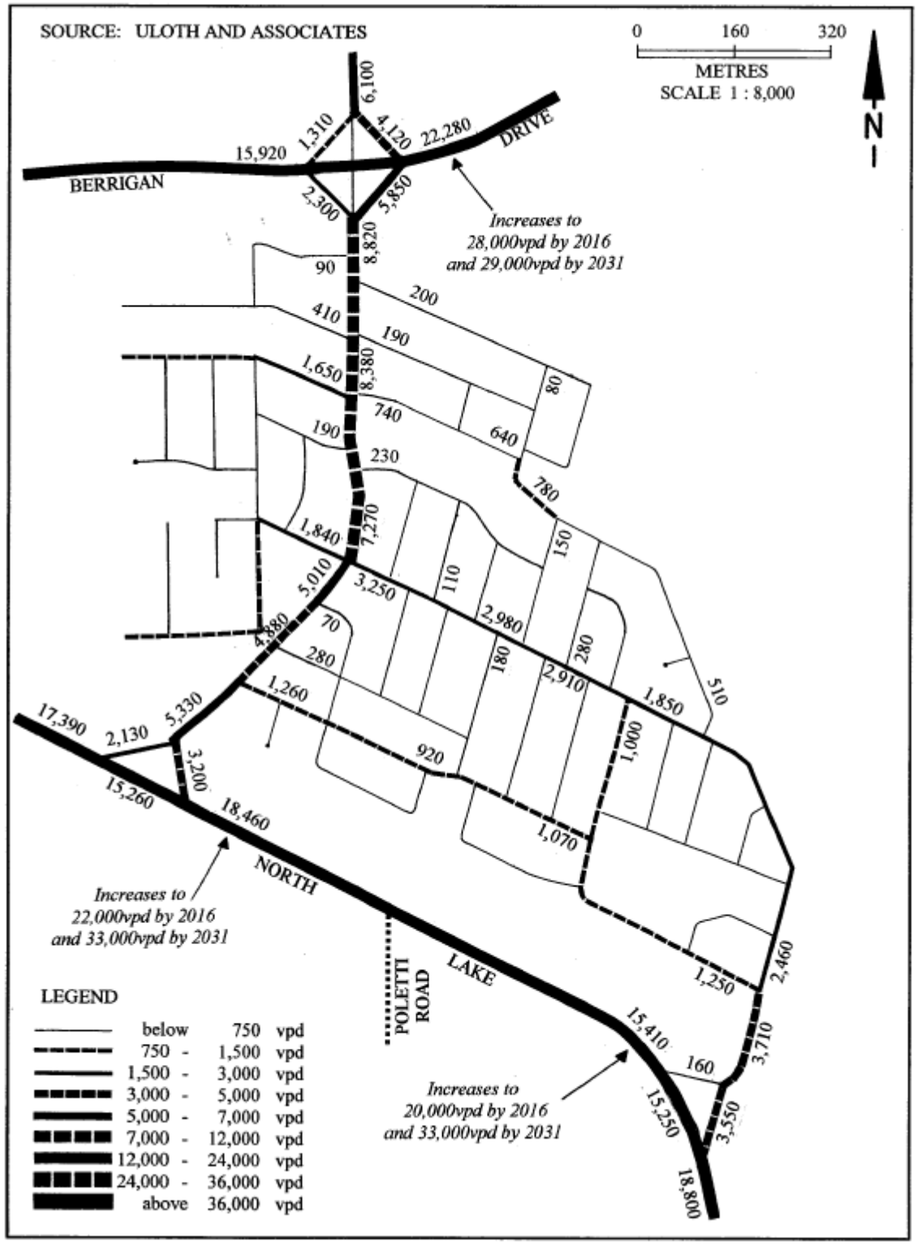

Figure 21 "Future Total Traffic Flows" for Muriel Court Structure Plan (source: Uloth)

5.3 Cockburn Central West Structure Plan

More recently, the Cockburn Central West Structure Plan was subject to an update which also included significant strategic modelling for 2031. Forecast AM volumes are set out in Figure 22 and PM volumes are in Figure 23.

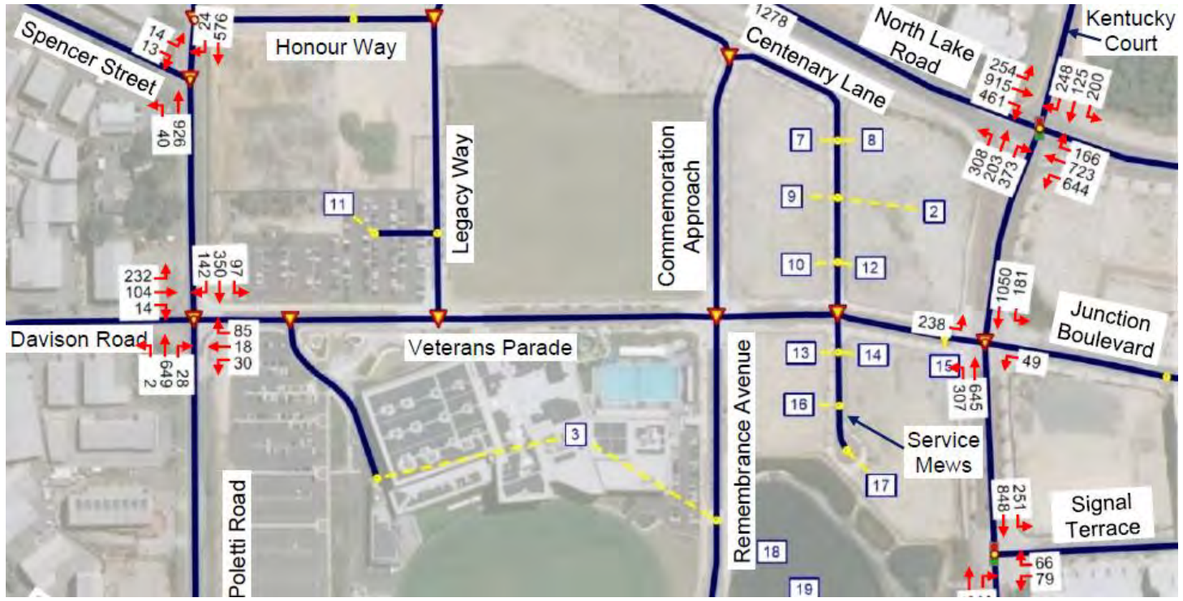

Figure 22 Cockburn Central West Structure Plan - 2031 AM forecast turning movements (source: GHD)

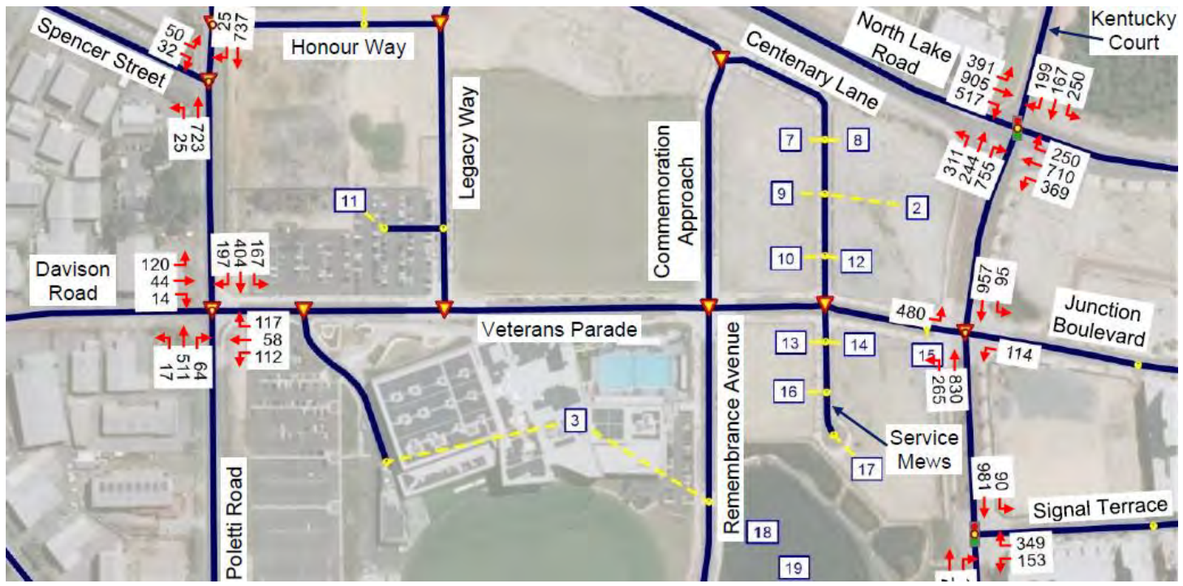

Figure 23 Cockburn Central West Structure Plan - 2031 PM forecast turning movements (source: GHD)

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These volumes also formed part of the forecast year assessment of this project to assist in determining distribution and also the proportion of forecast year volumes on the network at that intersection.

The update also provided some simplistic graphics which indicate the level of service (LOS) at each intersection in the Structure Plan area which have been used as a basis for comparison to the opening and full development scenarios completed for this site. The 2031 AM LOS per intersection is shown in Figure 24 and the PM peak hour is shown in Figure 25.

These technical assessments for development in the area show that there has been significant strategic assessment for forecast scenarios which have taken into account traffic generated by the subject site. The trip generation rates for residential development in the area are high compared to actual data collected for sites in this area and within other middle metropolitan activity centre sites, therefore the outcomes from the strategic planning exercises are considered conservative.

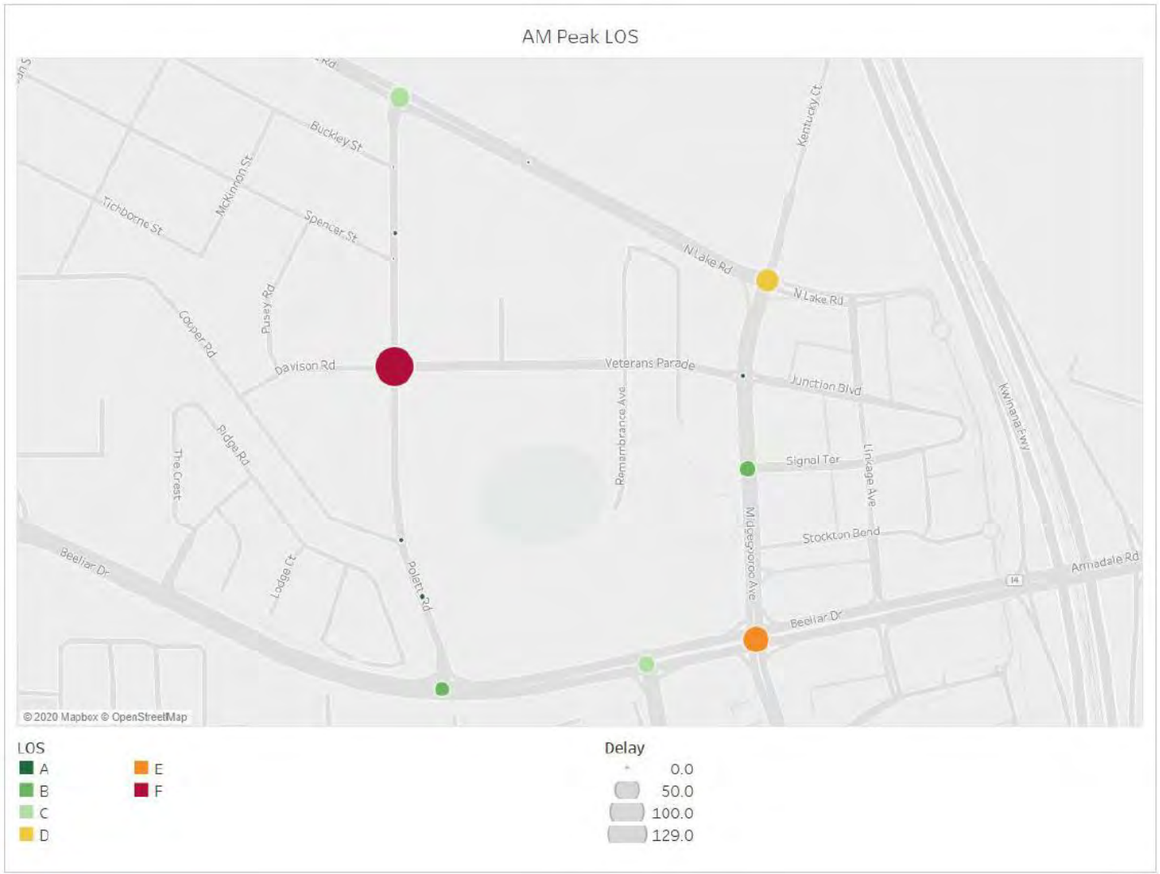

Figure 24 2031 AM LOS per intersection - Cockburn Central West (source: GHD)

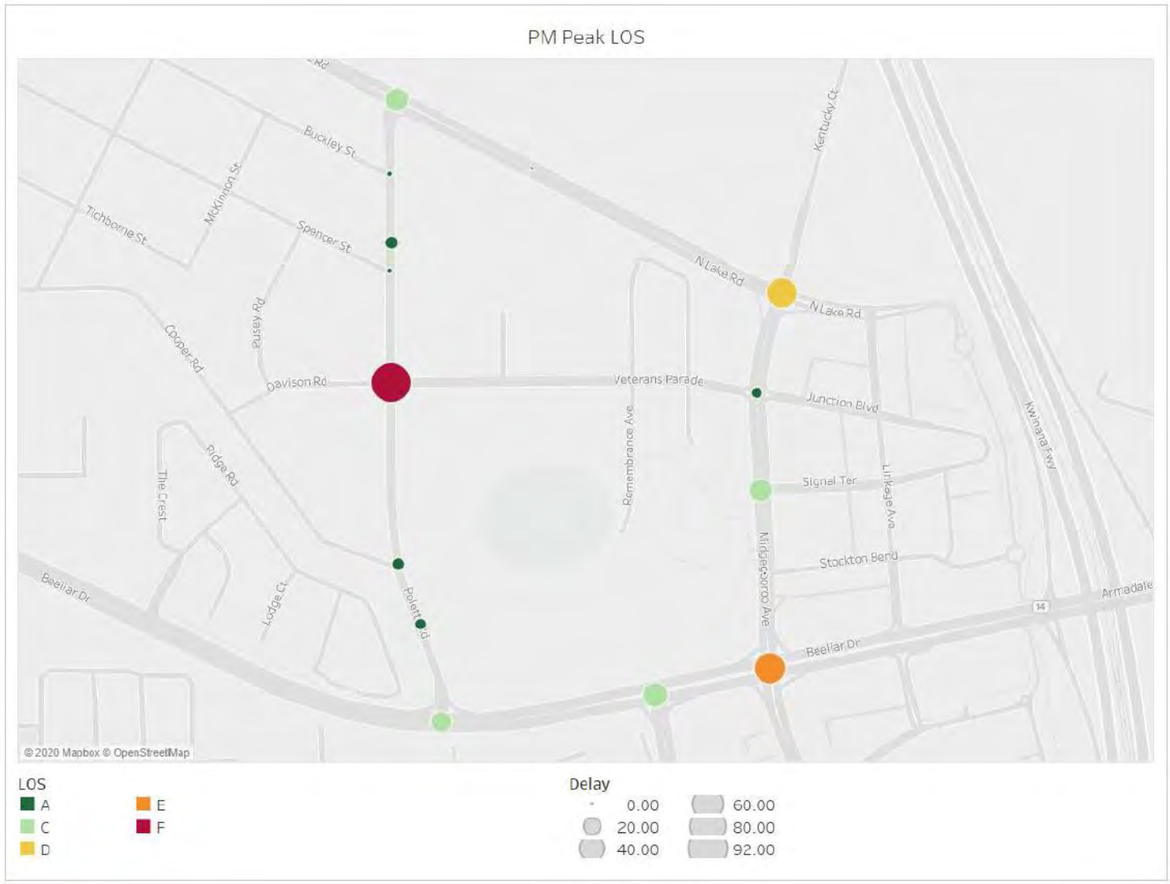

Figure 25 2031 PM LOS per intersection - Cockburn Central West (source: GHD)

5.4 Modelling Timeframes and Network

Intersection modelling has been undertaken in SIDRA Intersection 9.1 Plus version 9.1.1.200 for the following periods:

- AM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays at TCS 1091)
- PM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays at TCS 1091)
- AM Peak Hour Development Opening (determined by Traffic Map data assessment for all weekdays at TCS 1091)
- PM Peak Hour Development Opening (determined by Traffic Map data assessment for all weekdays at TCS 1091).

The layout of the intersection for TCS 1091 as modelled is shown in Figure 26. Assessment of volumetric data from TCS 1091 in 2023 confirmed the levels of background traffic. Within the base year, traffic attributed to the development crossover was based on volumes taken from average weekday movements.

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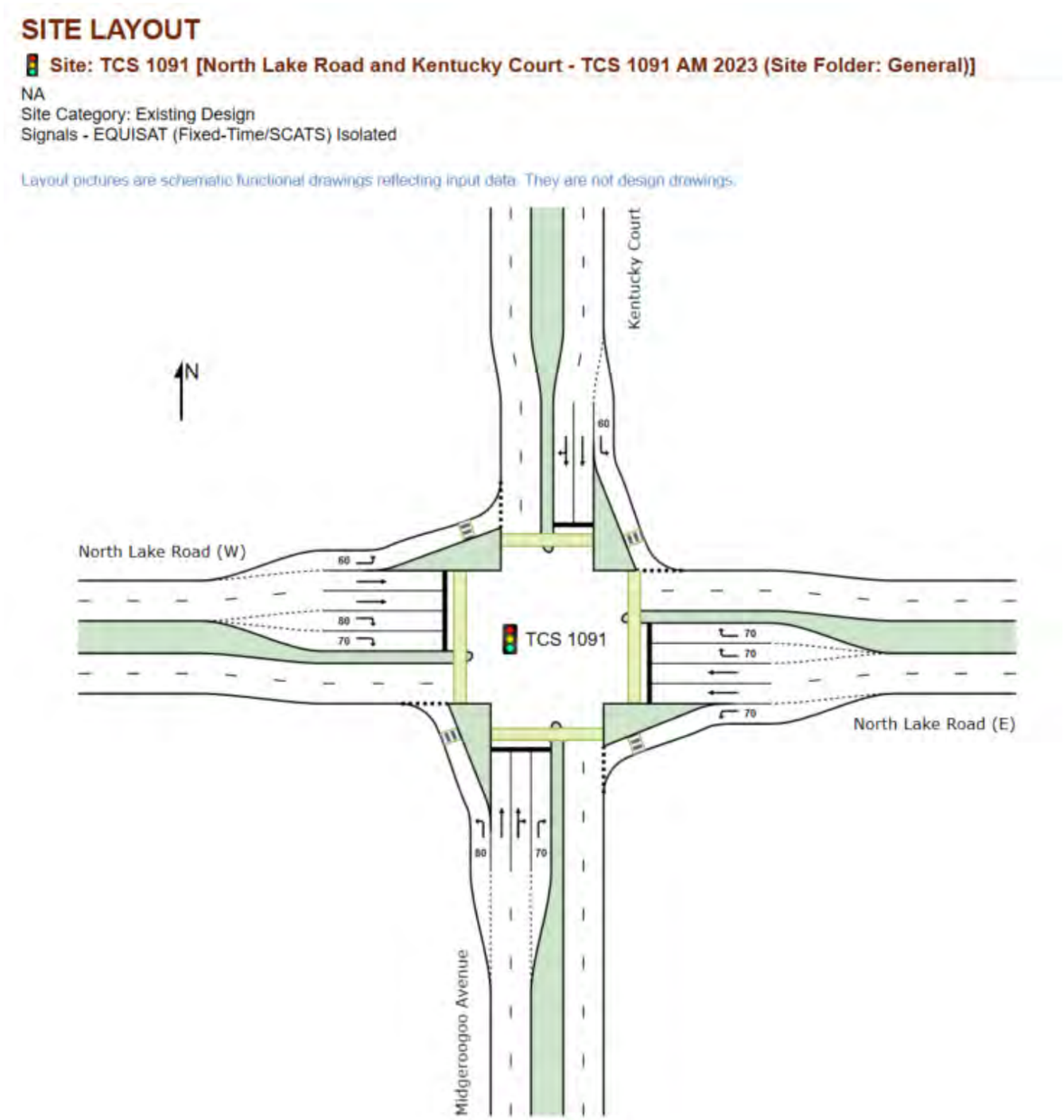

Figure 26 SIDRA intersection layout for TCS 1091 (source: SIDRA)

5.5 Trip Generation

The site will accommodate residential land uses only. A number of different sources were examined. The first were the generic trip rates within the WAPC Guidelines. These were rejected given they reflect very high rates associated with lower density residential development.

Rates from the Cockburn Central West Structure Plan and Main Roads WA Supplement to the Transport Impact Assessment Guidelines (May 2023) both suggested applying a rate of 0.5 vehicle trips per unit within peak hours. The consistency in these sources indicates that these are appropriate rates, however on-site surveys completed by Flyt within Cockburn Central and three other similar middle ring high density residential developments shows empirical data of a slightly lower rate.

The Main Roads WA rates within the May 2023 guidance are not considered appropriate because of the size of the developments surveyed to inform those rates and their location. Only one building was close to being considered of the same scale (comprised of 89 units) whilst most of the sites surveyed were between 4 to 7 dwellings – which is entirely non-reflective of the general travel patterns for a development that is proposed as part of this assessment. These rates are also much higher than those observed on site for residential land uses at Building 1.

The surveys completed by Flyt (for DoT and DPLH) showed peak hour levels of up to 0.34 vehicle trips per unit. To take a conservative approach, the highest recorded AM and PM values per in and out movement were used in this assessment, which took the per unit rate up to 0.37 vehicle trips per unit for both peak hours.

Rates used are shown in Table 2 with peak hour volumes for full build out of both Building 2 and 3 are shown in Table 3. Some rounding in calculations would have occurred however the impact of that on the assessment was negligible.

Table 2 Trip generation rates

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Bay)	0.06	0.31	0.37	0.23	0.14	0.37

Table 3 Traffic generation at full build of Buildings 2 and 3

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Bay)	10	54	64	40	24	64

The total forecast traffic generation for the site at full build out based on this assessment is 64 vehicle trips in the AM and PM peak hours. This represents a moderate impact on the network but because the traffic attributed to the site would all be utilising on access / egress point to the network, the impacts have been assessed through the SIDRA model.

The base year (2023) AM and PM peak hour traffic volumes for the network adjacent to the site are shown in Figure 27 and Figure 28. The volumes formed the basis for the modelling exercise and reflect an average weekday for the respective peak hours based on site observations completed in November 2023. These volumes reflect all existing traffic movements in the area.

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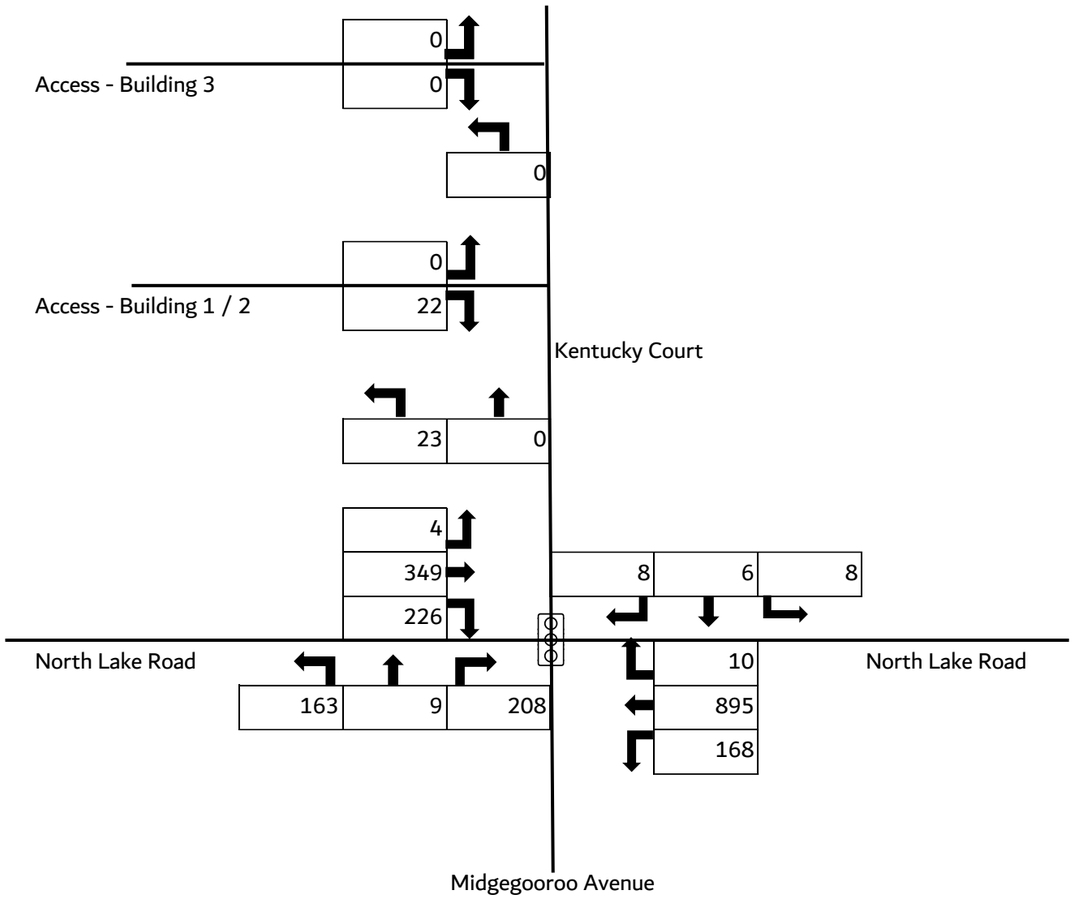

Figure 27 Traffic volumes - 2023 Base AM

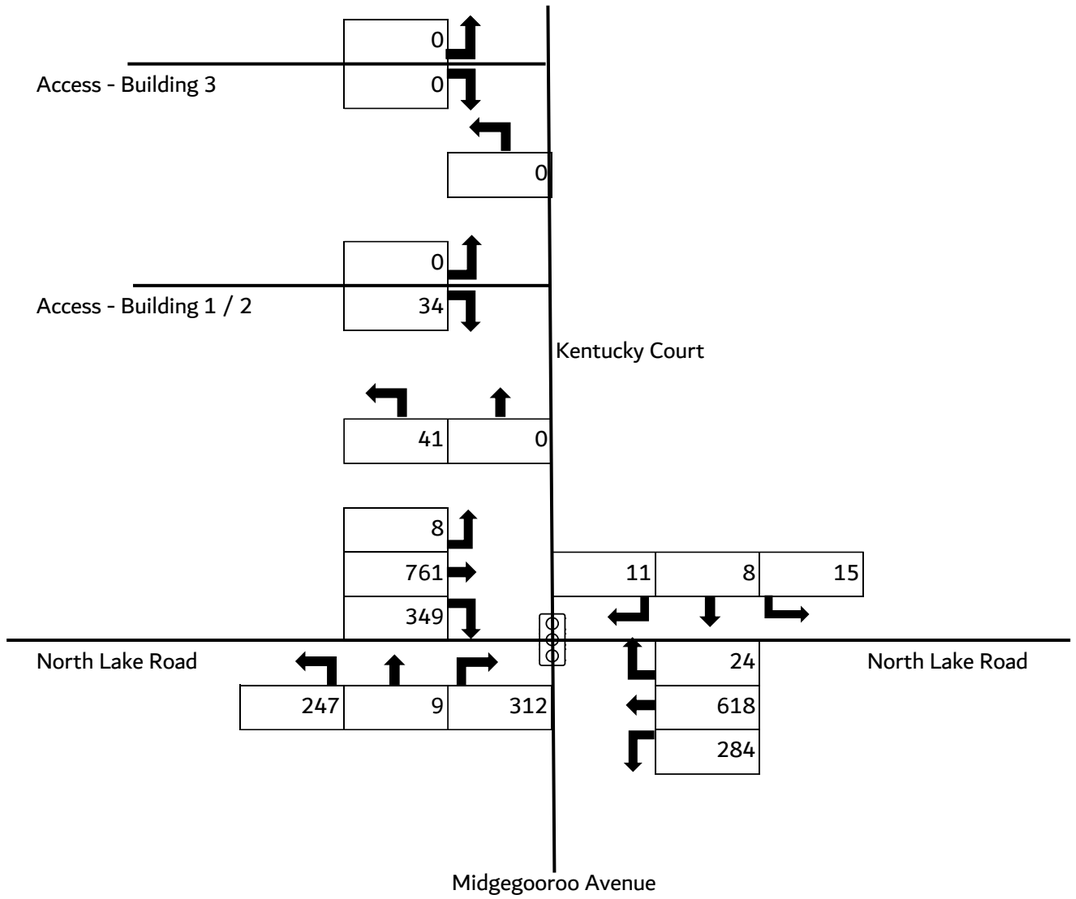

Figure 28 Traffic volumes - 2023 Base PM

The “opening year” forecast traffic volumes are shown in Figure 29 and Figure 30. These volumes reflect a scenario three years after the base network with a 3% background growth in traffic attributed to the network. The traffic volumes attributed to the full build scenario, of both buildings fully constructed and operational, and both crossovers in operation, are set out in Figure 31 and Figure 32. These scenarios also include a further 3% growth in background traffic volumes.

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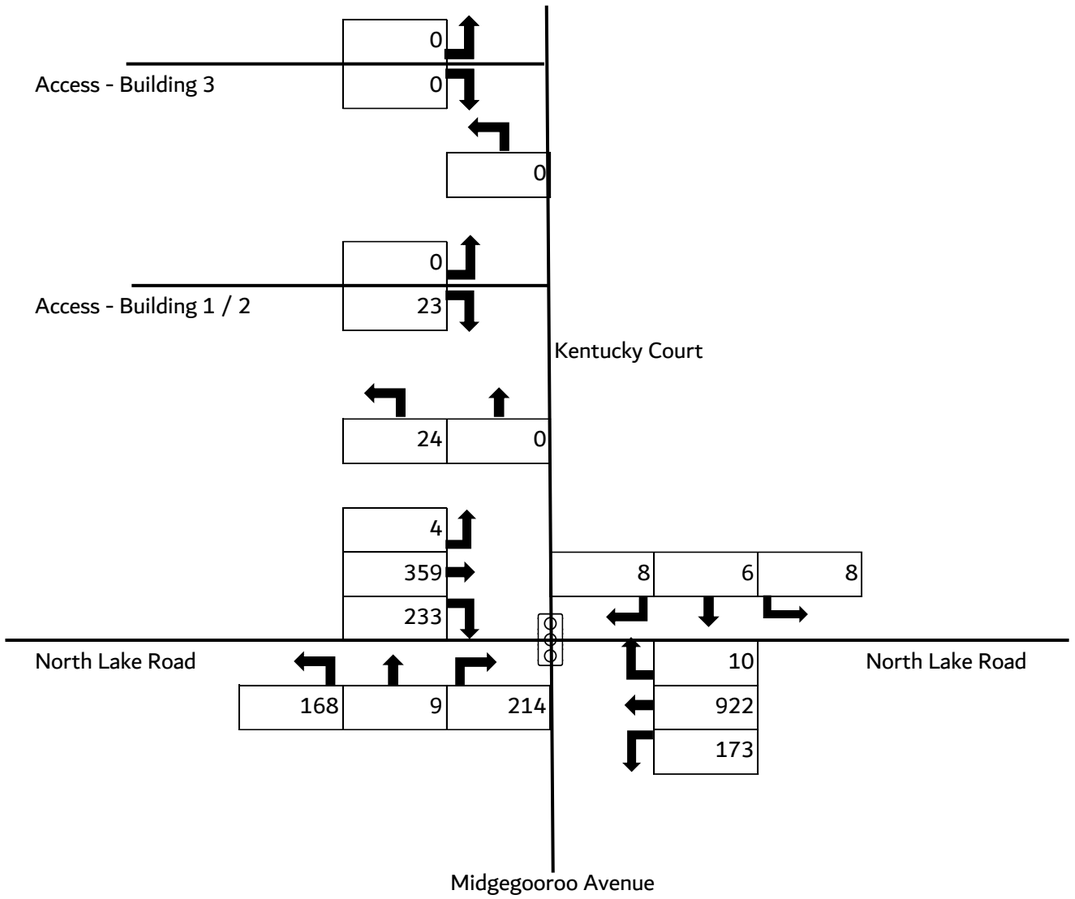

Figure 29 Traffic volumes - 2023 Opening AM

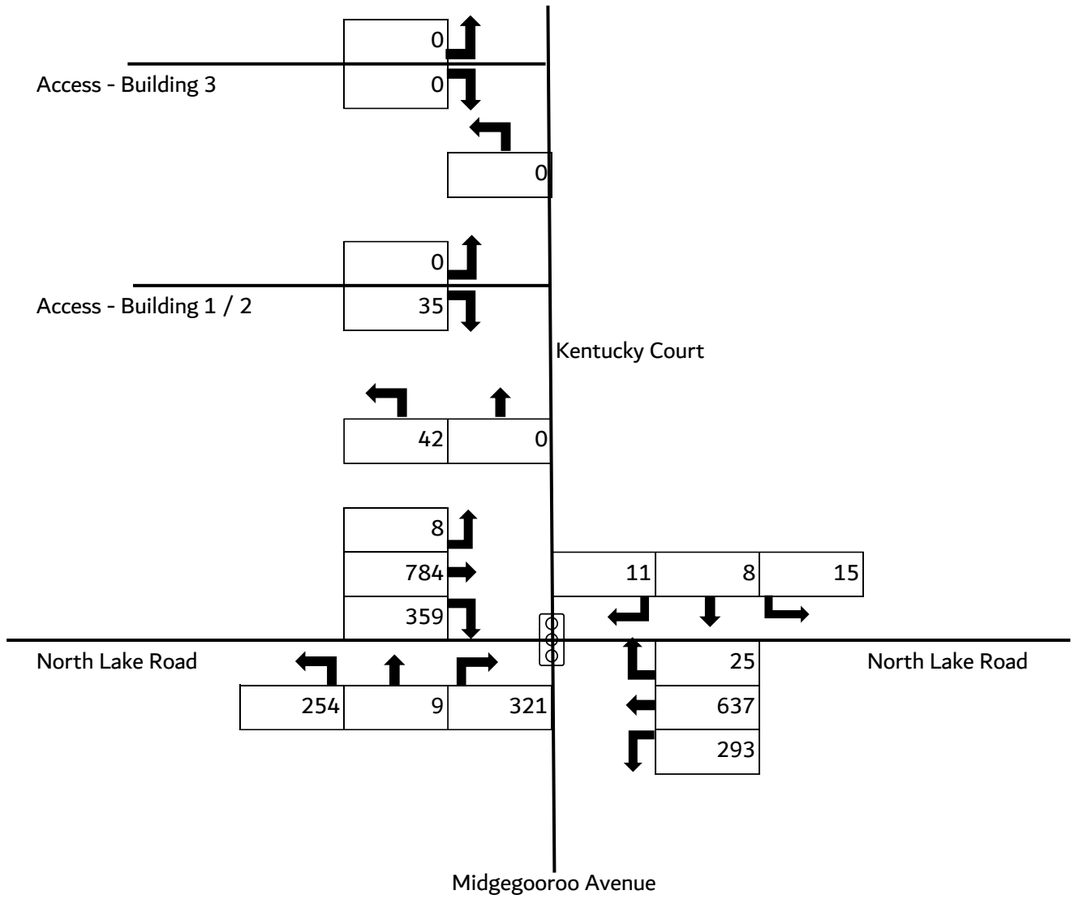

Figure 30 Traffic volumes - 2023 Opening PM

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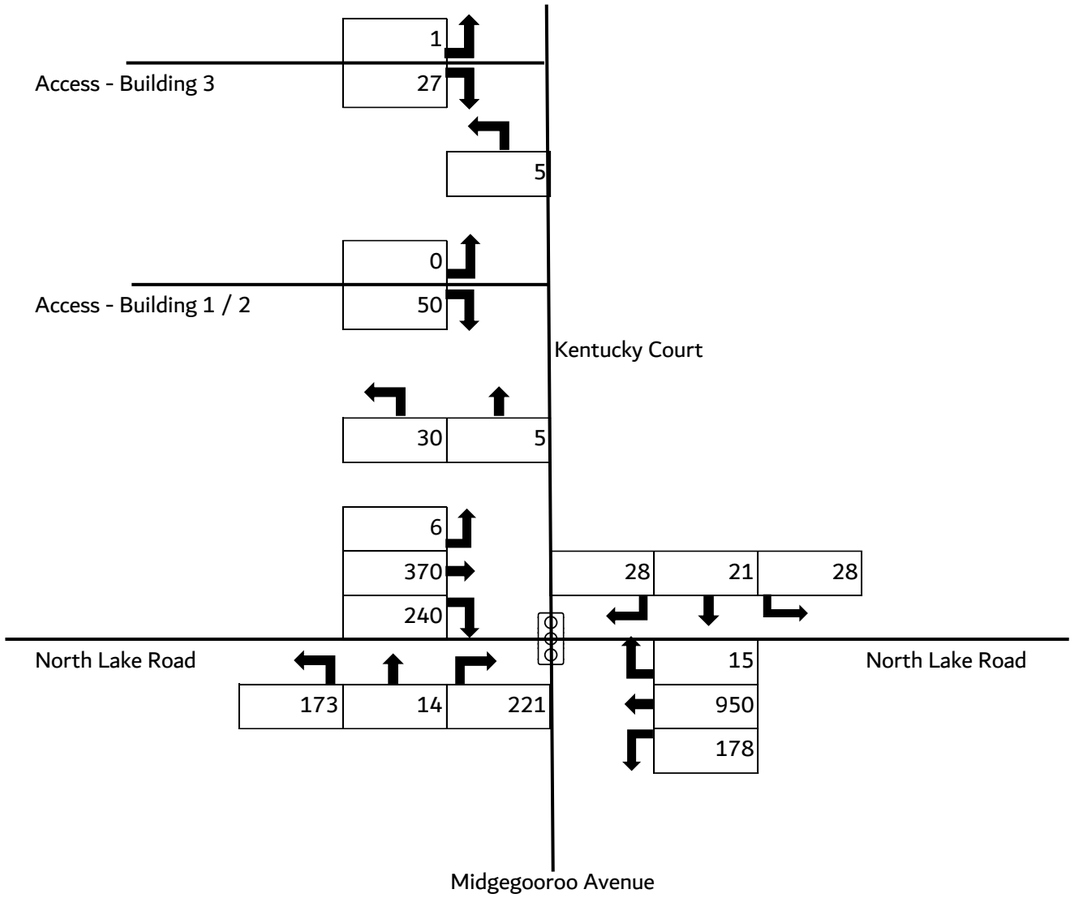

Figure 31 Traffic volumes - Full build AM

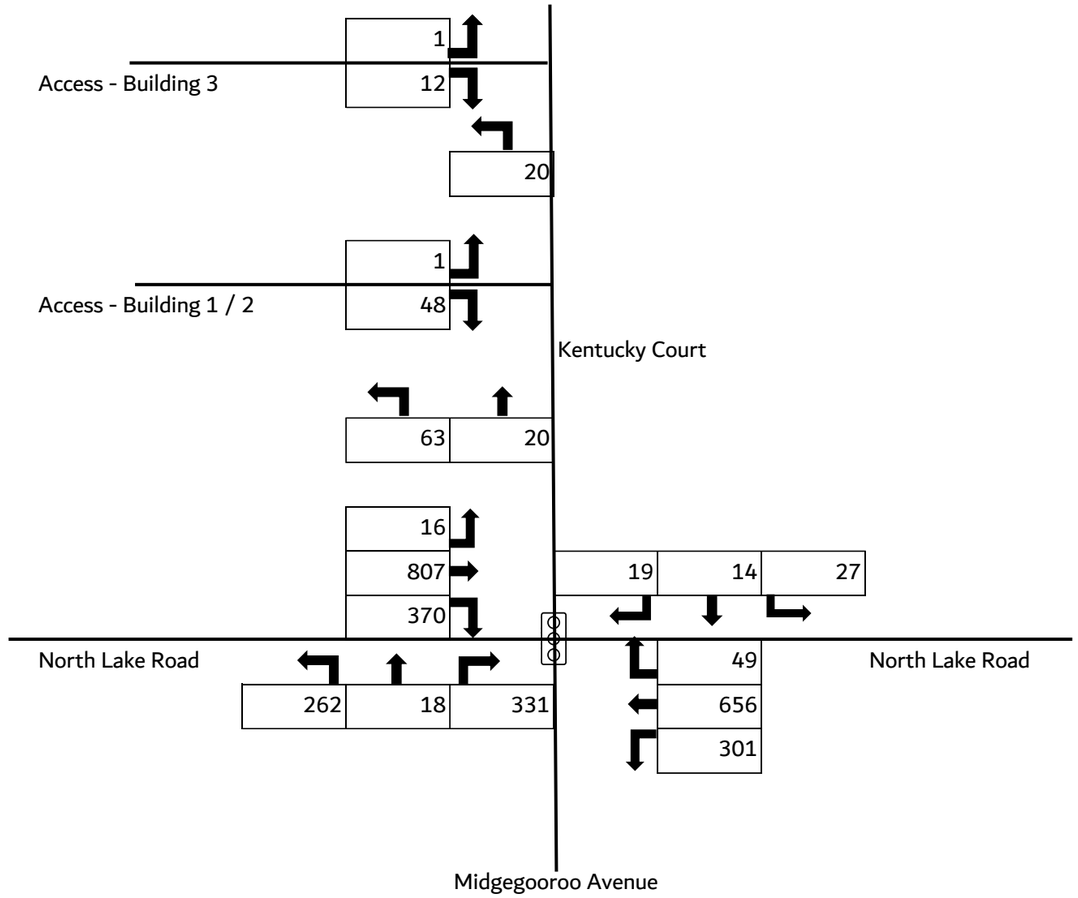

Figure 32 Traffic volumes - Full build PM

5.6 Comparison – Full Build and Cockburn Central West 2031

To understand the relationship between the local and more strategic modelling, a comparison exercise was undertaken between the full build traffic volumes for the proposed development and the 2031 strategic modelling review completed for the Cockburn Central West Structure Plan set out in section 5.3. The outputs in Figure 33 and Figure 34 reflect the differences between the two modelling exercises and shows the percentage of traffic within the full build scenarios compared to the Cockburn Central West modelling.

Clearly, the forecast volumes on Kentucky Court are much lower in the project models as the increase in volumes is almost entirely dependent on the development of the structure plan area to the north. The Cockburn Central West modelling appears to have underestimated the westbound flows along North Lake Road which would be higher owing to inducing traffic through from Armadale Road. Given the outcomes of the strategic modelling exercise, the proposed development contributes a very low level of traffic on the network and has commensurate outcomes, as discussed in the following section.

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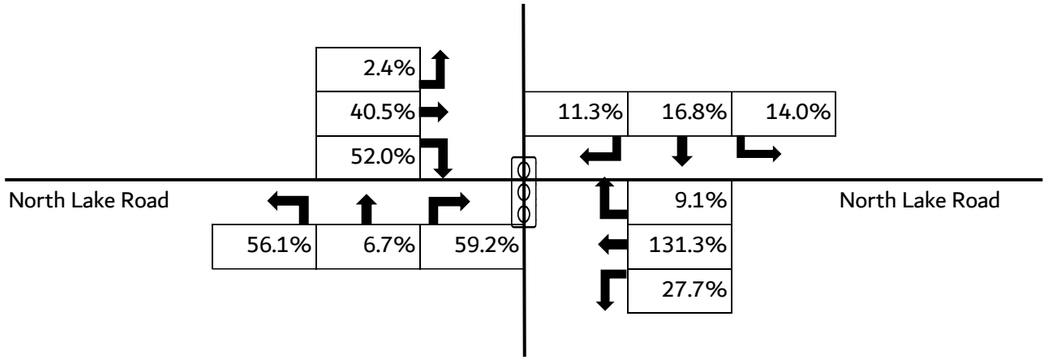

Figure 33 Comparison of turning movements - AM peak hour full build and Cockburn Central West 2031 scenarios

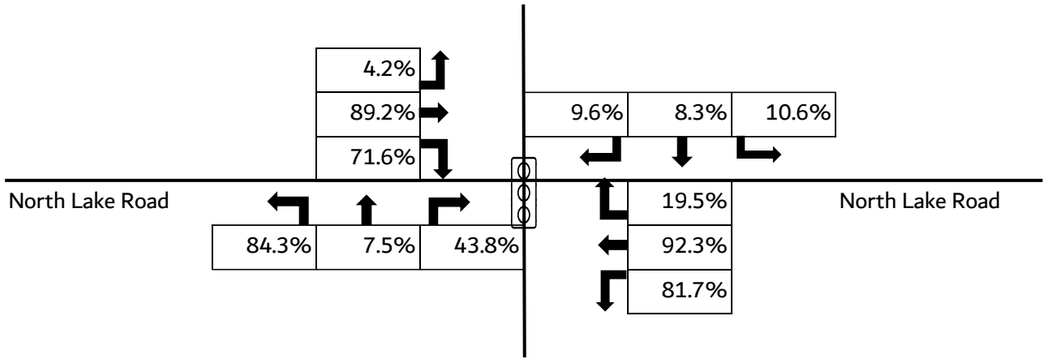

Figure 34 Comparison of turning movements - PM peak hour full build and Cockburn Central West 2031 scenarios

5.7 Model Outcomes – Base Year

The base year AM and PM peak hours were modelled as a network alongside the existing site crossover on Kentucky Court. The full results of the modelling are contained within Appendix A, including the movement summary for TCS 1091. The headline Level of Service (LOS) outputs for lanes are shown in Figure 35 for the AM and PM peaks, with the overall intersection performing at an LOS C for AM peak hour and LOS B for the PM peak hour.

These results reflect the observed operation of the network during both peak periods. The network caters for a high volume of traffic and the flows are largely unconstrained. There are delays experienced at the intersection which is a product of a four-way intersection being signalised. The movements from Kentucky Court south were limited, with the SCATS signal timing data reflecting a low level of the phase controlling that arm being called.

The delays for vehicles coming out of Kentucky Court are considered acceptable given the low volumes on that arm and the low frequency of that phase being called.

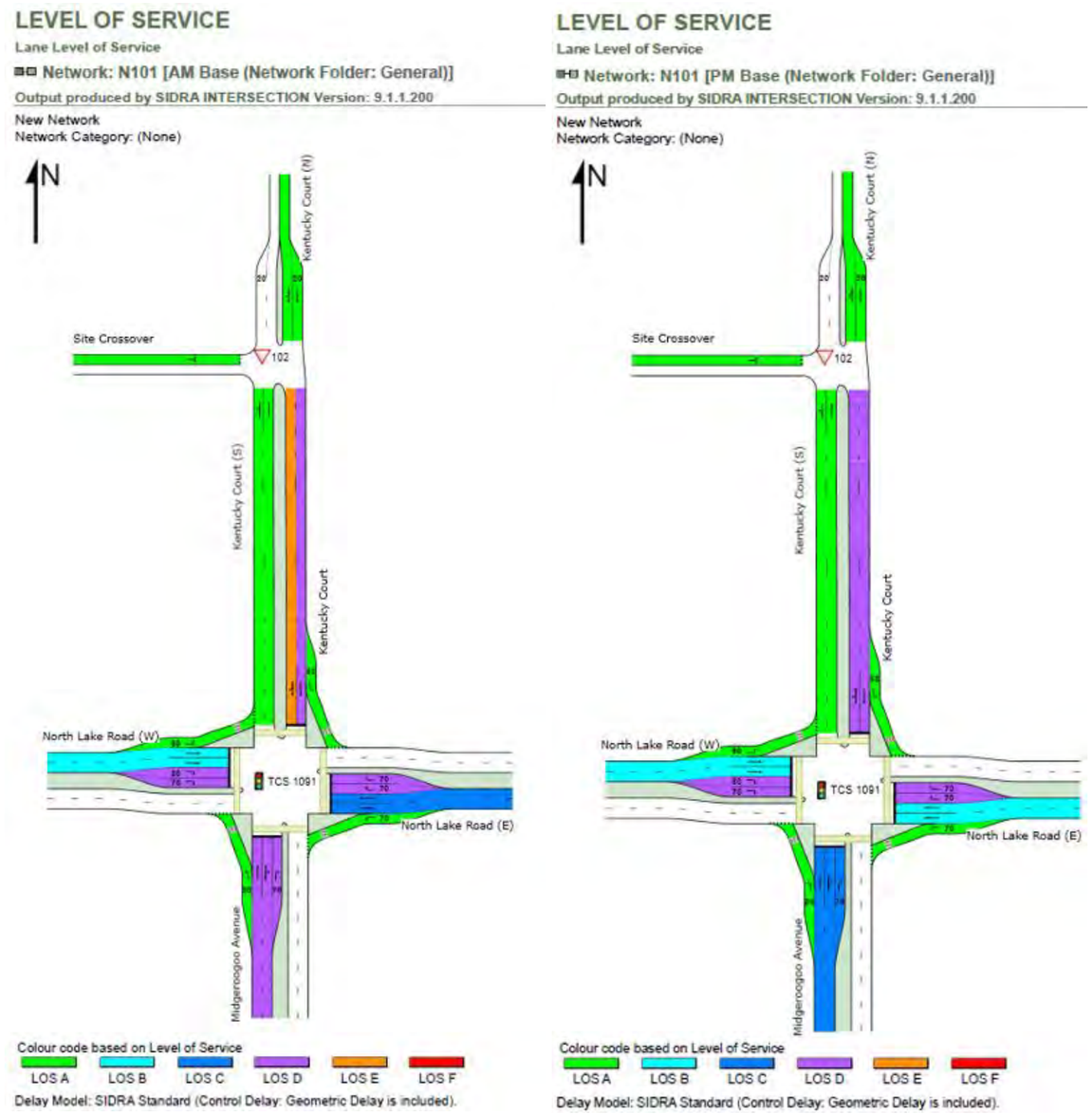

Figure 35 Level of Service - base year AM and PM models

5.8 Model Outcomes – Opening Year

The opening year scenario was modelled in a network and included the demands from the base year models alongside growth of 3% on all turning movements in the network. The crossover point for the development has been included within the network model to reflect existing flows into and out of the site from Building 1. As shown in Figure 36, all intersections continue to display high levels

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of performance which replicates observed operation of the network. These model results indicate that the network is continuing to perform at similar levels to the base year network and within acceptable traffic engineering parameters.

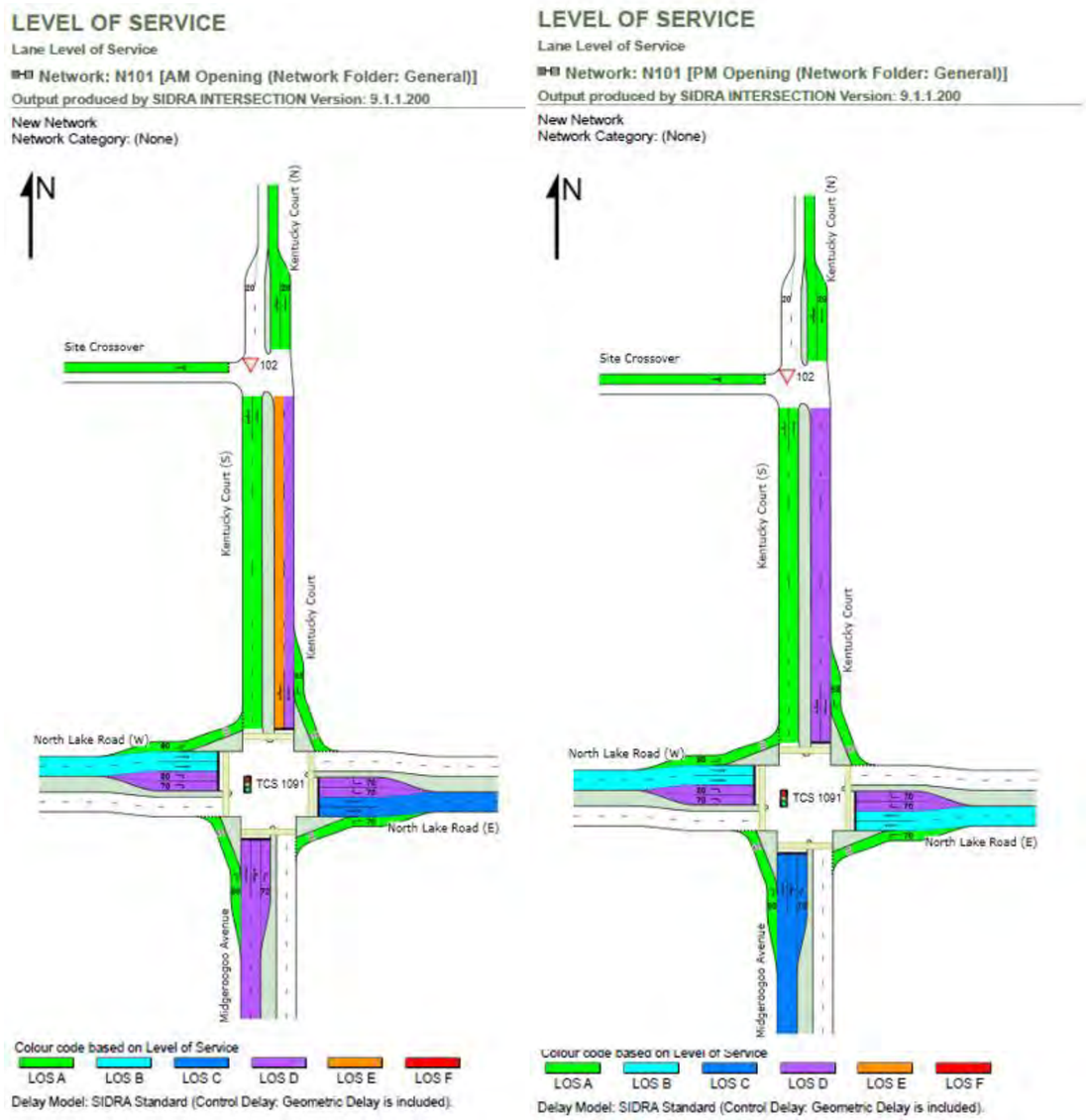

Figure 36 Level of Service – opening year AM and PM models

5.9 Model Outcomes – Full Build

The full model build includes all of the demands from both Building 2 and 3, with LOS results shown in Figure 37. The new access street intersection was not modelled as it is effectively a left-in, right-out with no conflicting turns (or a 90 degree bend in a road) but the demands from the new street were loaded on to Kentucky Court. Even with the full build traffic included and a further 3% growth rate on background traffic included on the opening year scenario, there was no deterioration or change in the headline performance of the network and intersection.

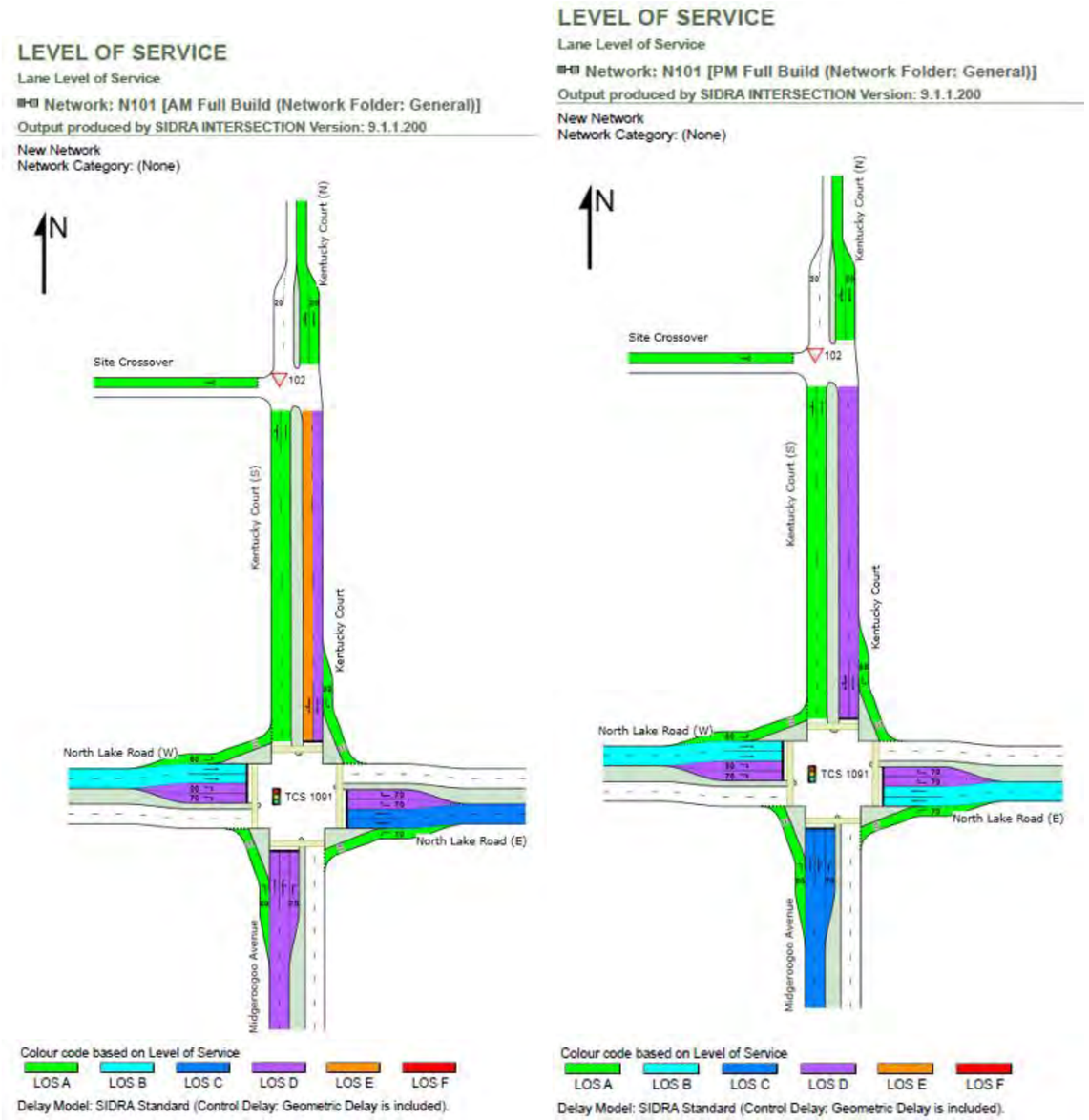

Figure 37 Level of Service – full development build AM and PM models

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5.10 Model Outcomes

The modelling approach has examined base year, opening year and a full build scenario as well as comment on the outcomes of strategic modelling undertaken for the area prior to the subject development application. Additional traffic trips associated with the development will not result in any issues that would require any additional capacity or reconfiguration of intersections at existing locations.

The additional volumes associated with the proposed development would be unlikely to result in any deterioration in network performance for nearby signalised intersections, nor cause any safety issues associated with additional traffic movements in the area. The performance of the signalised intersection would also be monitored by Main Roads WA given its proximity to the Kwinana Freeway interchange. It would also be expected that any updates to the Muriel Court Structure Plan area would be subject to revised modelling and assessment which would take into account the traffic generated from this site.

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6. PEDESTRIAN ACCESS AND AMENITY

6.1 Existing Pedestrian Network

The site has a high level of pedestrian connectivity with paths on both sides of Kentucky Court. Adjacent to the site, paths are generally 2 – 3.5m wide and in excellent condition with few crossovers (due to existing access strategy for North Lake Road). Internal spaces within the development site have been configured to provide connectivity with the external network. Landscaping and street trees have been provided along Kentucky Court but these features are relatively new and will take some time to take effect.

The path network in the area of the existing crossover is shown in Figure 38, with the 2m wide path and paved kerb abutment extending north of the site towards the proposed new street.

Figure 38 Kentucky Court frontage and footpath (source: Flyt)

The 10 minute walking catchment from the front entrance of the development site is shown in Figure 39, where walking is shown to be an efficient mode of transport with a 360° catchment as a result of the major road network and connecting paths in the immediate area. This accessibility will improve as the Muriel Court Structure Plan evolves. The catchment extends through to large areas of Central Cockburn, as well as Cockburn Central Train Station and access to a range of bus routes. The catchment connects into open space areas including the adjacent ARC facility and associated park areas within Cockburn Central area.

The walking catchment also covers a wide range of commercial, retail, employment, educational, entertainment and public use land uses.

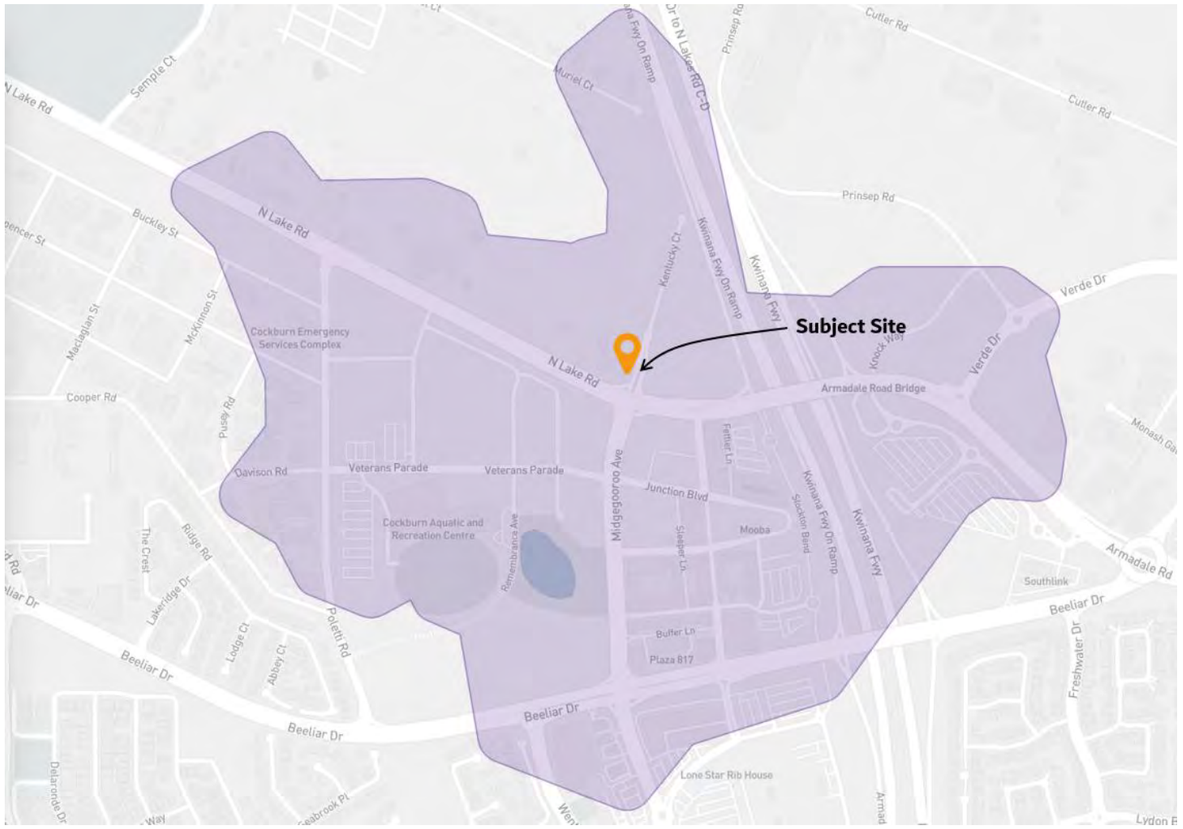

Figure 39 15 minute walking catchment (source: Planwisely)

The Department of Planning, Lands and Heritage's (DPLH) Urban Tree Canopy Dashboard provides an interactive snapshot of the extent of tree canopy coverage across the Perth and Peel regions. The urban tree canopy is an essential part of creating healthy, liveable neighbourhoods, where more dense and mature tree canopies can support active travel along walking and cycling paths.

As expected, given the highly urbanised nature of Central Cockburn, tree canopy is restricted largely to street corridors and some open space area around the Muriel Court Structure Plan area which is yet to be developed. The overall canopy mapping, shown in Figure 40, shows that the area to the north and west of the site is still well vegetated whilst street trees have yet to take effect in Central Cockburn. The shade profile will change in the Muriel Court area as vegetation is cleared wholesale to accommodate development.

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Figure 40 Urban tree canopy (source: Department of Planning, Lands and Heritage)

6.2 Proposed Pedestrian Facilities

Pedestrian access to the site will be catered for access on to Kentucky Court, as shown from the Landscape Plan in Figure 41. This will allow for lobby access and an entrance point to both Building 2 and 3. Access from Kentucky Court will be via a stair well or pedestrian lift as set out in Figure 42. The elevated bridge entry path will allow for residents and visitors to access lobby areas to the north and south.

It is proposed to divert the existing path along Kentucky Court to cater for on-street bays as well as street tree wells. The existing path is proposed to extend along the northern boundary of the site along the new street proposed.

Figure 41 Ground floor and canopy plan (source: Plan E)

Figure 42 Level 1 access concept (source: Plan E)

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7. BICYCLE ACCESS AND AMENITY

7.1 Existing Bicycle Network

All mapping for the existing bicycle network within the area around the development is out of date, with mapping from DoT, CoC Your Move maps, Google Streetmap and Open Source Mapping used in Planwisely all not updated to reflect changes that have occurred with the opening of North Lake Road and alterations to the path network.

Out of the resources examined, the heatmapping from Strava provides an indication of popular or well used routes. The heatmap of bicycle activity in the vicinity of the subject site is shown in Figure 43. This is produced by cyclists tracking their trips and shows the significant volumes of bicycle riders using the Strava software to track their rides along the PSP network, which is prominent, as is the North Lake Road corridor which connects to Armadale Road. The existing 20 minute cycling catchment from t he development site is shown in Figure 44.

There are publicly available bicycle racks within Building 1 of the development site.

Figure 43 Strava heatmap for cycling activity (source: Strava.com)

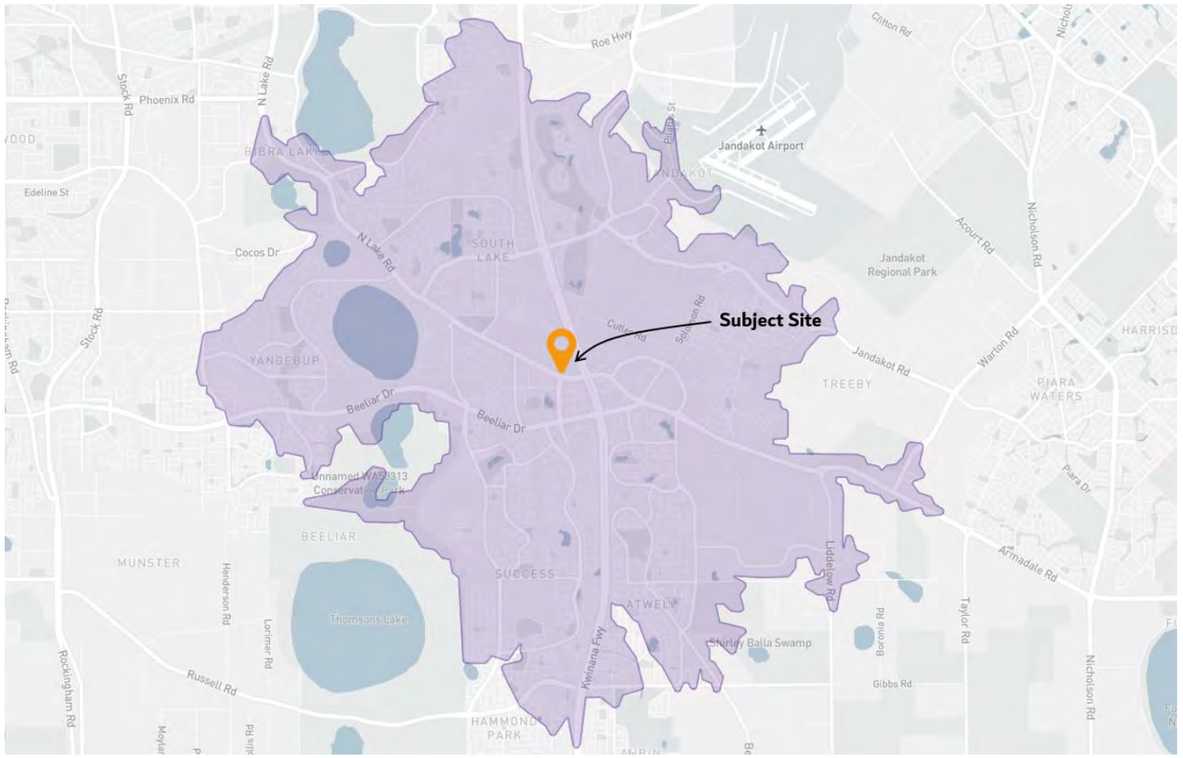

Figure 44 Existing 20 minute cycling catchment (source: Planwisely)

7.2 Proposed Cycling Network

Accessibility to the overall strategic cycle network (the Long Term Cycle Network (LTCN)) is evident as shown through the mapping of the future strategic network shown in Figure 45. This includes strategic level connections along both sides of the Kwinana Freeway reserve and North Lake Road. The site has excellent access to the strategic cycling network.

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Figure 45 Long Term Cycle Network (source: Planwisely)

Figure 46 On site cycle storage, workshop location and access (source: Colliere Architects)

7.3 Development Proposals Bicycle Network and Facilities

The centralised location of the development site, and the overall objectives of the project, lends itself to having a high level of attractiveness for people cycling for a range of reasons. Cycling trips are expected to be generated by residents commuting to work, recreational trips as well as for retail, commercial, educational and leisure purposes.

The proposed provision of bicycle storage on site is via a storage facility for 51 bicycles along the southern wall of Building 1, as shown in Figure 46. Access to the shelter is via a path through the ground level area or via the aisle provided for parking. The level of provision for the full build is assessed in the Planning Report for the proposed development against the outcomes provisions and design guidance for Movement and Access in SPP 7.3.

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8. PUBLIC TRANSPORT ACCESS

8.1 Existing Services

The subject site is located within close proximity to frequent and regular public transport services via Cockburn Central Station. This will only increase with the opening of the Thornlie – Cockburn Line. The front door of the development will be less then 550m to the Smartrider tag on machines at Cockburn Central Station. Proximity of the site to excellent public transport services is shown in Figure 47, with the nearest bus stops catering for the 515 and 520 bus services.

Access to the bus stops is via existing path network, with Cockburn Central Station providing a terminating or transfer point for 14 bus routes.

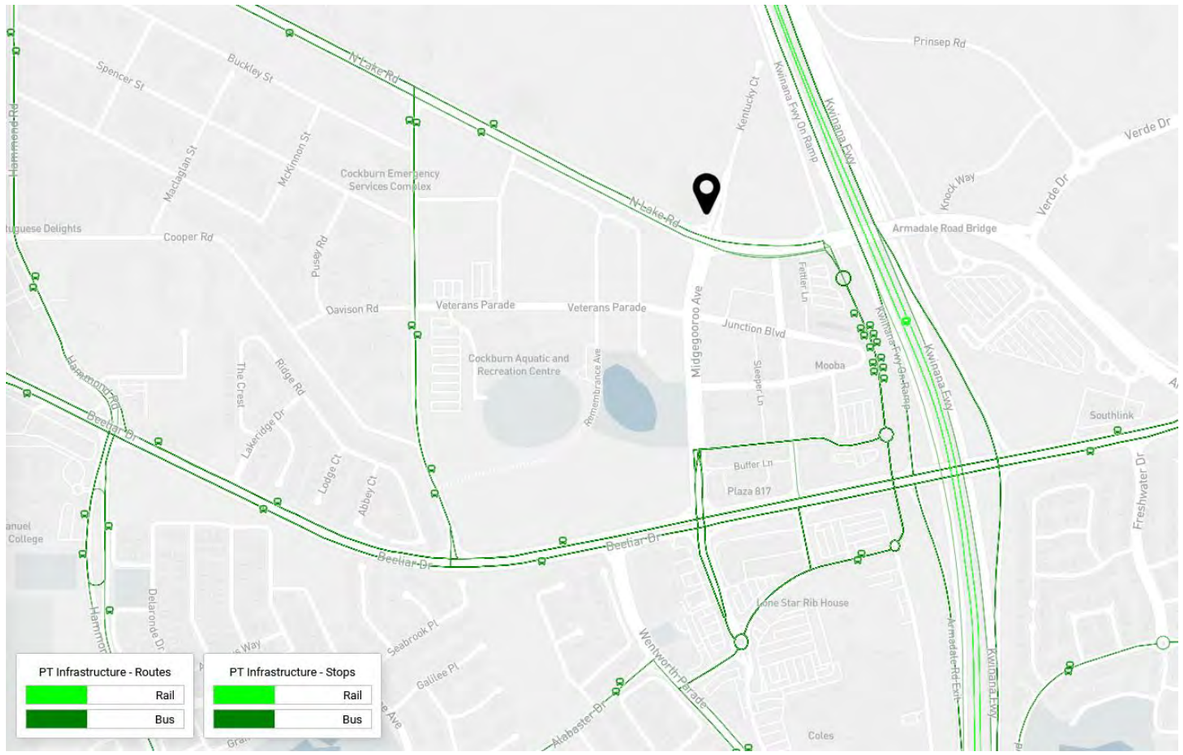

Figure 47 Public transport access (source: Transperth)

To illustrate the central location of the site relative to public transport accessibility, the 30 minute average weekday catchment was examined using Planwisely. The catchment, as shown in Figure 48, extends from Leederville Station to the north along the Joondalup Line to Rockingham Station to the south along the Mandurah Line. Connecting bus and train services extend as far to the west as Coogee and to a number of suburban area towards the east.

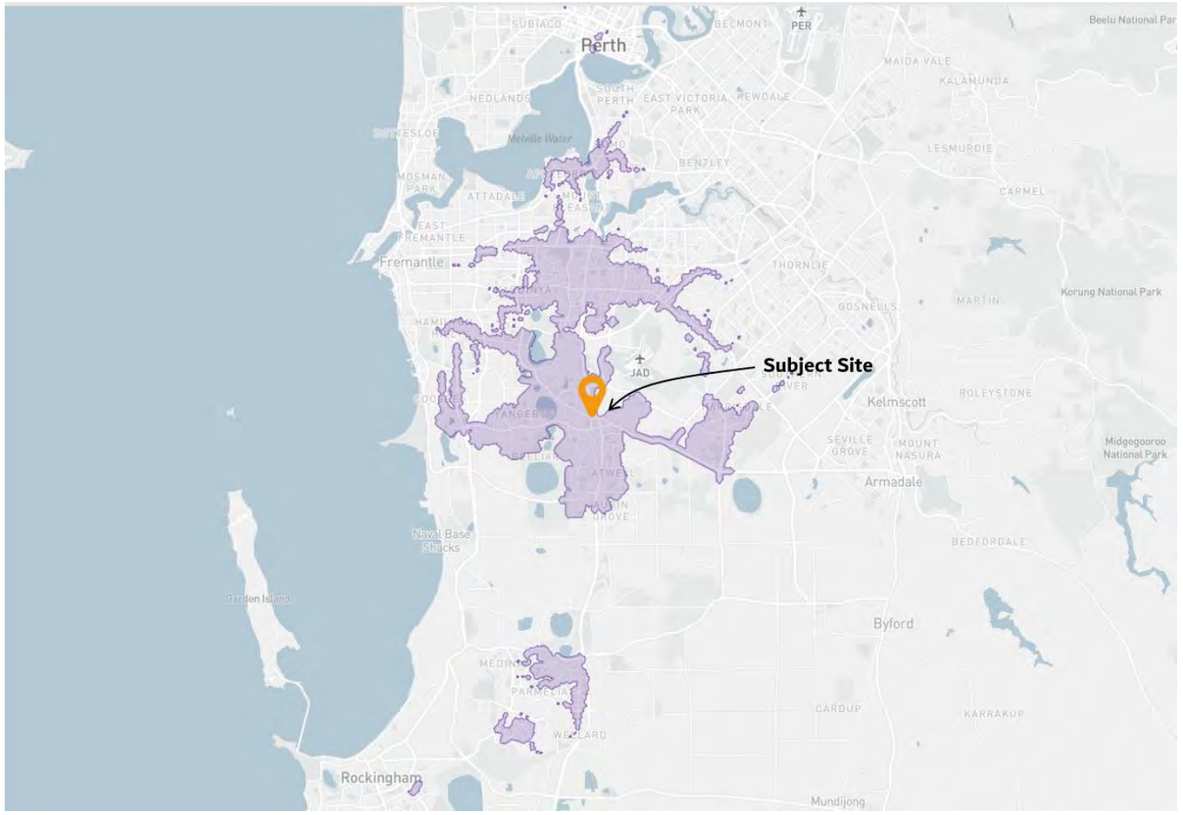

Figure 48 30 minute average weekday public transport accessibility (source: Planwisely)

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9. SITE SPECIFIC ISSUES

9.1 Road Safety

The Main Roads WA Crash Reporting system was interrogated for data relating to any road safety or crash issues in the proximity of the site. This can highlight pre-existing or potential issues which need to be addressed specific to the development site. The period since the opening of North Lake Road over the Freeway was examined, given that this is a substantial change to the network and incidents prior to that time are historical. The outputs in the vicinity of the site are shown in Figure 49.

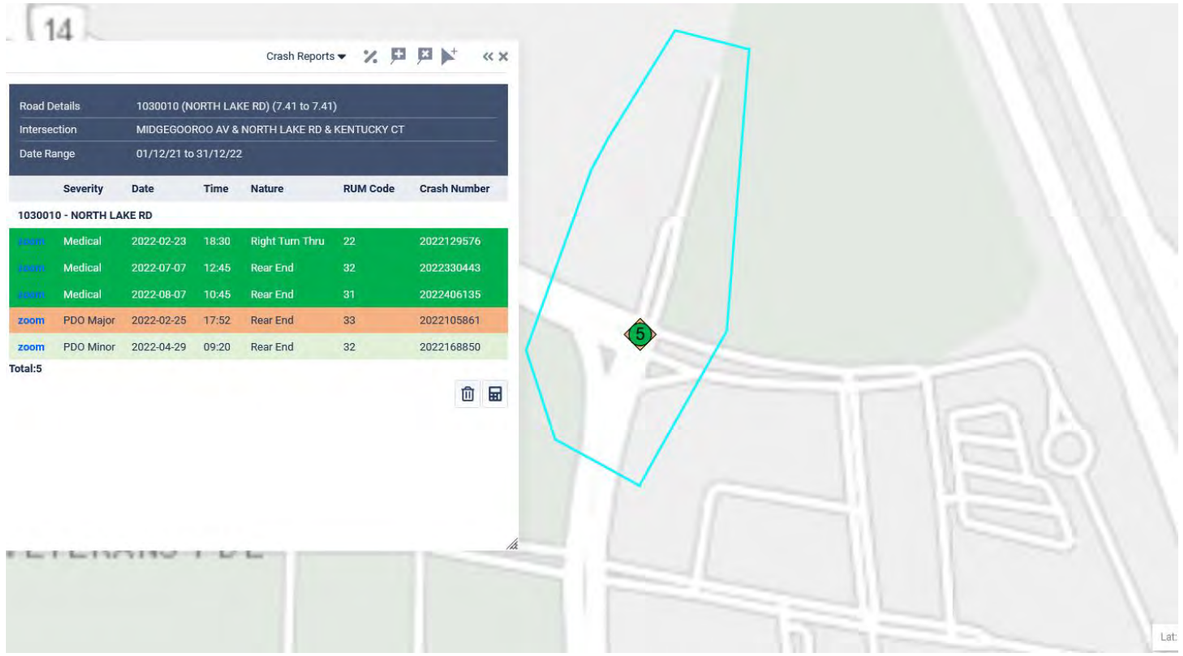

Figure 49 Crash reporting information for area since North Lake Road opening (source: Main Roads WA)

There were five crashes at the intersection of North Lake Road and Kentucky Court / Midgegooroo Avenue in the year since opening between 2021 and 2022, three of which were medical accidents and another being a major accident. The accidents were either rear end collisions caused by driver inattention or road rage, with a single accident being a right hand turn collision which can be attributed to a driver running a red light. The expectation would be, with a significant increase in traffic planned for and encouraged for the North Lake Road corridor, that this type of accident situation and frequency would increase given the recorded crashes relate to driver behaviour.

There was a single recorded incident for the length of Kentucky Court over the past five years which was a driver reversing into a tree on the footpath.

The volume of traffic generated by the site, given it is low in the overall context of the network, would only contribute to any increased accident risk minimally. Should the Muriel Court Structure Plan area see an elevated level of delivery, some measures around the site access may be considered by the CoC in the future including street markings, barriers and Keep Clear zones. Given there is an alternative access point to the north of the site that will access a new intersection, some drivers entering or exiting the site may prefer that location for turning movements.

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10. SUMMARY

10.1 Proposed Development and Impacts

This Transport Impact Statement (TIS) has been prepared by Flyt in support of the Development Application (DA) submitted for a proposed development at 884 – 888 North Lake Road in Cockburn Centre. This development focuses on the delivery of two separate residential buildings comprising 173 total units. The proposed development will be delivered in two stages but this assessment examined the outcomes and impacts of the total site development.

The subject site is located on the corner of North Lake Road and Kentucky Court in Central Cockburn and as indicated by the South West Aboriginal Land and Sea Council website; the development lot subject to this assessment sits within the Whadjuk Region.

The site is zoned Development Zone as set out in the City of Cockburn (CoC) online mapping tool and is covered by the Muriel Court Structure Plan for R160 Residential Coding. The site is surrounded by vacant land to the east, north and west and the Cockburn Central West development project of DevelopmentWA to the south.

The proposed development is comprised of:

- 173 residential dwellings across two separate buildings
- On-site amenities
- 51 bicycle parking spaces within secure facilities including workshops
- On-site parking comprised of 173 residential bays accessed via an existing crossover off Kentucky Court and a new proposed crossover via an unnamed carriageway to the north of the development site.
- 18 visitor bays, all accessed off Kentucky Court and external to a secure gate provided as part of Stage 2, Building 2
- 18 motorcycle bays
- Servicing area also accessed from the existing carriageway off Kentucky Court
- Pedestrian connection to Kentucky Court
- New access crossover and street connection to the north of the site.

The site has excellent transport accessibility for all modes, with pedestrian access via the Kentucky Court frontage. The site has easy access to either high frequency bus services or train services, with the front door of the site being less than 550m from Cockburn Central Station. The street network has a well defined pedestrian network, with wide footpaths on both sides of Kentucky Court and connections through to the Activity Centre. Access to the Principal Shared Path network for cycling is located at the end of Kentucky Court.

The development of the site proposes to retain the existing crossover location along Kentucky Court. This crossover will also continue to provide access to Stage 1 of the Harmony development The existing crossover on Kentucky Court will allow for all vehicle movements associated with Stage 2, Building 2 of the Harmony Development, including service movements. For Stage 2, Building 3 of the proposed development, access is proposed by a new crossover accessed from a new street constructed to the north of the proposed development. This will allow for a spreading of access trips and refinement to servicing arrangements.

The parking ratio for residential units is one per unit, with a total of 25 visitor bays / on-street embayments proposed to cater for visitor trips by vehicle.

The existing site is vacant; therefore any form of permitted development would result in the generation of additional traffic on the network. Any impact on the performance of adjoining intersections and roads would primarily be due to traffic associated with this proposed development. The level of traffic generated by the proposed development is considered moderate and previous Structure Plan assessment were completed on the basis of this site being developed.

Even though the level of development is determined to have a moderate impact, an assessment of the network and the traffic generated by the development was undertaken using SIDRA. This assessment looked at base year conditions (2023), an opening year scenario (3 years) and full build (further 3 years).

The assessment of the site crossover and adjoining TCS 1091 signalised intersection showed that the existing and future networks operate well within accepted traffic engineering parameters. There were no specific road safety issues associated with the immediate network that would be compounded by the development of this site.

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APPENDIX A

SIDRA Outputs

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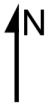
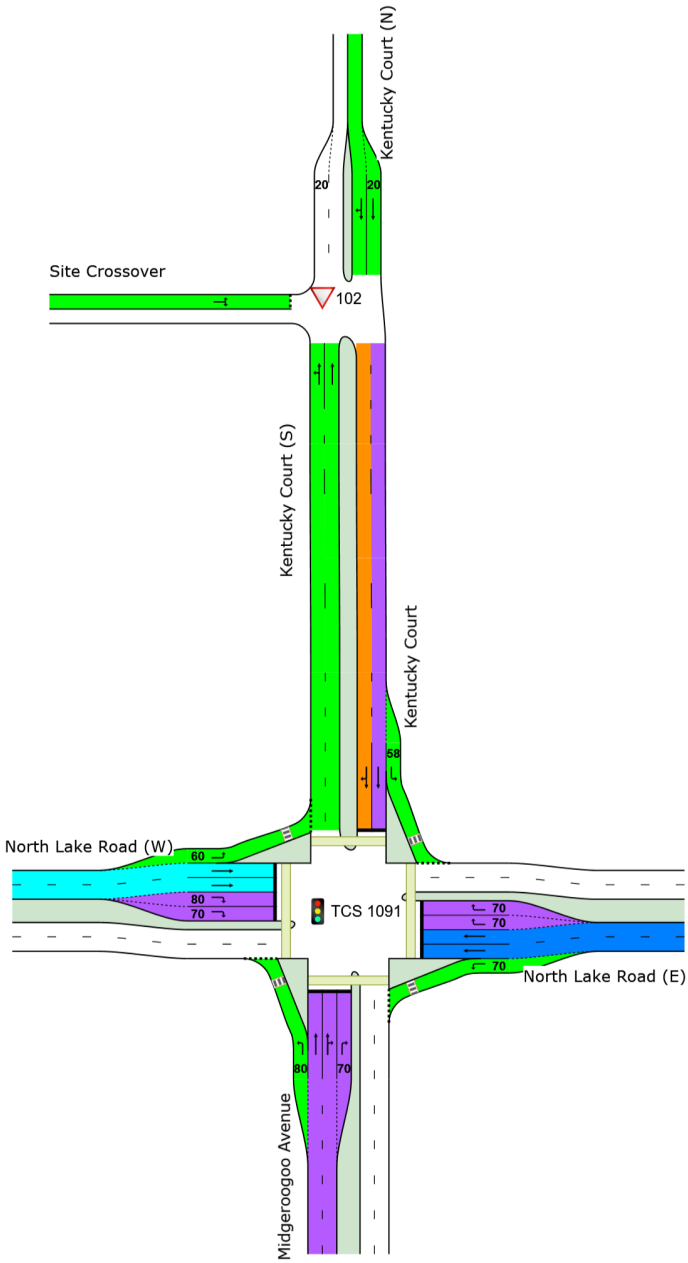
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Base (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

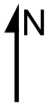
Delay Model: SIDRA Standard (Geometric Delay is included).

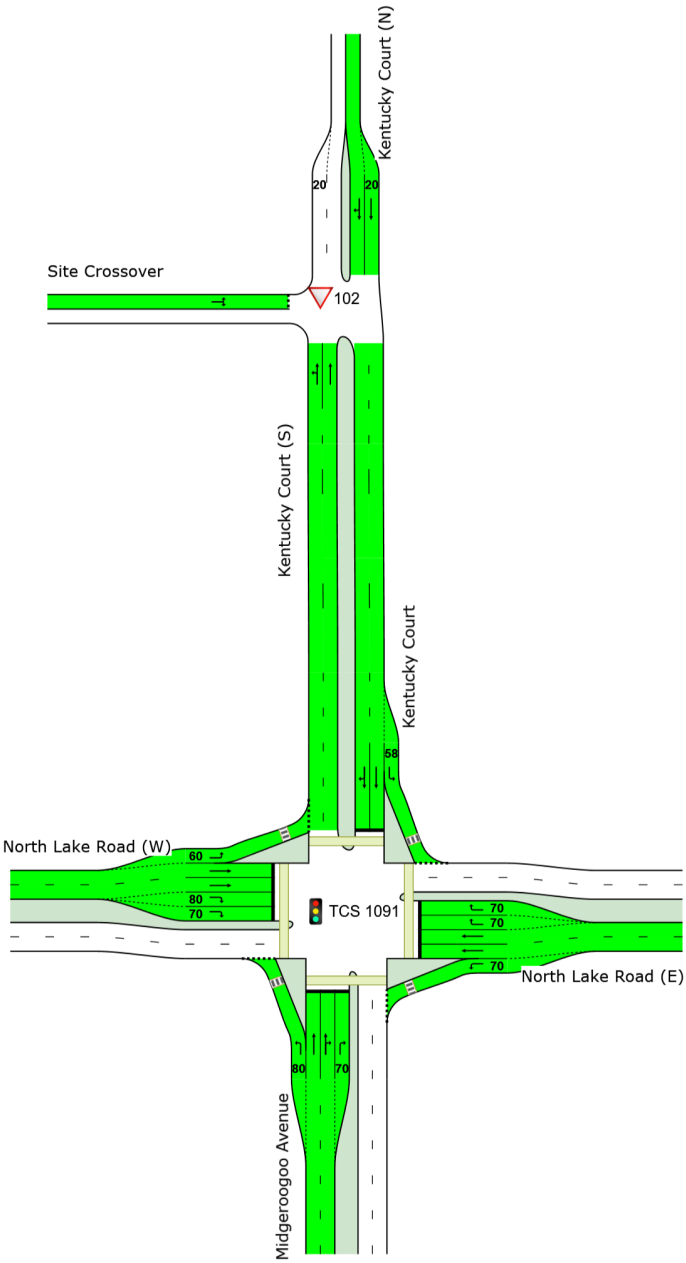
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [AM Base (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

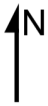
Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

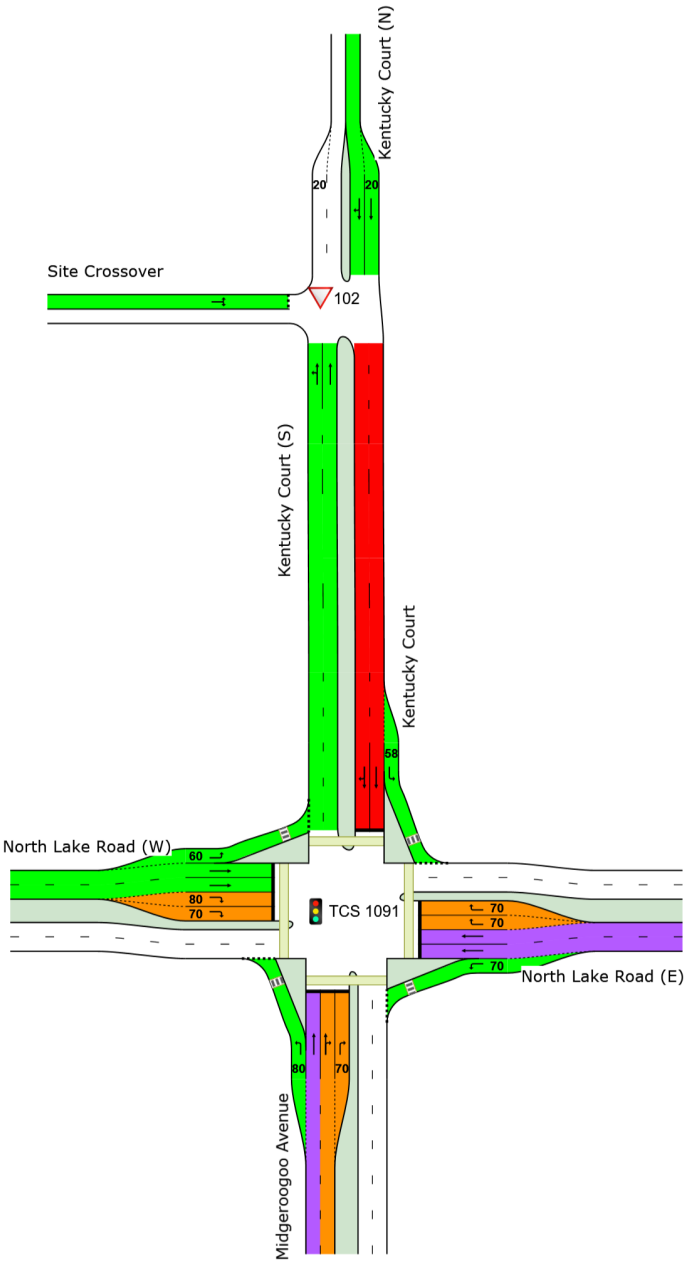
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Base (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

Document Set ID: 11748687
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MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 AM 2023 (Site Folder: General)]

Network: N101 [AM Base (Network Folder: General)]

Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	172	2.0	172	2.0	0.103	6.0	LOS A	0.3	2.4	0.08	0.57	0.08	55.2
2	T1	9	0.0	9	0.0	0.029	35.3	LOS D	0.2	1.5	0.86	0.62	0.86	19.7
3	R2	219	2.0	219	2.0	* 0.359	42.5	LOS D	2.7	19.2	0.93	0.77	0.93	25.9
Approach		400	2.0	400	2.0	0.359	26.7	LOS C	2.7	19.2	0.56	0.68	0.56	35.8
East: North Lake Road (E)														
4	L2	177	2.0	177	2.0	0.137	7.8	LOS A	0.7	5.1	0.23	0.64	0.23	49.7
5	T1	942	7.5	942	7.5	* 0.600	21.7	LOS C	9.8	73.2	0.83	0.73	0.83	45.3
6	R2	11	0.0	11	0.0	0.036	49.3	LOS D	0.1	1.0	0.95	0.65	0.95	15.3
Approach		1129	6.6	1129	6.6	0.600	19.8	LOS B	9.8	73.2	0.74	0.71	0.74	45.4
North: Kentucky Court														
7	L2	8	0.0	8	0.0	0.005	4.7	LOS A	0.0	0.1	0.09	0.51	0.09	47.5
8	T1	6	0.0	6	0.0	0.146	52.5	LOS D	0.2	1.3	1.00	0.64	1.00	17.1
9	R2	8	0.0	8	0.0	* 0.204	57.3	LOS E	0.3	1.8	1.00	0.65	1.00	23.2
Approach		23	0.0	23	0.0	0.204	36.9	LOS D	0.3	1.8	0.67	0.60	0.67	24.8
West: North Lake Road (W)														
10	L2	4	0.0	4	0.0	0.002	7.0	LOS A	0.0	0.1	0.09	0.60	0.09	55.6
11	T1	367	7.5	367	7.5	0.193	12.7	LOS B	2.7	19.8	0.58	0.48	0.58	53.0
12	R2	238	2.0	238	2.0	* 0.390	43.7	LOS D	2.9	20.9	0.94	0.78	0.94	32.2
Approach		609	5.3	609	5.3	0.390	24.8	LOS C	2.9	20.9	0.71	0.60	0.71	42.3
All Vehicles		2162	5.3	2162	5.3	0.600	22.6	LOS C	9.8	73.2	0.70	0.68	0.70	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
East: North Lake Road (E)											
P2	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
North: Kentucky Court											
P3	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	207.9	219.2	1.05
West: North Lake Road (W)											

P4 Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
All Pedestrians	211	39.3	LOS D	0.1	0.1	0.94	0.94	209.9	221.8	1.06

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

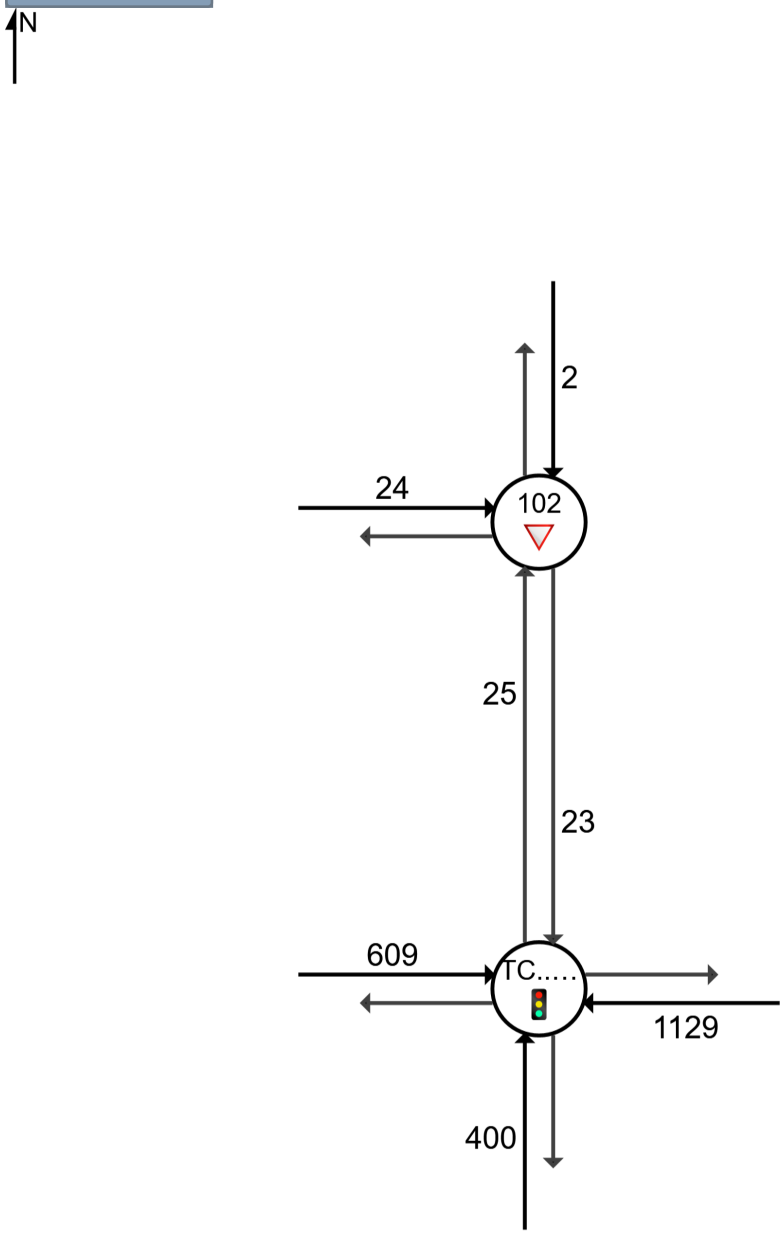
All Movement Classes

Network: N101 [AM Base (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

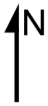


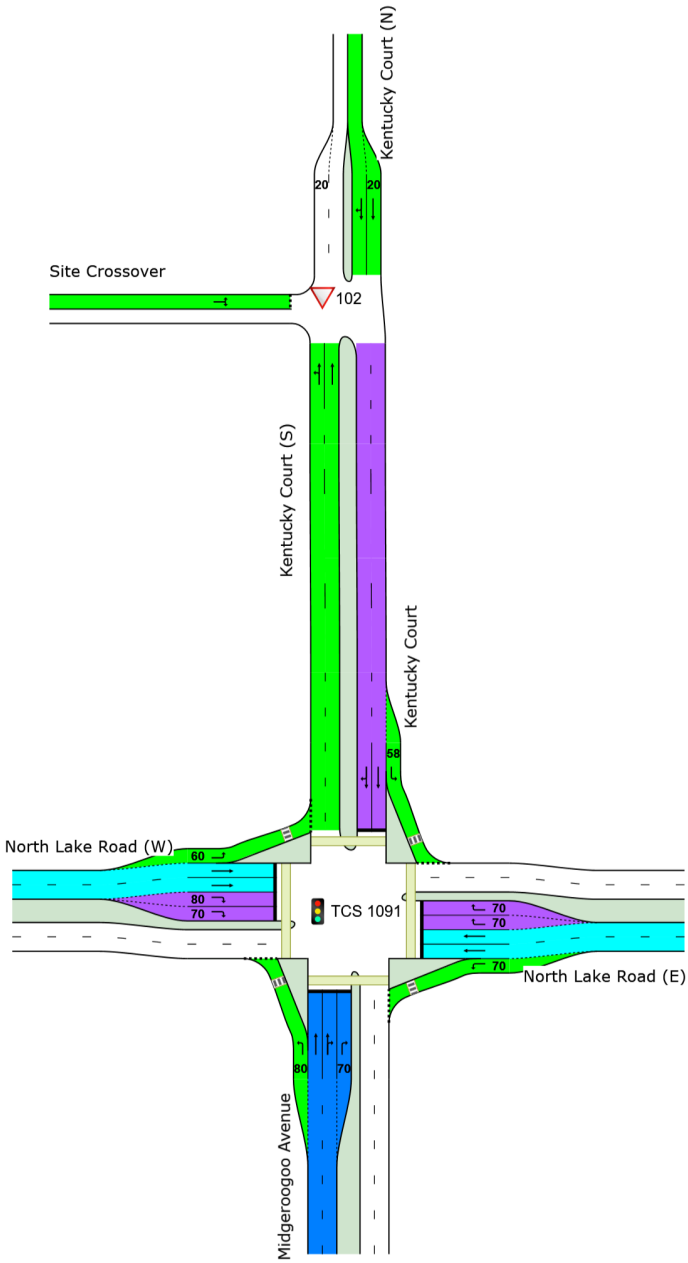
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [PM Base (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

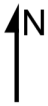
Delay Model: SIDRA Standard (Geometric Delay is included).

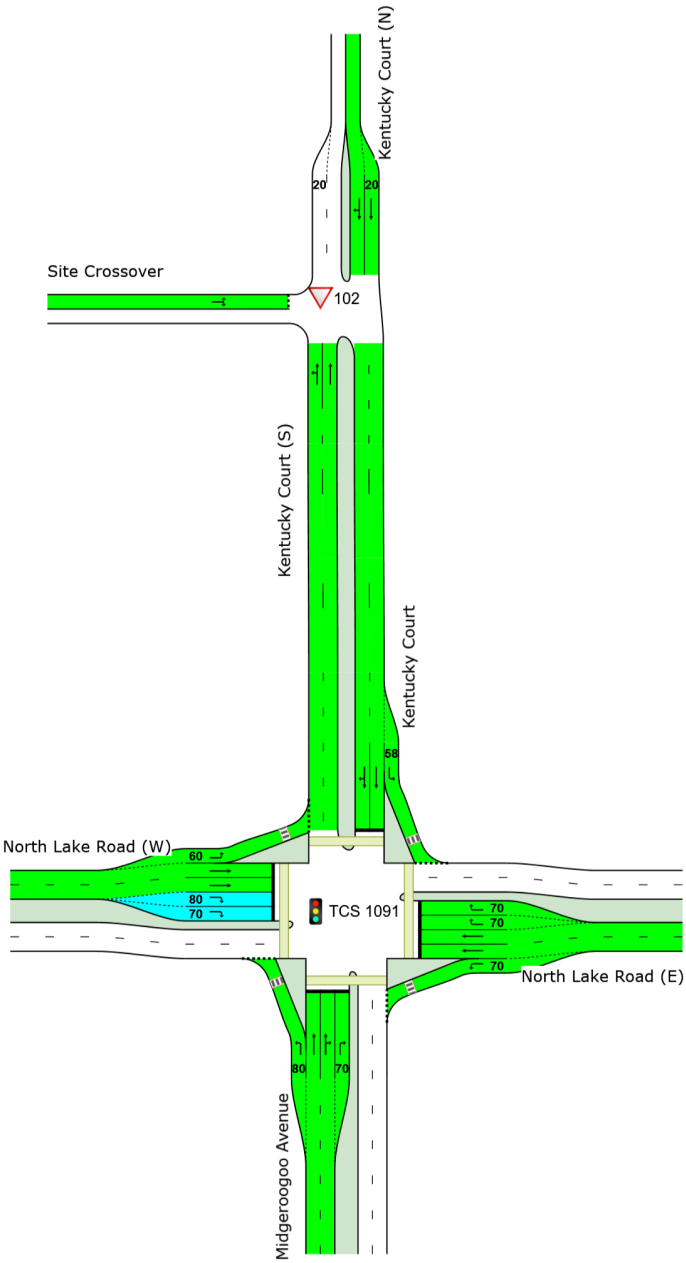
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [PM Base (Network Folder: General)]

New Network
Network Category: (None)





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Document Set ID: 11748687
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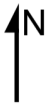
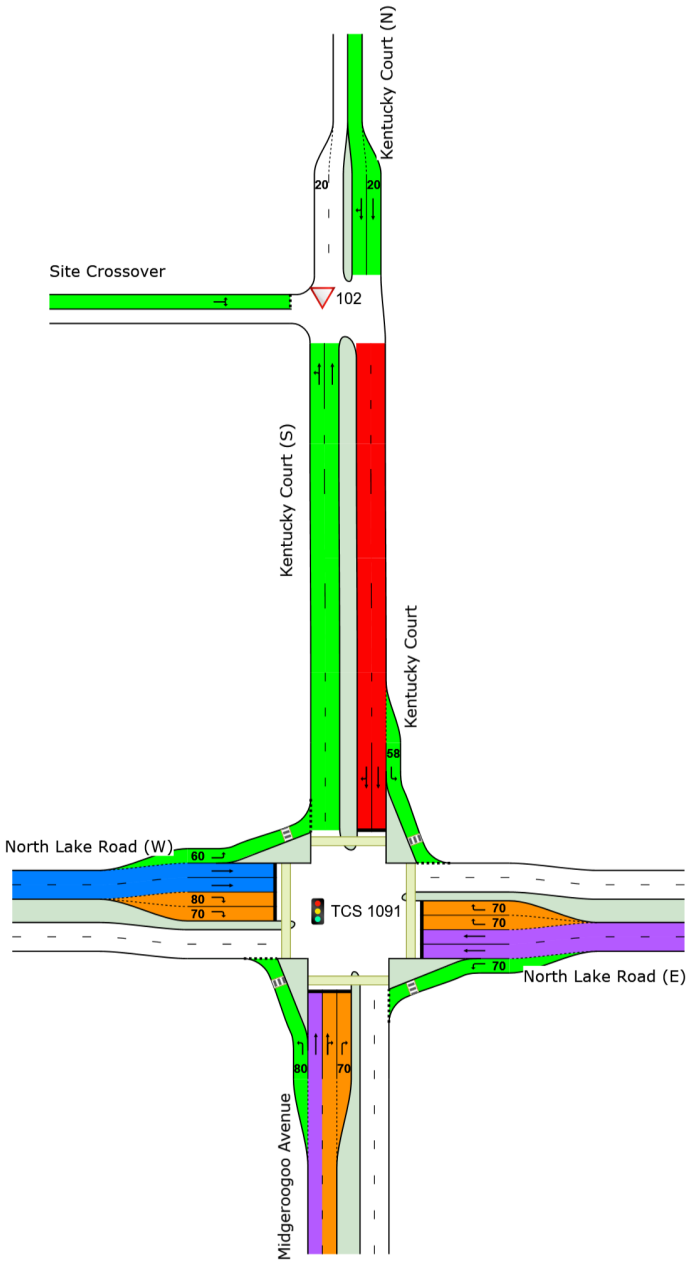
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Base (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 PM 2023 (Site Folder: General)]

Network: N101 [PM Base (Network Folder: General)]

Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 63 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	260	2.0	260	2.0	0.150	5.9	LOS A	0.4	2.5	0.08	0.56	0.08	55.2
2	T1	9	0.0	9	0.0	0.028	24.9	LOS C	0.2	1.1	0.85	0.61	0.85	24.5
3	R2	328	2.0	328	2.0	* 0.514	32.3	LOS C	3.0	21.0	0.95	0.79	0.95	29.9
Approach		598	2.0	598	2.0	0.514	20.7	LOS C	3.0	21.0	0.57	0.69	0.57	39.5
East: North Lake Road (E)														
4	L2	299	2.0	299	2.0	0.238	8.6	LOS A	1.4	10.3	0.33	0.67	0.33	48.7
5	T1	651	7.5	651	7.5	* 0.501	17.8	LOS B	4.9	36.8	0.84	0.71	0.84	48.4
6	R2	25	0.0	25	0.0	0.071	36.0	LOS D	0.2	1.6	0.94	0.68	0.94	19.4
Approach		975	5.6	975	5.6	0.501	15.4	LOS B	4.9	36.8	0.68	0.70	0.68	47.7
North: Kentucky Court														
7	L2	16	0.0	16	0.0	0.009	4.8	LOS A	0.0	0.3	0.13	0.52	0.13	47.1
8	T1	8	0.0	8	0.0	0.136	36.3	LOS D	0.2	1.2	1.00	0.65	1.00	22.0
9	R2	12	0.0	12	0.0	* 0.196	41.0	LOS D	0.2	1.7	1.00	0.66	1.00	28.3
Approach		36	0.0	36	0.0	0.196	23.9	LOS C	0.2	1.7	0.62	0.60	0.62	30.9
West: North Lake Road (W)														
10	L2	8	0.0	8	0.0	0.005	7.2	LOS A	0.0	0.1	0.13	0.60	0.13	55.3
11	T1	801	7.5	801	7.5	0.522	15.1	LOS B	5.7	42.7	0.80	0.69	0.80	50.7
12	R2	367	2.0	367	2.0	* 0.632	35.3	LOS D	3.5	24.8	0.98	0.83	1.05	35.6
Approach		1177	5.7	1177	5.7	0.632	21.4	LOS C	5.7	42.7	0.85	0.73	0.87	44.7
All Vehicles		2785	4.8	2785	4.8	0.632	19.2	LOS B	5.7	42.7	0.73	0.71	0.74	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	195.5	220.5	1.13
East: North Lake Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
North: Kentucky Court											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	194.5	219.2	1.13
West: North Lake Road (W)											

P4 Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
All Pedestrians	211	25.8	LOS C	0.1	0.1	0.91	0.91	196.5	221.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

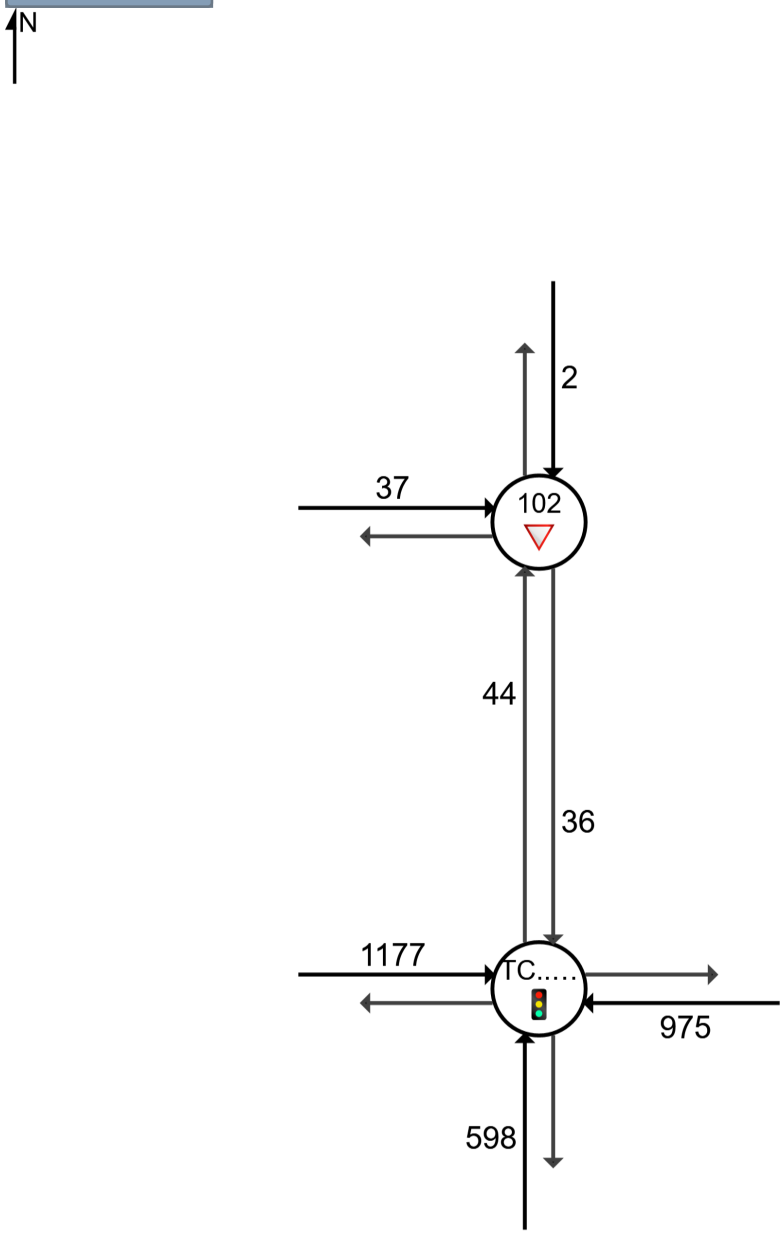
All Movement Classes

Network: N101 [PM Base (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

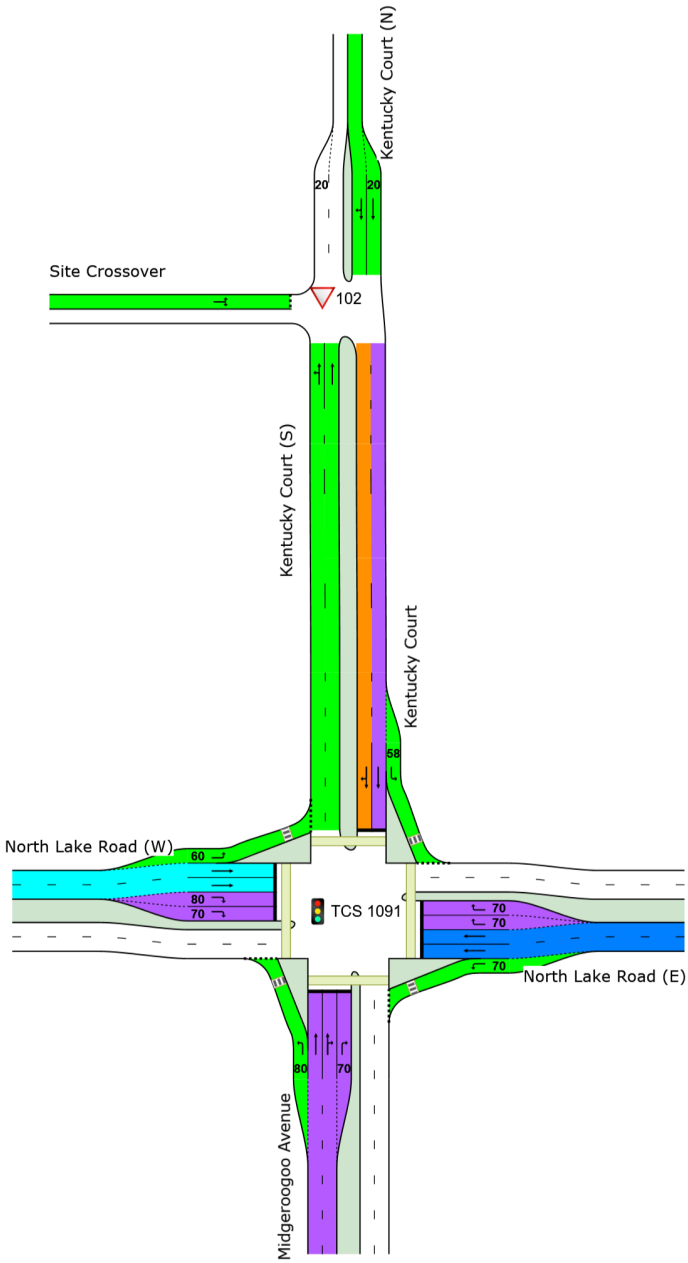


LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Opening (Network Folder: General)]

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

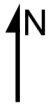
Delay Model: SIDRA Standard (Geometric Delay is included).

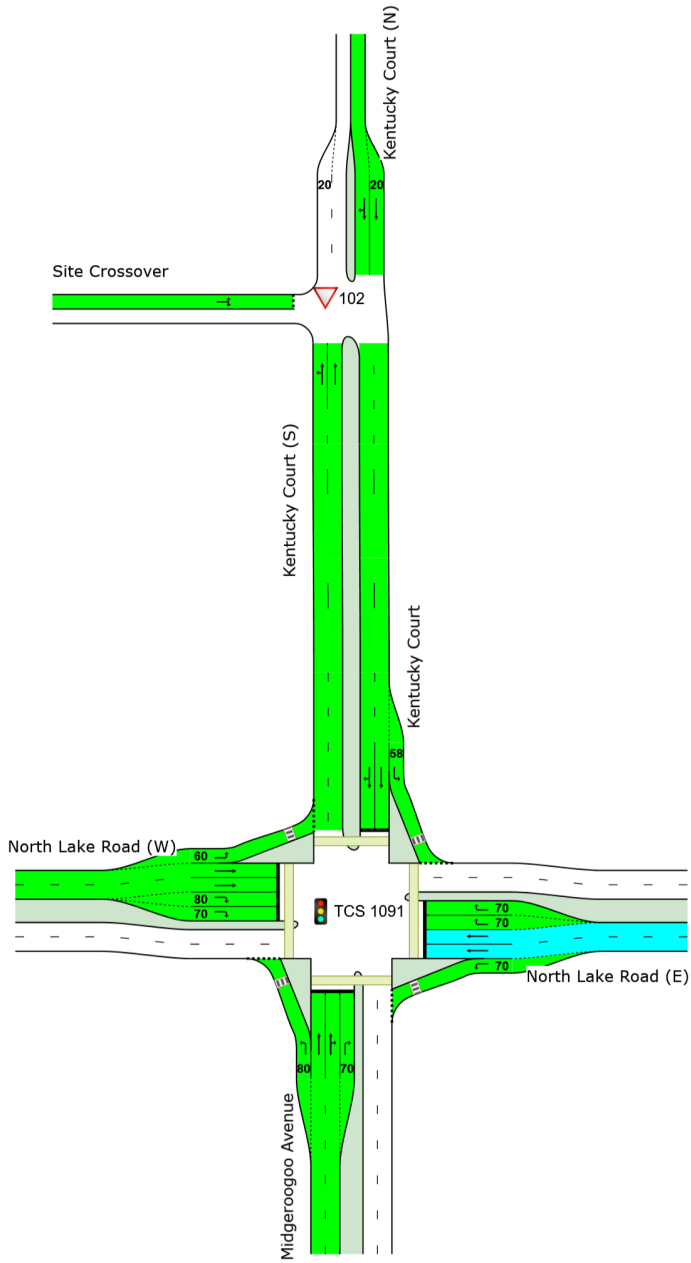
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [AM Opening (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Degree of Saturation

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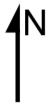
Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

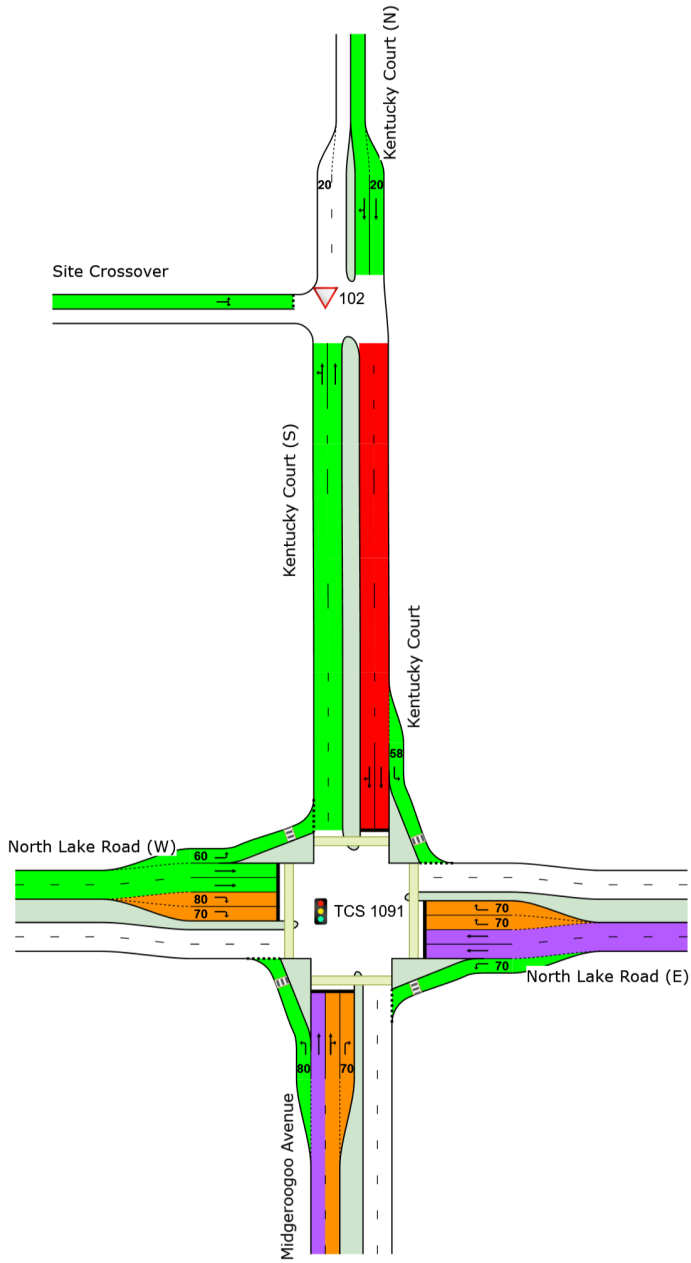
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Opening (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

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Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 AM Opening (Site Folder: General)]

Network: N101 [AM Opening (Network Folder: General)]

Opening year
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	177	2.0	177	2.0	0.106	6.0	LOS A	0.3	2.4	0.08	0.57	0.08	55.2
2	T1	9	0.0	9	0.0	0.029	35.3	LOS D	0.2	1.5	0.86	0.62	0.86	19.7
3	R2	225	2.0	225	2.0	* 0.369	42.6	LOS D	2.8	19.8	0.93	0.78	0.93	25.8
Approach		412	2.0	412	2.0	0.369	26.7	LOS C	2.8	19.8	0.56	0.68	0.56	35.8
East: North Lake Road (E)														
4	L2	182	2.0	182	2.0	0.141	7.8	LOS A	0.7	5.3	0.23	0.64	0.23	49.7
5	T1	971	7.5	971	7.5	* 0.621	21.9	LOS C	10.2	76.3	0.84	0.74	0.84	45.1
6	R2	11	0.0	11	0.0	0.036	49.3	LOS D	0.1	1.0	0.95	0.65	0.95	15.3
Approach		1163	6.6	1163	6.6	0.621	20.0	LOS B	10.2	76.3	0.74	0.72	0.74	45.3
North: Kentucky Court														
7	L2	8	0.0	8	0.0	0.005	4.7	LOS A	0.0	0.1	0.09	0.51	0.09	47.5
8	T1	6	0.0	6	0.0	0.146	52.5	LOS D	0.2	1.3	1.00	0.64	1.00	17.1
9	R2	8	0.0	8	0.0	* 0.204	57.3	LOS E	0.3	1.8	1.00	0.65	1.00	23.2
Approach		23	0.0	23	0.0	0.204	36.9	LOS D	0.3	1.8	0.67	0.60	0.67	24.8
West: North Lake Road (W)														
10	L2	4	0.0	4	0.0	0.002	7.0	LOS A	0.0	0.1	0.09	0.60	0.09	55.6
11	T1	378	7.5	378	7.5	0.199	12.8	LOS B	2.7	20.4	0.58	0.48	0.58	53.0
12	R2	245	2.0	245	2.0	* 0.402	43.7	LOS D	3.0	21.7	0.94	0.78	0.94	32.1
Approach		627	5.3	627	5.3	0.402	24.8	LOS C	3.0	21.7	0.71	0.60	0.71	42.2
All Vehicles		2225	5.3	2225	5.3	0.621	22.8	LOS C	10.2	76.3	0.70	0.68	0.70	42.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
East: North Lake Road (E)											
P2	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
North: Kentucky Court											
P3	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	207.9	219.2	1.05
West: North Lake Road (W)											

P4 Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
All Pedestrians	211	39.3	LOS D	0.1	0.1	0.94	0.94	209.9	221.8	1.06

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

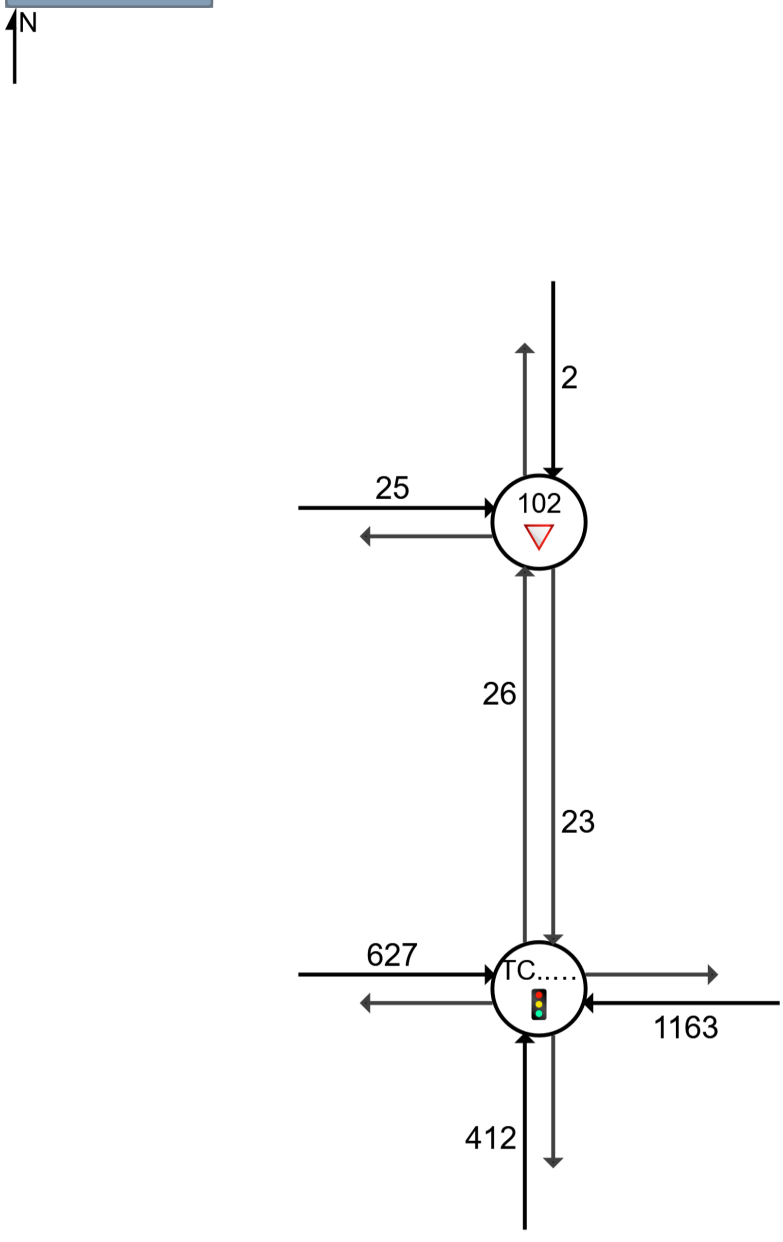
All Movement Classes

Network: N101 [AM Opening (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

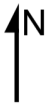


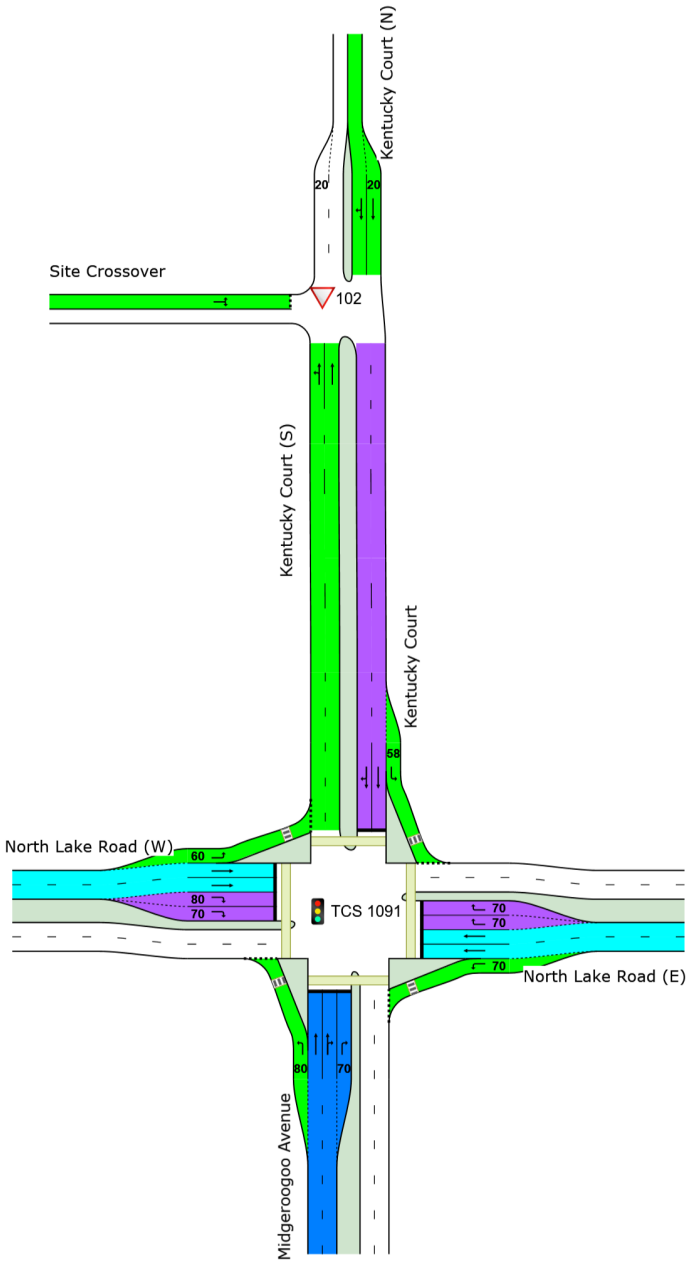
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [PM Opening (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

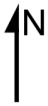
Delay Model: SIDRA Standard (Geometric Delay is included).

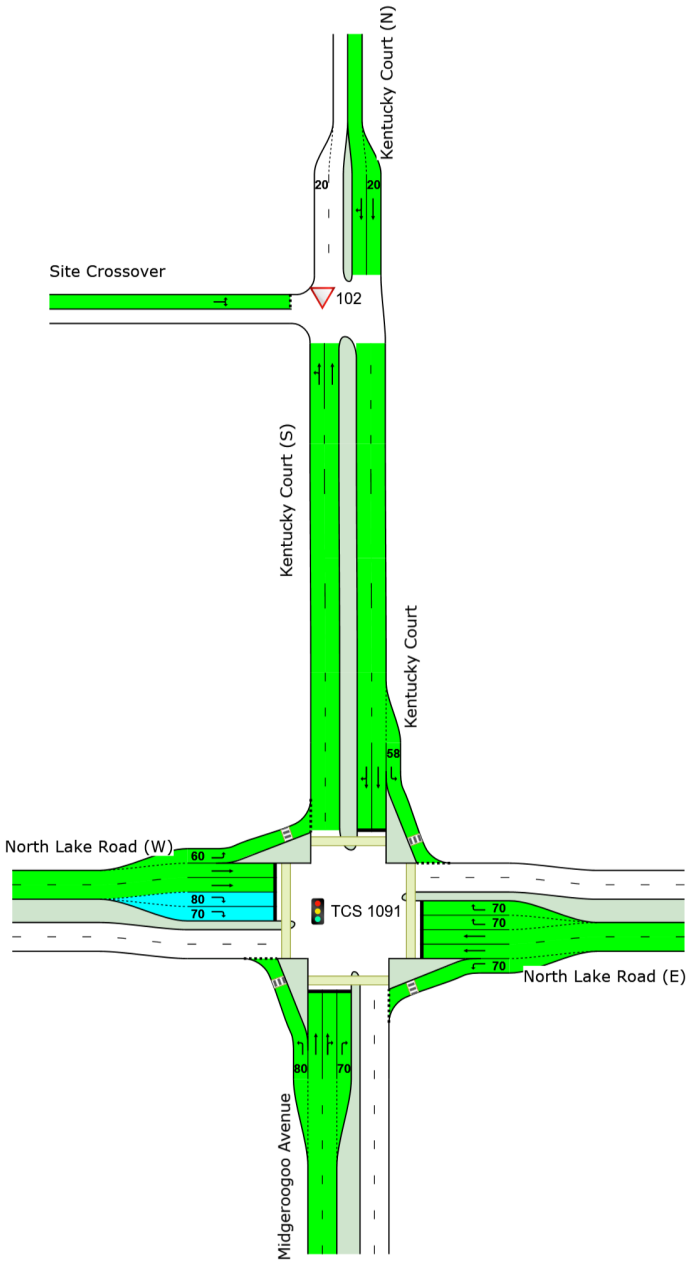
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [PM Opening (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

Document Set ID: 11748687
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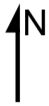
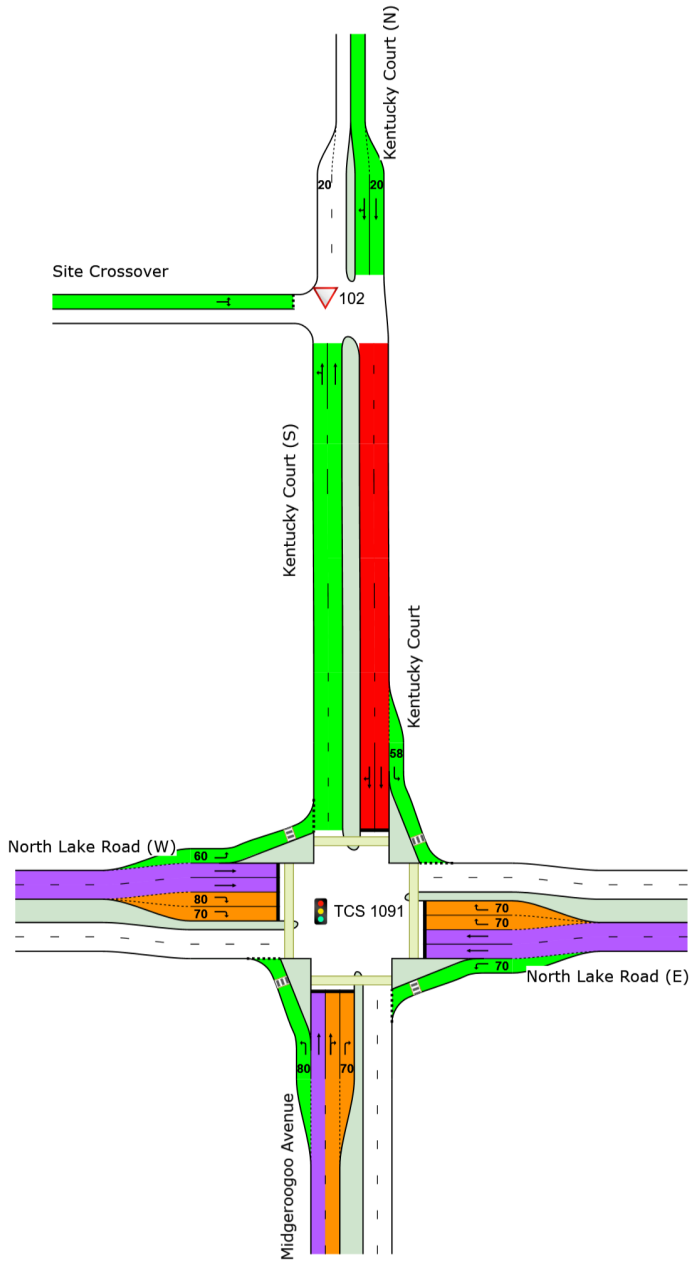
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Opening (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 PM Opening (Site Folder: General)]

Network: N101 [PM Opening (Network Folder: General)]

Opening year
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 63 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	267	2.0	267	2.0	0.154	5.9	LOS A	0.4	2.6	0.08	0.56	0.08	55.2
2	T1	9	0.0	9	0.0	0.028	24.9	LOS C	0.2	1.1	0.85	0.61	0.85	24.5
3	R2	338	2.0	338	2.0	* 0.528	32.4	LOS C	3.0	21.7	0.96	0.80	0.96	29.9
Approach		615	2.0	615	2.0	0.528	20.8	LOS C	3.0	21.7	0.57	0.69	0.57	39.5
East: North Lake Road (E)														
4	L2	308	2.0	308	2.0	0.246	8.6	LOS A	1.5	10.7	0.33	0.67	0.33	48.7
5	T1	671	7.5	671	7.5	* 0.516	17.9	LOS B	5.1	38.2	0.84	0.72	0.84	48.3
6	R2	26	0.0	26	0.0	0.074	36.0	LOS D	0.2	1.7	0.94	0.68	0.94	19.4
Approach		1005	5.6	1005	5.6	0.516	15.5	LOS B	5.1	38.2	0.69	0.70	0.69	47.6
North: Kentucky Court														
7	L2	16	0.0	16	0.0	0.009	4.8	LOS A	0.0	0.3	0.13	0.52	0.13	47.1
8	T1	8	0.0	8	0.0	0.136	36.3	LOS D	0.2	1.2	1.00	0.65	1.00	22.0
9	R2	12	0.0	12	0.0	* 0.196	41.0	LOS D	0.2	1.7	1.00	0.66	1.00	28.3
Approach		36	0.0	36	0.0	0.196	23.9	LOS C	0.2	1.7	0.62	0.60	0.62	30.9
West: North Lake Road (W)														
10	L2	8	0.0	8	0.0	0.005	7.2	LOS A	0.0	0.1	0.13	0.60	0.13	55.3
11	T1	825	7.5	825	7.5	0.538	15.3	LOS B	6.0	44.4	0.81	0.70	0.81	50.6
12	R2	378	2.0	378	2.0	* 0.650	35.6	LOS D	3.6	25.7	0.99	0.84	1.07	35.5
Approach		1212	5.7	1212	5.7	0.650	21.6	LOS C	6.0	44.4	0.86	0.74	0.88	44.6
All Vehicles		2867	4.8	2867	4.8	0.650	19.3	LOS B	6.0	44.4	0.73	0.72	0.75	44.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	195.5	220.5	1.13
East: North Lake Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
North: Kentucky Court											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	194.5	219.2	1.13
West: North Lake Road (W)											

P4 Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
All Pedestrians	211	25.8	LOS C	0.1	0.1	0.91	0.91	196.5	221.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

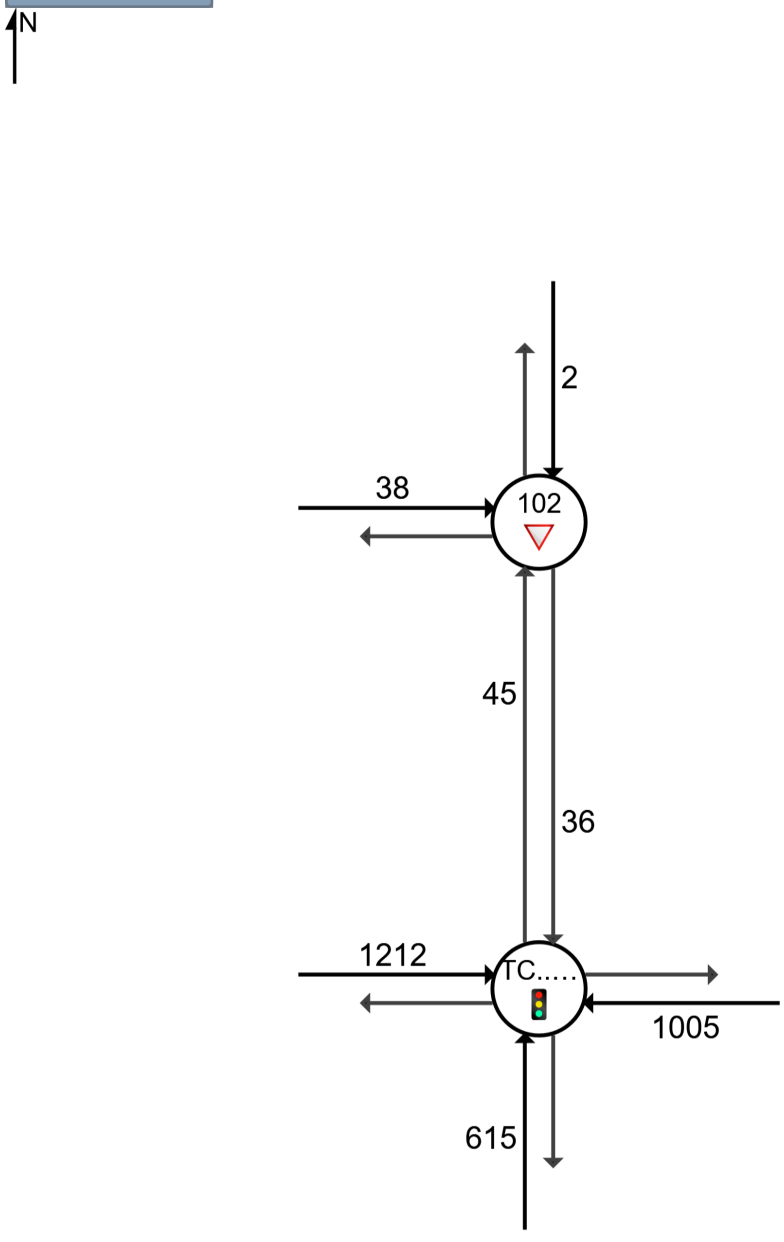
All Movement Classes

Network: N101 [PM Opening (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

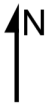


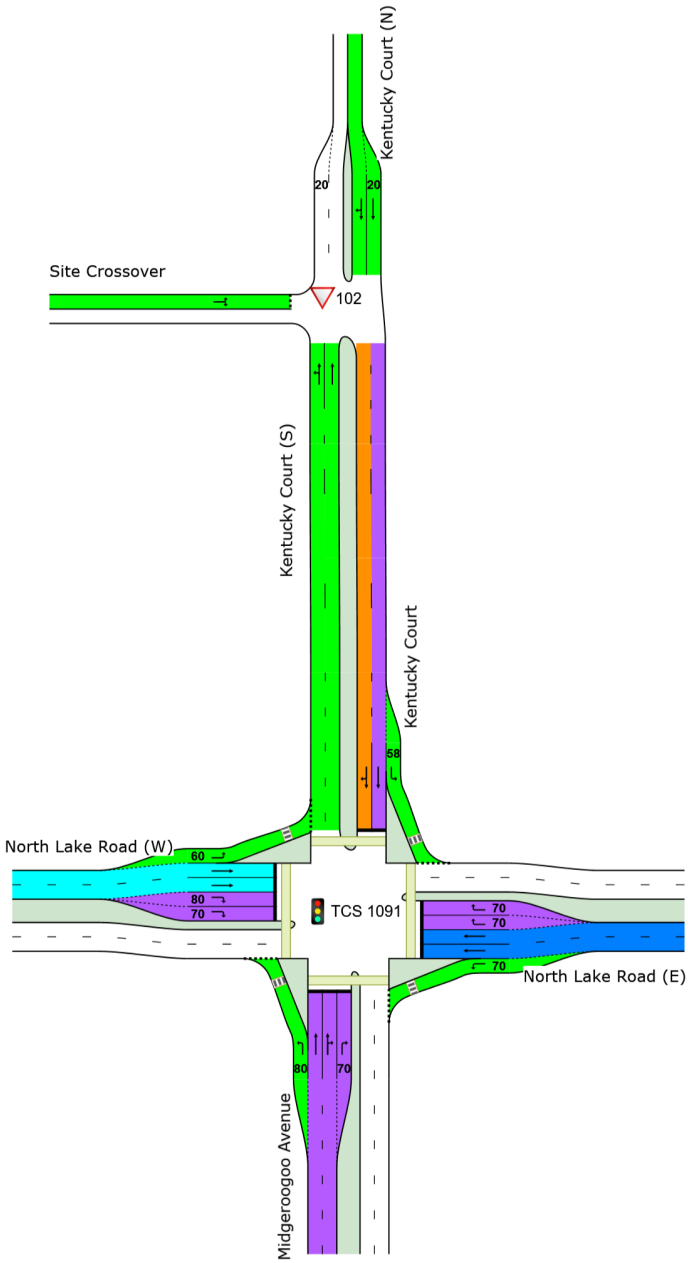
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Full Build (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

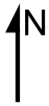
Delay Model: SIDRA Standard (Geometric Delay is included).

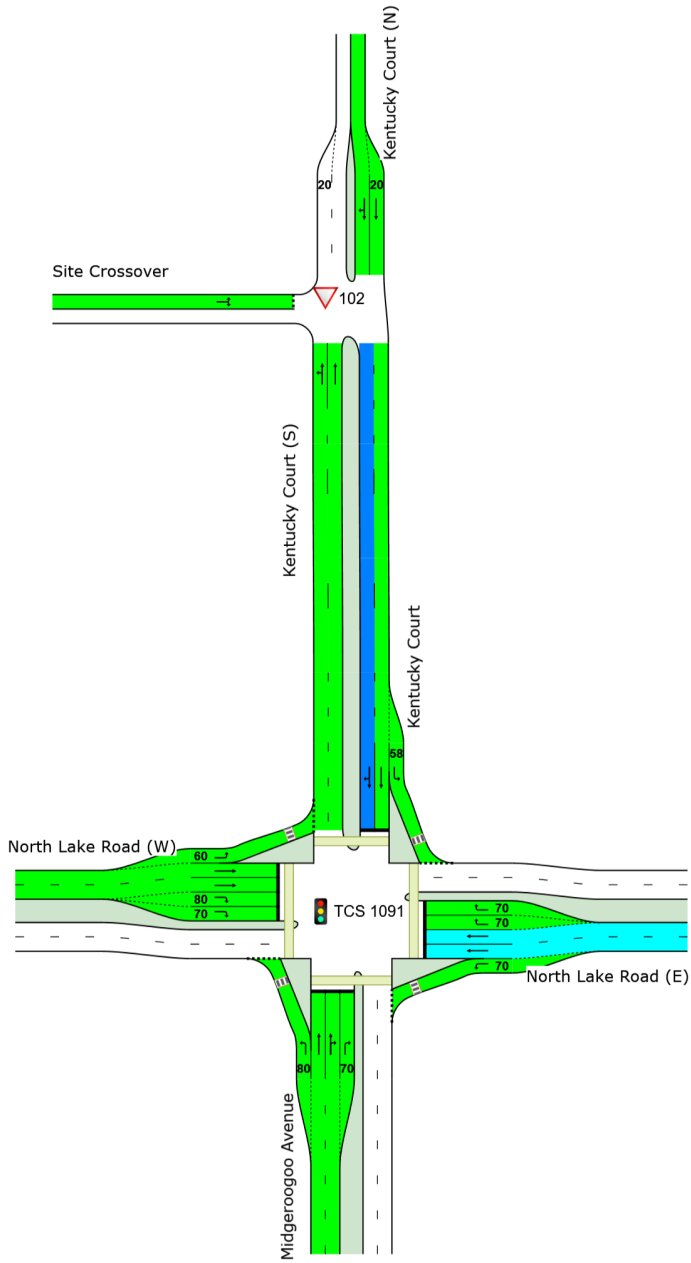
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [AM Full Build (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Degree of Saturation

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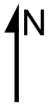
Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

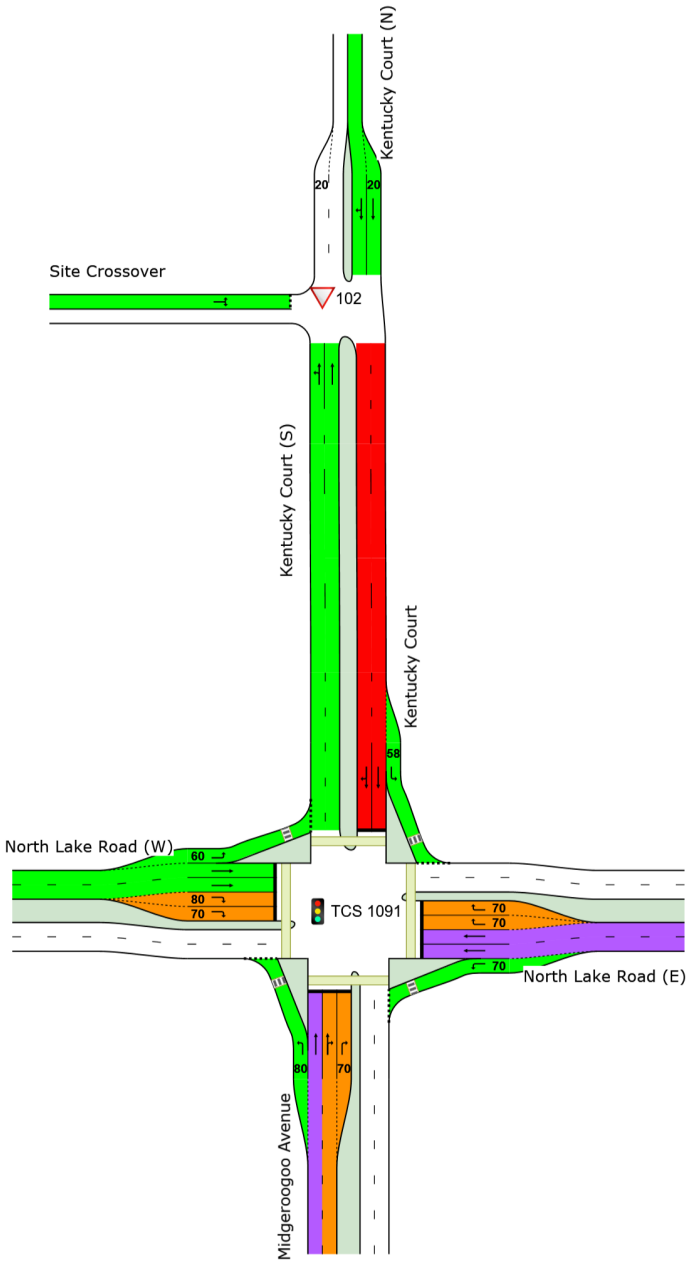
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Full Build (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 0.99] [1.0]

Document Set ID: 11748687
Version: 1, Version Date: 21/12/2023

MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 AM Full (Site Folder: General)]

Network: N101 [AM Full Build (Network Folder: General)]

Full build out
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	182	2.0	182	2.0	0.109	6.0	LOS A	0.4	2.5	0.08	0.57	0.08	55.2
2	T1	15	0.0	15	0.0	0.045	35.5	LOS D	0.3	2.4	0.87	0.63	0.87	19.6
3	R2	233	2.0	233	2.0	* 0.381	42.7	LOS D	2.9	20.4	0.93	0.78	0.93	25.8
Approach		429	1.9	429	1.9	0.381	26.9	LOS C	2.9	20.4	0.57	0.69	0.57	35.6
East: North Lake Road (E)														
4	L2	187	2.0	187	2.0	0.147	8.0	LOS A	0.8	5.9	0.24	0.65	0.24	49.4
5	T1	1000	7.5	1000	7.5	* 0.646	22.2	LOS C	10.8	80.1	0.85	0.75	0.85	44.9
6	R2	16	0.0	16	0.0	0.055	49.6	LOS D	0.2	1.4	0.95	0.66	0.95	15.2
Approach		1203	6.5	1203	6.5	0.646	20.3	LOS C	10.8	80.1	0.75	0.73	0.75	45.0
North: Kentucky Court														
7	L2	29	0.0	29	0.0	0.017	4.7	LOS A	0.1	0.5	0.09	0.52	0.09	47.4
8	T1	22	0.0	22	0.0	0.510	54.3	LOS D	0.7	4.8	1.00	0.72	1.10	16.7
9	R2	29	0.0	29	0.0	* 0.714	60.1	LOS E	0.9	6.5	1.00	0.80	1.36	22.5
Approach		81	0.0	81	0.0	0.714	38.4	LOS D	0.9	6.5	0.67	0.67	0.83	24.2
West: North Lake Road (W)														
10	L2	6	0.0	6	0.0	0.004	7.0	LOS A	0.0	0.1	0.09	0.60	0.09	55.6
11	T1	389	7.5	389	7.5	0.205	12.8	LOS B	2.8	21.1	0.58	0.49	0.58	53.0
12	R2	253	2.0	253	2.0	* 0.414	43.8	LOS D	3.1	22.4	0.94	0.79	0.94	32.1
Approach		648	5.3	648	5.3	0.414	24.8	LOS C	3.1	22.4	0.72	0.60	0.72	42.2
All Vehicles		2362	5.1	2362	5.1	0.714	23.4	LOS C	10.8	80.1	0.71	0.69	0.71	41.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
East: North Lake Road (E)											
P2	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
North: Kentucky Court											
P3	Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	207.9	219.2	1.05

West: North Lake Road (W)										
P4 Full	53	39.3	LOS D	0.1	0.1	0.94	0.94	211.4	223.8	1.06
All Pedestrians	211	39.3	LOS D	0.1	0.1	0.94	0.94	209.9	221.8	1.06

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

All Movement Classes

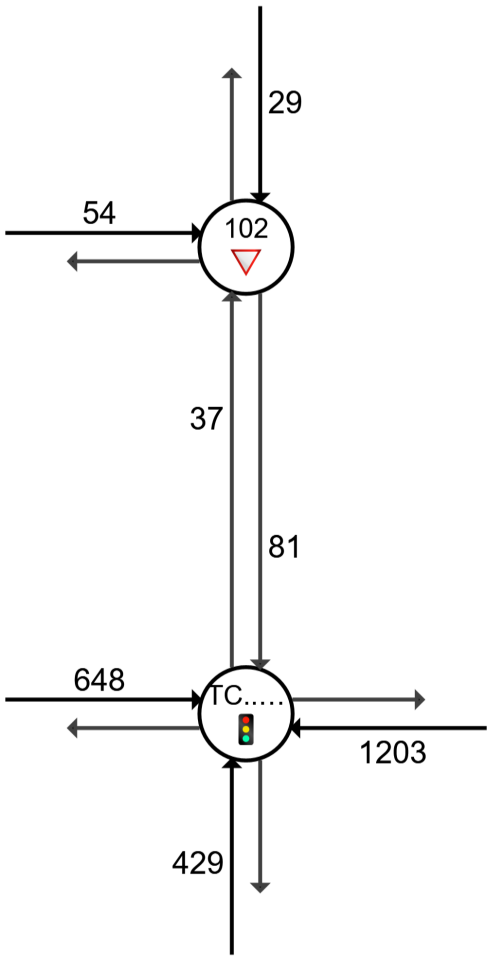
Network: N101 [AM Full Build (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

N



LEVEL OF SERVICE

Lane Level of Service

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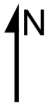
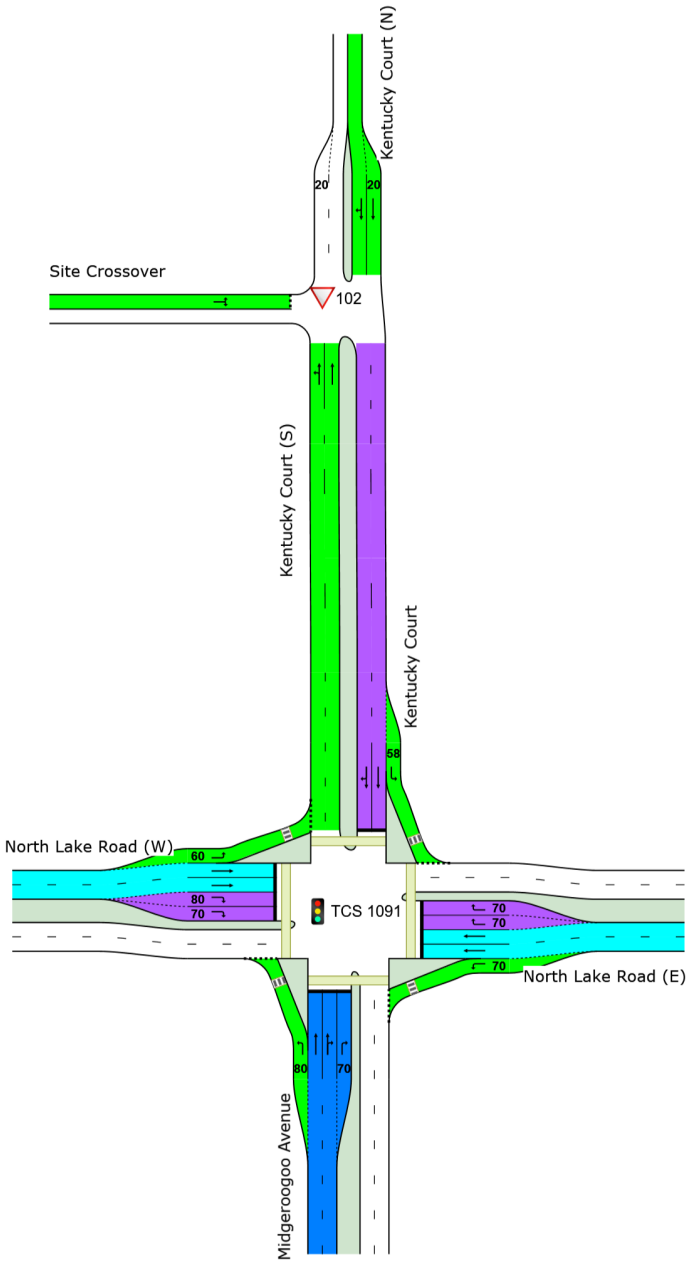
New Network
Network Category: (None)





Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

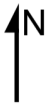
Delay Model: SIDRA Standard (Geometric Delay is included).

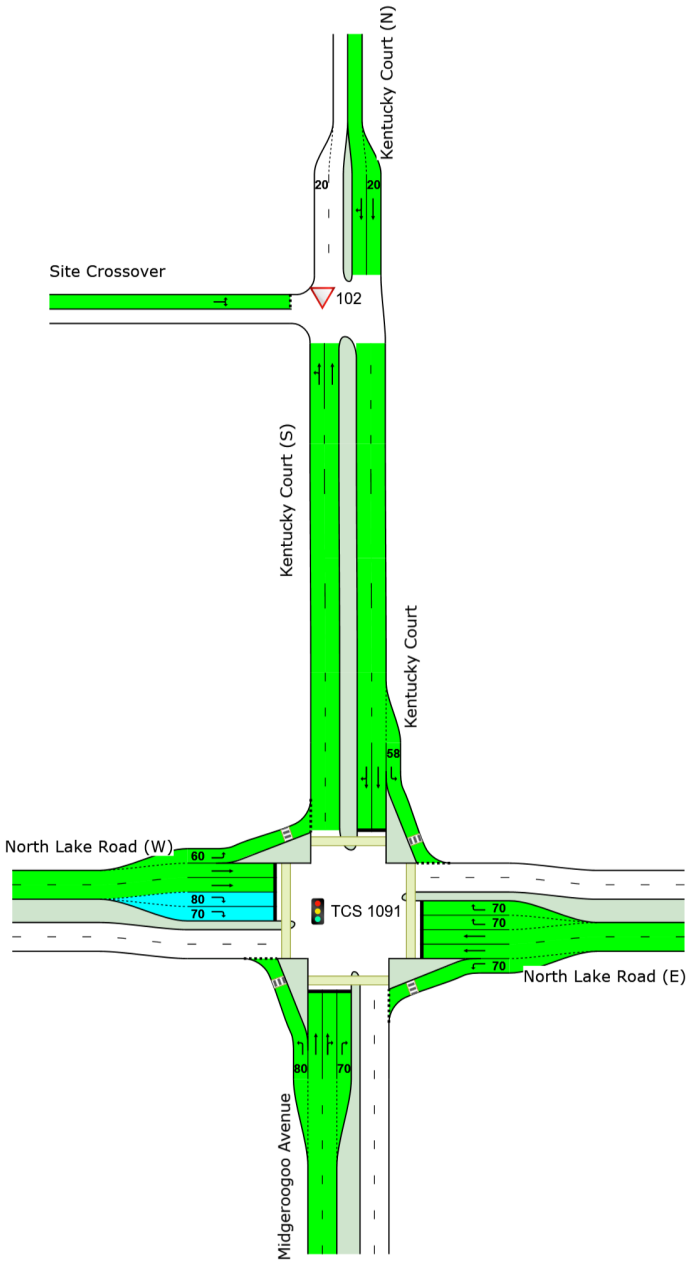
DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: N101 [PM Full Build (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

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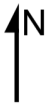
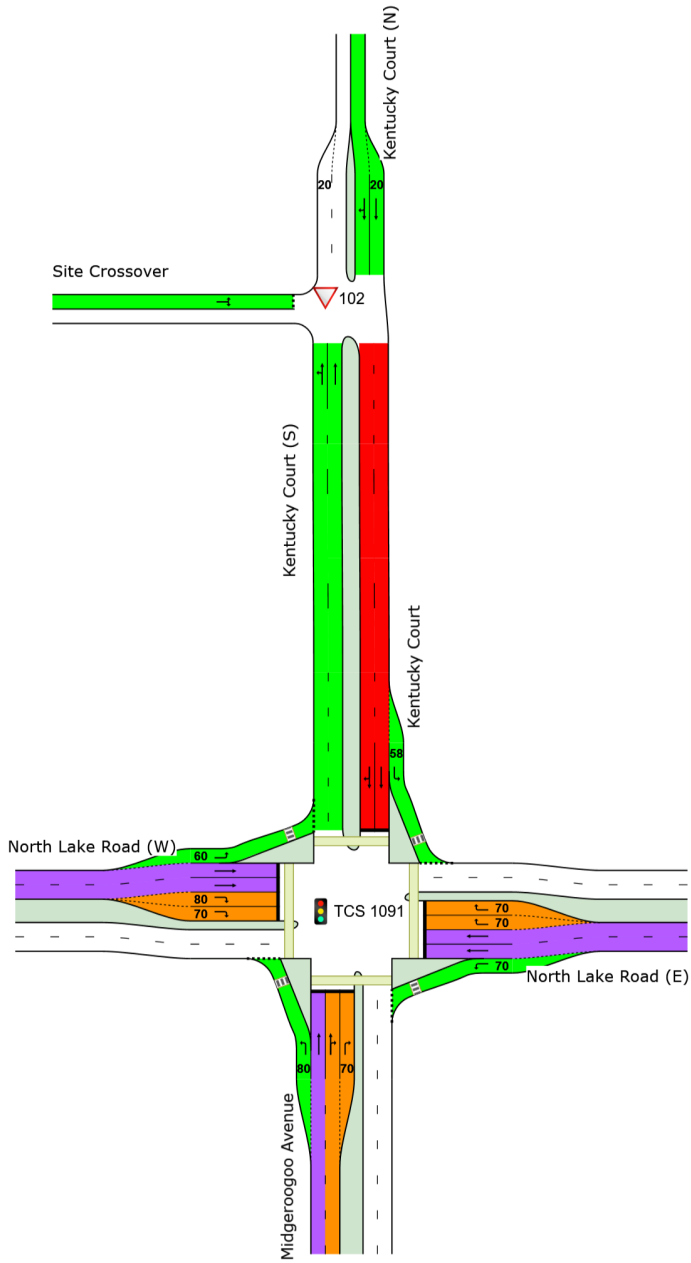
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Full Build (Network Folder: General)]

New Network
Network Category: (None)





Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

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MOVEMENT SUMMARY

Site: TCS 1091 [North Lake Road and Kentucky Court - TCS 1091 PM Full (Site Folder: General)]

Network: N101 [PM Full Build (Network Folder: General)]

Full build out
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 63 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Midgeroogoo Avenue														
1	L2	276	2.0	276	2.0	0.159	5.9	LOS A	0.4	2.7	0.08	0.56	0.08	55.2
2	T1	19	0.0	19	0.0	0.056	25.2	LOS C	0.3	2.1	0.86	0.64	0.86	24.3
3	R2	348	2.0	348	2.0	* 0.545	32.5	LOS C	3.2	22.4	0.96	0.80	0.96	29.9
Approach		643	1.9	643	1.9	0.545	20.9	LOS C	3.2	22.4	0.58	0.69	0.58	39.3
East: North Lake Road (E)														
4	L2	317	2.0	317	2.0	0.255	8.6	LOS A	1.6	11.1	0.33	0.67	0.33	48.6
5	T1	691	7.5	691	7.5	* 0.532	18.0	LOS B	5.3	39.6	0.85	0.73	0.85	48.2
6	R2	52	0.0	52	0.0	0.146	36.5	LOS D	0.5	3.3	0.95	0.71	0.95	19.2
Approach		1059	5.5	1059	5.5	0.532	16.1	LOS B	5.3	39.6	0.70	0.71	0.70	46.9
North: Kentucky Court														
7	L2	28	0.0	28	0.0	0.016	4.8	LOS A	0.1	0.5	0.13	0.53	0.13	47.1
8	T1	15	0.0	15	0.0	0.238	36.8	LOS D	0.3	2.2	1.00	0.67	1.00	21.8
9	R2	20	0.0	20	0.0	* 0.339	41.5	LOS D	0.4	3.0	1.00	0.69	1.00	28.0
Approach		63	0.0	63	0.0	0.339	23.9	LOS C	0.4	3.0	0.61	0.61	0.61	30.8
West: North Lake Road (W)														
10	L2	17	0.0	17	0.0	0.010	7.2	LOS A	0.0	0.3	0.13	0.61	0.13	55.3
11	T1	849	7.5	849	7.5	0.554	15.4	LOS B	6.2	46.1	0.81	0.71	0.81	50.4
12	R2	389	2.0	389	2.0	* 0.670	35.9	LOS D	3.8	26.7	0.99	0.85	1.09	35.3
Approach		1256	5.7	1256	5.7	0.670	21.7	LOS C	6.2	46.1	0.86	0.75	0.89	44.5
All Vehicles		3021	4.7	3021	4.7	0.670	19.6	LOS B	6.2	46.1	0.74	0.72	0.75	43.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Midgeroogoo Avenue											
P1	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	195.5	220.5	1.13
East: North Lake Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
North: Kentucky Court											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	194.5	219.2	1.13

West: North Lake Road (W)										
P4 Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	198.0	223.8	1.13
All Pedestrians	211	25.8	LOS C	0.1	0.1	0.91	0.91	196.5	221.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates (veh/h)

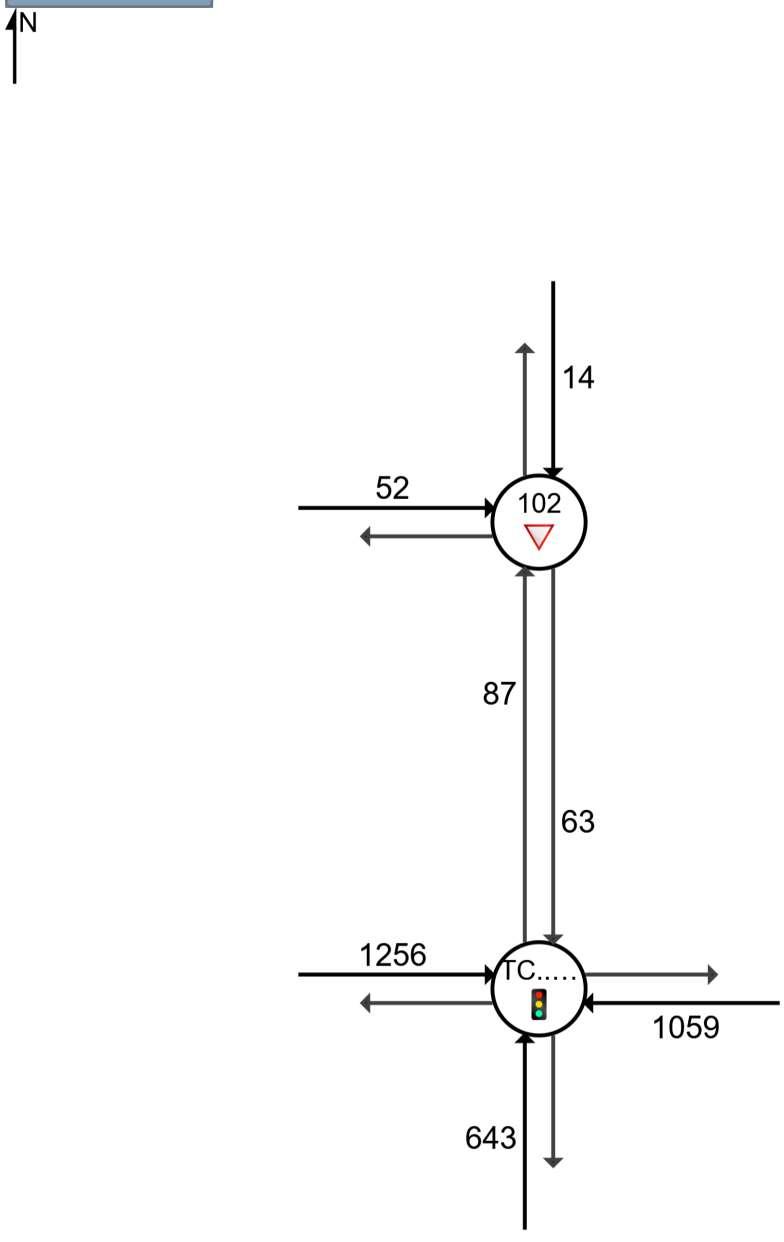
All Movement Classes

Network: N101 [PM Full Build (Network Folder: General)]

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups



13/12/2023

Harmony Residential

ESD Review

Graham Agar
FULL CIRCLE DESIGN SERVICES

Document Set ID: 11748685
Version: 1, Version Date: 21/12/2023

Full Circle Design Services

Telephone: 0412 475 819	**Report №:** 2023_081_ESD_REP_01
Email: graham.agar@fcds.com.au	**Original Date of Issue:** 11th December 2023
ACN: 163 742 890	
ABN: 84 163 742 890	

Title:	Harmony Residential - ESD Review
Author:	Graham Agar
Client:	Milieux Project Management
Contact:	Anthony Ciprian
Description:	This report provides an overview of the ESD strategy for the proposed residential development on Muriel Court in Cockburn. The project is an entry level residential development located in the City of Cockburn, Muriel Court development area. The location does not have any significant sustainable design requirements, other than dealing with water quality and compliance with the residential R-Codes. This report summarises the project response to the sustainability provisions of the residential R-Codes, including relevant images, drawings and report extracts.

Revision	Date	Checked by		Transmitted by	
A	11/12/2023				GEA
B	13/12/2023				GEA

Distribution	Revision								
Receiver	A	B							
Milieux	X	X							
Collière Architecture	X	X							

Document Set ID: 11748685
Version: 1, Version Date: 21/12/2023

Executive Summary

FCDS have been appointed to assist the Harmony Residential development team in demonstrating compliance with the sustainable design requirements within the Murel Court precinct in Cockburn.

The proposed design includes the next two stages of the Harmony project, comprising 173 apartments (90 Stage 2, 83 Stage 3). The design is a mix of one and two bedroom apartments over eight storeys (8 storeys Stage 2, 7 Storeys Stage 3) and includes open air amenities – including a pool – at level 8 on Stage 2.

The design intends to deliver affordable residences in the City of Cockburn, Muriel Court development area. The location does not have any significant sustainable design requirements, other than dealing with water quality and compliance with the residential R-Codes.

This report provides a summary of the sustainable design intent for the project, including a comparison to the performance and reporting requirements of the Residential R-Codes.

Overall, the design provides a considered and reasonable response, promising high quality outcomes for visitors, occupants and the community.

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Full Circle Design Services

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1. Introduction

FCDS have been appointed to assist the Harmony Residential development team in demonstrating compliance with the sustainable design requirements within the Murel Court precinct in Cockburn.

The design intends to deliver affordable residences in the City of Cockburn, Muriel Court development area. The location does not have any significant sustainable design requirements, other than dealing with water quality and compliance with the residential R-Codes.

This report present a summary of the project design team response and intent, summarising outcomes from the design team to demonstrate the project meets performance requirements.

1.1 Project Description

The proposed design includes the next two stages of the Harmony project, comprising 173 apartments (90 Building 2, 83 Building 3). The design is a mix of one and two bedroom apartments over eight storeys (8 storeys Building 2, 7 Storeys Building 3) and includes open air amenities – including a pool – at level 8 on Stage 2.

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1.2 Design Requirements

The project is located in the Murriel Court development area and is subject to the City of Cockburn Structure Plan and Design Guidelines (LPP4.2) and the City of Cockburn Town Planning Scheme 3 (TPS3).

The area is to be characterised as a contemporary, high quality and vibrant urban village, well connected to the Cockburn Central Town Centre.

The design is aiming to:

- Promote a safe, comfortable and easily accessible environment
- Address and complement public spaces, with transparent and engaging interfaces with the street
- Promote a sense of place and community
- Promote alternate transport, including walking, cycling and public transport
- Provide a mix of housing opportunities
- Provide good access to public open space

For sustainable design outcomes, the project will:

- Passive Design
    - Provide passive design to respond to local climate and site conditions.
    - Considerations include orientation, shading, thermal mass and natural ventilation
- Thermal Envelope
    - Include insulation and glazing which exceeds BCA minimum requirements and minuses energy for cooling, heating, resource consumption and operating costs.
- Layouts
    - Respond to the streetscape and topology
    - Optimise solar and daylight access
- Natural Ventilation
    - Promote natural ventilation for habitable rooms.

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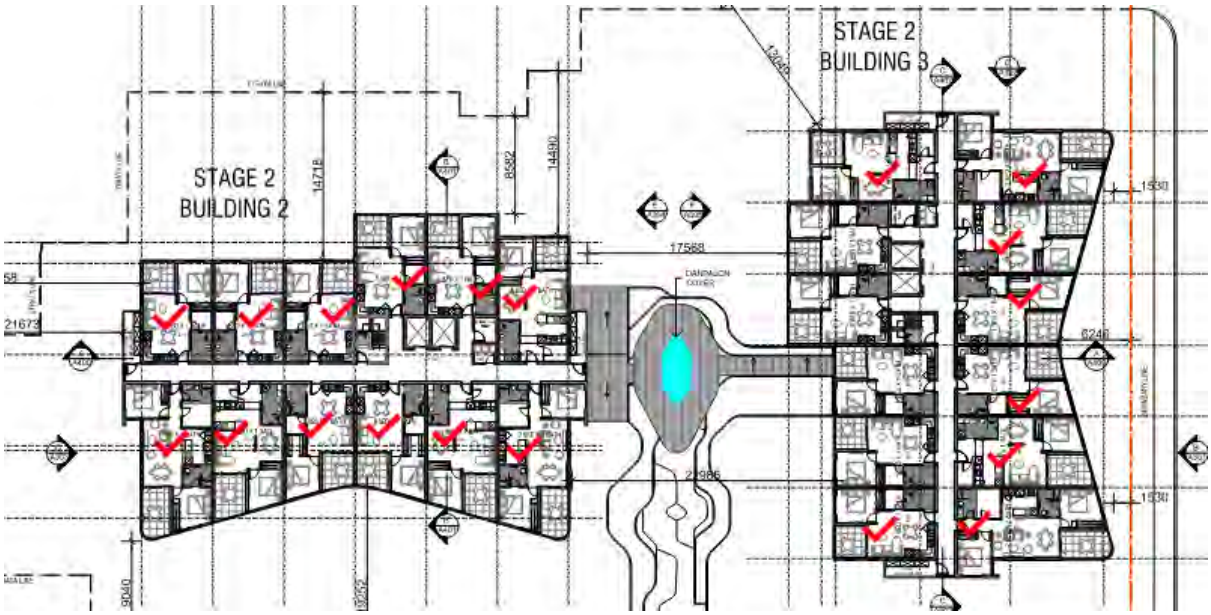
2. Solar and Daylight Access

2.1 Orientation and Winter Sunlight

The design has been oriented to optimise the number of dwellings receiving winter sunlight to private open space and via windows to habitable rooms.

As shown below, on a typical floor, 20 out of 24 apartments (~83%) have access to direct solar radiation during winter periods from either a north, east or western elevation:



This exceeds the 70% target from the R-Codes.

Overall, there are 23 apartments which do not receive direct solar radiation in this period, approximately 14%, which is less than the maximum allowable 15%.

2.2 Daylight for Habitable Rooms

The apartment layouts and position of windows is intended to optimise daylight access for habitable rooms. Every habitable room has at least one window in an external wall, visible from all parts of the room, with a glazed area not less than 10 per cent of the floor area and comprising a minimum of 50 per cent of clear glazing.

2.3 Shading and Glare Control

The building incorporates overhangs and balconies to provide glare control to reduce heat gain between spring and autumn.

2.4 Orientation

The building is oriented and incorporates external shading devices in order to minimise direct sunlight to habitable rooms between late September and early March.

Living room windows are generally protected by balconies or have reduced widow areas where unshaded and facing north, east or west. Glass performance will limit heat gains to these orientations.

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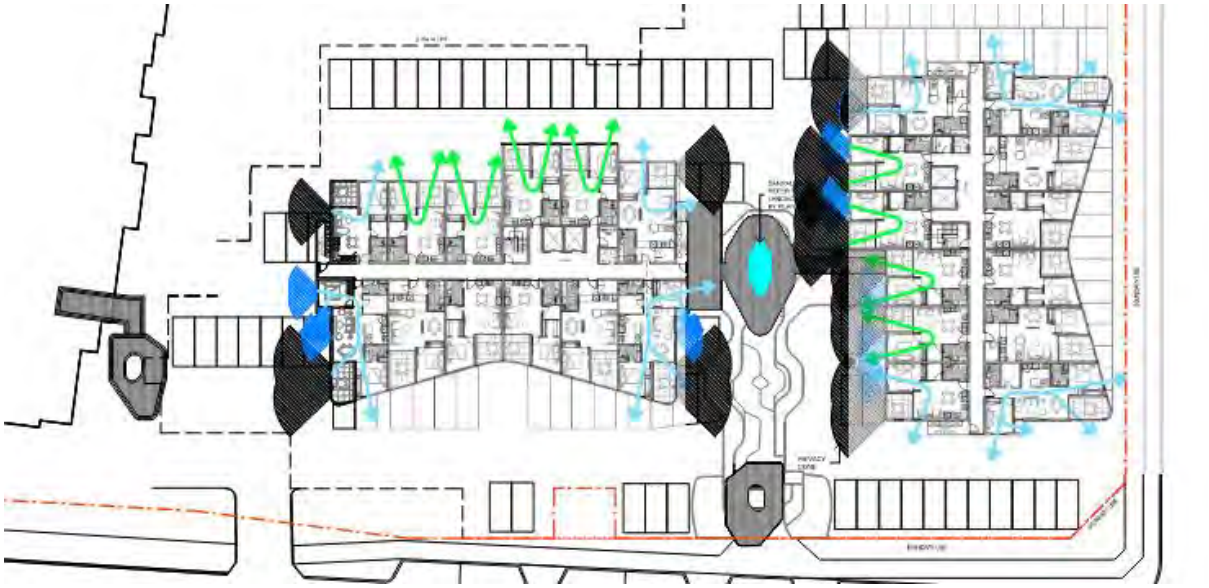
3. Natural Ventilation

3.1 Ventilation of Habitable Rooms

Each dwelling is designed to optimise natural ventilation to habitable rooms, both from single sided openings and cross flow ventilation, summarised as follows:

- Bedrooms are provided with windows and doors on opposite sides of the room.
- Apartments open to corridors which can be naturally ventilated by openings to at either end, capable of catching either easterly or south westerly prevailing breezes.
- No habitable room relies on lightwells as the primary source of fresh-air.



	BUILDING 2	BUILDING 3	TOTAL	PERCENTAGES
NATURALLY VENTILATED APARTMENTS	31	28	59	34%
SINGLE ASPECT APARTMENTS WITH PREVAILING BREEZES	30	28	58	33%
SINGLE ASPECT APARTMENTS	29	27	56	32%
NATURAL & PREVAILING BREEZE COMPLIANT			117	67%

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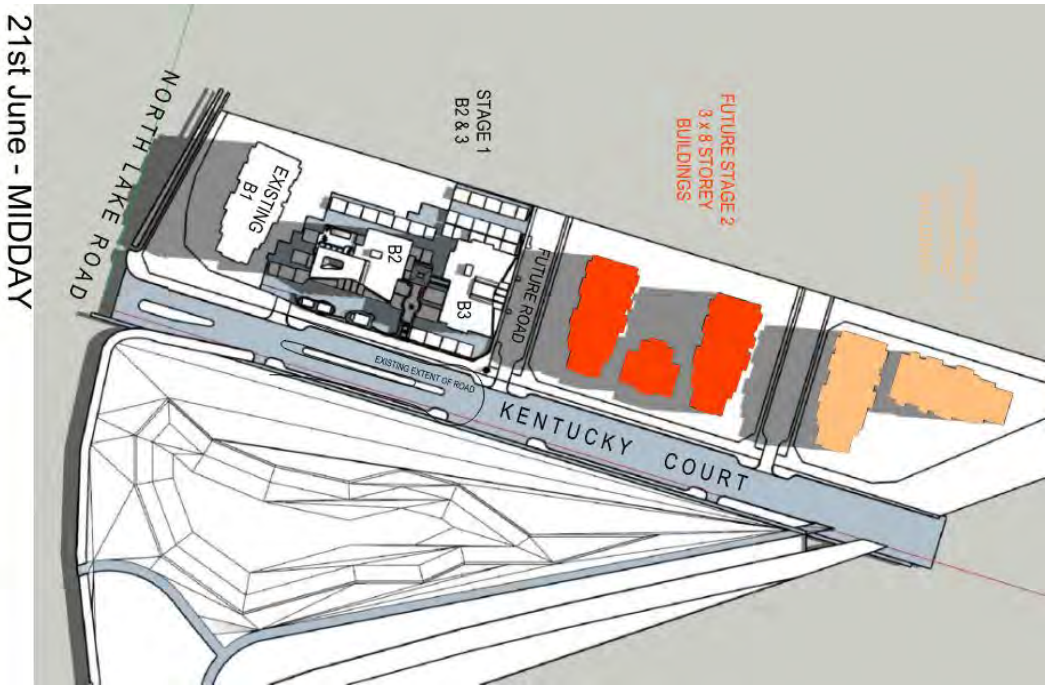
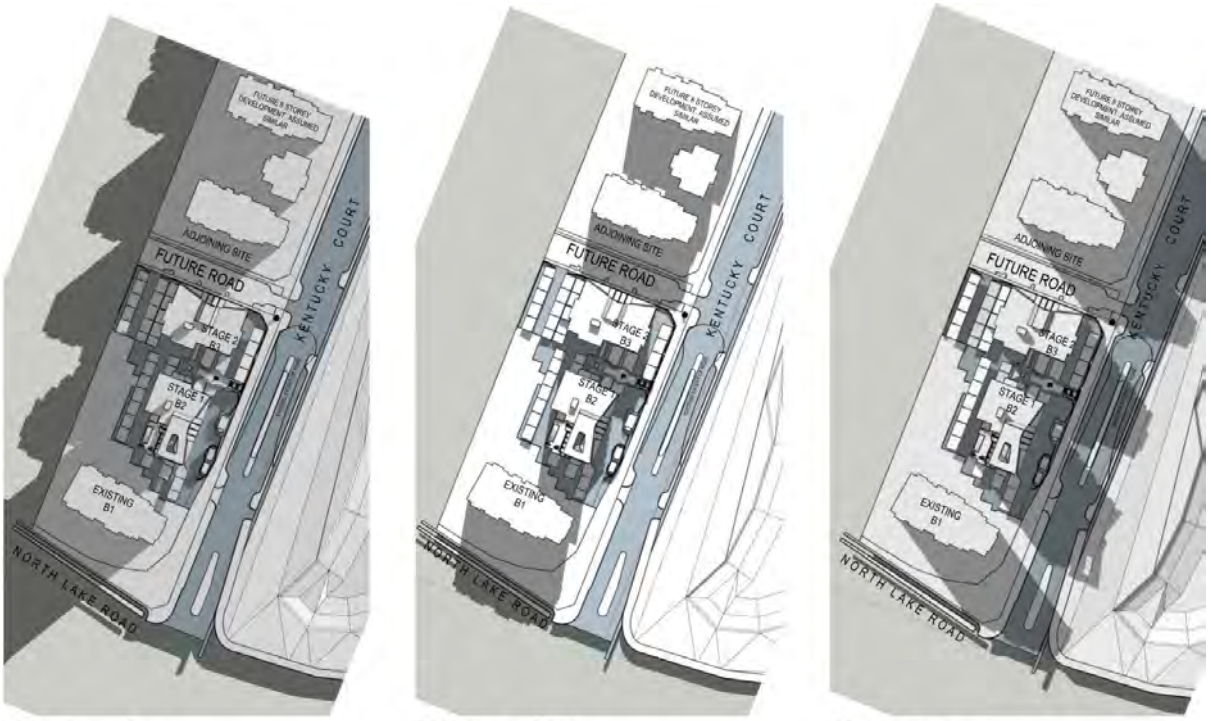
4. Site Orientation

4.1 Overshadowing

The design is to be built at the north end of the lot, with large set back to neighbours east or west:



There is around 24m clearance to the existing Stage 1 building and therefore overshadowing is anticipated to be minimal.



21st June - 9am | 21st June - 12pm | 21st June - 3pm

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5. Pedestrian Access

The project is well located for pedestrian access to the local Cockburn Gateway precinct, including the Cockburn ARC and Gateway shopping centre. The site also has strong public transport access, located within 500m of the Cockburn Train Station.

5.1 Pedestrian Connection & Response to Streetscape

The buildings have a main pedestrian entrance, accessed off Kentucky Court, which has been a focal point for landscaping and the provision of an attractive and accessible entry.

The pedestrian entries to the site are connected via a legible, well-defined, continuous path of ravel to building access areas.

Pedestrian paths are clearly delineated.

5.2 Pedestrian Comfort

Pedestrian connections are protected from the weather, well-lit for safety and amenity and visible from the public domain.

There is ample oversight from Kentucky Court, as well as apartments above, building management and building lobbies.

5.3 Services

Utility connections and bins are not located at the primary pedestrian entry.

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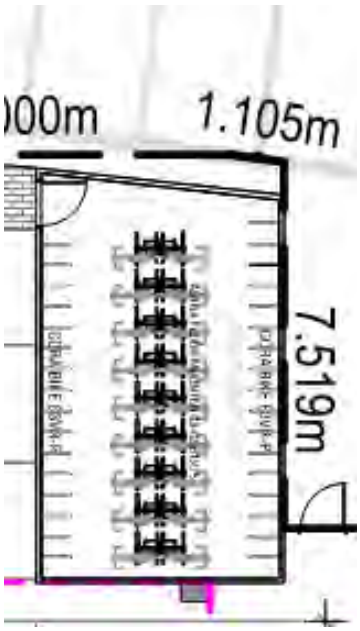
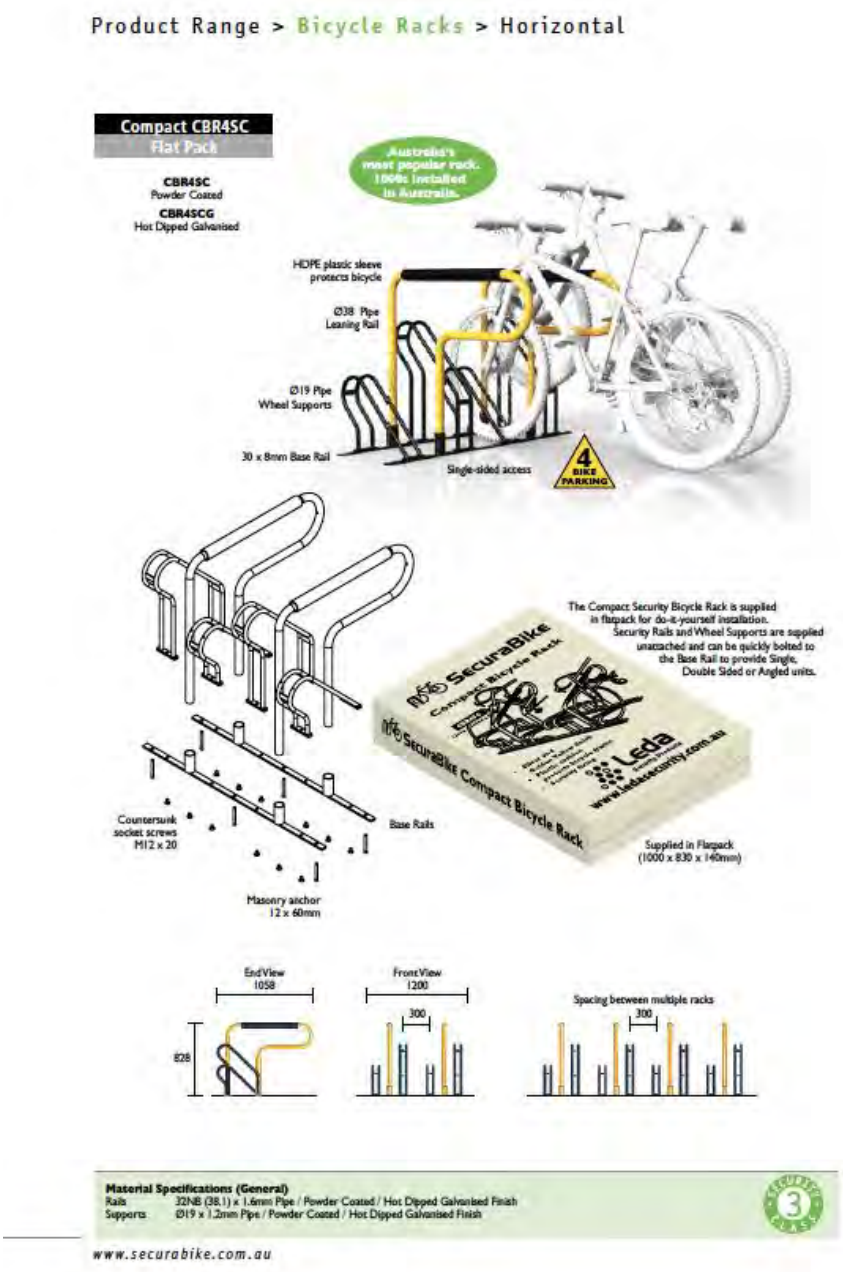
6. Sustainable Transport

6.1 Bike Parking

Secure, undercover bicycle parking is provided in accordance with Table 3.9 and accessed via a continuous path of travel from the vehicle or cycle entry point.

There is a secure bike store which will include around 50 bikes, with a further 56 kept in oversized stores:





6.2 Electric Car Charging

The design team will include spare capacity in car parking areas to facilitate future installation of car charging.

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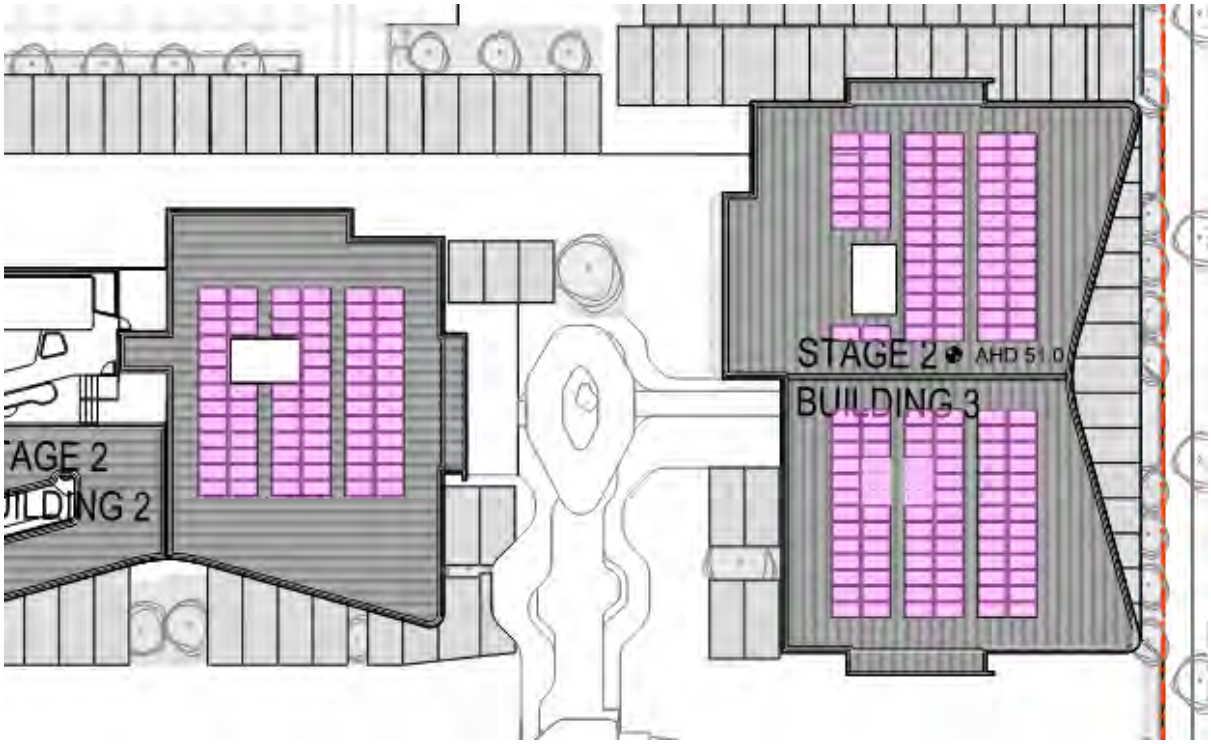
7. Energy Efficiency

7.1 Renewable Generation

The design includes a solar array at roof level which would be expected to generate more energy than the common area energy over a typical year:



Indicatively, the roof plan shows around 90kW peak generation, which is around 0.5kW per apartment, in keeping with good practice to avoid excessive energy export.

7.2 Passive Design

The project team are aiming to exceed BCA minimum performance requirements by at least 0.5 Stars, targeting a minimum rating of 5.5 stars and an average of 6.5 stars.

7.3 Lift Performance

The design team are intending to include regenerative braking on all internal lifts.

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8. Water Efficiency

8.1 Metering

The design will include an embedded meter network to track major uses, including apartment water consumption.

8.2 Fittings and Fixtures

Whilst the design is not yet finalised, the project team will be seeking to include high efficiency tapware and – where provided – appliances, generally in accordance with Green Star Buildings benchmarks:

Fixture Type	Minimum WELS rating	Maximum Flow Allowable
Taps	5 stars	4.5-6 L/min
Urinals	5 stars	1.0 L / Flush + Smart demand flush device
Toilets	4 stars	<3.5 L average flush <4.7L full flush <3.2 half flush
Showers	3 stars	6.0 – 7.5 L/min
Clothes Washing Machines	4 stars	
Dishwashers	5 stars	

8.3 Stormwater

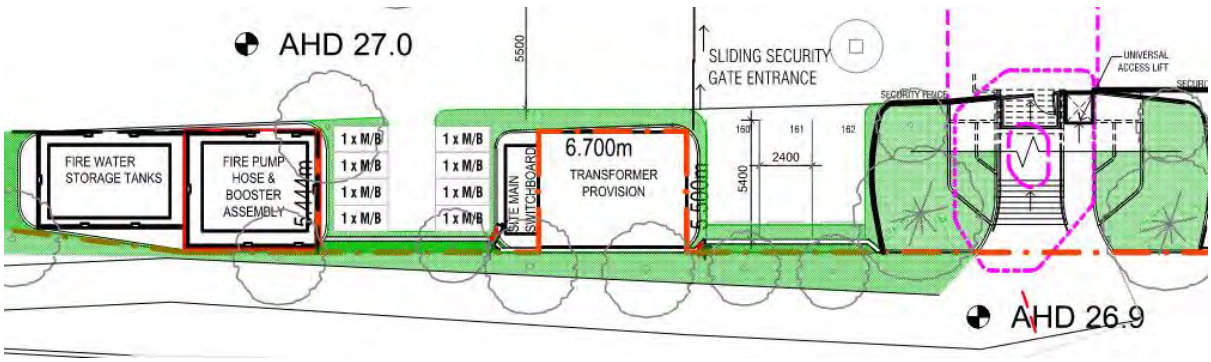
Stormwater is managed on site, with water infiltrated to local ground water, rather than being released to local sewer or stormwater infrastructure.

Where water cannot be managed on site, there are safe overland flows to manage major events to local stormwater system.

9. Services

Hot water units, air-conditioning condenser units and clotheslines are located such that they can be safely maintained, are not visually obtrusive from the street and do not impact on functionality of outdoor living areas or internal storage.

Services are sunk to basement level, below the pedestrian connection.



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10. Waste Management

10.1 Storage Area

Waste stores have been sized and located in accordance with the WALGA Multiple Dwelling Waste Management Plan Guidelines.

Usage			Daily Generation Rate			Weekly Generation Rate		
			Waste	Recycling	FOGO	Waste	Recycling	FOGO
Residential - Stage 2	90	Units	1,200	300	300	8,400	2,100	2,100
Residential - Stage 3	83	Units	1,109	277	277	7,760	1,940	1,940
Total			2,310	580	580	16,160	4,040	4,040
240 L Bins			10	3	3	68	17	17
660 L Bins			4	1	1	25	7	7

- Noise
  - Waste stores are located to protect residents from noise impacts from both bin use and collection
- Access
  - Waste vehicles have ready access to the waste store, without the need for reversing.
- Paths
  - Bins have a level and smooth access between the bin store and collection point to avoid excessive noise generation
- Users
  - Users have easy access to place their waste into bins, suitable for collection.
- Odour
  - Design includes ventilation to manage odour buildup
- Security
  - The bin store is accessible from an area with natural, every day surveillance
  - The bin store is not accessible by the general public

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WASTE MANAGEMENT PLAN

Client: Milieux Project Management

Project: HARMONY DEVELOPMENT –
Existing Building 1 and New Buildings 2 & 3
(Existing 77 apartments plus 173 new residential apartments)

Address: Kentucky Court, Cockburn Central

DALLYWATER CONSULTING

Prepared by Dallywater Consulting

Document Set ID: 11748683
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Version 1: 14/12/2023

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EXECUTIVE SUMMARY

Milieux Project Management (on behalf of its client) is applying to the City of Cockburn (the "City") to develop Buildings 2 and 3 of the Harmony development on the corner of Kentucky Court and Tea Tree Close, Cockburn Central. Building 1 has already been constructed and consists of 77 residential apartments and some commercial premises. Building 2 is proposed to have 90 apartments and Building 3 is proposed to have 83 apartments.

As part of the Development Approval process, the developer is required to submit a Waste Management Plan (WMP) for the development to the City. Milieux Project Management employed the services of waste management specialists, Dallywater Consulting, to investigate the City's requirements in this regard and to develop this WMP.

The Plan incorporates the existing waste management arrangements already approved by the City for Building 1, into an overall waste management plan for the three buildings.

Based on the City's current waste management requirements, it is proposed that the following initiatives will be implemented for the waste servicing of the three buildings of the Harmony Development at Kentucky Court, Cockburn Central.

- Use of 1100 litre receptacles; and
- Bi-weekly collections of the waste and recycling bins or more frequent collections if deemed necessary (e.g. for the more regular removal of putrescible waste).

The above arrangements will result in a requirement for twenty 1100 litre bins (i.e. 11 waste and 11 recycling) to be stored in the facilities two bin stores.

It is noted that these numbers are an example only as, based on the performance of the facility and its waste management and minimisation strategies, these numbers will be adjusted to suit the generation activity and servicing frequencies.

Review
All of the above-mentioned waste servicing arrangements will be reviewed as a matter of course on an ongoing basis to ensure that the most efficient arrangements to manage the waste and recycling material generated by all aspects of the facility are in place and are maintained.

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DEFINITIONS

660: A 660 litre waste or recycling receptacle.

1100: An 1100 litre waste or recycling receptacle.

Building Management: For the purposes of this document, the selected legal entity charged with managing the soft services of the built structure (i.e. waste management, cleaning, landscaping, security and other similar human-sourced services) on behalf of the owners and tenants of the building.

Recycling: Any material accepted by the local government's recycling collection contract.

Waste*: Any recyclable and non-recyclable discarded solid, semi-solid, liquid or contained gaseous materials not accepted by the local government's recycling collection contract.

Waste Minimisation: A process to minimise the amount of waste requiring disposal via hierarchical activities such as behaviour and product modification, waste avoidance, reduction, reuse and recycling.

Total Waste Stream: The combined waste, recyclables and compostables.

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1 INTRODUCTION

1.1 The Development

Milieux Project Management (on behalf of its client) is applying to the City of Cockburn (the "City") to develop Buildings 2 and 3 of the Harmony development on the corner of Kentucky Court and Tea Tree Close, Cockburn Central. Building 1 has already been constructed and consists of 77 residential apartments and some commercial premises. Building 2 is proposed to have 90 apartments and Building 3 is proposed to have 83 apartments.

As part of the Development Approval process, the developer is required to submit a Waste Management Plan (WMP) for the development to the City. Milieux Project Management employed the services of waste management specialists, Dallywater Consulting, to investigate the City's requirements in this regard and to develop this WMP. This Plan incorporates the existing waste management arrangements already approved by the City for Building 1, into an overall waste management plan for the three buildings.

Figure 1: Location Plan

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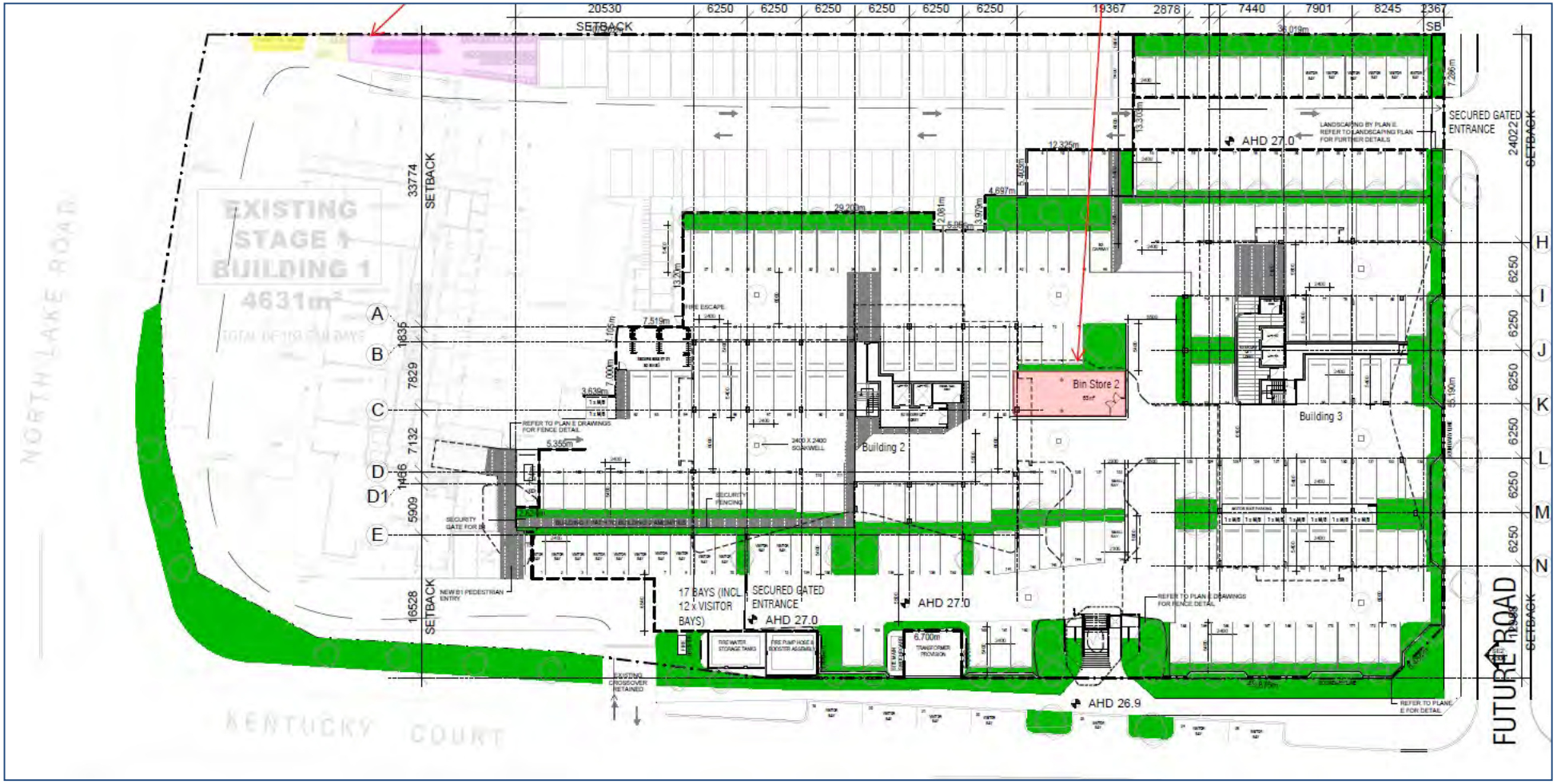
Figure 2: Site Plan



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The following table details the numbers (and types) of the various existing and proposed uses for the development.

Table 1: Various Uses (Buildings 1, 2 & 3)

Use	Number
Existing Building 1	
Apartments	77
Commercial Mix (Café and 2 Offices)	3
Proposed Buildings 2&3	**Number**
Building 2	
Apartments	90
Building 2	
Apartments	83
Total Apartments	**250**
Commercial	**Area ($m^{2)}$**
Cafe	105
Offices (2)	248

1.2 Onsite Residential Waste Management

The following provisions have been made for residential waste and recycling on the site.

1.2.1 General Waste and Recycling

- Residents will place waste and recycling into the 240 litre bins located in the existing bin store and the proposed ground level bin store, located adjacent Building 1 and under Building 2 and 3 respectively.
- The smaller bins will be emptied into the larger 660 or 1100 litre bins (using a bin lifter if required) by the building manager. (NOTE: see 4.4 with regards OS&H arrangements for this activity).
- Waste management staff will be tasked to monitor the bins in the both main bin stores to ensure that empty or part empty bins are accessible at all times and that each bin is filled before the next one is used.

1.2.2 Hardwaste/Bulky Items

Hard and bulky waste will be removed immediately from within the buildings and will be stored separately to the bin stores. Bulky waste will be disposed of as required to landfill or to a reuse or recycling opportunity.

1.2.3 Greenwaste

The gardens will be managed by strata management staff or contractor and all greenwaste would be removed offsite as it is generated, to a suitable disposal site. Small amounts of garden waste could be disposed of to the waste bins.

1.2.4 Waste Collection/Servicing

- The City provides various services for the collection of waste and recycling bins.
- The City sets the specifications for acceptable collection parameters (e.g. number of bins, frequency of collections, maximum bin weights, etc).
- The facility management are able to utilise the City's 660 litre bin collection services if suitable or can source a private collection arrangement if the preference is for the use of 1100 litre bins.

1.3 Onsite Commercial Waste Management

The commercial tenants will be required to place their waste and recycling into the commercial bin store. Depending on the collection service, bins will either be 240 litre general waste and recycling bins or 660 or 1100 litre bins, depending on weekly volumes and the nature of the material (e.g. putrescible versus dry recycling).

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2 LOCAL GOVERNMENT WASTE MANAGEMENT REQUIREMENTS

2.1 Waste Management Guidelines

To prepare a waste management plan for commercial developments, the City references its *Local Planning Policy Waste Management in Multiple Unit Developments (Policy Number LPP 1.14)*. For the commercial waste generation rates across the various activities conducted in Building 1, the author has used results for solid waste audits conducted by them of similar facilities and Sustainability Victoria's *Waste Management and Recycling in Multi-unit Developments Better Practice Guide 2019*.

The Plan has also been prepared based on the following assumptions which reflect the usual expectations of the local government;

- A variety of bin sizes can be accommodated (e.g. 660 litre and 1100 litre); and
- Waste and recycling receptacles are to be provided in sufficient numbers to cater for the waste generation volumes as indicated in the Plan and agreed to by the City.

2.2 Waste Generation

The following tables detail the required and assumed waste generation rates to be applied to calculations for the total waste and recycling volumes expected from the various areas of the development.

Table 2: Waste Generation Rates

Use	Number	Waste/Apartment/Week (m^3)	Recycling/Apartment/Week (m^3)
Existing Building 1			
Apartments	77	0.08	0.08
Existing Commercial	**Area**	**Waste/100m^2/week (m^3)**	**Recycling/100m^2/week (m^3)**
Café	105	0.3	0.2
Offices (2)	248	0.01	0.01
Proposed Buildings 2&3	**Number**	**Waste/Apartment/Week (m^3)**	**Recycling/Apartment/Week (m^3)**
Building 2			
Apartments	90	0.08	0.08
Building 2			
Apartments	83	0.08	0.08
Total Apartments	**250**		

2.3 Bin Stores

- Bin stores are to be provided for the weekly volume of material generated by the facility.
- Bin stores are to be adequate to house all bins with sufficient area to manoeuvre the bins to ensure that an empty or part empty bin is available to all users at all times.
- Bin stores are to be provided with a permanent water supply and drainage facility for wash down.

2.4 Bin Presentation

- Once the waste and recyclables have been collected from throughout the facility, the material is to be taken to the main bin stores for consolidation.
- Collection is to take place in the vicinity of the external bin store.
- The bin presentation area or collection point is flat, with the travel path between the bin store and collection point/vehicle clear of steps or kerbs.
- The distance between the bin store and the presentation area is less than ten (10) metres.
- Bins will be positioned within the store in such a manner so as to allow unobstructed access for the collection vehicle operators.
- Bins would be returned to the stores as soon as is they have been emptied.
- Bins from the internal store will be returned to that store as soon as they have been serviced.

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2.5 Waste Capacity

Based on the above requirements, the weekly storage capacity for waste and recycling from the proposed development is detailed in the following table.

Table 3: Estimated Weekly Volumes – Buildings 1-3

RESIDENTIAL					
	Number	Waste/Apartment/Week (m^3)	Recycling/Apartment/Week (m^3)	Waste/Week (m^3)	Recycling/Week (m^3)
Existing Building 1					
Apartments	77	0.08	0.08	6.2	6.2
Building 2				**0.01**	**0.01**
Apartments	90	0.08	0.08	7.2	7.2
Building 2				**0.44**	**0.09**
Apartments	83	0.08	0.08	6.6	6.6
TOTAL GENERATION (RESIDENTIAL)				**20**	**20**
COMMERCIAL					
Existing Commercial (Building 1)	**Area**	**Waste/100m^2/week (m^3)**	**Recycling/100m^2/week (m^3)**	**Waste/Week (m^3)**	**Recycling/Week (m^3)**
Café	105	0.3	0.2	1.89	1.26
Offices (2)	248	0.01	0.01	0.15	0.15
TOTAL GENERATION (COMMERCIAL)				**2.04**	**1.41**

2.6 Number of Bins

2.6.1 Residential

Based on the design of the service access way on the site, the collection is suited to a rear-load vehicle. The City's rear-load collection service is able to service 660 litre waste and recycling bins, or the proponent is able to seek an alternative private collection arrangement with a commercial collection entity for an 1100 litre service. In either case, the use of rear-load collections enables increased service frequencies which decreases bin numbers and will assist in the best practice management of putrescible material in the bin store areas.

Based on the above volumes, the number of 660 or 1100 litre receptacles required to cater for the weekly waste and recycling volumes for the residential component of this development are detailed in the following table.

Table 4: Required Bin Capacity - Residential

RECEPTACLES	Waste (m^3)	Recycling (m^3)
RESIDENTIAL		
Weekly Generation (m3)	**20**	**20**
No. of 660 litre receptacles/week	30.3 (**31**)	30.3 (**31**)
No. of 1100 litre receptacles/week	18.18 (**19**)	18.18 (**19**)

2.6.2 Commercial

Based on the above volumes, the number of 660 or 1100 litre receptacles required to cater for the weekly waste and recycling volumes for the commercial component of this development are detailed in the following table.

Table 5: Required Bin Capacity - Commercial

RECEPTACLES	Waste (m^3)	Recycling (m^3)
RESIDENTIAL		
Weekly Generation (m3)	**2.04**	**1.41**
No. of 660 litre receptacles/week	3.09 (**4**)	2.13 (**3**)
No. of 1100 litre receptacles/week	1.85 (**2**)	1.28 (**2**)

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2.7 Summary

Based on the above and on weekly waste and recycling collections , thirty-one 660 litre waste bins and thirty-one recycling 660 litre recycling bins would be required to be emptied each week. If 1100 litre bins are used, nineteen waste bins and nineteen recycling bins would be required.

These numbers of receptacles and the storage areas required for them would impinge significantly on available floor space within the development and raise many issues in regard to their management within the site (e.g. handling, movement between areas and from stores to collection points etc).

Options need to be considered to reduce the number of bins required to be stored on and collected from the site.

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3 REDUCING CAPACITY

It can be seen from the preceding tables that while the City requires capacity for a week's volume of waste to be stored on-site, alternatives could be considered to reduce the number of waste and recycling receptacles required for the development. The initiatives considered were:

- Compaction of the waste and recycling; and
- Increased servicing (collections).

Increased servicing has been selected as the most efficient option to allow reductions in the bin requirements for the development. Because it is a collection using a rear-load vehicle, the City or commercial contractors are able to provide more regular servicing to the development. Coupled with the use of 660 or 1100 litre bins, this strategy will significantly reduce the requirement for the number of bins.

3.1 Increased Servicing

The following table shows the required number of 660 or 1100 litre bins at a collection frequency of one per week against the number of bins required with increased servicing. Final bin numbers will depend on the collection frequency adopted.

Table 5: Number of Residential Bins - Combination of Increased Bin Size and Servicing

Weekly Generation (m3)	Waste	Recycling		Weekly Generation (m3)	Waste	Recycling
	20	20			20	20
No. of 660 litre waste receptacles/week	**31**	**31**		**No. of 1100 litre waste receptacles/week**	**19**	**19**
2 collections per week	15.5	15.5		2 collections per week	9.5	9.5
3 collections per week	10.33	10.33		3 collections per week	6.3	6.3
4 collections per week	7.75	7.75		4 collections per week	4.8	4.8
5 collections per week	6.2	6.2		5 collections per week	3.8	3.8

From the preceding table, with weekly collections of the facility's waste and recycling, thirty-one waste and thirty-one recycling 660s would be required to manage the weekly total waste stream. With twice weekly servicing of both streams, the number of 660s required would be sixteen waste and sixteen recycling bins.

As 1100s are to be used, with weekly collections of the facility's waste and recycling, twenty waste and twenty recycling bins would be required to manage the weekly total waste stream. With twice-weekly servicing of both streams, ten waste and ten recycling 1100s will be required.

3.2 Summation

It is proposed that the following initiatives will be implemented for the waste servicing of the three buildings of the Harmony development.

- Use of 1100 litre receptacles; and
- A minimum of twice-weekly collections of both the waste and recycling bins.

The above arrangements will result in a requirement for sufficient space in the facility bin stores for a maximum of twenty 1100 litre bins (i.e. 10 waste and 10 recycling). It is noted that these numbers are an example only as, based on the performance of the facility and its waste management and minimisation strategies, these numbers will be adjusted to suit the generation activity.

Review

All of the above-mentioned waste servicing arrangements will be reviewed as a matter of course on an ongoing basis to ensure that the most efficient arrangements to manage the waste and recycling material generated by all aspects of the facility are in place and are maintained.

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4 BIN STORAGE AND MANAGEMENT

4.1 Bin Compounds/Stores

There are two bin compounds within the facility. One (currently in use for Building 1) is located adjacent to Building 1 on the western boundary of the site. This store is the bin servicing site for the development and the bins from the second bin store, located under Buildings 2 and 3, will be transferred across to this store at collection time.

The Commercial Bin Store is located at the rear of the Servicing Store. The commercial entities do not have access to the residential bin stores.

4.2 Hard/Bulky Waste Temporary Storage

Area is available in the stores for the storage (prior to disposal or collection) of hard waste and large bulky items too large to be placed in the 1100 litre receptacles (see Figure 4).

4.3 Bin Store Specifications (Construction/Amenity)

The bin stores have been designed to meet or exceed the following specifications:

- Both are provided with a tap and connected to an adequate supply of water. The taps are to be located in a position so that they will not be susceptible to being damaged by the bins being removed for collection;
- Constructed of brick, concrete, corrugated compressed fibre cement sheet or other material of suitable thickness;
- Having walls not less than 1.8 metres in height and having an access point of not less than 1 metre in width and fitted with a self-closing gate;
- Access point for collection is to be of suitable size for the size of the bins used and the collection method proposed;
- Containing a smooth and impervious floor of not less than 75 millimetres in thickness, and provided with an adequate liquid refuse disposal system;
- Where located within a building, the bin compound is to be ventilated in accordance with Australian Standard 1668.2: *The Use of Ventilation and Air Conditioning in Buildings* (as amended);
- Conveniently located for disposal of waste, organics and recyclables;
- Not accessible by the public;
- To have no gradients or steps from the bin store to the bin service area; and
- Standard signage explaining waste management and what materials are suitable for recycling is to be posted/erected in all cleaners' rooms and the bin store.

4.4 Bin Management

The management of the bins throughout the complex will be coordinated by the facility management.

Designated waste management personnel will be responsible for servicing and cleaning the bins and the bin stores and for ensuring that a part empty or empty bin is accessible in the main bin store to all staff at all times.

It should be noted that consideration has been given to the handling of waste and recycling material collected by staff. Cleaners will use smaller (e.g. 120 or 240 litre), and those bins would then be transferred to the main bin store. Bagged waste can then be pulled from the smaller bins and deposited into the larger 1100s.

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Figure 3: Bin Stores

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4.5 Bin Collection

Servicing (emptying) of bins will occur from the existing Building 1 bin store area. The collection vehicle personnel will access the bins from the stores, wheel the bins to the vehicle and then return the bins to the stores.

Waste management staff will ensure that the collection vehicle operators have access to the store and that the bins are placed within the store such that they can be emptied without obstruction by the contractor. Upon request, facility staff could be made available if necessary to assist with presentation of the bins.

If 660 litre bins are used and the City is contracted to service the bins, and its vehicles and/or staff are required to access the site, an indemnity will be provided by the owners of the facility (in the manner prescribed by the City), with wording to the effect that the City and its Waste Management Contractor is indemnified from any loss, damage, liabilities or claims caused directly or indirectly to any person or property, by or through or in connection with the waste removal services or equipment. This indemnity is reduced to the extent that the City or its contractor have caused or contributed to such loss, damage or liability or claim by way of proven negligence.

4.6 Traffic/Pedestrian Management

Aside from movement of the collection vehicles traversing to the bin store, traffic will not be impacted by the collection process.

At times of servicing of the bins, facility staff will ensure that the area is clear of any person not authorised to be in the vicinity, to reduce the likelihood of any conflict with the collection vehicle.

4.7 Other Waste/Items

Bulky and hard waste will be stored temporarily in the bin store areas for collection. Collection vehicles will be able to access the yard to collect these materials or items as required. Should larger capacity bulk bins be required for occasional works (e.g. maintenance, building etc), various internal locations are available for the temporary placement of these bins.

Figure 4: Bin Store Locations

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5 COMPLIANCE WITH WASTE MANAGEMENT PROVISIONS

The following table provides responses against the City's Waste Management Policy for the various development criteria.

Table 6: Waste Management Plan Responses to Policy Criteria

Policy Reference	Stated Criteria	Response
(1) A Waste Management Plan (WMP) is to be submitted with the following categories of Development Application:		
1.	**Residential**	
(a)	**Grouped dwelling proposals where simple bin presentation for road-side collection is not possible;**	Not Applicable
(b)	**Four (4) or more multiple dwellings;**	Not Applicable
(c)	**Aged or dependant persons developments comprising more than 10 beds/dwellings or where simple bin presentation for road-side collection is not possible; and**	Not Applicable
(d)	**Lodging houses.**	Not Applicable
2.	**Mixed Use Developments (comprising both Residential and Non-Residential).**	Applicable
3.	**Non-Residential Development**	
(a)	**All types of non-residential development where waste is generated, including commercial (office, showroom, warehouse), industrial (all types), retail (shops) and food and beverage type establishments (cafes, restaurants etc).**	Not Applicable
(2) The Waste Management Plan is to Include		
1.	**In the case of demolition and/or remediation:**	Not Applicable
(a)	**Site plan showing on-site materials storage areas, collection points and vehicular access/egress arrangements;**	Applicable
(b)	**Details of materials and quantities thereof to be re-used (on-site), recycled or to be sent to landfill;**	Not Applicable
(c)	**Measures to be implemented for the purpose of minimising the delivery of waste generally to landfill.**	Not Applicable
2.	**In the case of new development:**	
(a)	**Measures to be implemented for the purpose of minimising the delivery of waste to landfill during construction, including: the separation on-site of like materials for re-use or recycling, nominated on-site collection points, and the requirements/expectations of the builder and sub-contractors regarding waste.**	Not addressed in this Plan
(b)	**Measures to be implemented for the purpose of minimising the delivery of waste to landfill during occupation, including: the on-site separation of materials for recycling, on-site collection points, and the expectations of owners and/or occupants/tenants.**	**On-site Minimisation –** • The development has provided access to waste collection vehicles for onsite removal of recycling materials. • Management would direct the removal of larger recyclable items unsuitable for placement in the bins to Henderson Waste Recovery Park for disposal. • Cleaners and facility staff will be designated to manage the bins both within the facility as well as in the bin store. **Bin Collection Points –** • Bins will be collected from the Building 1 bin store.

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Policy Reference	Stated Criteria	Response
(c)	**Site Plan showing the location and size of on-site storage, the collection point/s, pedestrian and vehicular access to the collection point/s (in the case of site collection) and/or the location of the bin pad in the case of road side collection.**	**Location and size of on-site storage –** • detailed on proposed ground floor plan provided. **Collection point/s –** • detailed on proposed ground floor plan provided
(d)	**Detailed plan and elevation showing the size and design of the storage area in accordance with the minimum requirements below. If not shown on the Site Plan, turning circles (manoeuvring details) are to be shown on a separate plan.**	**Plan and Elevation of Bin Stores –** See Figure 2 – will be designed in accordance with the requirements in LPP 1.14 **Manoeuvring Details –** Vehicles will be able to enter and leave the site in forward gear – sufficient turning area has been provided to enable the 8m collection vehicles to drive to the bin store and access the bins directly to the rear of the collection vehicle.
(e)	**An estimation of waste volume likely to be generated when the development is occupied, including the potential for an increase in volume (due to an increase in the density of a residential development or a change of use in non-residential development). In this regard, the City provides a weekly recycling service;**	**Likely Waste Volumes –** The maximum generation for the facility has been calculated using the City's LPP, Sustainability Victoria's guidelines and the consultant's solid waste audit experience with similar facilities. Estimated volumes are provided at Table 3.
(f)	**Details of the intended method of collection and associated equipment i.e. by the City of Cockburn and/or private contractor, time and management of collection i.e. by individuals, strata managers and/or caretaker/s, cleaning and maintenance of on-site waste management areas etc;**	**Collection –** • Collection of the waste and recycling will be via rear-load vehicles from the external bin store. **Cleaning and Maintenance –** • Cleaning and maintenance of the bins will be the responsibility of facility staff.
(g)	**Details of advice to be provided to property owners and/or development occupants (both residential and non-residential) regarding the WMP;**	**Tenant Education –** • A copy of the City of Cockburn Resource Recovery Calendar, details of Council's website, lists of what can and can't be put into each bin etc) and a copy of this WMP will be made available to the relevant Facility Management staff. The information would also contain details of employee's responsibilities in regard to onsite waste managementand participation in any waste minimisation activities conducted by the Facility Management and the City
(h)	**Details of any contract/s with cleaners and/or waste contractors, including the requirements of the contract/s;**	**Cleaning/Waste Contracts –** • To be determined
(i)	**Plans to incorporate new waste management technologies and practices in the WMP;**	**New Technologies and Practices –** • While the facility operates to best practice, no new waste technologies or initiatives are being considered at this time, apart from the development of a waste information pack. • Where and when applicable, the Facility Management will adopt new technologies and regular internal review of the waste management practices adopted on the site will be conducted to ensure they remain current and contemporary.
(j)	**Details of how a WMP will continue to be applied in perpetuity across the life of a development, via for example, reference to such in the Strata Management Statement (including details regarding the process for changing a WMP and the City's involvement in such).**	**Integration of WMP in Facility Management** – • Facility Management will ensure that WMP is adopted and incorporated into the management practices of the facility. • If any significant changes are made to this Plan, they are required to be approved by the City ofCockburn; • The Facility Management will continue to inform staff of their obligations to meet the requirements of the Plan and of any modifications to the system. • It is anticipated that the waste management systems and Facility Management expectations will be incorporated into the "induction" process for staff.
(3) Minimum requirements to be addressed in a WMP:		
1.	**Residential**	
(a)	**On-site storage capable of containing a minimum of one (1) weeks waste and recycled material;**	• Met
(b)	**The provision of a minimum one (1) square metre per dwelling for**	Not Met

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Policy Reference	Stated Criteria	Response
	waste storage;	
(c)	**On-site storage being conveniently located to the point of collection and out of public view;**	Met
(d)	**Suitably located road side bin collection pad/s (taking into account pedestrian and vehicular movement across the front of, or into and out of a property, walls, fencing and landscaping at the front of a property, and kerbside parking);**	Not Applicable
(e)	**Removal of bins from the collection point (internal or road side) the day of collection.**	Not Applicable
2,	**Non-Residential Development**	Applicable
(4) General Requirements (applicable to both Residential and Non-Residential Development)		
1.	**Mandatory (Required)**	
(a)	**Waste storage and/or recycling rooms are to be provided in the basement, part basement or undercroft level of a development when waste is collected from one, or all of these levels;**	Not Applicable
(b)	**Where waste and recyclables are to be collected in the basement level or similar, collection is to take place in the vicinity of the waste storage and/or recycling room. The collection point is to be flat, with the travel path between the storage area/room and collection point/vehicle clear of steps or kerbs. The distance between the storage area/room should be no greater than ten (10) metres.**	Not Applicable
(c)	**Minimum clearance required in the basement, part basement or undercroft levels of a development is 2.4 metres. This includes clearance to all structural beams, pipe work, services or similar.**	Not Applicable
(d)	**Minimum driveway width is four (4) metres. On-site manoeuvring (turning circles etc) is to provide for ease of collection and vehicle egress in a forward manner. Where a turn-table is to be installed to facilitate forward egress, the turn-table requires a minimum 20 tonne capacity.**	Road widths met. Sufficient hardstand turning area provided for the service vehicles to be able enter and leave the site in forward gear.
(e)	**Access ramps and driveway gradients serving basements, part basements or undercroft areas are to cater for long wheelbase vehicles 7.2 metres in length with a maximum gradient of1:4.5.**	Not Applicable
(f)	**Where approval is given for the collection of waste and recyclables from the road (at the pre-application stage, or via the development application process), consideration needs to be given to a 12.5 metre long truck where access and/or manoeuvrability is difficult or limited.**	Not Applicable
(g)	**Waste storage, management and collection in mixed use developments and/or buildings is to be separate and self contained/secured (with separate access arrangements). Where secured, a compatible key system is necessary to enable access by collecting personnel/contractors. This includes the City of Cockburn where the City is the collector. The City's Waste Services**	Met

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Policy Reference	Stated Criteria	Response
	Unit is to be consulted regarding the system prior to installation. All costs associated with the system are the responsibility of the developer, property owner/s and/or the strata managers.	
(h)	**A caretaker or strata management representative is to manage waste and recycling to ensure bins are filled consecutively, with only full bins to be presented on collection day.**	Met
(i)	**All putrescible waste awaiting collection is to be stored in a Mobile Garbage Bin/s (MGB). Alternative storage containers with permanent tight fitting lids and smooth washable internal surfaces may be approved by the City.**	Met
(j)	**External waste enclosures are to be surrounded by 1.8 metre high walls or fencing with a self closing gate. Internal rooms i.e. within a basement are to be separately ventilated with a system complying with Australian Standard 1668 (AS1668). The ventilation outlet is not to be in the vicinity of windows or intake vents associated with other ventilation systems.**	This will occur.
(k)	**Waste storage and/or recycling rooms/areas are to be designed and erected in a manner that has regard for the design and appearance of the development of which they are a part. Suitable clearance to enable safe and unimpeded collection is also required. In this regard, clearance to: buildings, hard and soft landscaped elements, and on/off-site parking is to be taken into account.**	This will occur.
(l)	**All waste storage and/or recycling rooms/areas are to have: 75mm concrete floors grading to a 100mm industrial floor waste (including a charged 'water-trap' connected to sewer or an approved septic system), with a hose cock to enable bins and/or the enclosure to be washed out. An alternate floor surface may be approved by the City's Waste Manager.**	This will occur.
(m)	**All internal walls in waste storage and/or recycling rooms/areas are to be cement rendered (solid and impervious) to enable easy cleaning. Ceilings in waste storage and/or recycling rooms are to be finished with a smooth faced, non-absorbent material capable of being easily cleaned.**	This will occur.
(n)	**Walls and ceilings in waste storage and/or recycling areas are to be finished or painted in a light colour.**	This will occur.
(o)	**All waste storage and/or recycling rooms are to be constructed in a manner that prevents the entry of vermin;**	This will occur.
(p)	**All waste storage and/or recycling rooms/areas are to be provided with artificial lighting, sensor or switch controlled both internal/external to the room or area. All lighting in open areas to**	This will occur.

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Policy Reference	Stated Criteria	Response
	comply with AS4282-1997 (Control of Obtrusive Outdoor Lighting).	
(q)	**All waste storage and/or recycling rooms/areas require the following signs and/or information to be displayed: i. A sign stating "NO STANDING" at the entrance to the room/area. ii. A clearly visible "DANGER" sign in the vicinity of the entrance to the room/area. iii. Standard signage (details available in the City's Resource Recovery Calendar for Domestic Waste distributed with Rates Notices) explaining waste management and what materials are suitable for recycling (to be posted/erected in all waste storage and/or recycling rooms/areas).**	This will occur.
2.	**Preferred (Recommended)**	
(a)	**The storage and collection of waste from the basement, part basement or undercroft level of any multi-storey development.**	Not Applicable
(b)	**Where applicable in the case of non-residential use or development, waste contract provisions should require the collection and recycling of low/high grade office paper and other office equipment (including: batteries, smoke detectors, fluorescent tubes etc) from the waste stream.**	Will be considered in the internal commercial waste minimisation arrangements adopted by the Facility Management.
(c)	**The provision of a minimum of 0.5 square metres per dwelling 'bulky' storage space in residential development.**	Met
(d)	**A bulky storage or fenced in area in non-residential development. Minimum eight (8) metres in volume (m^3), suitably signed and made available for the storage of electronic goods.**	Area allocated in the bin stores for the temporary storage of larger or bulky items unsuitable for placement in the bins. It will be a requirement of the Facility Management that if these items cannot be repaired on-site, that they should be removed promptly to a suitable disposal or recovery site by facility staff or contractors.
(5) Advice		
1.	**Where road side collection is not considered appropriate by the City's Waste Manager due to concerns relating to amongst matters pedestrian and/or vehicular conflict, and potential impacts on the amenity of a locality, alternate collection methods are to be determined and incorporated in the WMP in consultation with the Waste Manager.**	Not Applicable – Onsite collection
2.	**Waste chutes are not permitted without mechanical ventilation and the submission of details acceptable to the City outlining the cleaning and maintenance of such.**	Not Applicable

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6 WASTE MANAGEMENT RESPONSIBILITIES

6.1 Strata/Building Management

The Strata Management, through its facility management team, will have overall responsibility for ensuring that the waste management activities are appropriately conducted and that all staff meet their waste management responsibilities. They will also be responsible for training staff in all facets of the cleaning responsibilities.

The Strata Management aspires to continual improvement of waste minimisation throughout the complex, to lessen the volume of material being sent to landfill and increase the amount of material recycled or diverted from landfill.

6.2 Cleaning Staff/Waste Management Personnel

At a minimum, the cleaners/waste personnel will undertake the following bin servicing and waste management functions;

- Regular inspection (and rotation if required) of 1100 bins in the bin stores to ensure that part empty or empty bins are accessible to staff at all times;
- Regular cleaning of bins and bin stores and ensuring that one bin is filled before the next one is used;
- Ensuring the collection vehicle operators have access to the external store;
- Preventing unauthorised access by other than facility personnel to the area around the service vehicle at times of bin servicing; and
- Assistance with bin movement for operators (if required).

In the future, with the initial assistance of waste management experts, training of staff to implement a Waste Minimisation Plan for the facility may be explored. The plans could provide recommendations on and include specific actions for;

- the additional segregation of specific recycling materials (e.g. cardboard, aluminium, e-Waste etc) from the comingled stream; and
- implementation of waste reduction initiatives such as office recycling, worm farms and composting etc.

6.3 Residents/Commercial Tenants

All residents and commercial entities will be advised of the Strata Management's various waste requirements. This would include direction on the correct use of the bin rooms and expectations of the management with regards to any recycling or waste diversion initiatives.

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7 REFERENCES

1.	City of Cockburn	*Local Planning Policy Waste Management in Multiple Unit Developments (Policy Number LPP 1.14)*
2.	Sustainability Victoria	*Waste Management and Recycling in Multi-unit Developments Better Practice Guide 2022*

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ILIEUX PROJECT MANAGEMENT

HARMONY APARTMENTS STAGE 2 AND 3
COCKBURN CENTRAL

DEVELOPMENT APPLICATION
ACOUSTIC REPORT

DECEMBER 2023

OUR REFERENCE: 23016-1-23404

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
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DA ACOUSTIC REPORT

HARMONY APARTMENTS STAGE 2 AND 3
COCKBURN CENTRAL

Job No: 23404

Document Reference: 32016-1-23404

FOR

ILIEUX PROJECT MANAGEMENT

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1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Ilieux Project Management to conduct a preliminary review of the proposed development of Stage 2 and 3 of the Harmony Apartments in Cockburn Central. The development is location on 884-888 North Lake Road, Cockburn Central.

This report has been based on the Development Application drawings provided.

2.0 PROPOSED DEVELOPMENT

The proposed development site is located at 884 – 888 North Lake Road, Cockburn Central.

The development is Stage 2 and 3 of the Harmony Apartments, with Stage 1 already constructed.

Stage 2 and 3 consists of 2 buildings, Stage 2 being eight floors and Stage 3 seven floors.

The ground floor consist of carparking, with the balance of both buildings consisting of apartments. A communal roof terrace is located on the south side of the 8th floor of the Stage 2 building.

3.0 CRITERIA

3.1 BCA PROVISIONS

For Class 2 or 3 buildings, Part F5 of the National Construction Code (NCC), outlines the minimum acoustic isolation of apartments. The following summarises the acoustic criteria:

3.1.1 Walls

Wet to wet	$R_W + C_{tr}$ not less than 50 dB.
Living to living	$R_W + C_{tr}$ not less than 50 dB.
Wet to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
Kitchens to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
SOU to Lobby	R_W not less than 50 dB.

Note: Where kitchens are part of an open living area, we consider the kitchen to be part of the living area and in these cases a discontinuous construction is required. This also includes cases where kitchens are back-to-back, however, discontinuous construction is only required on one side.

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3.1.2 Floors

Floors $R_W + C_{tr}$ not less than 50 dB.

Impact Isolation $L_{n,w}$ not more than 55 dB is recommended.

Note: The impact isolation criteria under the BCA is an $L_{n,w}$ of not more than 62 dB. However, as a member firm of the Association of Australasian Acoustic Consultants, (AAAC) we recommend a criteria of an $L_{n,w}$ of not more than 55 dB be adopted for a development of this type.

3.1.3 Service Risers

to Habitable Rooms $R_W + C_{tr}$ not less than 40 dB.

to Non-Habitable Rooms $R_W + C_{tr}$ not less than 25 dB.

3.1.4 Hydraulics

The above requirements also apply to storm water down pipes.

3.1.5 Doors

Door (Connecting to a lobby) R_W not less than 30 dB.

The development will be designed to comply with the requirements of Part F5 of the BCA.

3.2 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable or assigned noise levels for noise sensitive premises are determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1. For commercial premises, the allowable or assigned noise levels are the same for all hours of the day. Table 3.1 also lists the assigned noise levels for commercial premises.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

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It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

From a review of the development, the influencing factor for this development and the surrounding noise sensitive premises would be 10 dB, based on the following:

Major Roads within inner circle;	
North Lake Road	+ 6 dB
Midgegooroo Road	+ 6 dB
	(+6 dB maximum)
Commercial Premises within inner circle;	
40%	+ 2 dB
Commercial Premises within outer circle;	
40%	+ 2 dB
Total IF	**+ 10 dB**

Hence, the influencing factor would be + 10 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	55	65	75
	0900 - 1900 hours Sunday and Public Holidays	50	60	75
	1900 - 2200 hours all days	50	60	65
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	45	55	65

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

We note that noise emissions from the premises need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This primarily consists of mechanical services associated with the development.

3.3 STATE PLANNING POLICY 5.3 – JANDAKOT AIRPORT

The implications of State Planning Policy 5.3, and proximity to Jandakot Airport have been considered.

As the development is location outside of the identified "Frame" area, no amelioration is required in accordance with SPP 5.3 – as shown in Figure 1 below.

State Planning Policy 5.3
Land Use Planning in the Vicinity of Jandakot Airport
January 2017
12

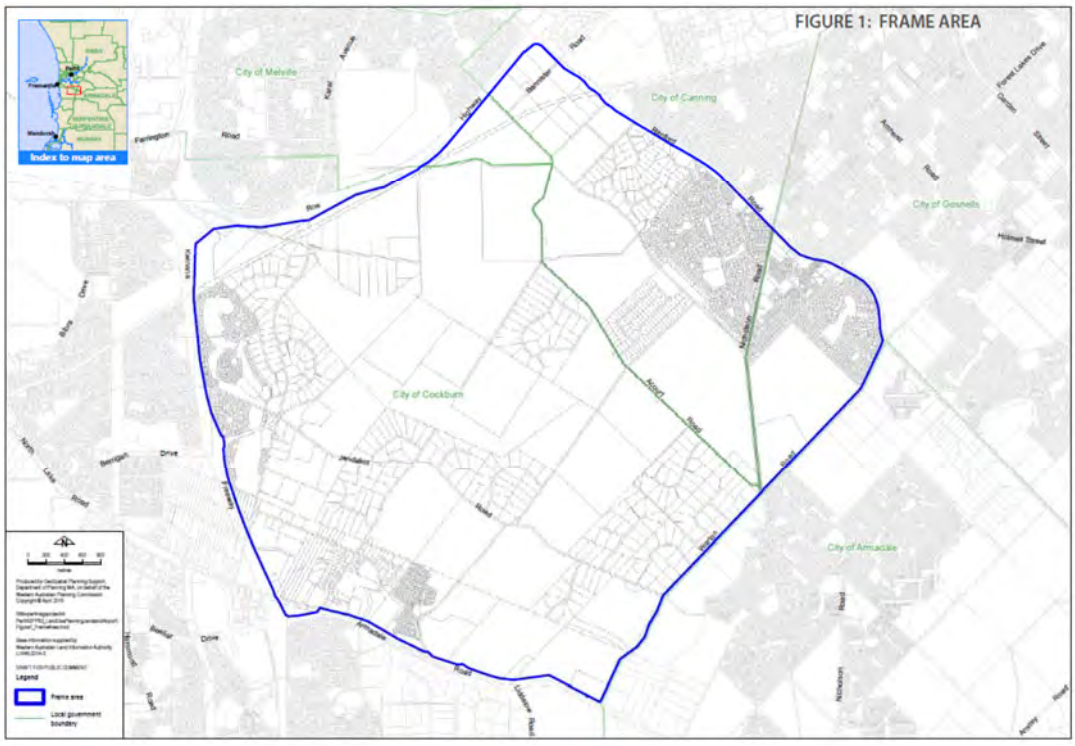
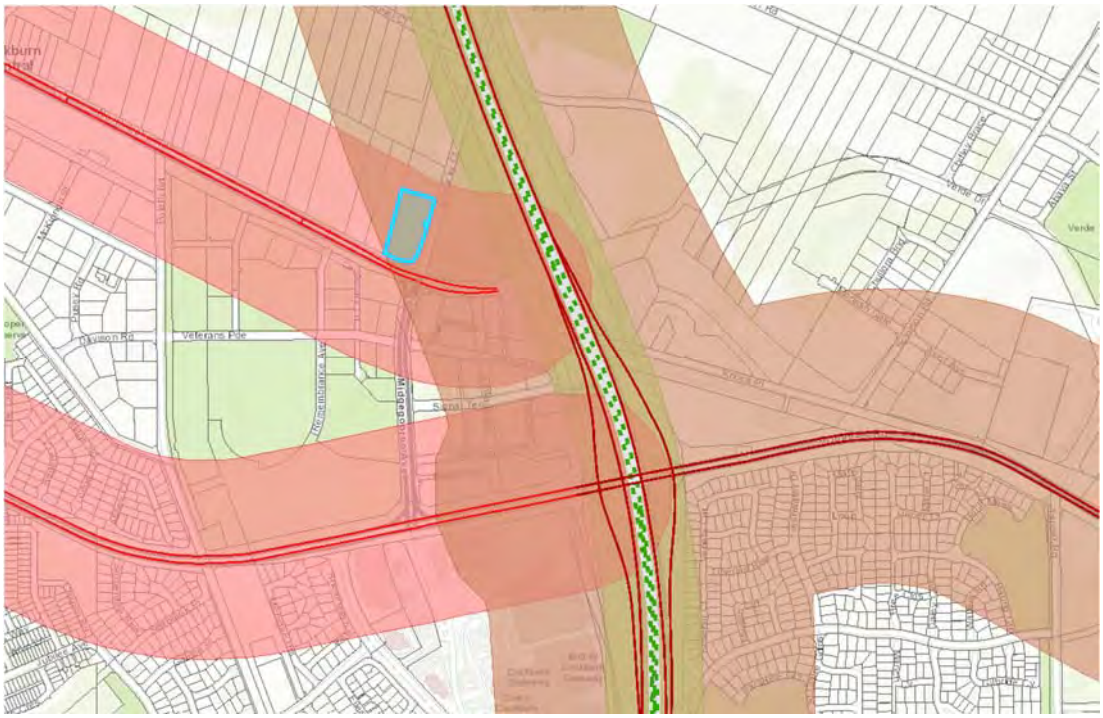


FIGURE 1 – SPP 5.3 FRAME AREA

3.4 STATE PLANNING POLICY 5.4 – ROAD AND RAIL NOISE IMPACTS

The development is located such that an SPP 5.4 assessment is trigged for both Kwinana Freeway and North Lake Road – as shown in Figure 2 below.



It is noted that the development location is located outside of requiring an assessment for the passenger rail.

For this development, the acoustic criteria relating to noise ingress from transportation would be outlined in State Planning Policy 5.4 *"Road and Rail Transport Noise and Freight Considerations in Land Use Planning"* (SPP5.4), be:

INTERNAL

$L_{Aeq(Day)}$ of 40 dB(A) in living and work areas; and
$L_{Aeq(Night)}$ of 35 dB(A) in bedrooms.

4.0 BCA REQUIRMENTS

The proposed development will be constructed to comply with the requirements of Part F5 of the NCC.

It is noted that adopting the flooring criteria of not more than 55 $L_{nT,w}$ dB provides greater amenity than basic BCA compliance.

Additionally, the separation of kitchens from bedrooms in adjacent apartments will be provided with a discontinuous construction to ensure the transfer of structure-borne noise is not of issue.

Similarly, the separation of the bin store on the ground floor and the adjacent apartment will be upgraded to ensure the level of amenity within the apartment is maintained.

5.0 NOISE INGRESS

A review of the surrounding premises indicated that the noise environment in the area is dominated by traffic noise associated with Kwinana Freeway and the associated on ramps / off ramps, in addition to North Lake Road.

A preliminary noise impact assessment has been undertaken with the details of this assessment contained in a separate report to accompany the development application (Our Ref: 32033-1-23404).

During the design process a full assessment of noise ingress into the development will be undertaken to ensure compliance with the internal criteria and assist in glazing selections.

6.0 NOISE FROM DEVELOPMENT

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning plant. Noise received at neighbouring premises, and premises within the development, from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

6.1 MECHANICAL SERVICES

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning plant and condenser units. Noise received at residence (neighbours and residence within the development) from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

As the mechanical services could operate during the night, noise emissions from the development needs to comply with the assigned L_{A10} night period noise level of 45 dB(A) at residential premises. Potentially, noise emissions from mechanical services could be tonal, in which case an +5 dB(A) penalty for a tonal component could be applied to the resultant noise levels. Therefore, the design level at the neighbouring residential premises would be 40 L_{A10} dB.

6.1.1 Apartments

The air conditioning for the apartments is not yet known.

Once the design of the system is finalised, an acoustic assessment will be carried out of noise emissions from the mechanical plant and any noise amelioration required will be incorporated into the design to ensure compliance with the *Environmental Protection (Noise) Regulations 1997*. However, we believe that compliance would be easily achieved, and any noise mitigation would be minimal, with the proposed design.

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APPENDIX A

DEVELOPMENT APPLICATION PLANS

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MAXIMUM YIELD: 173 Dwelling Units
- Building 2 - 90 D.U
90 Car Bays required (incl. 13 Visitor Bays)
- Building 3 - 83 D.U
83 Car Bays required (incl. 12 Visitor Bays)

198 Car Bays are required for Concept 4
(if calculated as 2 stages)

198 Car Bays provided on site
(Incl. 7 x embedded visitor bays)

NORTH LAKE ROAD

KENTUCKY COURT

PROPOSED ROAD TO CITY OF COCKBURN SPECIFICATION

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A201 - GROUND FLOOR PLAN B2 + B3 (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
09/11/23 PRELIMINARY DA ISSUE - REV A

PRD. COLLIÈRE ARCHITECTURE

TOTAL SITE AREA (STAGE 2 & 3): 5639 m²

REQUIRED DEEP EARTH: 10% OF SITE AREA = 563.9m²

TOTAL DEEP EARTH PROVIDED- 631m² (11.1% OF SITE AREA)

SITE PLAN LEGEND

Deep Earth Landscaping

SOAKWELL CALCULATION
IMPERVIOUS AREA = 6548m²
2400 x 2400 SOAKWELL = 868.56m²
NUMBER OF SOAKWELLS
1878/254.48 = 8 SOAKWELLS

0 5 10 20

ARCHITECTURE
MASTER PLANNING
URBAN DESIGN
INTERIORS

A 32/88 BROADWAY, NEDLANDS WA 6009
T (08) 9385 2858

DWG No. A202 - DEEP EARTH PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
09/11/23 PRELIMINARY DA ISSUE - REV A

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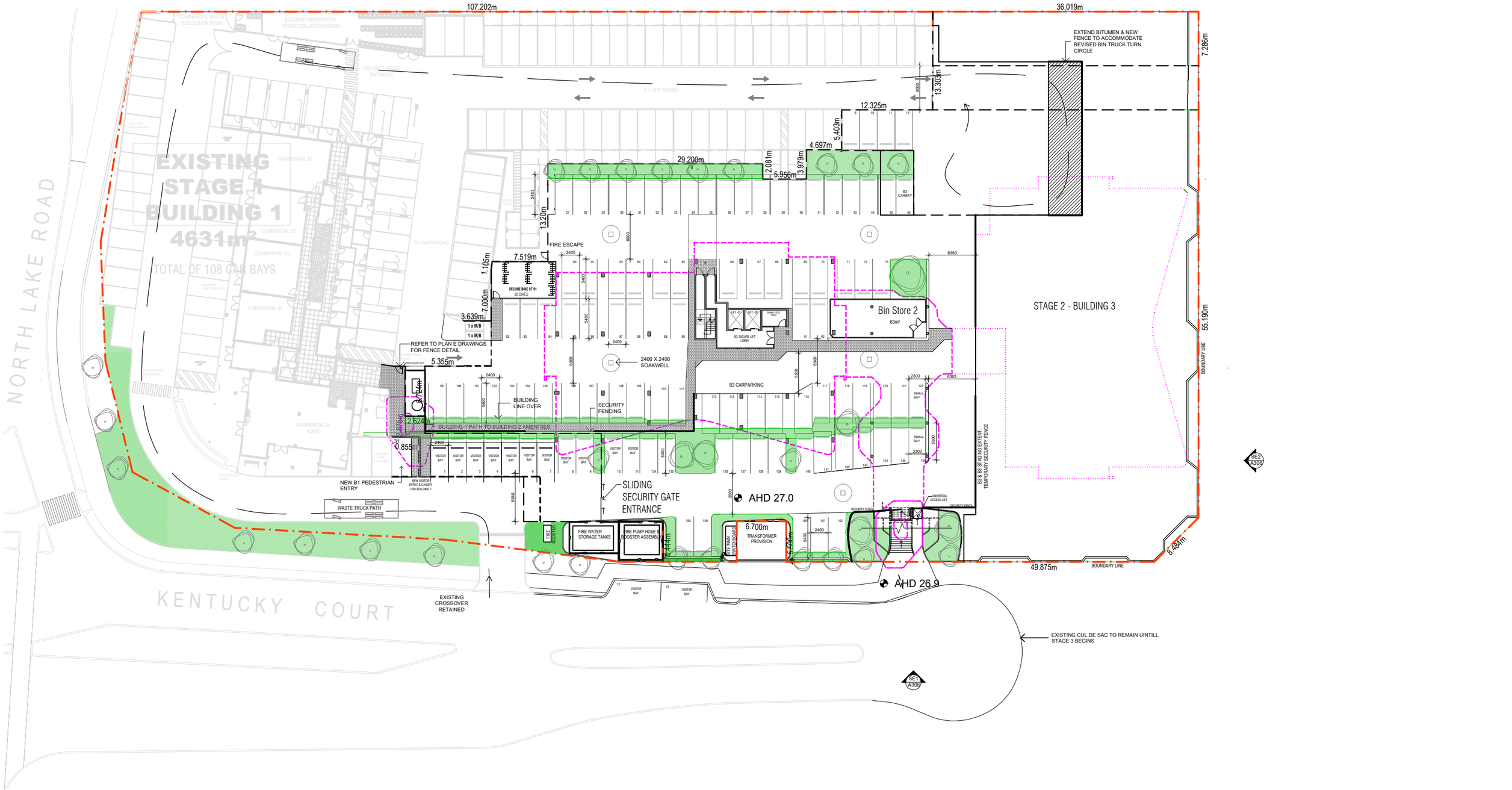

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DWG No. A203 - STAGE 2 BUILDING 2 PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
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LEGEND
DEMOLITION
STAGE 2
BUILDING 3

NORTH LAKE ROAD

EXISTING
STAGE 1
BUILDING 1
4631m²
TOTAL OF 108 CAR BAYS

107.202m
36.019m
7.286m
SECURED GATED
ENTRANCE
PROPOSED
WASTE
TRUCK EXIT
FOR STAGE 2
BUILDING 3
13.303m
12.325m
5.403m
4.697m
29.200m
2.081m
3.979m
5.956m
13.20m
7.519m
1.105m
7.000m
3.639m
1 x M/B
1 x M/B
REFER TO PLAN E DRAWINGS
FOR FENCE DETAIL
5.355m
7.744m
BUILDING
LINE OVER
2.624m
2.675m
BUILDING 1 PATH TO BUILDING 2 AMENITIES
0.855m
NEW B1 PEDESTRIAN
ENTRY
WASTE TRUCK PATH
6540
Bin Store 2
B3 SECURE
LIFT
LOBBY
UP5-02
UP5-01
STAGE 2 - BUILDING 3
MOTOR BIKE PARKING
1 x M/B
55.190m
BOUNDARY LINE
PROPOSED TWO WAY ROAD ADDED
FOR STAGE 2 BUILDING 3
SECURED GATED
ENTRANCE
6.700m
TRANSFORMER
HOUSING
8.484m
49.875m
BOUNDARY LINE
REFER TO PLANE
E FOR DETAIL
KENTUCKY COURT
EXISTING
CROSSOVER
RETAINED
VISITOR BAY
EXISTING CUL DE SAC TO REMAIN UINTILL
STAGE 3 BEGINS
SE2
A306
SE1
A306

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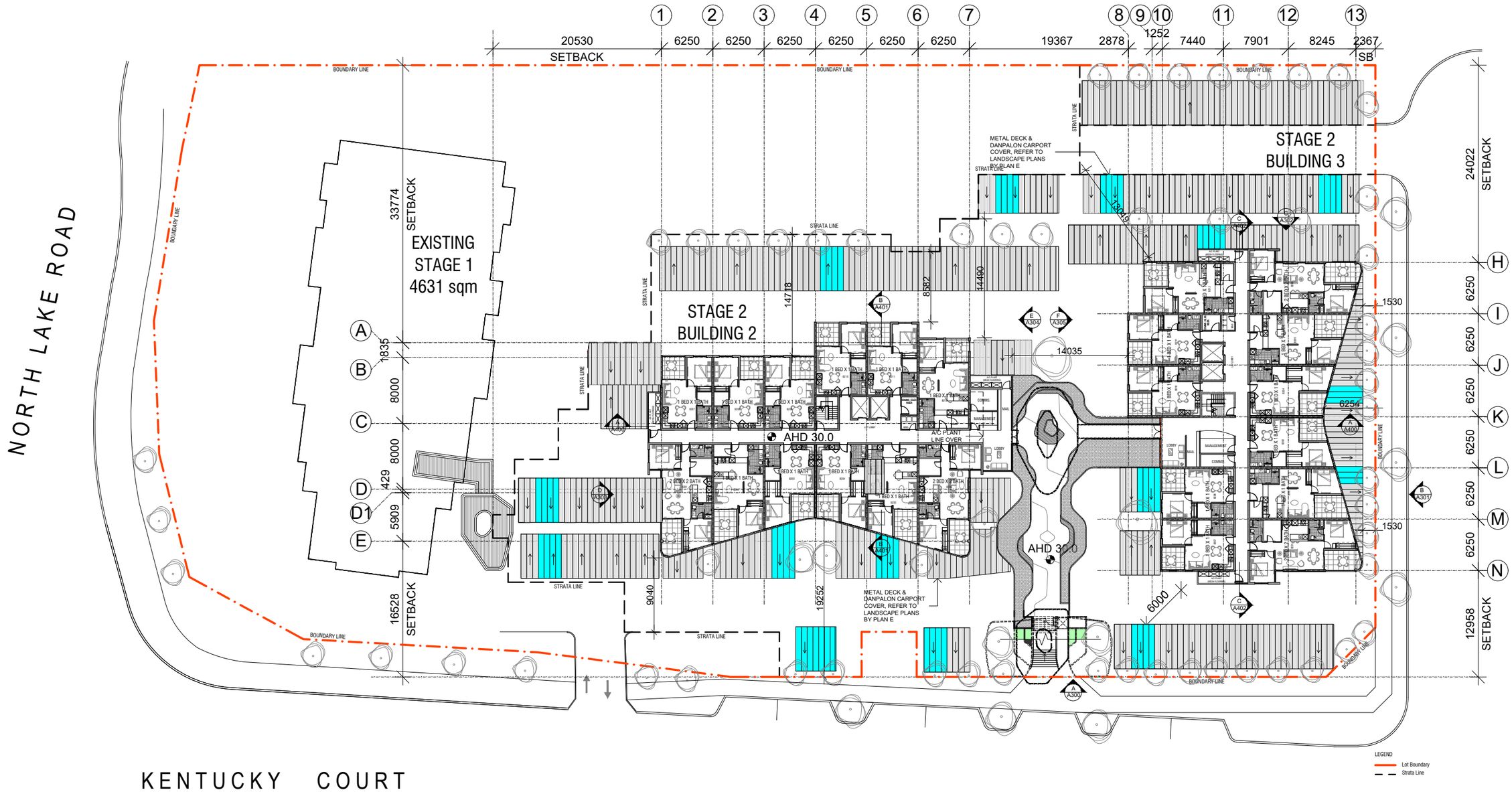

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DWG No. A204 - FIRST FLOOR PLAN (SCALE 1:500 @ A3)
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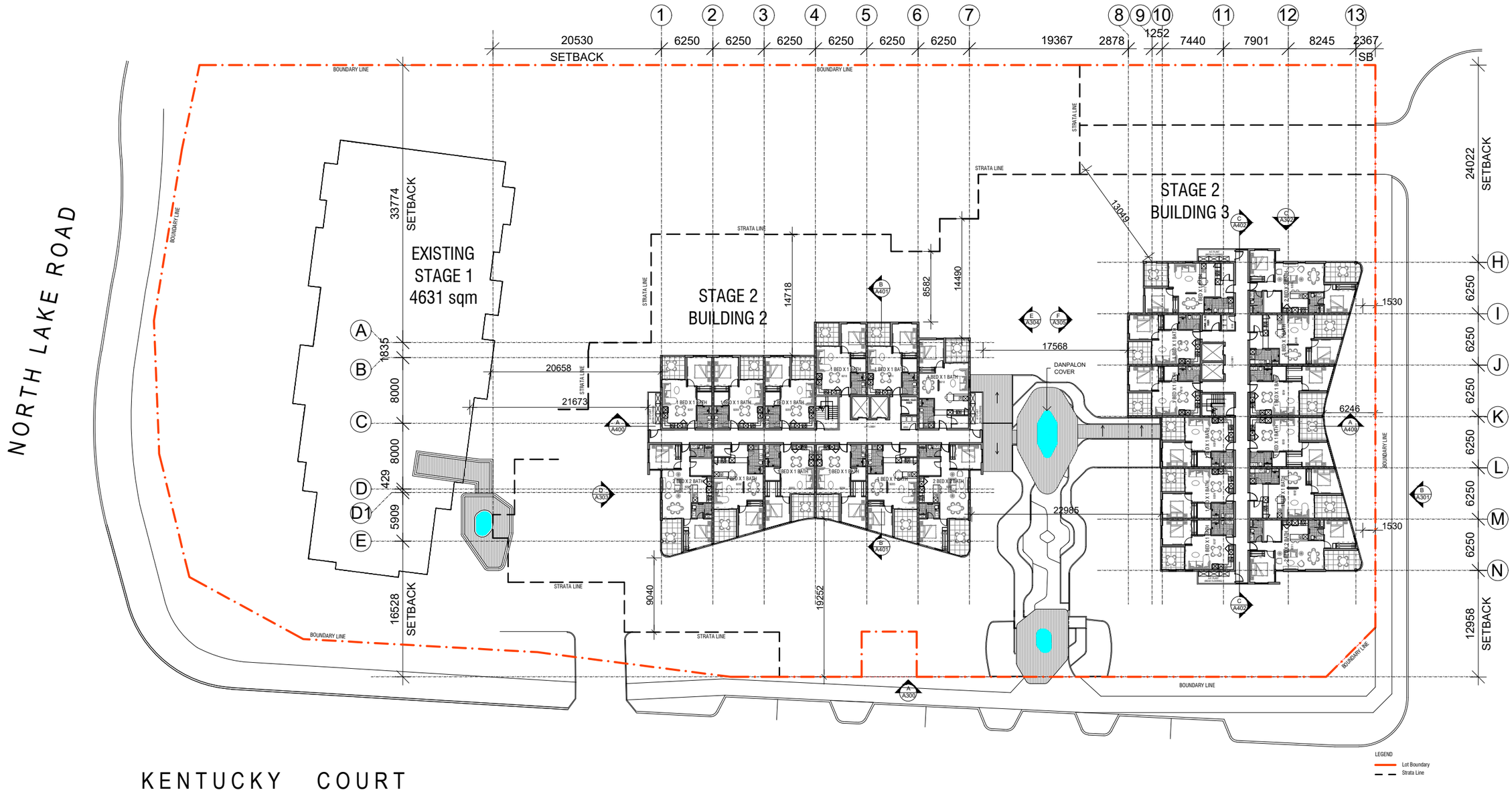

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DWG No. A205 - 2nd FLOOR PLAN (SCALE 1:500 @ A3)
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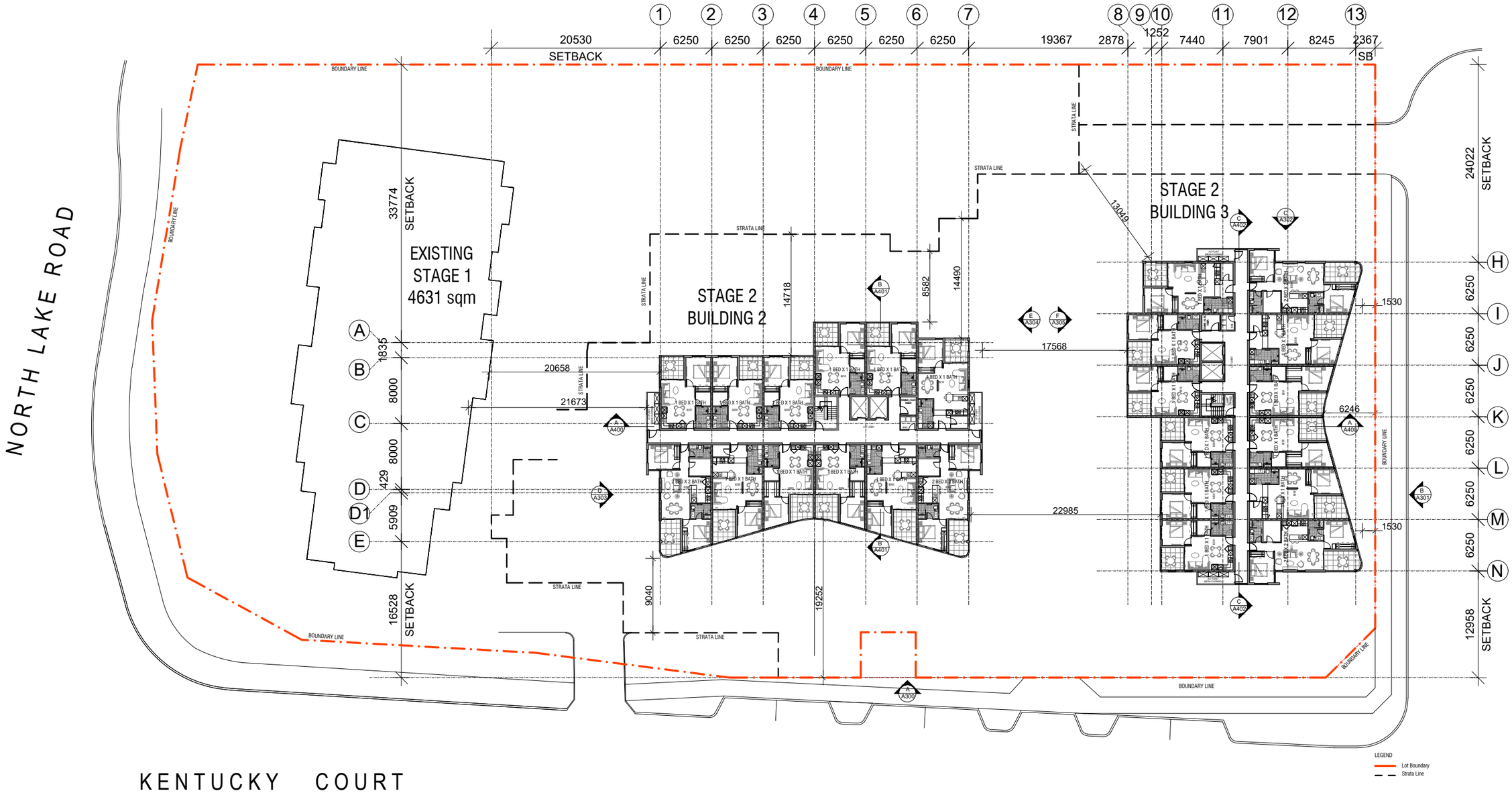

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DWG No. A206 - TYPICAL FLOOR PLAN 3rd - 7th (SCALE 1:500 @ A3)
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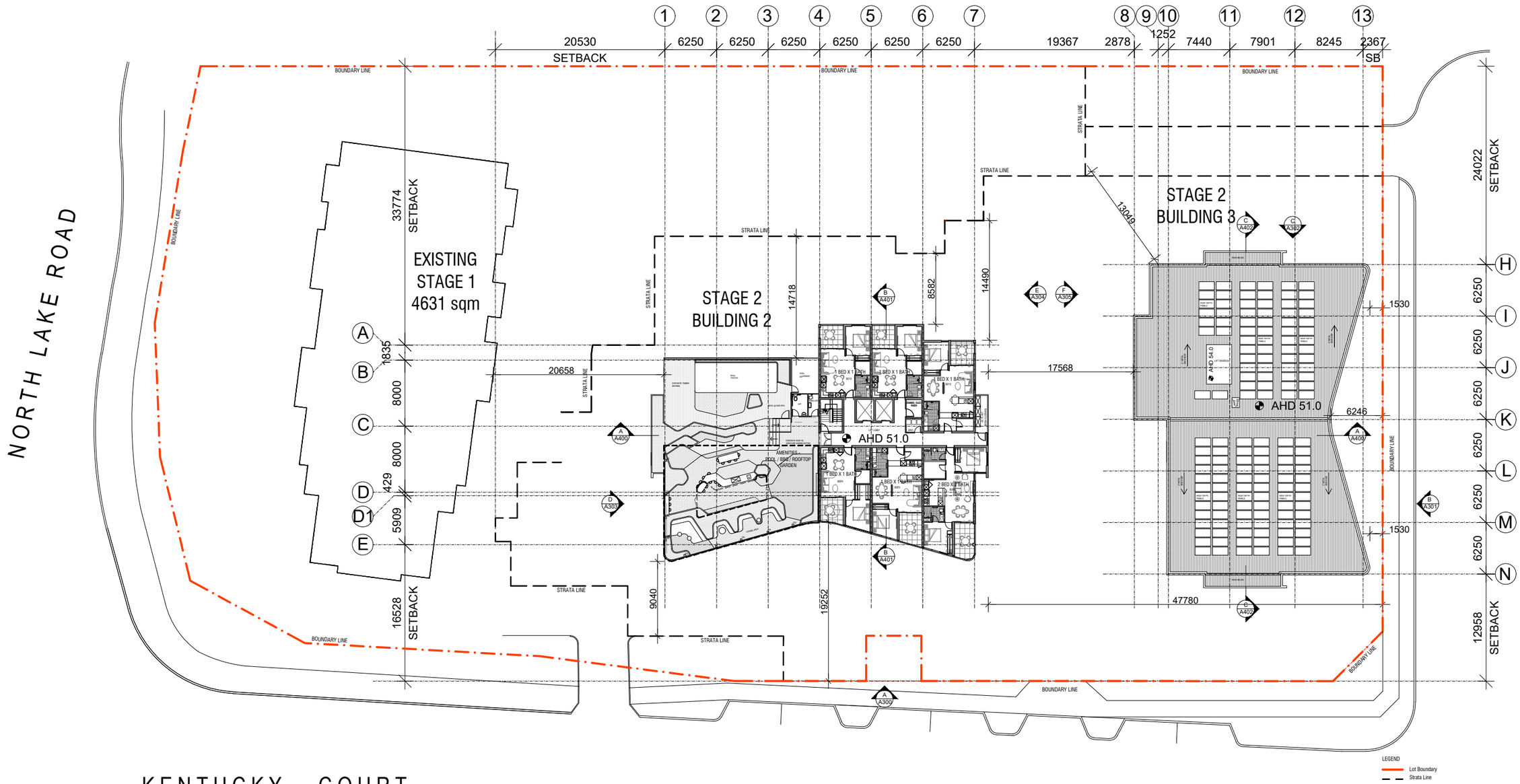

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DWG No. A207 - AMENITIES / ROOF / 8th FLOOR PLAN (SCALE 1:500 @ A3)
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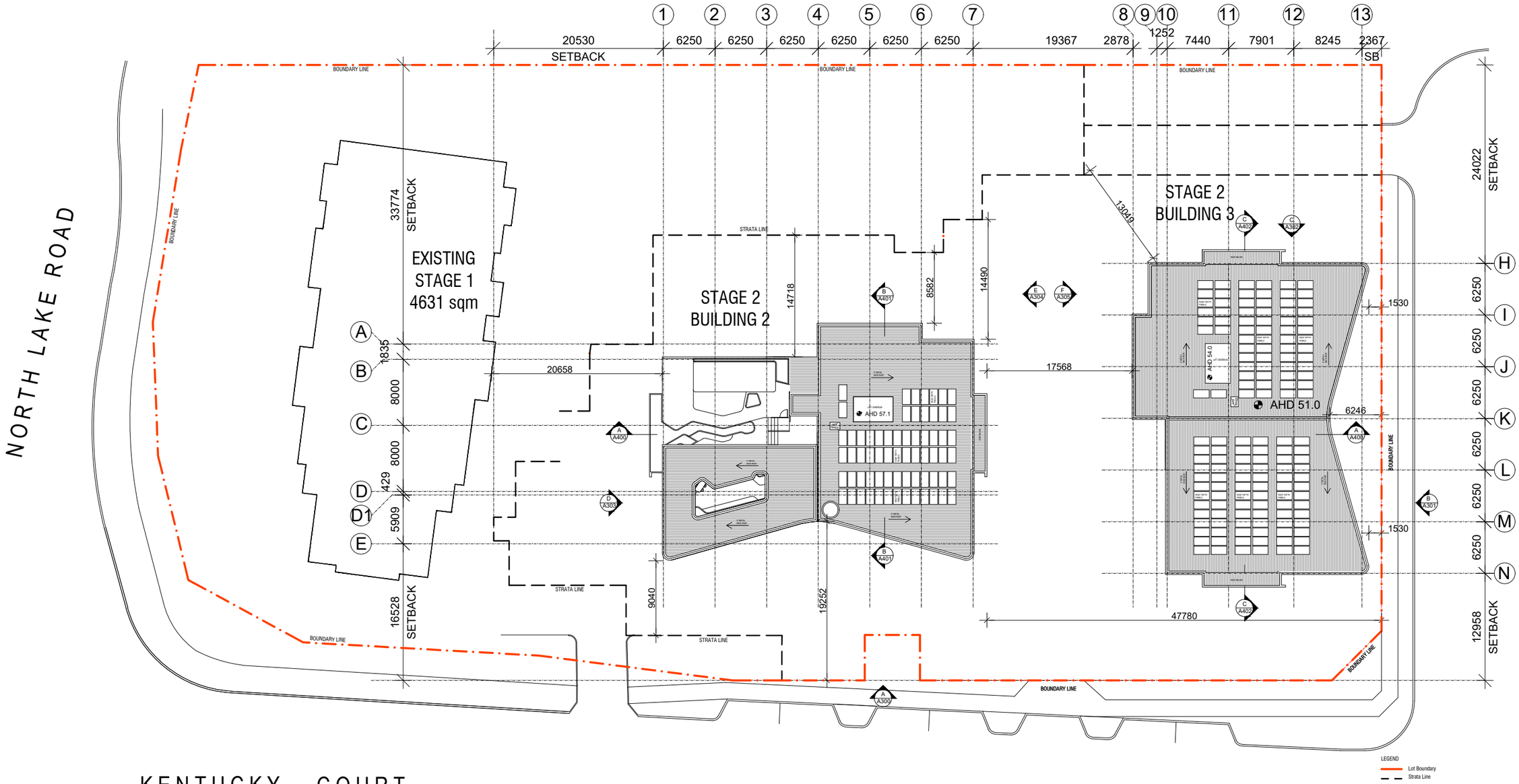

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DWG No. A208 - ROOF (SCALE 1:500 @ A3)
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ILIEUX PROJECT MANAGEMENT

HARMONY APARTMENTS STAGE 2 AND 3
884-888 NORTH LAKE ROAD
COCKBURN CENTRAL

SPP 5.4 NOISE MANAGEMENT PLAN

DECEMBER 2023

OUR REFERENCE: 32033-1-23404

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
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884-888 NORTH LAKE ROAD
COCKBURN CENTRAL

Job No: 23404

Document Reference: 32033-1-23404

FOR

ILIEUX PROJECT MANAGEMENT

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B	Glazing Requirements
C	Main Roads Traffic Flow Data

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1. INTRODUCTION

Herring Storer Acoustics were commissioned through Ilieux Project Management to carry out an acoustic study with regards to traffic related noise for the proposed development at 884-888 North Lake Road, Cockburn Central.

The purpose of the study was to:

- Assess the noise that would be received within the development area from vehicles travelling on North Lake Road and the Kwinana Freeway for future traffic volumes.
- Compare the results with accepted criteria and if exceedances exist, develop the framework for the management of noise.

A plan is attached in Appendix A.

It is noted that whilst this study references *State Planning Policy 5.4* as the criteria, some parts of the assessment have not been conducted under strict accordance with the policy, although a conservative approach where possible has been utilised. The intent of this preliminary assessment is to inform of general acoustic requirements as well as garner development approval.

The location of the development is such that an assessment in accordance with SPP 5.4 is required – hence, this work is intended to inform the development application process to ensure that internal noise levels within the development attain a satisfactory, industry standard, level.

2. SUMMARY

The noise measurements and modelling for the development location indicates that an upgrade to façade construction – primarily glazing – is recommended to be included during the design development phase of the project.

These recommendations will ensure that the internal noise environment within the development meets the recommended noise levels consistent with residential premises.

Recommended glazing upgrades are listed in Appendix B of this report. It is noted that the required upgrades are such that it is possible that other requirements will dictate the glazing selections (energy efficiency, thermal etc).

3. ACOUSTIC CRITERIA

3.1 NOISE

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 *"Road and Rail Noise".* The requirements of State Planning Policy 5.4 are outlined below.

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POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

a) *noise-sensitive land-use within the policy's trigger distance of a transport corridor as specified in **Table 1**.*

b) *New or major upgrades of roads as specified in **Table 1** and maps **(Schedule 1,2 and 3);** or*

c) *New railways or major upgrades of railways as specified in maps (**Schedule 1, 2 and 3);** or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

***Table 1** identifies the State's transport corridors and the trigger distances to which the policy applies.*

*The designation of land within the trigger distances outlined in **Table 1** should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are un-affected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/ mitigation required. An initial screening assessment (**guidelines: Table 2: noise exposure forecast**) will determine if the lot is affected and to what extent."*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	***Trigger distance***	***Distance measured from***
Roads		
Strategic freight and major traffic routes *Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume*	*300 metres*	*Road carriageway edge*
Other significant freight/traffic routes *These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)*	*200 metres*	*Road carriageway edge*
Passenger railways		
	100 metres	*Centreline of the closest track*
Freight railways		
	200 metres	*Centreline of the closest track*

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

***Table 2** sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.*

In the application of the noise targets the objective is to achieve:

- *indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.*

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	***New/Upgrade***	***Noise Targets***		
		Outdoor		***Indoor***
		Day (L_{Aeq}(Day) dB) (6 am-10 pm)	***Night (L_{Aeq}(Night)dB) (10 pm-6 am)***	***(L_{Aeq} dB)***
Noise-sensitive land-use and/or development	*New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor*	*55*	*50*	*L_{Aeq} (Day) 40(Living and work areas) L_{Aeq} (Night) 35 (bedrooms)*
Roads	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*
Railways	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*

Notes:

- *The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.*
- *For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.*
- *The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.*
- *Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.*

Noise Exposure Forecast (Section 6.2)

*When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2**: noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/ or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:*

- *no further measures are required.*
- *noise-sensitive land-use and/or development is acceptable subject to deemed-to-comply mitigation measures; or*
- *noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/ or development is subject to mitigation measures outlined in a noise management plan."*

4. ACOUSTIC ENVIRONMENT

The noise measurements were conducted at 8:15 AM on the 11th December 2023 for a short term period to determine the L_{A10} noise level traffic for approximately 15 minutes. This time period has been identified as peak traffic period for the road to ensure of a conservative measurement. Traffic volume details for this road section are included in Appendix C.

Utilising this measurement, reference to the DEFRA publication (*Method for Converting the UK Road Traffic Noise $L_{A10,18h}$ to the EU Noise Indices for Road Noise Mapping, ref: st/05/91/AGG04442)* has been sought and the difference between the $L_{A10,18hr}$ and the $L_{Aeq,8hr}$ and the $L_{Aeq,16hr}$ has been calculated. The location of the measurements is shown in Appendix A.

Noise measurements were conducted with a Larson Davis 831 Sound Level Meter. The Sound Level Meter was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently NATA laboratory calibrated. Calibration certificates are available on request.

TABLE 4.1: SUMMARY OF MEASURED NOISE LEVELS

Measurement Location	Measured/Calculated Noise Level, dB(A)		
	L_{A10}	$L_{Aeq,\ day\ (6am\ to\ 10pm)}$	$L_{Aeq,\ night\ (10pm\ to\ 6am)}$
Kwinana Freeway	62.8	59.4	52.3
North Lake Road	63.7	60.2	53.6

5. MODELLING

To determine the noise levels from traffic on Kwinana Freeway and North Lake Road acoustic modelling was carried out using Sound Plan, using the Calculation of Road Traffic Noise (CoRTN)[1] algorithms.

The input data for the model included:

- Topographical and cadastral data supplied by client (Shown in Appendix A).
- Traffic data as per Table 5.1 (Obtained from MRWA Traffic Map, Attached in Appendix C).
- Adjustments as listed in Table 5.2.

TABLE 5.1 - NOISE MODELLING INPUT DATA

Parameter	Kwinana Freeway (Current) 2018	Kwinana Freeway (Future) 2043*	North Lake Road (Current) 2020	North Lake Road (Future) 2043*
Traffic Volumes	127,615 vpd	209,365 vpd	16,260 vpd	25,640 vpd
Percentage traffic 0600 – 2400 hours (Assumed)	94%	94%	94%	94%
Heavy Vehicles (%) (Assumed)	11.2%	11.2%	7.5%	7.5%
Speed (km/hr)	100km/hr	100km/hr	60 km/hr	60 km/hr
Road Surface	Asphalt**	Asphalt**	Asphalt**	Asphalt**

*Future extrapolated road traffic figures based on the MRWA Traffic counts (attached in Appendix C)
**Assumed

TABLE 5.2 – ADJUSTMENTS FOR NOISE MODELLING

Description	Value
Façade Reflection Adjustment	+2.5 dB
Conversion from $L_{A10\ (18\ hour)}$ to $L_{Aeq\ (16\ hour)}$ (Day)	-3.4/-3.5 dB

6. TRAFFIC NOISE ASSESSMENT

Using the data contained in Tables 4.1, 5.1 and 5.2, modelling was carried out under existing conditions for calibration. The Sound Plan model for the site has been set up for the 2043 scenario as defined in Table 5.1. The following assumptions have been made:

- 18-hour traffic count will be 94% of daily figures.
- Traffic figures used are MRWA Traffic Counts (Attached in Appendix C)
- Noise model calibrated to measured noise level as per Table 4.1
- The same diurnal relationship will exist in the future between the $L_{A10\ (18\ hour)}$ and the L_{Aeq} parameters; and
- 2.5 dB(A) has been added to the results for façade reflection.

The noise requirements based on the above have been listed in Appendix B.

It is noted that these requirements pertain to acoustic requirements only, with regard to *State Planning Policy 5.4,* and may be superseded by other requirements (BAL, Thermal, etc).

1 *Calculation of Road Traffic Noise* UK Department of Transport 1987

7. CONCLUSION

In accordance with the WAPC Planning Policy 5.4, an assessment of the noise that would be received within the development of 884-888 North Lake Road, Cockburn Central from vehicles travelling on Kwinana Freeway and North Lake Road has been undertaken.

In accordance with the Policy, the following would be the acoustic criteria applicable to this project:

External

Day	55 dB(A) L_{Aeq}
Night	50 dB(A) L_{Aeq}

Internal

Sleeping Areas	35 dB(A) $L_{Aeq(night)}$
Living Areas	40 dB(A) $L_{Aeq(day)}$

It is noted that walls of the development would be required to be constructed of either masonry or tilt up concrete panel. If a lightweight construction or similar is desirable, investigation into constructions that would meet the requirement of State Planning Policy 5.4 would have to be undertaken.

The results of the acoustic assessment indicate that noise received at the development from future traffic, exceed external noise level criteria. Therefore, noise amelioration in the form of quiet house design listed in Appendix B, as well as notifications on the title is required.

It is noted that due to the development's proximity to Kwinana Freeway and North Lake Road, specialised glazing is likely to be required for windows at the façades.

Herring Storer Acoustics recommends the findings of this preliminary assessment are reviewed once detailed designed is finalised to provide a more accurate assessment – this would include finalised window sizes, façade constructions and the like to be accounted for.

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APPENDIX A

PLANS

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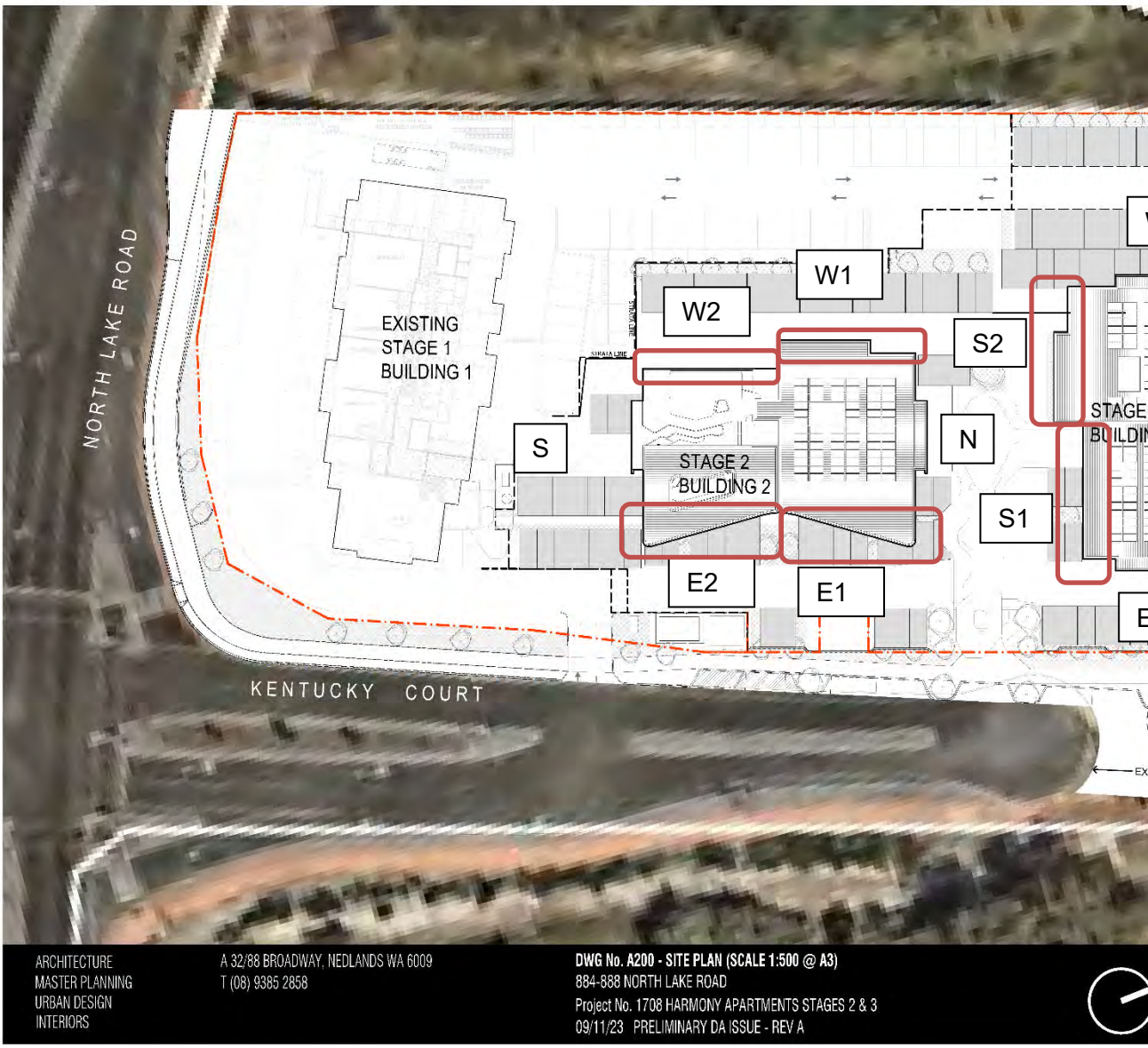

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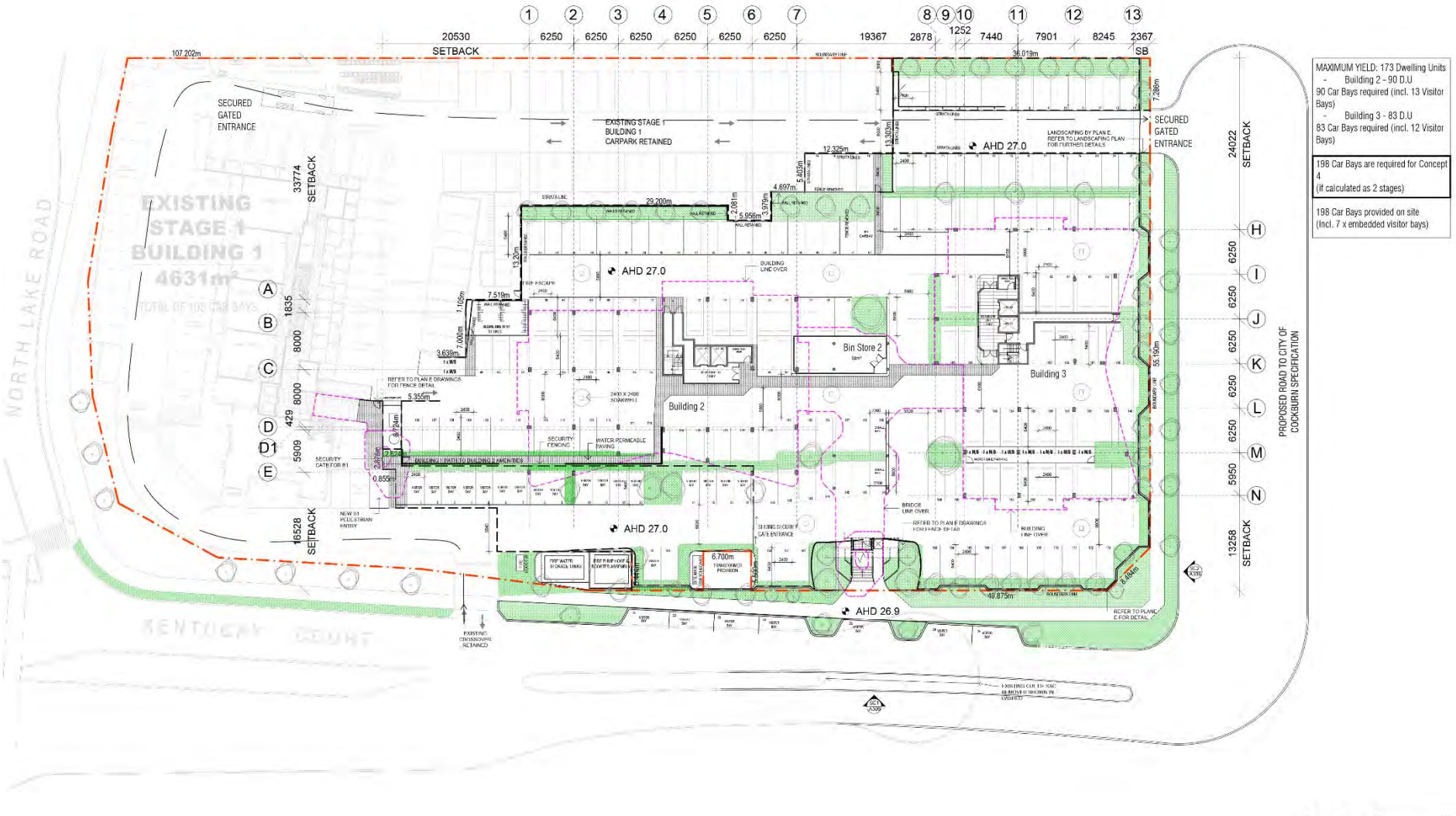

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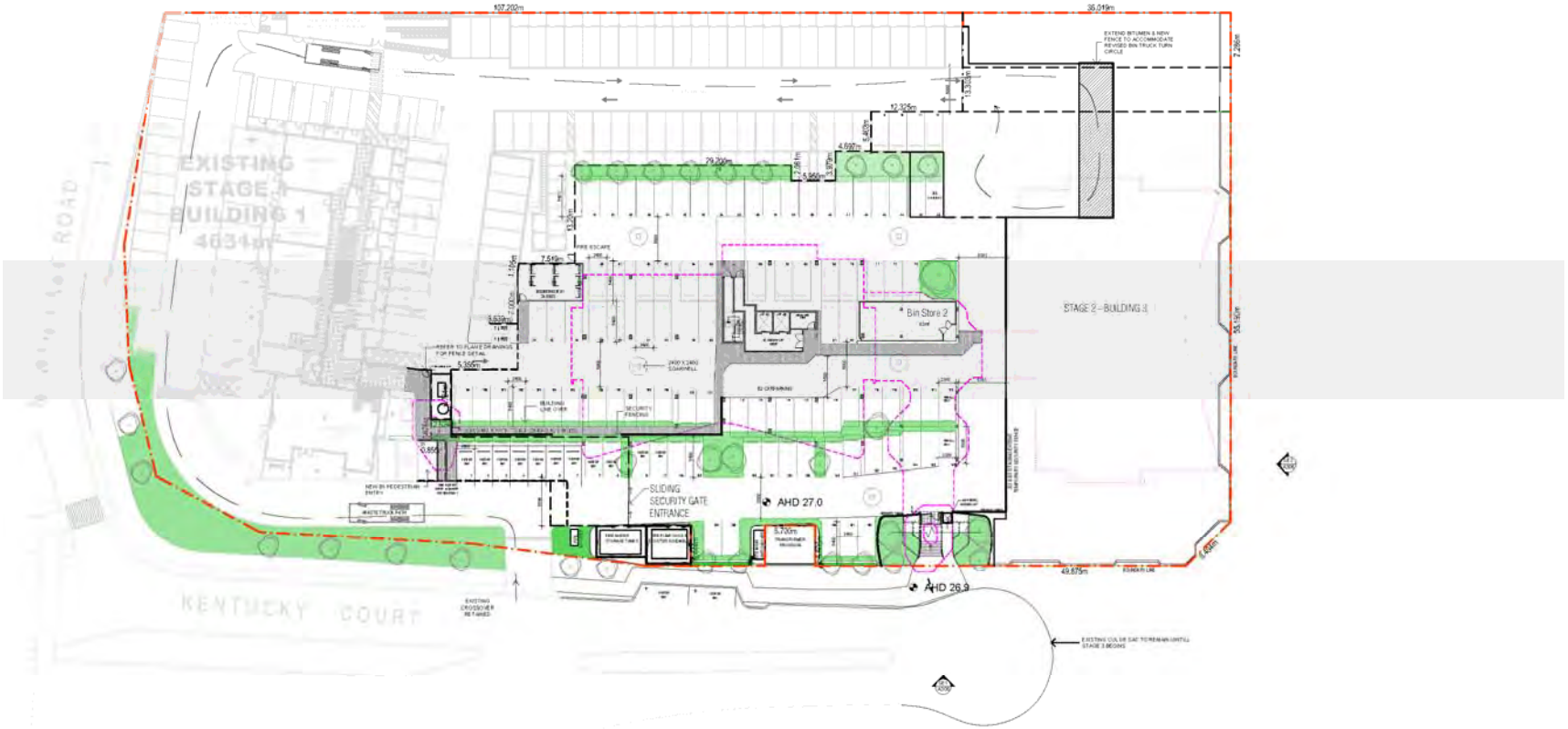

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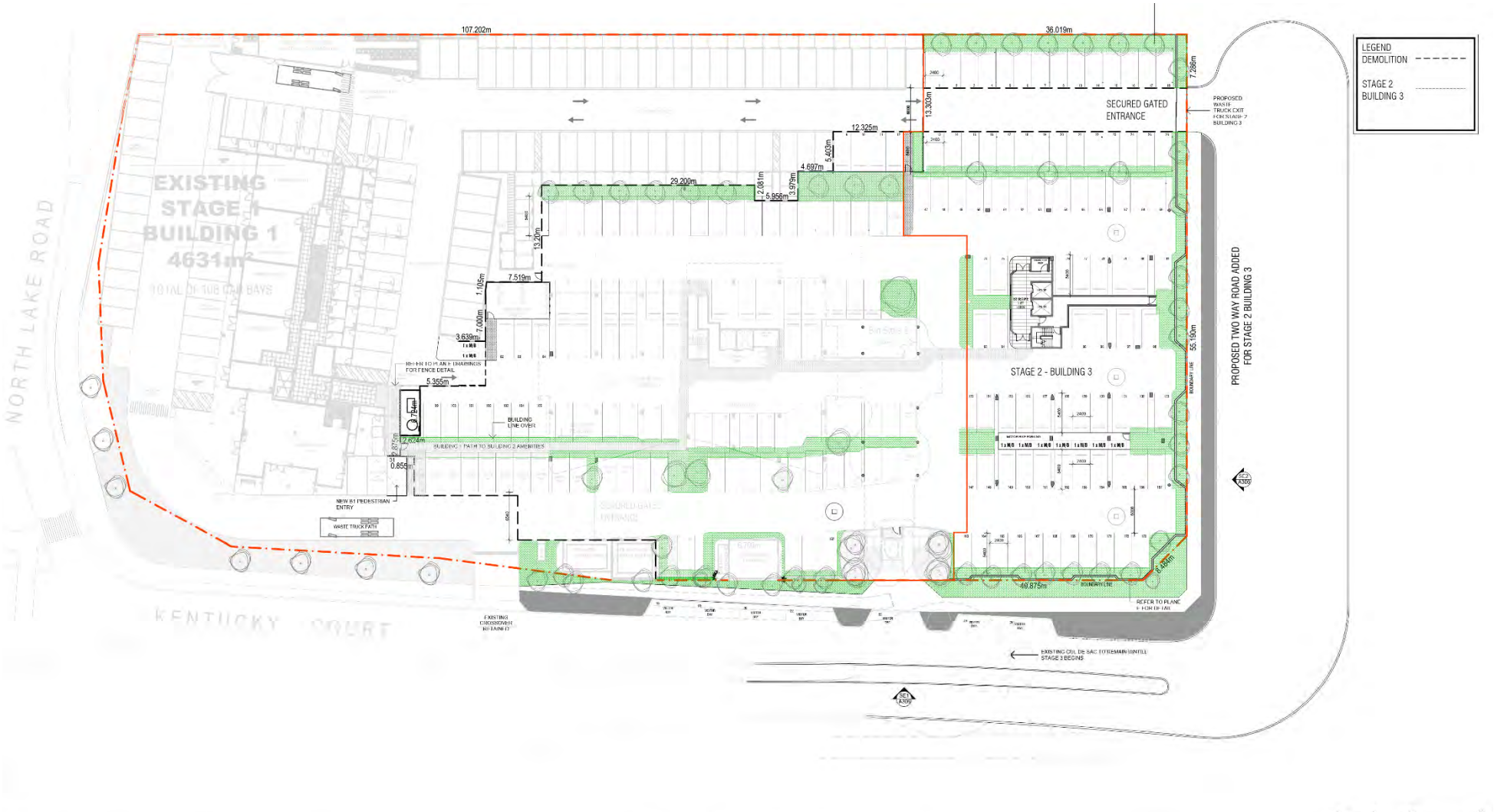

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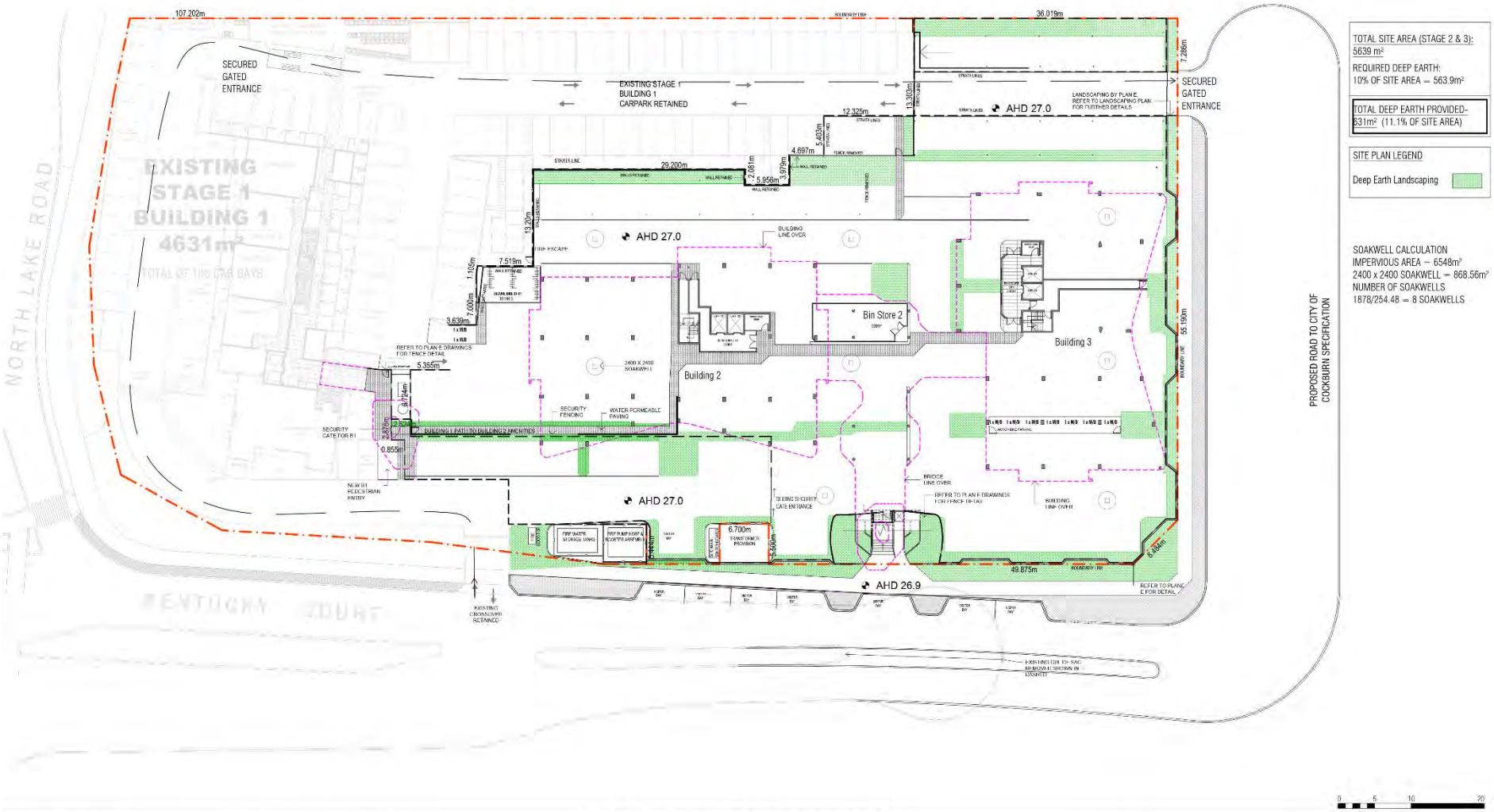

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DWG No. A202 - DEEP EARTH PLAN (SCALE 1:500 @ A3)
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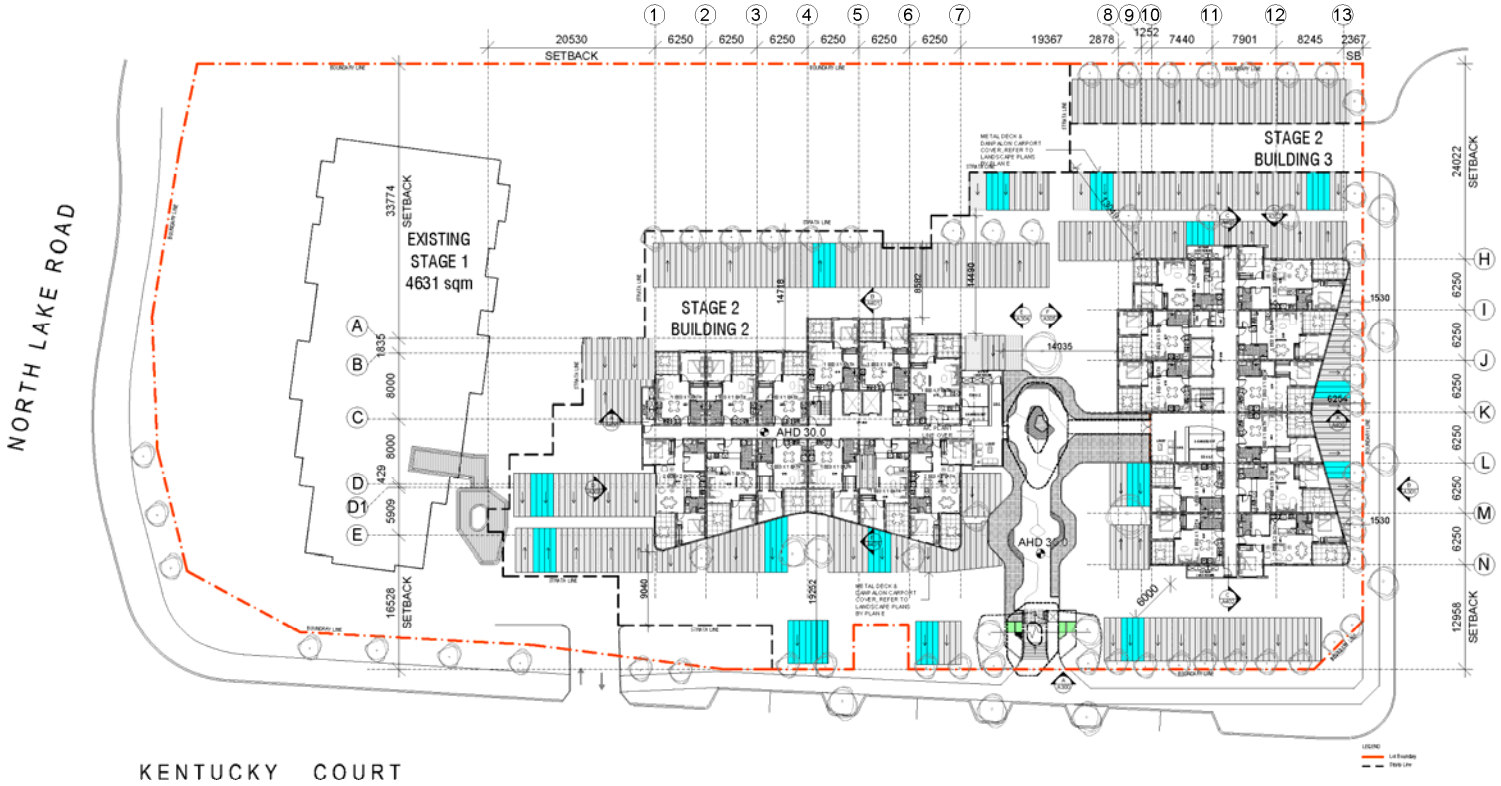

ARCHITECTURE MASTER PLANNING URBAN DESIGN INTERIORS	A 32/88 BROADWAY, NEDLANDS WA 6009 T (08) 9385 2858	**DWG No. A204 - FIRST FLOOR PLAN (SCALE 1:500 @ A3)** 884-888 NORTH LAKE ROAD Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3 09/11/23 PRELIMINARY DA ISSUE - REV A	PRD. COLLIÈRE ARCHITECTURE

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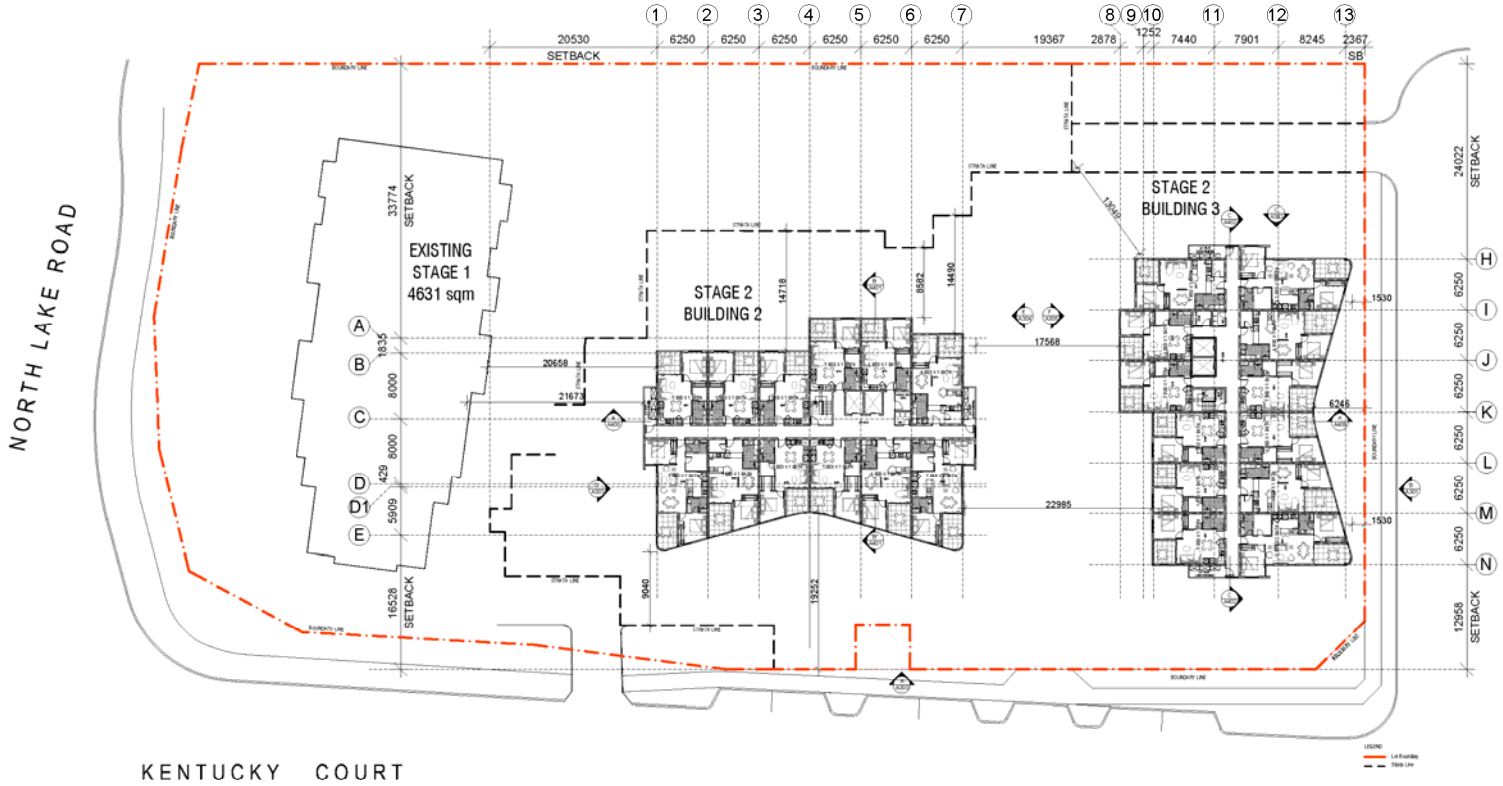

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Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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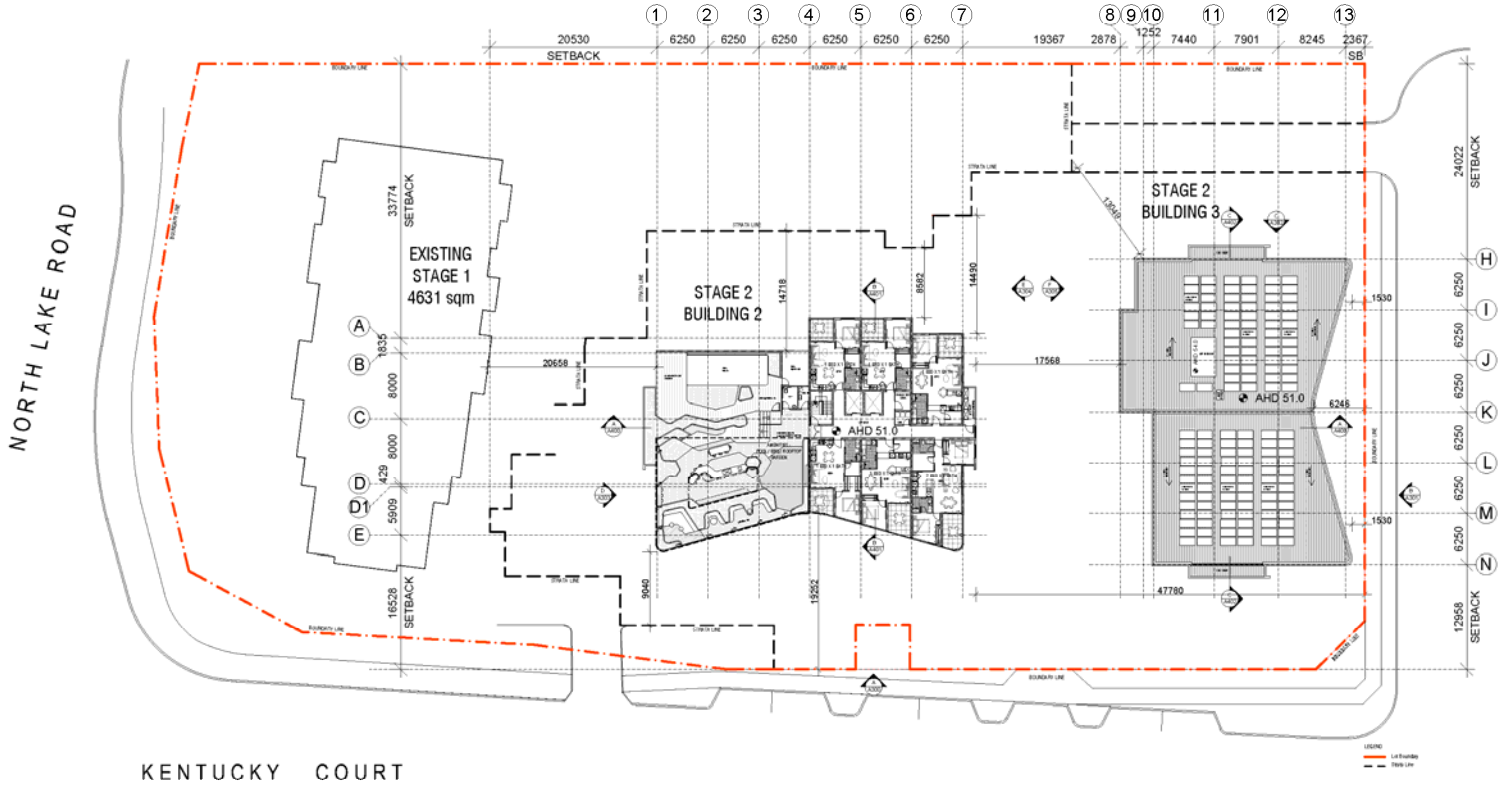

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Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
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PRD. COLLIÈRE ARCHITECTURE

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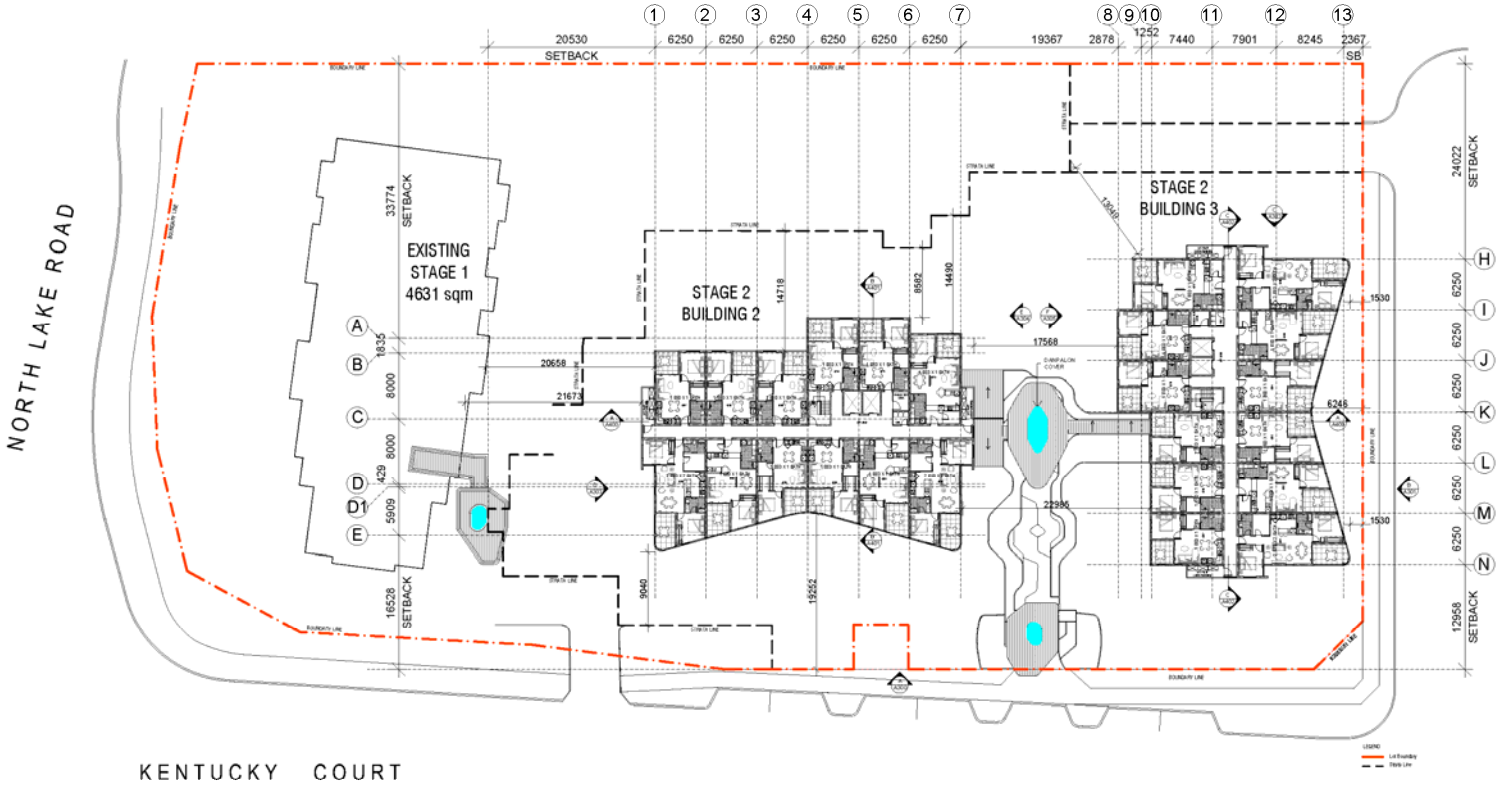

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884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
09/11/23 PRELIMINARY DA ISSUE - REV A

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APPENDIX B

GLAZING REQUIREMENTS

Document Set ID: 11748690
Version: 1, Version Date: 21/12/2023

Facade	Calculated Noise Levels and Required R_w and C_{tr} Ratings			
	Floor	Level dB(A)	Bedroom $R_w + C_{tr}$	Living Room $R_w + C_{tr}$
BUILDING 2				
NORTH	F 1	59	29	24
	F 2	60	30	25
	F 3	60	31	26
	F 4	61	31	26
	F 5	61	32	27
	F 6	62	32	27
	F 7	62	32	27
	F 8	63	33	28
EAST 1	F 1	61	31	26
	F 2	62	32	27
	F 3	63	33	28
	F 4	63	33	28
	F 5	64	34	29
	F 6	64	34	29
	F 7	64	35	30
		65	35	30
EAST 2	F 8	61	31	26
	F 1	62	32	27
	F 2	62	33	28
	F 3	63	33	28
	F 4	63	34	29
	F 5	64	34	29
	F 6	64	34	29
SOUTH	F 7	53	24	23
	F 1	55	25	23
	F 2	55	26	23
	F 3	56	26	23
	F 4	57	27	23
	F 5	57	28	23
	F 6	58	28	23
	F 7	56	27	23
WEST 1	F 8	46	23	23
	F 1	50	23	23
	F 2	51	23	23
	F 3	52	23	23
	F 4	52	23	23
	F 5	53	23	23
	F 6	53	23	23
		54	25	23
WEST 2	F 7	47	23	23
	F 8	51	23	23
	F 1	51	23	23
	F 2	52	23	23
	F 3	53	23	23
	F 4	53	23	23
	F 5	54	25	23

Document Set ID: 11748690
Version: 1, Version Date: 21/12/2023

Facade	Calculated Noise Levels and Required R_w and C_{tr} Ratings			
	Floor	Level dB(A)	Bedroom $R_w + C_{tr}$	Living Room $R_w + C_{tr}$
BUILDING 3				
NORTH	F 1	60	30	25
	F 2	61	31	26
	F 3	61	32	27
	F 4	62	32	27
	F 5	62	32	27
	F 6	63	33	28
	F 7	63	33	28
NORTH 2	F 1	60	30	25
	F 2	61	31	26
	F 3	61	32	27
	F 4	62	32	27
	F 5	62	32	27
	F 6	63	33	28
	F 7	63	33	28
EAST	F 1	62	32	27
	F 2	63	33	28
	F 3	64	34	29
	F 4	64	35	30
	F 5	65	35	30
	F 6	65	35	30
	F 7	65	36	31
SOUTH 1	F 1	54	25	23
	F 2	55	26	23
	F 3	56	27	23
	F 4	57	27	23
	F 5	57	28	23
	F 6	58	28	23
	F 7	59	29	24
	F 1	53	23	23
SOUTH 2	F 2	55	25	23
	F 3	55	26	23
	F 4	56	26	23
	F 5	57	27	23
	F 6	57	28	23
	F 7	58	28	23
	F 1	45	23	23
WEST	F 2	48	23	23
	F 3	49	23	23
	F 4	50	23	23
	F 5	50	23	23
	F 6	51	23	23
	F 7	53	23	23
	F 1	60	30	25

Notes: The required R_W rating can be reduced by reducing the area of glazing.
Requirements pertain to only acoustic advice in regard to *State Planning Policy 5.4* and may be superseded by other requirements (BAL, Thermal, etc).
Façade names are shown in the site plan of Appendix A

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APPENDIX C

MRWA TRAFFIC FLOW DATA

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mainroads WESTERN AUSTRALIA

SITE 0775

Hourly Volume

North Lake Rd (1030010)

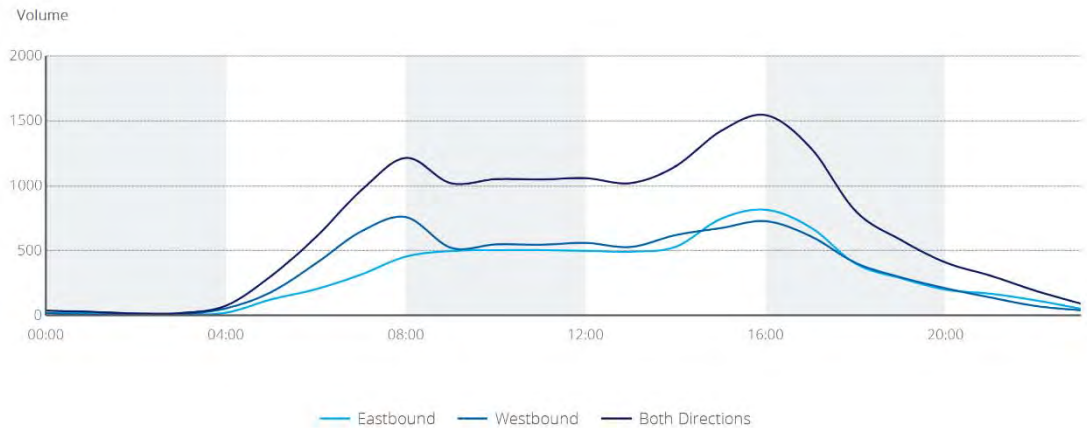
East of Hammond Rd (SLK 5.93)

2020/21
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	19	18	37	5	3	8	21.6
01:00	21	7	28	3	2	5	17.9
02:00	8	8	16	2	1	3	18.8
03:00	9	10	19	0	1	1	5.3
04:00	21	55	76	2	6	8	10.5
05:00	124	180	304	13	14	27	8.9
06:00	203	402	605	26	47	73	12.1
07:00	316	648	964	38	56	94	9.8
08:00	455	759	1214	39	64	103	8.5
09:00	498	523	1021	45	51	96	9.4
10:00	504	549	1053	38	56	94	8.9
11:00	504	546	1050	38	42	80	7.6
12:00	500	560	1060	39	50	89	8.4
13:00	493	529	1022	36	44	80	7.8
14:00	531	621	1152	33	42	75	6.5
15:00	746	675	1421	50	50	100	7.0
16:00	816	728	1544	48	32	80	5.2
17:00	679	611	1290	43	22	65	5.0
18:00	399	405	804	34	14	48	6.0
19:00	288	295	583	22	8	30	5.1
20:00	199	209	408	13	7	20	4.9
21:00	168	139	307	12	7	19	6.2
22:00	117	73	190	10	2	12	6.3
23:00	52	40	92	5	3	8	8.7
TOTAL	7670	8590	16260	594	624	1218	7.5

Peak Statistics

AM	TIME	08:45	07:45	08:00	08:30	08:00	08:30
	VOL	522	781	1214	46	64	107
PM	TIME	15:45	16:00	16:00	15:45	14:15	15:00
	VOL	825	728	1544	51	51	100



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mainroads WESTERN AUSTRALIA

SITE 50094

Hourly Volume

Kwinana Fwy (H015)

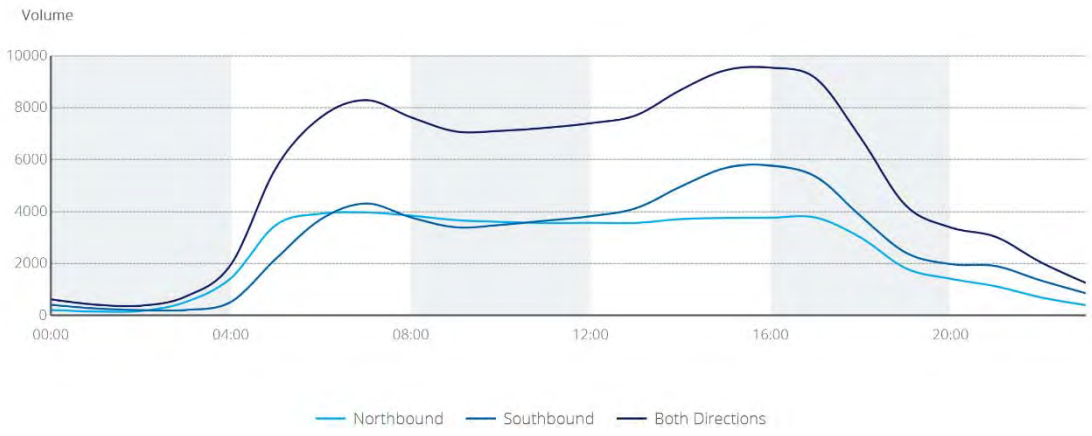
South of Roe Hwy (SLK 15.85)

2018/19
Monday to Friday

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	211	411	622	28	40	68	10.9
01:00	150	269	419	25	33	58	13.8
02:00	174	205	379	32	34	66	17.4
03:00	526	211	737	73	41	114	15.5
04:00	1444	528	1972	169	88	257	13.0
05:00	3494	2194	5688	387	294	681	12.0
06:00	3928	3717	7645	494	630	1124	14.7
07:00	3975	4324	8299	387	652	1039	12.5
08:00	3854	3786	7640	416	610	1026	13.4
09:00	3681	3406	7087	488	607	1095	15.5
10:00	3614	3500	7114	543	632	1175	16.5
11:00	3568	3661	7229	556	633	1189	16.4
12:00	3580	3832	7412	543	619	1162	15.7
13:00	3574	4139	7713	547	624	1171	15.2
14:00	3721	4977	8698	522	631	1153	13.3
15:00	3762	5696	9458	441	586	1027	10.9
16:00	3775	5778	9553	356	463	819	8.6
17:00	3778	5357	9135	248	331	579	6.3
18:00	3004	3829	6833	172	217	389	5.7
19:00	1820	2424	4244	111	139	250	5.9
20:00	1416	1981	3397	83	109	192	5.7
21:00	1125	1907	3032	66	89	155	5.1
22:00	700	1353	2053	50	73	123	6.0
23:00	399	857	1256	42	50	92	7.3
TOTAL	59273	68342	127615	6779	8225	15004	11.8

Peak Statistics

AM	TIME	07:00	07:15	07:15	10:45	06:30	10:30
	VOL	3975	4370	8345	556	678	1193
PM	TIME	16:45	15:30	15:30	13:15	14:15	13:30
	VOL	3813	5831	9591	547	633	1175



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element.
the art and science of place

Bushfire Management Plan

Harmony Apartments – Stages 2 & 3
Lot 100 (No. 1) Kentucky Court, Cockburn Central

December 2023 | 21-264

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

We acknowledge the Whadjuk people of the Noongar nation as Traditional Owners of the land on which we live and work. We acknowledge and respect their enduring culture, their contribution to the life of this city, and Elders, past and present.

Document ID: 21-264				
Issue	Date	Status	Prepared by	
			Name	Accreditation Details
1	15/12/23	Draft 1	Dylan Wray	BPAD 44656
2	19/12/23	Final	Dylan Wray	BPAD 44656

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Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 100 (No. 1) Kentucky Court, Cockburn Central

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 6 Month December Year 2022

Report author or reviewer: Dylan Wray

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☑ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 44656 Accreditation expiry: Month March Year 2024

Bushfire management plan version number: 2

Bushfire management plan date: Day 19 Month December Year 2023

Client/business name: Harvest Properties (WA) Pty Ltd

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
High risk land-use		✔
Vulnerable land-use		✔

None of the above ☑

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

N/A

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer

Date 19/12/2023

Document Set ID: 11748686
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1. Proposal Details

1.1 Background

This Bushfire Management Plan (BMP) has been prepared on behalf of Harvest Properties (WA) Pty Ltd, the landowners of Lot 100 (No. 1) Kentucky Court, Cockburn Central (the subject site).

This BMP has been prepared in accordance with State *Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) and the *Guidelines to Planning in Bushfire Prone Areas* (the Guidelines) to accompany the development application for the proposed residential apartment development on the subject site.

1.2 Purpose

The aim of this BMP is to assess the potential bushfire hazards surrounding the subject site to ensure the threat posed by any identified hazards can be appropriately managed and mitigated. This BMP provides an assessment of the general bushfire management strategies to be considered as part of the proposed development, including:

- Assessment of vegetation and effective slope within the 150m assessment area of the subject site, in accordance with *Australian Standard 3959-2018 Construction of buildings in bushfire prone areas* (AS3959-2018);
- Consideration of environmental, biodiversity and conservation values which may require the retention of bushfire hazards;
- Consideration of bushfire hazards that will exist post development and whether there are any temporary hazards that need to be considered;
- Assessment of the proposed development against the bushfire protection criteria of the Guidelines;
- Recommended mitigation measures to reduce the risk of bushfire from within the subject site; and
- Recommended roles and responsibilities associated with implementing the requirements of this BMP.

1.3 Proposed Development

The subject site is located on the intersection of North Lake Road and Kentucky Court, within the City of Cockburn (the City). The subject site contains an existing mixed-use development (Stage 1) as shown in Figure 1.

The proposed development comprises of following elements:

- Eight storey apartment building containing 90 dwellings and rooftop communal area;
- Seven storey apartment building containing 83 dwellings;
- Ground floor carparking and landscaping;
- First floor communal areas; and
- Partial construction of the public road on the adjacent Lot 9000.

Refer Appendix A – Site Plan

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Figure 1 Location Plan

1.4 Map of Bushfire Prone Areas

The majority of the subject site is designated as bushfire prone on the Office of Bushfire Risk Management (OBRM) Map of Bushfire Prone Areas, as shown in Figure 2. The designation of an area as bushfire prone reflects the potential for bushfire attack and acts as a mechanism to initiate further considerations through the planning and building approval processes.

A BMP is required in accordance with SPP 3.7 given the proposed development will result in people permanently residing in an area that may be prone to bushfires.

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Figure 2 Map of Bushfire Prone Areas (OBRM 2021)

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2. Environmental Considerations

2.1 Native Vegetation – Modification and Clearing

Policy Objective 5.4 of SPP 3.7 recognises the need to consider bushfire risk measures alongside environmental, biodiversity and conservation values. This BMP considers the environmental values specific to the subject site that may require consideration through protection, retention, or revegetation. Table 2.1 provides a summary of the relevant environmental considerations obtained from public databases.

Table 2.1 Summary of Potential Environmental Considerations

Environmental Features	Dataset	Relevant to site?	Relevant to assessment area?	Comments
Conservation Category Wetland (CCW) and Buffer	DBCA-019	No	No	N/A
RAMSAR Wetlands	DBCA-010	No	No	N/A
Threatened and Priority Flora	DBCA-036	No	No	N/A
Threatened Ecological Communities (TECs)	DBCA-038	Yes	Yes	The subject site and assessment area are mapped within a TEC.
Bush Forever Areas	DOP-071	No	No	N/A
Environmentally Sensitive Areas	DWER-046	No	No	N/A
Swan Bioplan Regionally Significant Natural Areas	DWER-070	No	No	N/A
Native Vegetation Extent	DPIRD-005	No	Yes	Native vegetation extents occur within the assessment area, outside of the subject site.

The subject site has previously been cleared and does not contain any vegetation of environmental value that will need to be retained. The environmental considerations identified in Table 2.1 will not prevent compliance with the bushfire protection measures contained within this BMP.

2.2 Landscaping

The proposed development includes additional landscaping to adhere to the landscaping provisions under the state and local planning framework. All proposed landscaping shall be maintained in a low threat state, in accordance with Clause 2.2.3.2 (f) of AS3959.

Refer Appendix B – Landscape Concept Plans

2.3 Revegetation

The proposed development does not include areas of revegetation.

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3. Bushfire Assessment

3.1 Assessment Inputs

The assessment has been undertaken in accordance with SPP 3.7, the Guidelines and AS3959.

3.1.1 Vegetation Classifications

A site visit was undertaken on the 6th December 2022 with all vegetation classified in accordance with Table 2.3 of AS3959 and the Visual Guide for Bushfire Risk Assessment in Western Australia (WAPC 2016). While the assessment was completed more than 12 months ago, the assessment inputs are still considered accurate based on current aerial imagery.

The classified vegetation within the assessment area is shown in Figure 3 with a description of each area provided in Table 3.1. Photographic evidence to support the vegetation classification has been provided in Appendix C.

Refer Appendix C – Vegetation Assessment

3.1.2 Effective Slope

The assessment area is generally flat with a slight downward slope to the east of the subject site which is associated with the drainage basin.

Slope analysis is based on site observations with a rangefinder, cross checked with available contour data over the assessment area, as shown in Figure 3.

3.1.3 Post Development Assumptions

The assessment has been based on the following post development assumptions:

- The subject site will be managed in a low fuel state in perpetuity, including the future landscaping;
- A 21m wide Asset Protection Zone (APZ) will be provided along the southern boundary of the adjoining Lot 9000 which is under the same ownership as the subject site. The 21m APZ extends over the proposed public road and will be managed in a low fuel state, in perpetuity;
- Classified vegetation surrounding the subject site will remain unchanged and will continue to pose a bushfire risk post development; and
- Excluded low threat vegetation will remain managed in a low fuel state which is a continuation of existing management regimes.

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Table 3.1 Assessment Summary

Plot	Vegetation Classification	Effective Slope	Comments
Plot 1	Class A Forest	Flat / Upslope	Areas of eucalyptus trees 15-20m in height and greater than 30% canopy cover. The understory consists of grass, small shrubs and trees resulting in a continuous fuel load from surface to canopy.
Plot 2	Class A Forest	Downslope 0-5°	
Plot 3	Class B Woodland	Flat / Upslope	Areas of eucalyptus trees 15-20m in height and less than 30% canopy cover. The understory consists of low grassland with limited near surface fuels.
Plot 4	Class B Woodland	Downslope 0-5°	
Plot 5	Class D Scrub	Flat / Upslope	Areas of large shrubs greater than 2m in height and foliage cover in excess of 30%.
Plot 6	Class D Scrub	Downslope 0-5°	
Plot 7	Class G Grassland	Flat / Upslope	Areas of unmanaged grassland surrounding the subject site with an average height greater than 100mm. Areas of isolated trees with overstorey foliage cover less than 10% have been classified as grassland.
Plot 8	Class G Grassland	Downslope 0-5°	
Plot 9	Excluded: Cl. 2.2.3.2 (a), (e) & (f)	N/A	Areas excluded in accordance with Clause 2.2.3.2 of AS3959 including: • Classified vegetation more than 100m from the site; • Non-vegetated areas including public roads, driveways, footpaths and buildings; and • Low threat vegetation including gardens on private properties and managed verges.

The classified vegetation and effective slope identified in Table 3.1 has been used to determine the radiant heat impact on the proposed development through the determination of the Bushfire Attack Level (BAL) in accordance with AS3959. Table 3.2 provides an extract of the applicable separation distances from Table 2.5 of AS3959.

Table 3.2 Vegetation Separation Distances (Table 2.5 of AS3959)

Plot	Vegetation Classification	Effective Slope	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5	BAL-LOW
Plot 1	Forest	Flat / Upslope	<16	16-<21	21-<31	31-<42	42-<100	>100
Plot 2	Forest	Downslope 0-5°	<20	20-<27	27-<37	37-<50	50-<100	>100
Plot 3	Woodland	Flat / Upslope	<10	10-<14	14-<20	20-<29	29-<100	>100
Plot 4	Woodland	Downslope 0-5°	<13	13-<17	17-<25	25-<35	35-<100	>100
Plot 5	Scrub	Flat / Upslope	<10	10-<13	13-<19	19-<27	27-<100	>100
Plot 6	Scrub	Downslope 0-5°	<11	11-<15	15-<22	22-<31	31-<100	>100
Plot 7	Grassland	Flat / Upslope	<6	6-<8	8-<12	12-<17	17-<50	>50
Plot 8	Grassland	Downslope 0-5°	<7	7-<9	9-<14	14-<20	20-<50	>50

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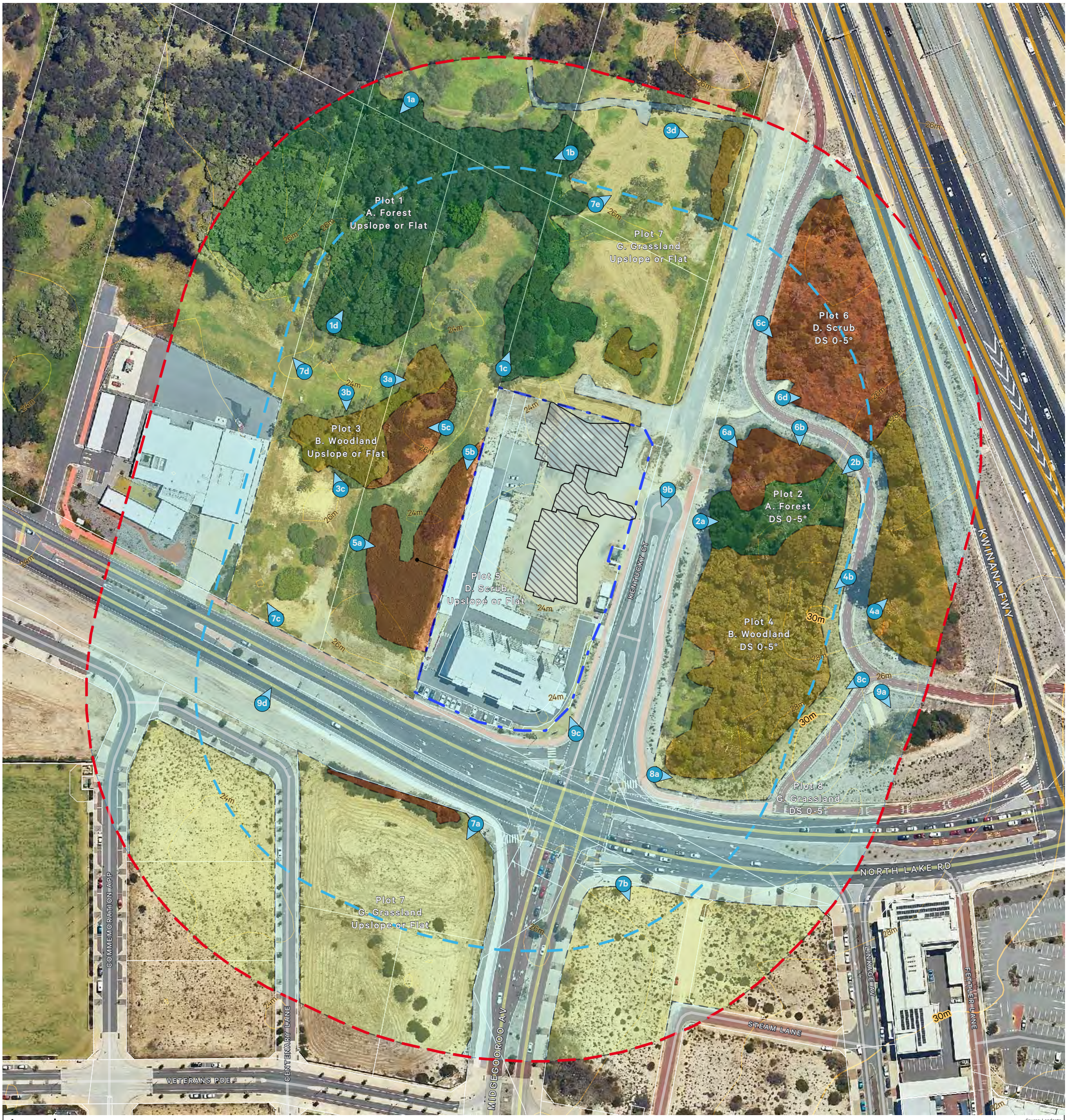

Source: Landgate

Legend

- Subject Site
- Building Footprints
- Assessment Area (100m)
- Assessment Buffer (150m)
- Vegetation Extents
- 01 Photo Point

AS 3959 Classifications

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Excluded - Clause 2.2.3.2 (Low Threat)

0 50 100
Meters

Scale: 1:2,000 @ A3

Staff: JP Date: 14/12/2023 File: 21-264

Figure 3 - Site Assessment

Harmony Apartments - Stages 2 & 3

Lot 100 (No. 1) Kentucky Court, Cockburn Central

Assessment Date: 5/12/2022

Accreditation Details: BPAD 44656 (Level 2)

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3.2 Assessment Outputs

The Bushfire Attack Level (BAL) Contour Map in Figure 4 has been prepared for the assessment area based on the following considerations:

- The vegetation classifications and slope analysis in Table 3.1; and
- AS3959 separation distances in Table 3.2;
- The subject site being managed in a low fuel state, in perpetuity; and
- A 21m APZ being maintained along the southern boundary of the adjoining Lot 9000.

The assessment outcomes have been summarised in Table 3.3 which demonstrates that all habitable buildings will be subject to a radiant heat exposure of 29kW/m^2 (BAL-29) or below, in accordance with SPP 3.7.

Table 3.3 BAL Ratings for Proposed Development

Proposed Building	Plot	Separation	BAL Rating	Determined BAL
Building 2	Plot 1	76m	BAL-12.5	**BAL-12.5**
	Plot 2	50m	BAL-12.5	
	Plot 3	68m	BAL-12.5	
	Plot 4	52m	BAL-12.5	
	Plot 5	32m	BAL-12.5	
	Plot 6	62m	BAL-12.5	
	Plot 7	41m	BAL-12.5	
	Plot 8	51m	BAL-LOW	
Building 3	Plot 1	22m	BAL-29	**BAL-29**
	Plot 2	43m	BAL-19	
	Plot 3	22m	BAL-19	
	Plot 4	54m	BAL-12.5	
	Plot 5	23m	BAL-19	
	Plot 6	45m	BAL-12.5	
	Plot 7	22m	BAL-12.5	
	Plot 8	79m	BAL-LOW	

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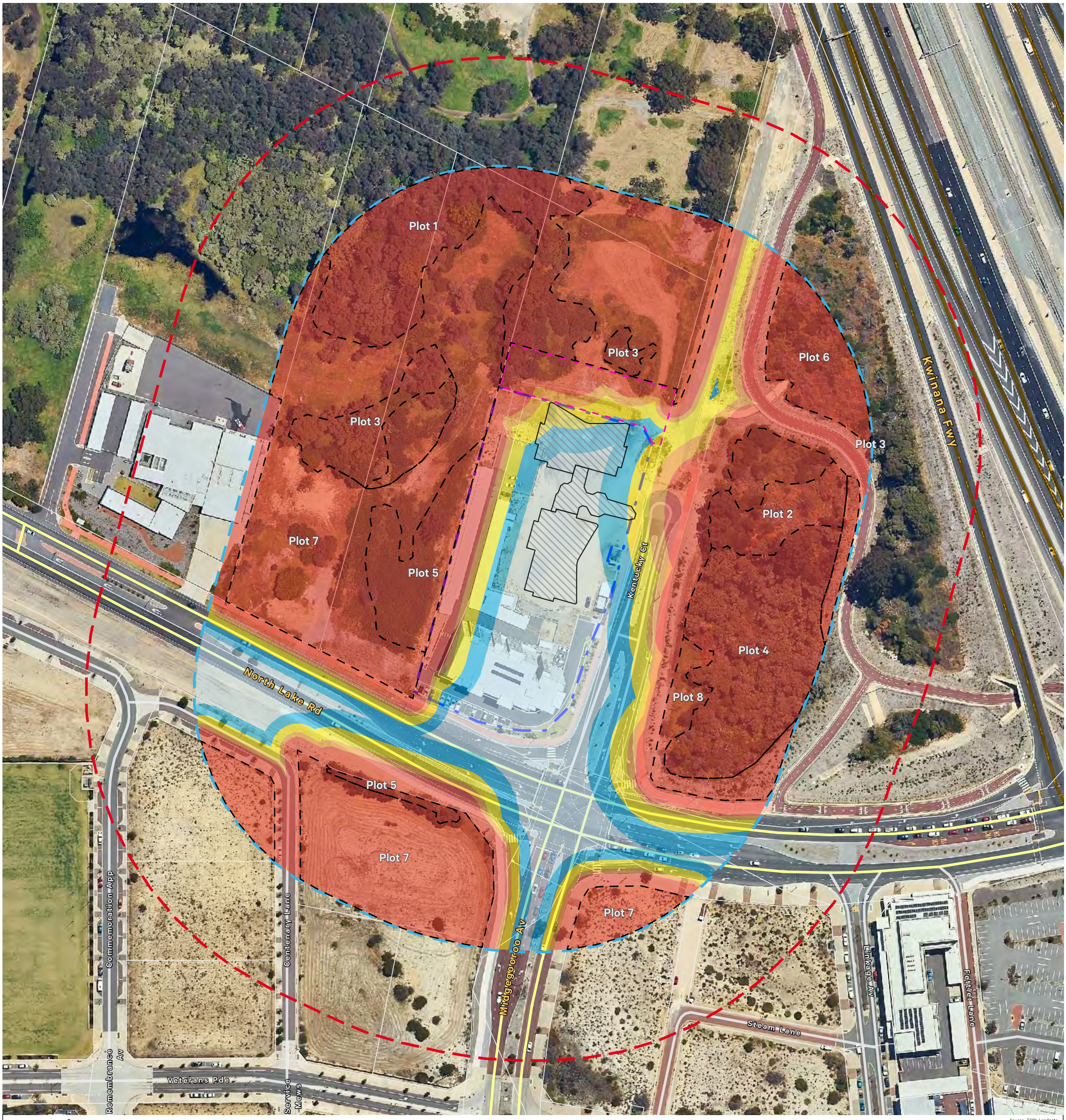

Figure 4: BAL Contour Map

Harmony Apartments - Stages 2 & 3

Lot 100 (No. 1) Kentucky Court, Cockburn Central

Assessment Date: 5/12/2022

Accreditation Details: BPAD 44656 (Level 2)

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4. Identification of Bushfire Hazard Issues

4.1 Key Issues

SPP 3.7 and AS3959 aims to minimise the likelihood of radiant heat exposure, direct flame contact and ember attack to habitable buildings. However, these requirements cannot guarantee that damage will not occur from bushfires or that the land use intensification will not increase the likelihood and risk of bushfire ignition.

From a bushfire hazard management and safety perspective, the key issues that are likely to require management and additional consideration include:

- The public road to be constructed on the adjacent Lot 9000 shall be managed in a low threat condition to provide sufficient separation between the proposed development and retained bushfire hazards to ensure the radiant heat exposure does not exceed 29kW/m2 (BAL-29). A 21m wide APZ will be provided on the adjacent Lot 9000 which will include the 18m wide road reserve to be provided in accordance with the Cockburn Central North (Muriel Court) Structure Plan;
- Kentucky Road is currently a no-through public road which could impact evacuation procedures in a bushfire emergency given the number of residents that will be on site at any one time. Kentucky Road will eventually become a through road as envisaged under the Cockburn Central North (Muriel Court) Structure Plan which will enable multiple access routes to be provided;
- The proposed development will be serviced by reticulated scheme water for both domestic and firefighting purposes. The developer will be responsible for ensuring there is adequate capacity within the existing water network and that street hydrants meet the relevant standards prescribed by the Water Corporation; and
- Consideration will need to be given to the landscape design and management regimes to ensure the introduction of landscaping does not add unnecessary fuel loads which may change the assessment outcomes of this BMP.

It is acknowledged that the bushfire risk to the proposed development posed by the identified bushfire hazards can be managed through standard application of the acceptable solutions of the bushfire protection criteria, as detailed in Section 5.1.

Additional bushfire mitigation measures have been recommended in response to the issues identified above to further improve the site response and resilience to a bushfire, as detailed in Section 5.2.

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5. Bushfire Protection Criteria

5.1 Compliance Table

This BMP provides an outline of the mitigation strategies that will ensure the development meets the bushfire protection criteria of the Guidelines. The bushfire protection criteria addressed as part of this BMP include:

- Element 1 – Location of the development.
- Element 2 – Siting and design of the development;
- Element 3 – Vehicle access; and
- Element 4 – Water supply.

Compliance with the bushfire protection criteria of the Guidelines has been achieved by meeting the acceptable solutions, as detailed in Table 5.1. No non-compliances have been identified and therefore a performance-based solution is not required.

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Table 5.1 Bushfire Protection Criteria Assessment

Bushfire Protection Criteria	Acceptable Solution	Compliance Comments
Element 1: Location	A1.1 Development Location The development is located in an area that is or will, on completion, be subject to a radiant heat exposure of 29kW/m^2 (BAL-29) or below.	**Compliant** The proposed development meets the acceptable solution as follows: • Building 2 will be subject to 12.5kW/m^2 (BAL-12.5); and • Building 3 will be subject to 29kW/m^2 (BAL-29).
Element 2: Siting and Design	A2.1 Asset Protection Zone (APZ) Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m^2 (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. • Management: the APZ is managed in accordance with the requirements of Standards for Asset Protection Zones.	**Compliant** An APZ has been provided on the adjacent Lot 9000 as a temporary measure to ensure the radiant heat exposure on the proposed development is maintained at 29kW/m^2 (BAL-29) or below until the lot is cleared for Stage 3 of the development. The APZ will be maintained in accordance with the Standards for Asset Protection Zones in Appendix D.
Element 3: Vehicular Access	A3.1 Public Road The minimum requirements under this acceptable solution are applicable to all proposed and existing public roads. Public roads are to meet the minimum technical requirements in Appendix E.	**Compliant** The existing public road network and the proposed public road achieve compliance with the relevant technical standards and shall be maintained in perpetuity by the relevant authorities. The proposed public road on Lot 9000 includes an 18m wide road reserve with each lane 6m in width for access, street parking and landscaping, as required under the Cockburn Central North (Muriel Court) Structure Plan.

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Bushfire Protection Criteria	Acceptable Solution	Compliance Comments
Element 3: Vehicular Access Cont.	A3.2a Multiple Access Routes Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access). Where public road access is via a no-through road, the road access is to be a maximum 200m to an intersection providing two-way access.	**Compliant** The subject site is accessed via Kentucky Court, a no through road approximately 65m in length to the intersection of North Lake Road which provides access in multiple directions to multiple suitable locations. Compliance with A3.2a is achieved given the no through road is less than 200m in length and direct access from the subject site to North Lake Road is not possible due to existing access arrangements. It should be noted that the public road network envisaged under the Cockburn Central North (Muriel Court) Structure Plan includes an extension of Kentucky Court to Muriel Court which will provide multiple access routes.
	A3.2b Emergency Access Way Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution.	**Not Applicable** Emergency access ways are not required given compliance with A3.2a has been achieved.
	A3.3 Through Roads All public roads should be through-roads. No-through roads should be avoided and can only be considered in certain scenarios.	**Not Applicable** A3.3 does not apply to development applications.
	A3.4a Perimeter Roads A perimeter road is a public road and should be provided for greenfield or infill development where 10 or more lots are being proposed (including as part of a staged subdivision).	**Not Applicable** A3.4a does not apply to development applications.
	A3.4b Fire Service Access Routes Where proposed lots adjoin classified vegetation under AS3959, and a perimeter road is not required in accordance with A3.4a, a fire service access route can be considered as an acceptable solution to provide firefighter access, where access is not available, to the classified vegetation.	**Not Applicable** A3.4b does not apply to development applications.
	A3.5 Battle-Axe Access Legs Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.	**Not Applicable** A3.5 does not apply to development applications.

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Bushfire Protection Criteria	Acceptable Solution	Compliance Comments
Element 3: Vehicular Access Cont.	A3.6 Private Driveways The private driveway is to meet all the following requirements: • Technical Specifications in Appendix 3; • Passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres; and • Turn-around areas within 30 metres of the habitable building.	**Compliant** Internal accessways have been designed for two-way access throughout the subject site with a minimum trafficable width of 6m for light vehicles and fire appliances. Loop access is provided to enable fire appliance vehicles to enter and exit in a forward motion without the need to turnaround. It should be noted that it is unlikely that fire appliance vehicles would enter the site given existing fire pump and booster assembly is located along Kentucky Court which means fire suppression efforts are likely to be conducted from the street.
Element 4: Water	A4.1 Identification of Future Water Supply Evidence that a reticulated or sufficient non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements detailed in Appendix F.	**Not Applicable** Identification of future water supply not applicable to development applications.
	A4.2 Provision of Water for Firefighting Purposes Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority.	**Compliant** The subject site is located within a reticulated scheme water area with the proposed development to be serviced by existing mains. Existing street hydrants are located along Kentucky Court and North Lake Road which can be utilised during a bushfire emergency. There is also an existing booster assembly, pumps and tanks which were provided as part of the Stage 1 works on the subject site. The existing firefighting infrastructure is readily accessed from Kentucky Court. The proponent will be responsible for ensuring there is capacity within the existing reticulated water supply network and that street hydrants comply with the Water Corporation Technical Specifications (Appendix F).

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5.2 Additional Management Strategies

The following additional bushfire management strategies have been recommended to inform ongoing planning stages and increase the level of bushfire risk mitigation and resilience across the subject site. The responsibilities and timeframes for the below recommendations are provided in Section 6.

5.2.1 Landscaping

All landscaping proposed on the subject site shall be managed to a minimum fuel condition in accordance with Clause 2.2.3.2 (f) of AS3959. Low threat vegetation includes managed landscaping, reticulated lawns and gardens. Management may include regular clearing of vegetation, removal of weeds, removal of dead plant material, tree pruning and mowing of grass to maintain a fuel load of approximately 2 tonnes per hectare.

5.2.2 Temporary Fuel Management

This BMP includes a requirement for a portion of the adjacent Lot 9000 to be managed by the landowner as an APZ to ensure the proposed development is subject to a maximum radiant heat exposure of 29kW/m^2 (BAL-29). The majority of the APZ will be non-vegetated as it will contain the proposed public road to be constructed as part of the proposed development.

The adjacent Lot 9000 is under the same ownership as the subject site and can therefore be managed as part of the proposed development. The APZ will remain in place until such time that Lot 9000 is developed under future stages of the proposed development. In the event Lot 9000 is sold as a vacant property, the current landowners shall register an easement over the site to ensure the area covered by the APZ is continually managed as low threat. The easement shall be in place until such time the adjoining property is either redeveloped.

5.2.3 Internal Access Arrangements

The internal private road network provides two-way access for light vehicles to effectively access and egress the carpark to the front of the subject site. The landowner will need to ensure egress routes to the public road network are always available and clear from obstructions. If a security gate is to be installed, it shall include a manual override to enable occupants to evacuate the site.

5.2.4 Construction Requirements

The proposed Class 2 apartment building shall be constructed in accordance with the bushfire construction requirements of the National Construction Code (NCC). This is likely to include compliance with AS3959 which is a deemed-to-satisfy solution.

The building permit application will need to be accompanied by a separate BAL Assessment or a certificate from a bushfire practitioner to verify the BAL ratings contained within this BMP.

5.2.5 Water Supply and Suppression Equipment

Fire suppression equipment such as fire water tanks, pumps, hydrants, hose reels, sprinklers and extinguishers may be required to comply with the NCC for the suppression of structural fires. The fire suppression equipment required to comply with the NCC can also be used to defend and suppress a bushfire.

It is noted that the subject site includes existing fire water tanks, pumps and booster assembly along Kentucky Court which were installed under Stage 1 of the development. All existing and proposed fire suppression equipment shall be commissioned and routinely checked to ensure it is in working order.

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5.2.6 Fire Control Order

The City's annual Fire Control Order provides a structure for managing bushfire throughout the local government area. The Fire Control Order is issued under Section 33 of the *Bush Fires Act 1954* which authorises the City to enforce bushfire preparation works such as fuel reduction, firebreaks and total fire bans.

The following requirements apply to the subject site under the Fire Control Order:

- Construct firebreaks immediately inside all external property boundaries; and
- Remove all dead vegetation surrounding and over all habitable structures to a radius of 3m.

A copy of the Fire Control Order is provided in Appendix G.

5.2.7 Public Education and Preparedness

The City provides fire and emergency advice to landowners which is available on their website:

https://www.cockburn.wa.gov.au/Health-Safety-and-Rangers/Fire-and-Emergency-Management

Additional information and resources can also be sourced from the Department of Fire and Emergency Services (DFES) website. This includes educational programs and safety guidelines to assist landowners with preparing for and surviving bushfire events.

In the event of a bushfire, specific advice and recommendations will be given to landowners from DFES, emergency services personnel and/ or the City.

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Management Requirements

1. All landscaping on the the subject site shall be managed in a low fuel condition in accordance with Clause 2.2.3.2 (f) of AS3959-2018. Management may include regular clearing of vegetation, removal of weeds, removal of dead plant material, tree pruning and mowing of grass.
2. A 21m wide Asset Protection Zone (APZ) shall be provided on the adjacent Lot 9000 to ensure the radiant heat exposure on the proposed development does not exceed 29kW/m2 (BAL-29). The APZ shall be managed in accordance with the Standards for Asset Protection Zones until such time Lot 9000 is developed.
3. The proposed public road shall be constructed in accordance with the Cockburn Central North (Muriel Court) Structure Plan including an 18m wide road reserve and minimum road width of 6m to enable two way access.
4. The internal access roads shall be constructed to provide a minimum trafficable width of 6m to enable light vehicles and emergency service vehicles to manouver the subject site.
5. The proposed development shall be connected to the reticulated water supply with street hydrants provided in accordance with Water Corporation technical requirements.
6. The proposed Class 2 Apartment Buildings shall comply with the bushfire construction requirements of the National Construction Code.

Notes

- The subject site shall comply with the City of Cockburn Fire Control Order.
- Classified vegetation outside of the subject site will continue to pose a bushfire threat post development.

Source: Landgate

Legend

- Subject Site
- Proposed Development
- Existing Development (Stage 1)
- Asset Protection Zone (21m)
- Existing Public Roads
- Proposed Public Roads
- Internal Accessway
- Egress Routes
- Existing Street Hydrants (Water Corp)
- Reticulated Water Supply
- Permanent Bushfire Hazards
- Temporary Bushfire Hazards

0 25 50
Metes

Scale: 1:1,500 @ A3

Staff: DW Date: 27/10/23 File: 23-431

Figure 5 - Spatial Representation of BMP Strategies

Harmony Apartments – Stages 2 & 3

Lot 100 (No. 1) Kentucky Court, Cockburn Central

Assessment Date: 06 December 2022
Accreditation Details: BPAD 44656 (Level 2)

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6. Responsibilities

6.1 Implementation

Table 6.1 Implementation Actions – Prior to Occupation (Landowner)

No.	Implementation Actions
1	The subject site shall be managed in a low threat state in perpetuity. This may include regular clearing of vegetation, removal of weeds, removal of dead plant material, tree pruning and mowing of grass to reduce the fuel load surrounding the proposed development.
2	A 21m wide APZ shall be implemented along the southern boundary of the adjacent Lot 9000.
3	The proposed public road shall comply with the relevant technical specifications
4	Internal access road shall be a minimum 6m in width constructed of all-weather surface materials.
5	The proposed development shall be connected to reticulated water mains.
6	Fire suppression equipment must be installed and commissioned by the relevant authorities, including pumps, tanks, hydrants, hose reels and fire extinguishers, as prescribed under the NCC.
7	The proposed development shall comply with the bushfire construction requirement of the NCC.
8	The subject site shall comply with the City's Fire Control Order.

6.2 Management

Table 6.2 Ongoing Management Actions (Landowner)

No.	Management Actions
1	The subject site shall be maintained in a low threat state, in perpetuity. All landscaping shall be subject to routine management regimes including clearing of vegetation, removal of weeds, removal of dead plant material, tree pruning and mowing of grass.
2	The 21m wide APZ to be installed on the adjacent Lot 9000 shall be maintained in accordance with the Standards for Asset Protection Zones, until such time that the site is developed.
3	Internal access roads shall be maintained to the required standards and surface conditions as stipulated in this BMP.
4	Fire suppression equipment shall be maintained in good working order, including pumps, tanks, hydrants, hose reels and fire extinguishers, as prescribed under the NCC.
5	Ensure ongoing compliance with the City's Fire Control Order.

Table 6.3 Ongoing Management Actions (City of Cockburn)

No.	Management Actions
1	Monitor landowner compliance with relevant conditions of the development approval.
2	Maintain the public road network to the relevant technical specifications.
3	Enforce compliance with the City's Fire Control Order enforced under Section 33 of the Bush Fires Act 1954.

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7. References

Office of Bushfire Risk Management (OBRM) Map of Bush Fire Prone Areas, accessed November 2023, https://maps.slip.wa.gov.au/landgate/bushfireprone/

City of Cockburn, Fire Control Order, accessed November 2023, https://www.cockburn.wa.gov.au/Health-Safety-and-Rangers/Fire-and-Emergency-Management/Fire-Control-Order

Standards Australia. AS 3959: 2018 Construction of buildings in bushfire-prone areas. Australian Standard published 14 November 2018.

Western Australian Planning Commission (WAPC, 2015) State Planning Policy 3.7 Planning in Bushfire Prone Areas. Western Australian Planning Commission.

Western Australian Planning Commission (WAPC, 2016) Visual guide for bushfire risk assessment in Western Australia. Western Australian Planning Commission.

Western Australian Planning Commission (WAPC) (2021) Guidelines for Planning in Bushfire Prone Areas Version 1.4. Western Australian Planning Commission.

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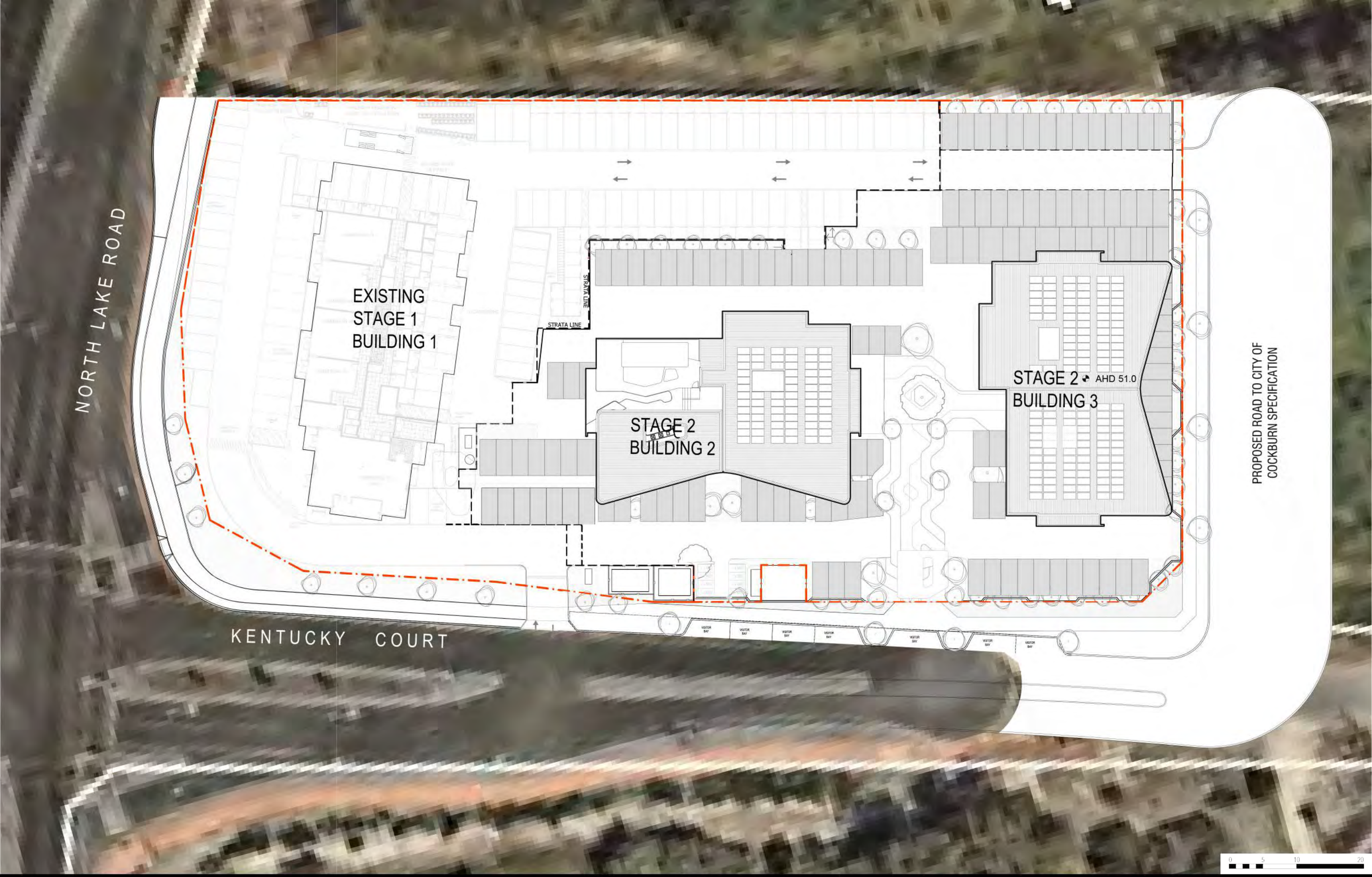
Version: 1, Version Date: 21/12/2023

Appendix A – Site Plan

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023



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DWG No. A200 - SITE PLAN (SCALE 1:500 @ A3)
884-888 NORTH LAKE ROAD
Project No. 1708 HARMONY APARTMENTS STAGES 2 & 3
18/12/23 DEVELOPMENT APPROVAL ISSUE - REV 0

PRD. COLLIÈRE ARCHITECTURE

Appendix B – Landscape Plan

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1.2 GROUND FLOOR & CANOPY PLAN
concept

PLAN E

LANDSCAPE ARCHITECTS

LEVEL 1 278 RAILWAY PDE WEST LEEDERVILLE WA 6007
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1708 HARMONY APARTMENTS, COCKBURN CENTRAL

PREPARED FOR MILIEUX PROJECT MANAGEMENT
DECEMBER 2023

C1.108

REV G
1400 @ A3

0 2 4 8 12 20m

2313301 HARMONY APARTMENTS - landscape concept

© PLANE

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Version: 1, Version Date: 21/12/2023

1.3 ENTRY - LEVEL 1
concept

LEGEND

01 Entry staircase to Lobby

02 Pedestrian path entry to ground floor

03 Terracing planting

04 Pedestrian Lift

05 Elevated “bridge’ entry path

06 Raised planters with cascading and feature lush planting

07 Seating node - opportunity for artwork location

08 Feature node:
Raised planter with feature tree and seating deck

09 Roof over with opening for feature tree canopy shown dashed

10 Roof over stair entrance way

11 Small trees in raised planters

12 Large feature trees in ground floor to grow through to first level

PLAN E

LANDSCAPE ARCHITECTS

LEVEL 1 278 RAILWAY PDE WEST LEEDERVILLE WA 6007
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1708 HARMONY APARTMENTS, COCKBURN CENTRAL

PREPARED FOR MILIEUX PROJECT MANAGEMENT
DECEMBER 2023

C1.109

REV G
1:200 @ A3

0 1 2 4 6 10m

© PLAN E

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1.4 AMENITIES LEVEL
concept

LEGEND

01 Flexible space:
Outdoor movies, passive recreation/sports in artificial turf

02 TV/Screen on Wall

03 Semi-private seating nodes

04 Sunset/Lookout lounging seat with movable tables

05 High bench table in planter with low planting to allow for views

06 Feature tree in raised planter

07 Low seating bench and dining furniture

08 BBQ bench with dining setting

09 Terracing with seating/ lounging opportunities and hammock style lounging

10 Pool deck with sun beds and cabanas

11 Screening planting aorund pool

12 Feature tree in planter flushed with pool deck level

13 Roof over with opening shown dashed

K E N T U C K Y C O U R T

PLAN E

LANDSCAPE ARCHITECTS

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T: (08) 9388 9566 E: mail@plane.com.au

1708 HARMONY APARTMENTS, COCKBURN CENTRAL

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© PLAN E

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Appendix C – Vegetation Assessment

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

APPENDIX C – VEGETATION ASSESSMENT

PLOT 1	
Classification: Class A Forest	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of eucalyptus trees on vacant properties to the north and west of the subject site. The trees are 15-20m in height with canopy cover geater than 30%. The understory consists of grass, small shrubs and trees resulting in a continuous fuel load from surface to canopy.	**Post Development Description:** Portion of this vegetation on the adjacent Lot 9000 will be cleared to facilitate the proposed road and will be managed as part of the APZ.

Photo ID: 1a

Photo ID: 1b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 1	
Classification: Class A Forest	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of eucalyptus trees on vacant properties to the north and west of the subject site. The trees are 15-20m in height with canopy cover geater than 30%. The understory consists of grass, small shrubs and trees resulting in a continuous fuel load from surface to canopy.	**Post Development Description:** Portion of this vegetation on the adjacent Lot 9000 will be cleared to facilitate the proposed road and will be managed as part of the APZ.

Photo ID: 1c

Photo ID: 1d

APPENDIX C – VEGETATION ASSESSMENT

PLOT 2	
Classification: Class A Forest	**Effective Slope: Downslope 0-5 Degrees**
Pre-Development Description: Areas of eucalyptus and melaleuca trees within the drainage vasin to the east of the subject site. The trees are 15-20m in height with canopy cover geater than 30%. The understory consists of grass, small shrubs and trees resulting in a continuous fuel load from surface to canopy.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 2a

Photo ID: 2b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 3	
Classification: Class B Woodland	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of eucalyptus trees on vacant properties to the north and west of the subject site. The trees are 15-20m in height with foliage canopy cover less than 30%. The understory consists of low grassland with limited near surface fuels.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 3a

Photo ID: 3b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 3	
Classification: Class B Woodland	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of eucalyptus trees on vacant properties to the north and west of the subject site. The trees are 15-20m in height with foliage canopy cover less than 30%. The understory consists of low grassland with limited near surface fuels.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 3c

Photo ID: 3d

APPENDIX C – VEGETATION ASSESSMENT

PLOT 4	
Classification: Class B Woodland	**Effective Slope: Downslope 0-5 Degrees**
Pre-Development Description: Areas of melaleuca trees within the drainage vasin to the east of the subject site. The trees are 15-20m in height with foliage canopy cover less than 30%. The understory consists of low grassland with limited near surface fuels.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 4a

Photo ID: 4b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 5	
Classification: Class D Scrub	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of large shrubs located on the western adjoining site. The shrubs are greater than 2m in height and foliage cover in excess of 30%.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 5a

Photo ID: 5b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 5	
Classification: Class D Scrub	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of large shrubs located on the western adjoining site. The shrubs are greater than 2m in height and foliage cover in excess of 30%.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 5c

APPENDIX C – VEGETATION ASSESSMENT

PLOT 6	
Classification: Class D Scrub	**Effective Slope: Downslope 0-5 Degrees**
Pre-Development Description: Areas of large shrubs located within the drainage basin to the east and along Kwinana Freeway. The shrubs are greater than 2m in height and foliage cover in excess of 30%.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 6a

Photo ID: 6b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 6	
Classification: Class D Scrub	**Effective Slope: Downslope 0-5 Degrees**
Pre-Development Description: Areas of large shrubs located within the drainage basin to the east and along Kwinana Freeway. The shrubs are greater than 2m in height and foliage cover in excess of 30%.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 6c

Photo ID: 6d

APPENDIX C – VEGETATION ASSESSMENT

PLOT 7	
Classification: Class G Grassland	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of unmanaged grassland surrounding the subject site with an average height greater than 100mm. Areas of isolated trees with overstorey foliage cover less than 10% have been classified as grassland.	**Post Development Description:** Portion of this vegetation on the adjacent Lot 9000 will be cleared to facilitate the proposed road and will be managed as part of the APZ.

Photo ID: 7a

Photo ID: 7b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 7	
Classification: Class G Grassland	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of unmanaged grassland surrounding the subject site with an average height greater than 100mm. Areas of isolated trees with overstorey foliage cover less than 10% have been classified as grassland.	**Post Development Description:** Portion of this vegetation on the adjacent Lot 9000 will be cleared to facilitate the proposed road and will be managed as part of the APZ.

Photo ID: 7c

Photo ID: 7d

APPENDIX C – VEGETATION ASSESSMENT

PLOT 7	
Classification: Class G Grassland	**Effective Slope: Flat / Upslope**
Pre-Development Description: Areas of unmanaged grassland surrounding the subject site with an average height greater than 100mm. Areas of isolated trees with overstorey foliage cover less than 10% have been classified as grassland.	**Post Development Description:** Portion of this vegetation on the adjacent Lot 9000 will be cleared to facilitate the proposed road and will be managed as part of the APZ.

Photo ID: 7e

Photo ID: 7f

APPENDIX C – VEGETATION ASSESSMENT

PLOT 8	
Classification: Class G Grassland	**Effective Slope: Downslope 0-5 Degrees**
Pre-Development Description: Areas of unmanaged grassland surrounding the subject site with an average height greater than 100mm. Areas of isolated trees with overstorey foliage cover less than 10% have been classified as grassland.	**Post Development Description:** The vegetation will remain unchanged.

Photo ID: 8a

Photo ID: 8b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 9	
Exemption: Clause 2.2.3.2 (a), (e) & (f)	**Reason: 100m+, Non Vegetated and Low Threat**
Pre-Development Description: Areas excluded in accordance with Clause 2.2.3.2 of AS3959 including: • Classified vegetation more than 100m from the site; • Non-vegetated areas including public roads, driveways, footpaths and buildings; and • Low threat vegetation including gardens on private properties and managed verges.	**Post Development Description:** Excluded areas will remain unchanged.

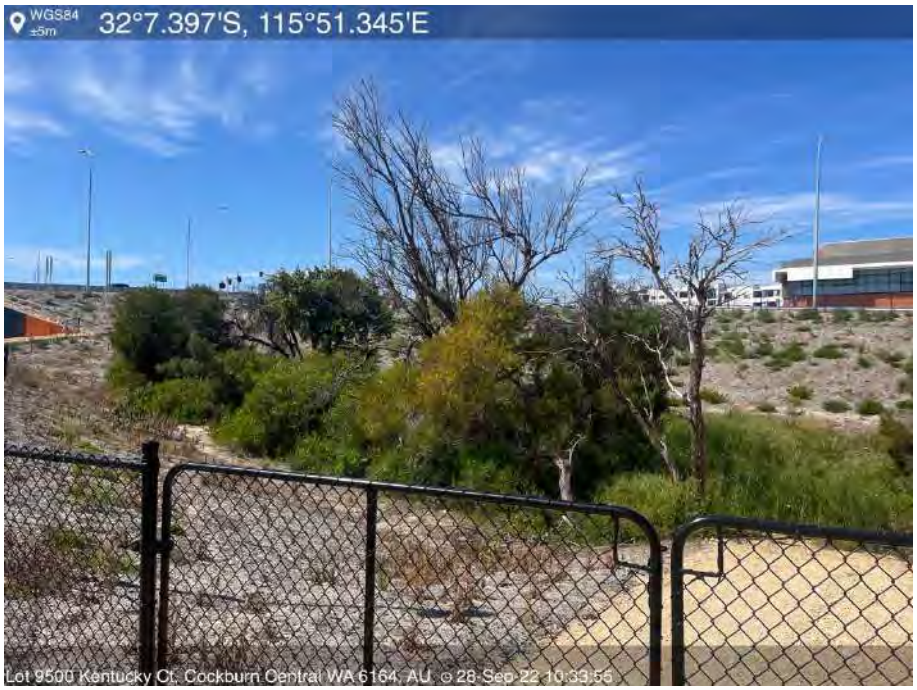


Photo ID: 9a

Photo ID: 9b

APPENDIX C – VEGETATION ASSESSMENT

PLOT 9	
Exemption: Clause 2.2.3.2 (a), (e) & (f)	**Reason: 100m+, Non Vegetated and Low Threat**
Pre-Development Description: Areas excluded in accordance with Clause 2.2.3.2 of AS3959 including: • Classified vegetation more than 100m from the site; • Non-vegetated areas including public roads, driveways, footpaths and buildings; and • Low threat vegetation including gardens on private properties and managed verges.	**Post Development Description:** Excluded areas will remain unchanged.

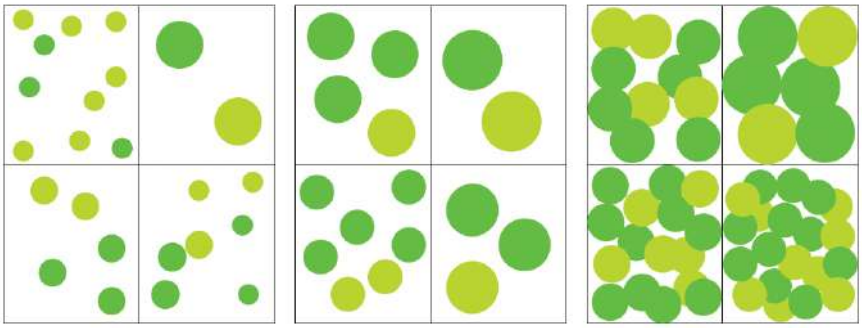
Photo ID: 9c

Photo ID: 9d

Appendix D – Standards for Asset Protection Zones

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

APPENDIX D – STANDARD FOR ASSET PROTECTION ZONE

Object	APZ Requirements
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area, as detailed below. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.  15% 30% 70%
Shrub and scrub (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

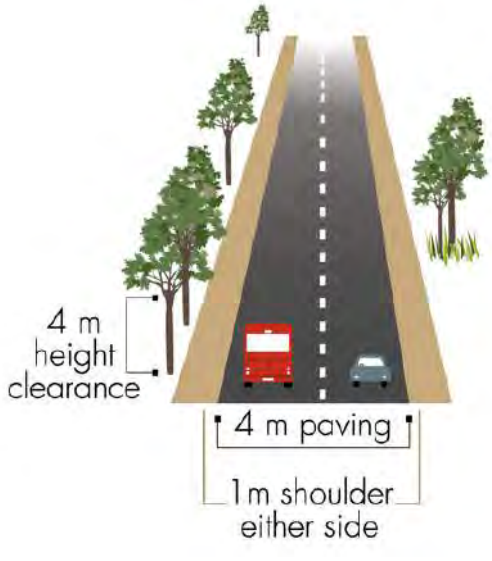
Note: Plant flammability, landscaping design and maintenance should be considered – Refer to explanatory notes of the Guidelines.

Appendix E – Access Requirements

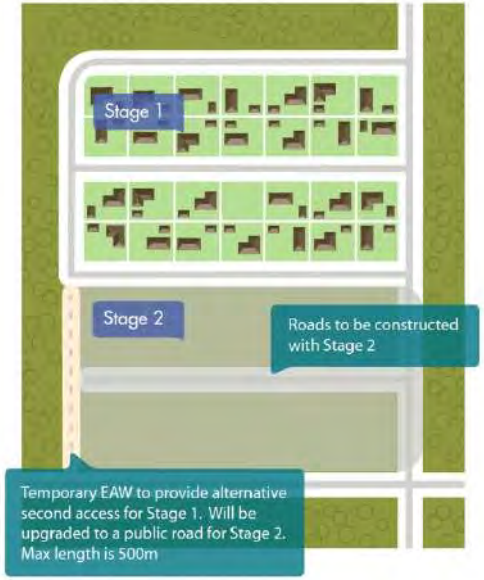
Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

APPENDIX E – VEHICULAR ACCESS TECHNICAL REQUIREMENTS

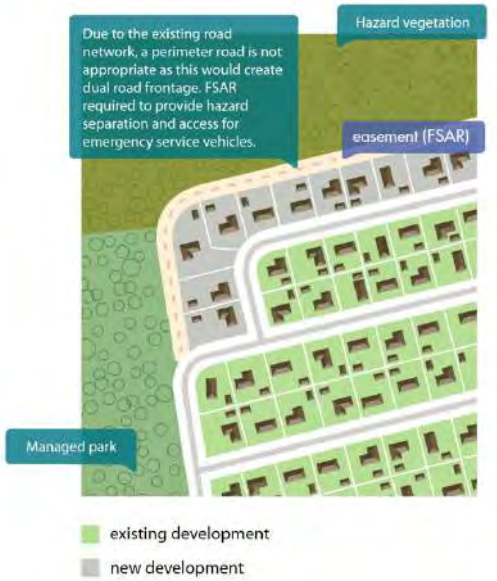
TECHNICAL REQUIREMENTS	1. Public Road	2. Emergency Access Way	3. Fire Service Access Rout	4. Battle-Axe and Private Driveways
Minimum trafficable surface	In accordance with A3.1	6m	6m	4m
Horizontal clearance	N/A	6m	6m	6m
Vertical clearance	4.5m			
Minimum weight capacity	15 tonnes			
Maximum grade unsealed road	As per the Subdivision Guidelines.	1:10 (10%)		
Maximum grade sealed road		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves		8.5m		



Example of a Public Road

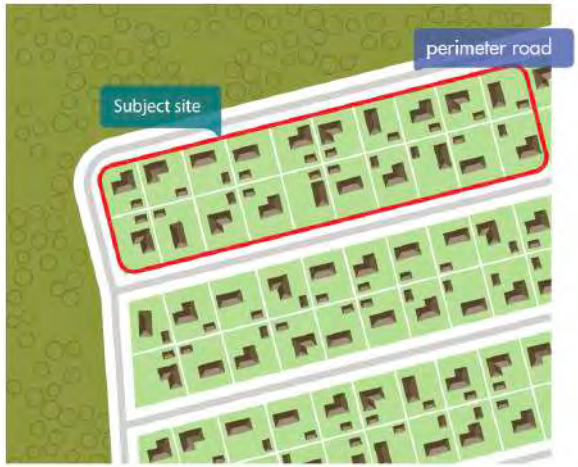


Example of Emergency Access Way

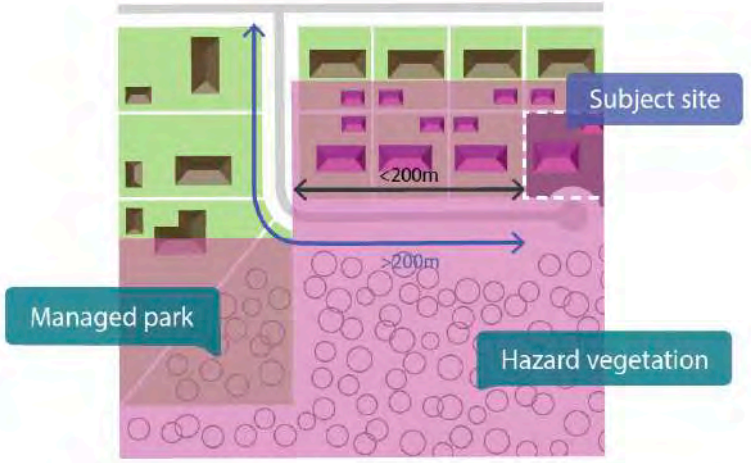


Example of Fire Service Access Way

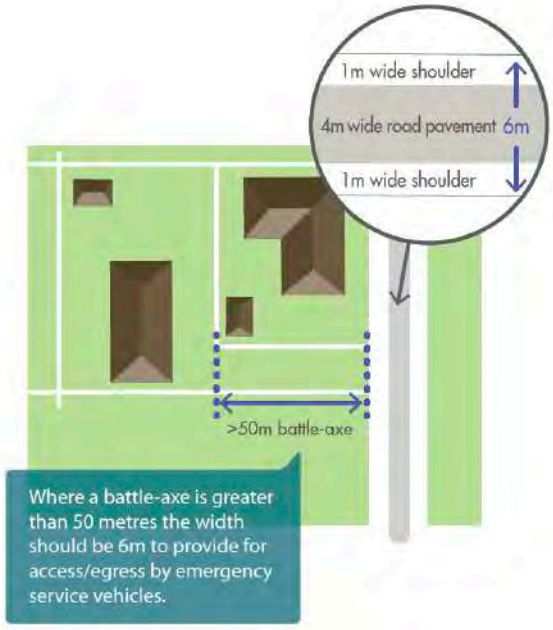
APPENDIX E – VEHICULAR ACCESS TECHNICAL REQUIREMENTS



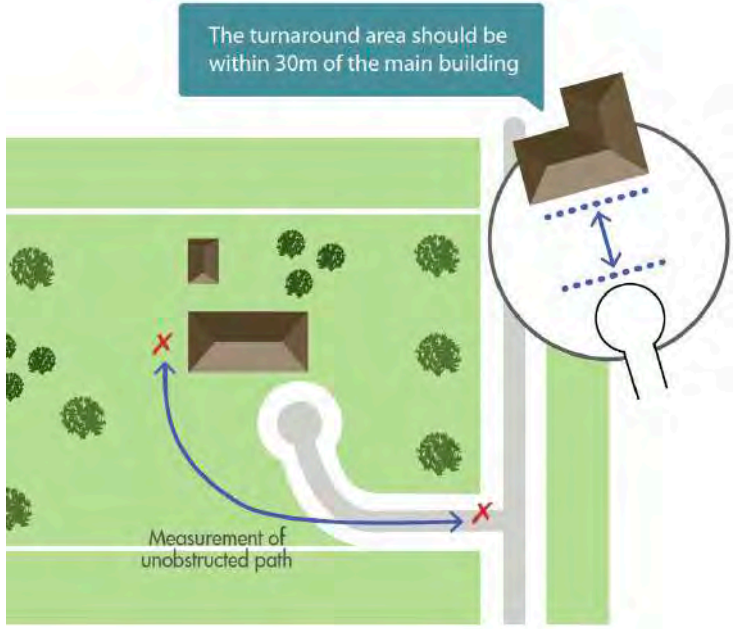
Example of a Perimeter Road



Example of a Cul-de-sac

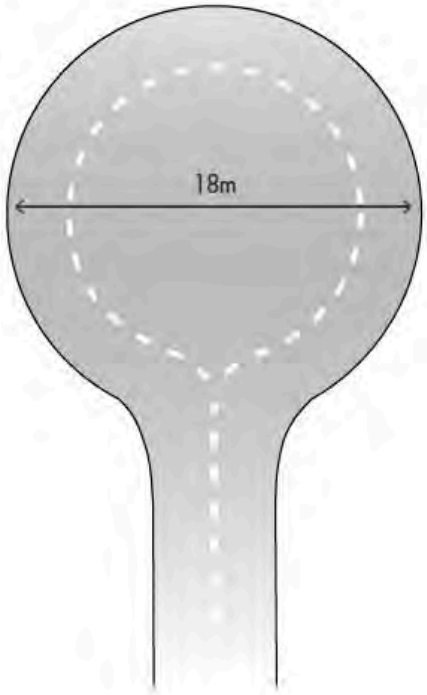


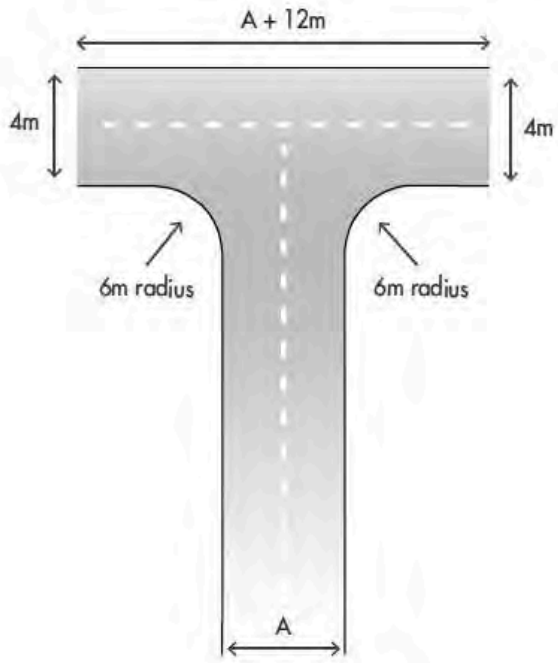
Example of a Battle-Axe Access Leg

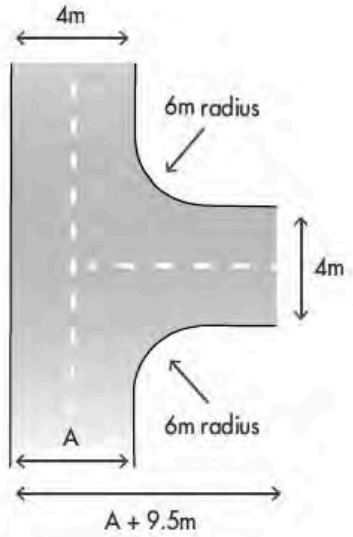


Example of a Private Driveway

APPENDIX E – VEHICULAR ACCESS TECHNICAL REQUIREMENTS







Example of Turn Around Areas

Appendix F – Water Requirements

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

APPENDIX F – WATER TECHNICAL REQUIREMENTS

Hydrant Requirements (Water Corp Design Standard 63)

Hydrants shall be screw-down hydrant with built-in isolation valve and installed only on DN100 or larger pipes. Hydrants shall be located:

- so that the maximum distance between a hydrant and the rear of a building envelope, (or in the absence of a building envelope the rear of the lot) shall be 120m and the hydrants shall be no more than 200m apart;
- a maximum of 100m spacing in Industrial and Commercial areas;
- hydrant spacing in rural residential areas where minimum site areas per dwelling is 10,000m^2 (1ha), a maximum 400m hydrant spacing be applied. If area is further subdivided to land parcels less than 1ha, then the residential standard (200m) is to be applied;
- centrally along the frontage of a lot to avoid being under driveways;
- where appropriate at the truncation of road junctions or intersections so that they can serve more than one street and can be readily located;
- on both sides of the major roads at staggered intervals where there are mains on both sides of the road;
- at major intersections on dual multi-lane roads, where two hydrants are to be sited on diagonally opposite corners;
- hydrants should be located at least 20m from traffic calming devices i.e. median slow points or chokers, chicanes, mini traffic circles, and intersection ‘pop-outs’ to ensure traffic is not impeded;
- in a position not less than 10m from any high voltage main electrical distribution equipment such as transformers and distribution boards (AS 2419.1-2005).
- hydrants with washout bends shall be used only in cul-de-sac situations.

Appendix G – Fire Control Order

Document Set ID: 11748686
Version: 1, Version Date: 21/12/2023

Fire Control Order

Pursuant to *Section 33* of the *Bush Fires Act 1954* owners or occupiers of land situated within the City of Cockburn are required by law to comply with the prescribed Fire Control Order here within.

1. All Property (vacant or developed) - less than 4,047m2Collapse

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to:

1.1 Have all flammable materials such as dry grass and weeds slashed, mown or trimmed down by other means to a maximum height of 50mm across the entire property for the duration of this firebreak time; and

1.2 Remove all dead vegetation.

2. All property (vacant or developed) - 4,047m2 or greaterCollapse

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to:

2.1 Construct a firebreak (as defined within section 3 of this order) immediately inside all external property boundaries, this includes those adjacent to roads, drains, rail reserves and any public open space reserves

2.2 Remove all dead vegetation surrounding and over all habitable structures to a radius of 3 metres except living trees, shrubs, maintained grass and gardens under cultivation.

3. Firebreak SpecificationsCollapse

A firebreak is an area of land cleared of flammable material, installed to minimise the spread or extension of a fire and to provide suitable access for fire fighting vehicles. The standards of a compliant firebreak are as follows:

3.1 A firebreak must be constructed of bare earth, stone, or sealed surfaces and be clear of all flammable materials to create a 3 metre wide trafficable surface

3.2 Maintained grass may occupy a firebreak

3.3 Overhanging branches must be pruned to provide a 4 metre vertical clearance above the full width of the 3 metre firebreak surface

3.4 A firebreak must be a continuous trafficable surface for a fire fighting vehicle, clear of any obstructions and must not terminate in a cul-de-sac (dead end).

4. Additional WorksCollapse

Regardless of land size and location, the City of Cockburn or its Authorised Officer(s) may require you to undertake additional work(s) on your property to

improve access and/or undertake further works where in the opinion of that Authorised Officer(s), these works would be conducive to preventing the outbreak and/or the spread or extension of a fire.

5. Fire Control Order VariationsCollapse

6. BurningCollapse

During the declared prohibited burning time, owners and/or occupiers must not undertake any bush or garden refuse burning activities.

During the declared restricted burning time only, owners and/or occupiers may:

6.1 Apply for a permit to burn the bush for bush fire risk mitigation purposes, by following the conditions imposed on a permit to burn as issued by an Authorised Officer.

6.2 In areas zoned rural by the Metropolitan Region Scheme you may undertake burning of leaves, tree branches, and other dry vegetation in piles no larger than 1m³ in size, without a permit to burn, subject to the following conditions:

6.2.1 No flammable material (other than that being burned) is to be within 5 metres of the fire at any time while the fire is burning

6.2.2 The fire is lit between 6pm and 11pm and is completely extinguished before midnight on the same day

6.2.3 At least one person is present at the site of the fire at all times until it is completely extinguished

6.2.4 When the fire is no longer required, the person ensures that the fire is completely extinguished by the application of water or earth.

During the unrestricted burning time, owners and/or occupiers in areas zoned rural under the Metropolitan Region Scheme may burn garden refuse and set fire to bush on their land without a permit ‘To Set Fire To The Bush’. Burning of the bush must be in accordance with all relevant State legislative requirements.

Burning of garden refuse in areas not zoned rural should not be undertaken within the City of Cockburn, unless approved by an Authorised Officer. Burning of household waste is prohibited in all areas of the City of Cockburn.

Burning of household waste is prohibited in all areas of the City of Cockburn.

7. PenaltiesExpand

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Version: 1, Version Date: 21/12/2023

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Document Set ID: 11748684
Version: 1, Version Date: 21/12/2023
www.landgate.wa.gov.au

~~SURVEY~~-STRATA PLAN 68908

SHEET 1 OF 10 SHEETS

PLAN OF
LOT 100 ON DP 402491

CERTIFICATE OF TITLE
VOL. 2929 FOL. 662

LOCAL GOVERNMENT
CITY OF COCKBURN

FIELD RECORD
141054

NAME OF SCHEME
HARMONY APARTMENTS

ADDRESS OF PARCEL
884-888 NORTH LAKE ROAD
COCKBURN CENTRAL WA 6164

MANAGEMENT STATEMENT YES ~~NO~~

SURVEYOR'S CERTIFICATE - REG 54

I, CRAIG MILLER
hereby certify that this plan is accurate and is a correct representation of the -
(a) *survey; and/or
(b) *calculations from measurements recorded in the field records,
[* delete if inapplicable]
undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

Craig Miller 2017.08.21 14:09:47 +08'00'

LICENSED SURVEYOR DATE

LODGED

21.8.2017	$6177.00	267423
DATE	FEE PAID	ASSESS No.

EXAMINED
MM 27.9.2017 DATE

WESTERN AUSTRALIAN PLANNING COMMISSION
W.A.P.C. REF:
Certificate of Approval of W.A.P.C. under Section 25B(2) of Strata Titles Act 1985

Delegated under S.16 P&D Act 2005 DATE

PLAN APPROVED

INSPECTOR OF PLANS AND SURVEYS 27.9.2017 DATE
(S. 18 Licensed Surveyors Act 1909)

IN ORDER FOR DEALINGS
SUBJECT TO
Surrender of easement N659735,
Approval of DP411989,
Management Statement

FOR REGISTRAR OF TITLES 27.9.2017 DATE

REGISTERED

N728287 APPLICATION
27.9.2017 DATE REGISTRAR OF TITLES SEAL

GOVERNMENT OF WESTERN AUSTRALIA

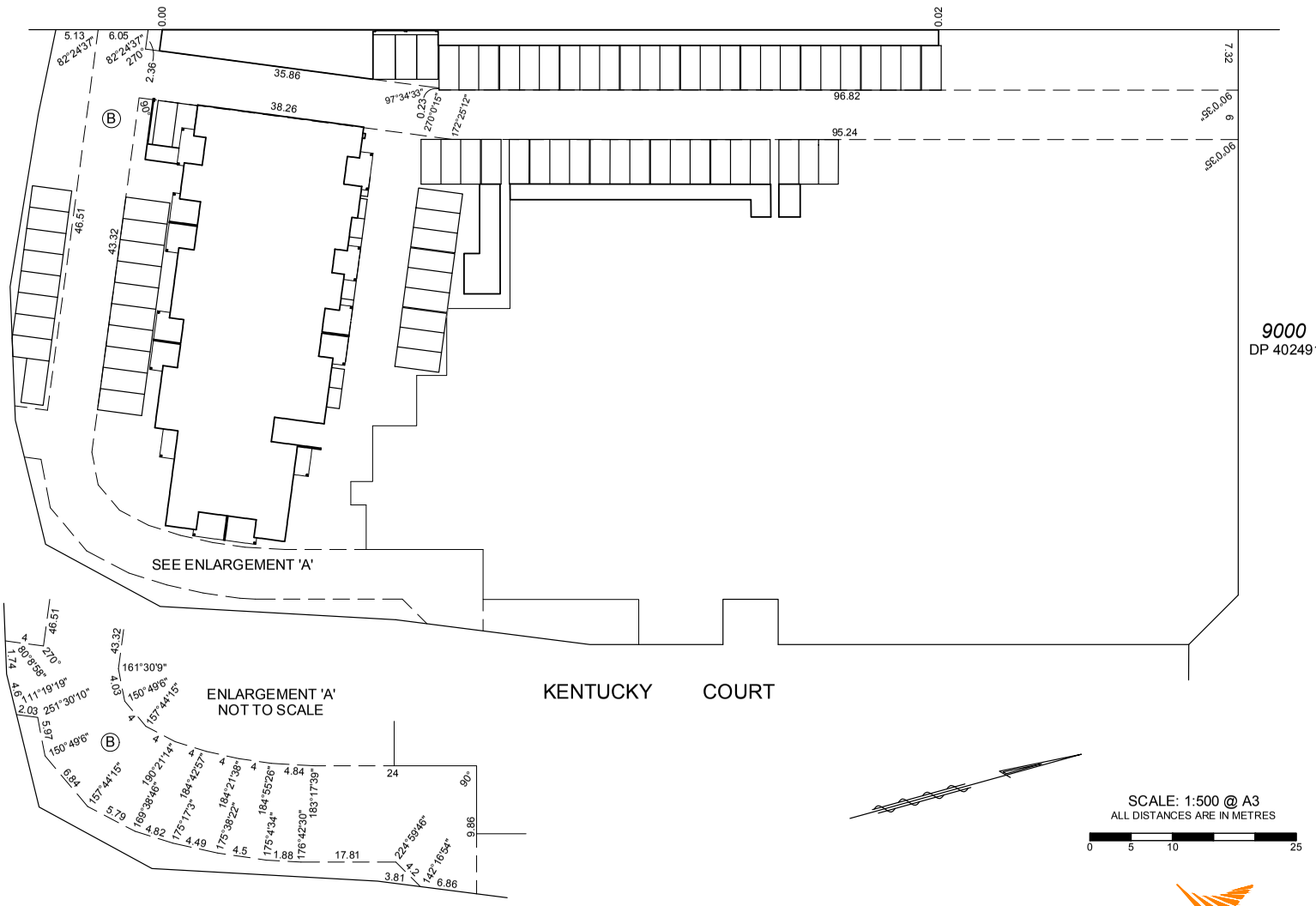
Landgate

VER.	AMENDMENT	AUTHORISED BY	DATE

HELD BY LANDGATE IN DIGITAL FORMAT ONLY

54
D 60481

LOCATION PLAN



SCALE: 1:500 @ A3
ALL DISTANCES ARE IN METRES
0 5 10 25

INTERESTS & NOTIFICATIONS

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS
Ⓑ	EASEMENT	SEC 195 & 196 OF THE LAA	DOC. N715752	COMMON PROPERTY	CITY OF COCKBURN & THE PUBLIC AT LARGE	LIMITED IN HEIGHT TO 29.4m AHD. ALL HEIGHTS ARE IN AHD AND DERIVED FROM SSM JAN 22A

Visionsurveys CONSULTING
TEL (08) 6144 0000 FAX (08) 6144 0099
59 SCARBOROUGH BEACH RD,
SCARBOROUGH WA 6019
Email: info@visionsc.com.au
www.visionsurveys.com.au

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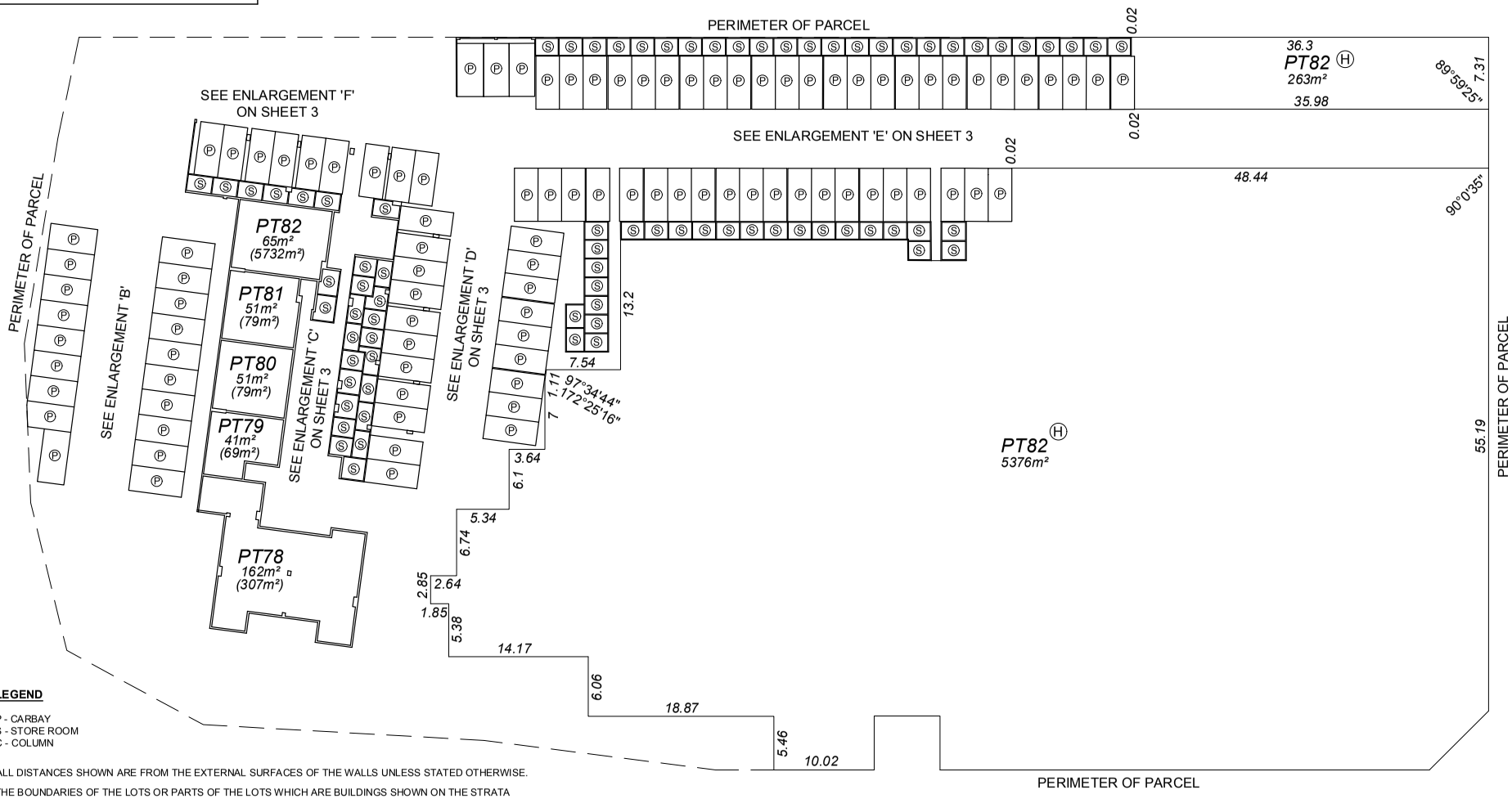
~~SURVEY~~-STRATA PLAN

68908

SHEET 2 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

GROUND FLOOR PLAN



LEGEND

P - CARBAY
S - STORE ROOM
C - COLUMN

ALL DISTANCES SHOWN ARE FROM THE EXTERNAL SURFACES OF THE WALLS UNLESS STATED OTHERWISE.

THE BOUNDARIES OF THE LOTS OR PARTS OF THE LOTS WHICH ARE BUILDINGS SHOWN ON THE STRATA PLAN ARE THE INNER SURFACES OF THE WALLS, THE UPPER SURFACE OF THE FLOOR AND THE UNDER SURFACE OF THE CEILING, AS PROVIDED BY SECTION 3 (2) (A) OF THE STRATA TITLES ACT 1985.

THE STRATUM OF THE CARBAYS (P) EXTENDS FROM THE UPPER SURFACE OF THEIR FLOOR TO 3.0 METRES ABOVE THE UPPER SURFACE OF THEIR FLOOR, EXCEPT WHERE COVERED THEN THE STRATUM EXTENDS TO THE UNDER SURFACE OF THE CEILING.

EXCLUDING PERIMETER OF PARCEL, ALL ANGLES ARE MULTIPLES OF 45° UNLESS STATED OTHERWISE.

ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

ALL WALLS EXTERNAL TO THE PART LOTS ARE COMMON PROPERTY.

AS TO LOT 82 ONLY:

THE STRATUM OF PT LOT 82 LABELLED 'H' IS LIMITED TO BETWEEN 10 METERS BELOW AND 40 METERS ABOVE THE UPPER SURFACE LEVEL OF THE LOWEST GROUND FLOOR OF THE MAIN BUILDING ERECTED ON LOT 82.

SCALE: 1:400 @ A3
ALL DISTANCES ARE IN METRES

0 5 10 20

Visionsurveys CONSULTING
TEL (08) 6144 0000 FAX (08) 6144 0099
59 SCARBOROUGH BEACH RD,
SCARBOROUGH WA 6019
Email: info@visionsc.com.au
www.visionsurveys.com.au

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~~SURVEY~~-STRATA PLAN

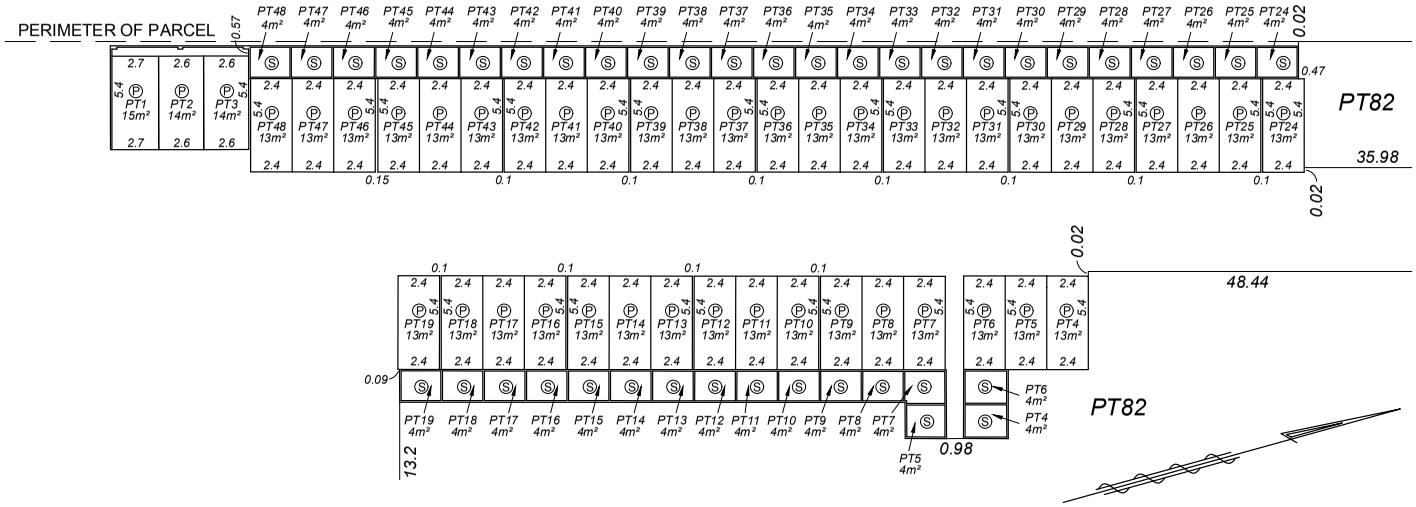
68908

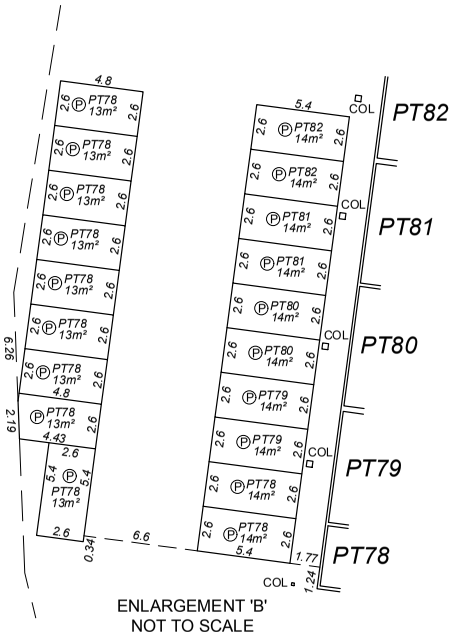
SHEET 3 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

GROUND FLOOR PLAN
ENLARGEMENT DETAIL

ENLARGEMENT 'E'
NOT TO SCALE





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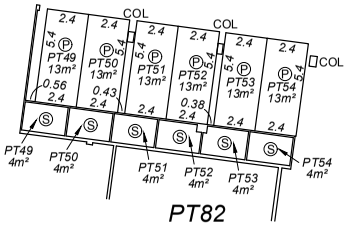

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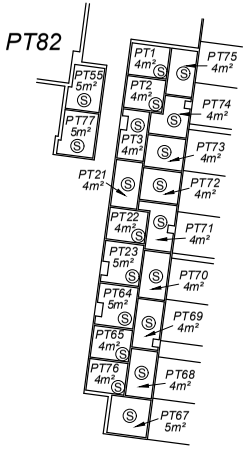
NOT TO SCALE



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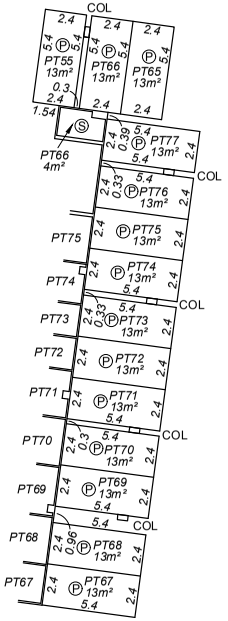
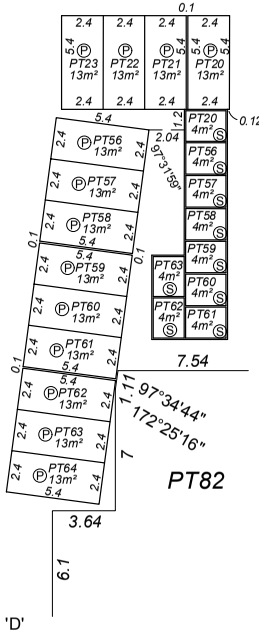
NOT TO SCALE





ENLARGEMENT 'D'
NOT TO SCALE

LEGEND

COL - COLUMN
P - CARBAY
S - STORE ROOM

SCALE: NOT TO SCALE
ALL DISTANCES ARE IN METRES

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TEL (08) 6144 0000 FAX (08) 6144 0099
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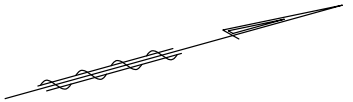
~~SURVEY~~-STRATA PLAN

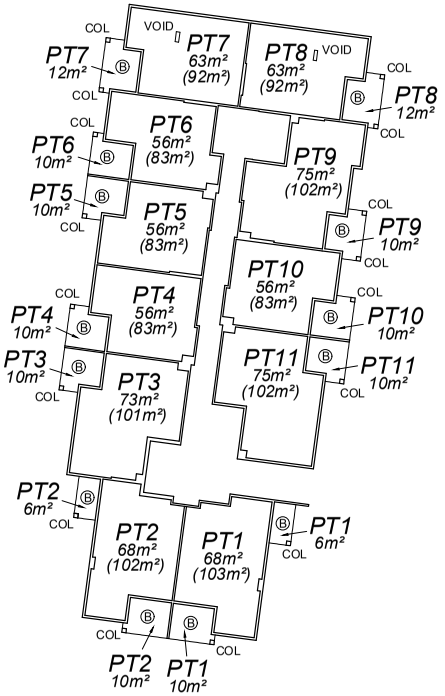
68908

SHEET 4 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

FIRST FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

THE BOUNDARIES OF THE LOTS OR PARTS OF THE LOTS WHICH ARE BUILDINGS SHOWN ON THE STRATA PLAN ARE THE INNER SURFACES OF THE WALLS, THE UPPER SURFACE OF THE FLOOR AND THE UNDER SURFACE OF THE CEILING, AS PROVIDED BY SECTION 3 (2) (A) OF THE STRATA TITLES ACT 1985

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ALL WALLS EXTERNAL TO THE PART LOTS ARE COMMON PROPERTY.

ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

SCALE: 1:400 @ A3
ALL DISTANCES ARE IN METRES

0 5 10 20

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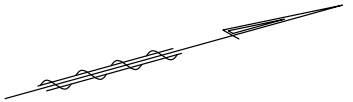
~~SURVEY~~-STRATA PLAN

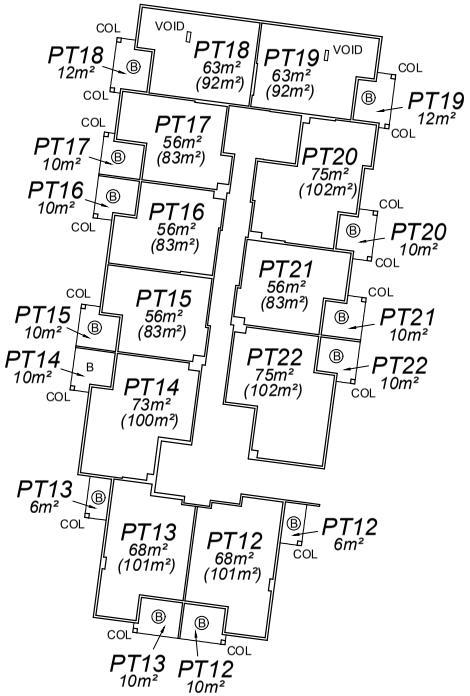
68908

SHEET 5 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

SECOND FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

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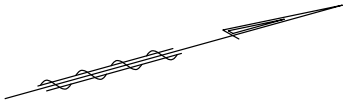
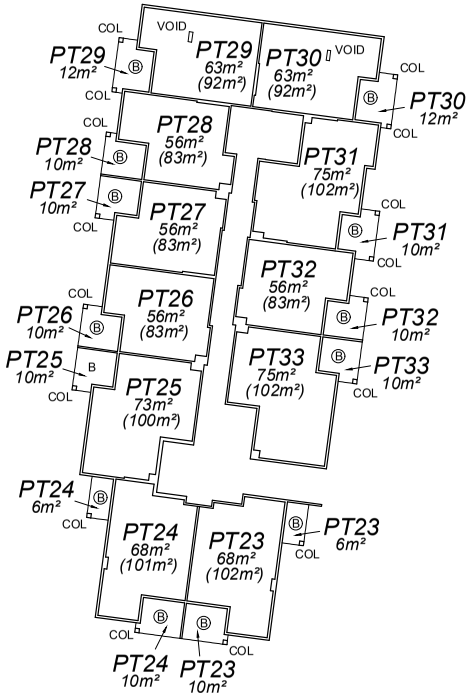
68908

SHEET 6 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

THIRD FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

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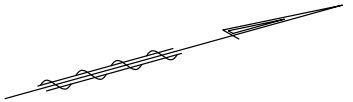
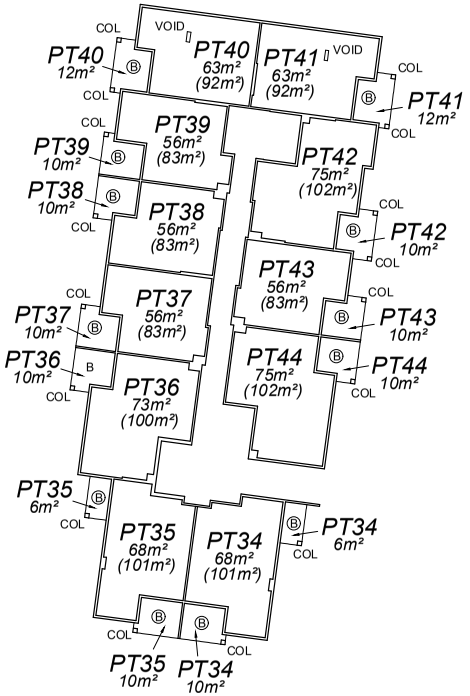
68908

SHEET 7 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

FOURTH FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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ALL WALLS EXTERNAL TO THE PART LOTS ARE COMMON PROPERTY.

ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

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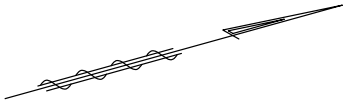
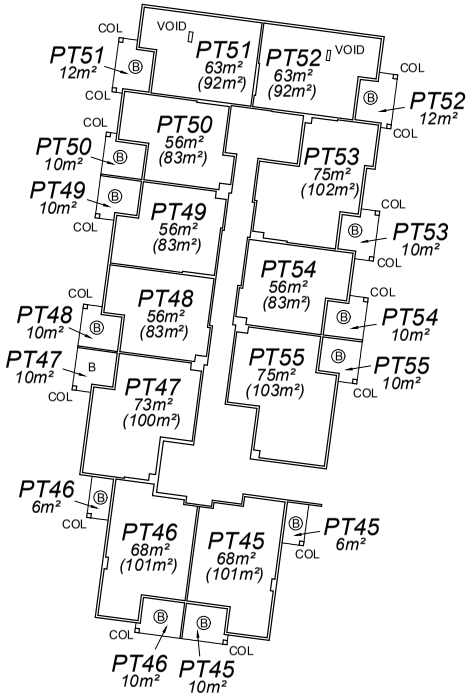
SHEET 8 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

FIFTH FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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ALL WALLS EXTERNAL TO THE PART LOTS ARE COMMON PROPERTY.

ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

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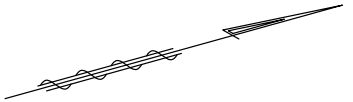
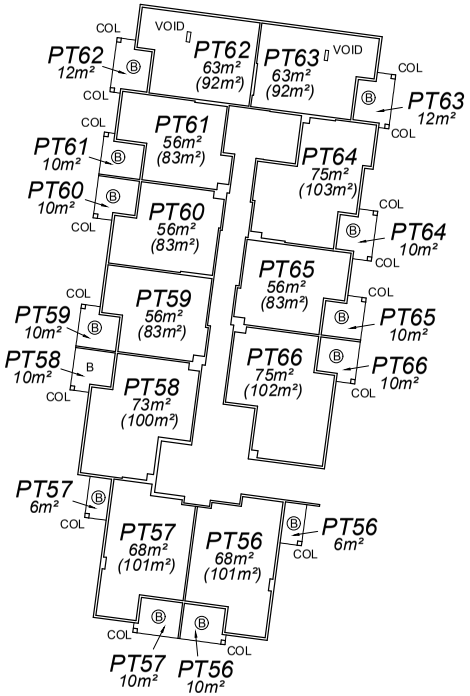
SHEET 9 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

SIXTH FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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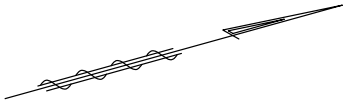
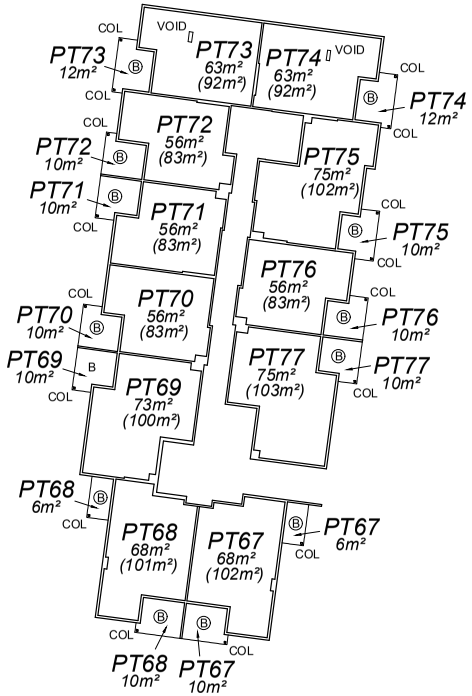
SHEET 10 OF 10 SHEETS

SEE SHEET 1 FOR INTERESTS AND NOTIFICATIONS

SEVENTH FLOOR PLAN





LEGEND

B - BALCONY
COL - COLUMN

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ALL STRUCTURES THAT ARE COLUMNS (COL) ARE COMMON PROPERTY.

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FORM 3

STRATA PLAN No.		68908			
Schedule of Unit Entitlement		Office Use Only Current Cs of Title		Schedule of Unit Entitlement	Office Use Only Current Cs of Title
Lot No,	Unit Entitlement	Vol. Fol.	Lot No,	Unit Entitlement	Vol. Fol.
1	45		28	39	
2	45		29	43	
3	46		30	43	
4	38		31	48	
5	38		32	39	
6	38		33	47	
7	42		34	46	
8	42		35	46	
9	46		36	40	
10	38		37	48	
11	46		38	40	
12	45		39	40	
13	45		40	44	
14	47		41	44	
15	39		42	48	
16	39		43	40	
17	39		44	48	
18	43		45	47	
19	43		46	47	
20	47		47	40	
21	39		48	49	
22	46		49	40	
23	46		50	40	
24	46		51	44	
25	48		52	44	
26	39		53	49	
27	39		54	40	

Continued Overleaf

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FORM 3

STRATA PLAN No. 68908					
Schedule of Unit Entitlement		Office Use Only Current Cs of Title		Schedule of Unit Entitlement		Office Use Only Current Cs of Title	
Lot No,	Unit Entitlement	Vol.	Fol.	Lot No,	Unit Entitlement	Vol.	Fol.
55	48			70	41		
56	47			71	41		
57	47			72	41		
58	40			73	45		
59	49			74	45		
60	40			75	50		
61	40			76	41		
62	44			77	49		
63	44			78	115		
64	49			79	40		
65	40			80	44		
66	48			81	44		
67	48			82	6386		
68	48						
69	49			Aggregate	10,000		

DESCRIPTION OF PARCEL AND BUILDING

A multi level mixed use development comprising 5 ground level commercial units and 77 apartments on the upper seven levels, together with ground level parking allocated to all units.
Known as 19-23 Tea Tree Close , Cockburn Central.

CERTIFICATE OF LICENSED VALUER
STRATA

I, **Don Eftos**, being a Licensed Valuer licensed under the *Land Valuers Licensing Act 1978* certify that the unit entitlement of each lot (in this certificate, excluding any common property lots), as stated in the schedule bears in relation to the aggregate unit entitlement of all lots delineated on the plan a proportion not greater than 5% more or 5% less than the proportion that the value (as that term is defined in section 14 (2a) of the *Strata Titles Act 1985*) of that lot bears to the aggregate value of all the lots delineated on the plan.

03-Jul-2017
Date

Don Eftos
2017.08.03
15:11:04 +08'00'
Signed

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FORM 5

Strata Titles Act 1985

Sections 5B(1), 8A, 22(1)

STRATA PLAN No. 68908

DESCRIPTION OF PARCEL & BUILDING

A multi level mixed use development comprising 5 ground level commercial units and 77 apartments on the upper seven levels, together with ground level parking allocated to all units.
Known as 19-23 Tea Tree Close , Cockburn Central.

CERTIFICATE OF LICENSED SURVEYOR

I, CRAIG MILLER . . . . . ., being a licensed surveyor registered under the *Licensed Surveyors Act 1909* certify that in respect of the strata plan which relates to the parcel and building described above (in this certificate called "the plan"): —

(a) each lot that is not wholly within a building shown on the plan is within the external surface boundaries of the parcel*;* and either

(b) each building shown on the plan is within the external surface boundaries of the parcel;* or

*(c) ~~in a case where a part of a wall or building, or material attached to a wall or building, encroaches beyond the external surface boundaries of the parcel —~~

(i) ~~all lots shown on the plan are within the external surface boundaries of the parcel;~~

(ii) ~~the plan clearly indicates the existence of the encroachment and its nature and extent*;* and~~

(iii) ~~where the encroachment is not on to a public road, street or way, that an appropriate easement has been granted and will be lodged with the Registrar of Titles to enable it to be registered as an appurtenance of the parcel; and~~

*~~(d) if the plan is a plan of re-subdivision, it complies with Schedule 1 by-law(s) no(s) . . . . . on Strata Plan No. . . . . registered in respect of (name of scheme) or sufficiently complies with that/those by-law(s) in a way that is allowed by regulation~~ 36 of the *Strata Titles General Regulations 1996*.

Craig Miller
2017.07.31 15:57:17 +08'00'

. . . . . .
Licensed Surveyor Date

*Delete if inapplicable

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PERMIT FORM BA12

Occupancy permit – strata

Building Act 2011, section 50, 61
Building Regulations 2012, regulation 4

Permit number
StratReg17/038

This form is for the purposes of the *Building Act 2011*, section 50 and the *Strata Titles Act 1985*, section 5B(2)(a) and 8A(f)(i).

1. Details of building or structure

Property street address (provide lot number where street number is not known)	Unit no	Street no **1**	Level	Lot no
	Street name **Kentucky Court**		Street type	Street suffix
	Suburb **COCKBURN CENTRAL**		State **WA**	Postcode **6164**
Certificate of title	Volume **2929**		Folio **662**	
Lot(s) on survey	**100**			
Strata plan number	**68908**	Land being re-subdivided (if applicable)		

Description of building	**Harmony Apartments Stage 1 – A Multi-level Mixed Use Development Comprising of 5 Ground Level Commercial Units (including 1 Café) and 77 Apartments on the Upper Seven (7) Levels with associated Ground Floor Level Parking allocated to all the Units**	
BCA class of the building	Main BCA class **Class 2, 5 & 6**	Secondary BCA class (for multi-purpose buildings Class 7a
Use(s) of the building	**Residential & Commercial**	Each restriction on use (if applicable)

2. Permit details

This occupancy permit strata is for: ☒ Whole of building ☐ Part of building

Details

Western Australian Planning Commission approval required? ☐ Yes ☒ No

All requirements including those for encroachments under section 76 of the *Building Act 2011*, in addition to those covered in the certificate of building compliance, have been met to the satisfaction of the permit authority.

This occupancy permit strata is for the purpose of lodging a strata plan for registration or to re-subdivide a strata scheme under the *Strata Titles Act 1985*.

Issuing officer	Name **Alan Savage**	Job title **Senior Building Surveyor**
	Signature	Date **24/08/2017**
Permit authority	**City of Cockburn**	

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FORM 26

WAPC Ref. N/A

STRATA PLAN NO 68908

Strata Titles Act 1985

Sections 25(1), 25(4)

CERTIFICATE OF GRANT OF APPROVAL BY WESTERN AUSTRALIAN PLANNING COMMISSION TO STRATA PLAN

It is hereby certified that the approval of the Western Australian Planning Commission has been granted pursuant to section 25(1) of the *Strata Titles Act 1985* to —

*(i) the *Strata Plan/~~plan of re-subdivision/plan of consolidation submitted on~~ 8-Aug-17 and relating to the property described below;

~~*(ii) the sketch submitted on ..... of the proposed *subdivision of the property described below into lots on a Strata Plan/re-subdivision / consolidation of the lots on the Strata Plan specified below, subject to the following conditions —~~

Property Description: Lot (or Strata Plan) No. 68908

Location 884 - 888 NORTH LAKE ROAD

Locality COCKBURN CENTRAL WA 6164

Local Government CITY OF COCKBURN

Lodged by: VISION SURVEYS

Date: 8-Aug-17

For Chairman, Western Australian Planning Commission

28-Aug-17

Date

(*To be deleted as appropriate.)

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FORM 8

ANNEXURE 'A' [illegible] 68908 REGISTRAR OF TITLES

SCHEDULE OF DEALINGS

Dealings registered or recorded on [illegible]	Instrument				Signature of Registrar of Titles
	Nature	Number	Registered	Time	

SCHEDULE OF ENCUMBRANCES ETC.

Instrument		Particulars	Registered	Signature of Registrar of Titles	Cancellation				Signature of Registrar of Titles
Nature	Number				Nature	Number	Registered	Time	
EASEMENT	N715752	EASEMENT TO CITY OF COCKBURN FOR PUBLIC ACCESS PURPOSES - SEE STRATA							
		PLAN 68908	27.9.2017						
STATEMENT	N728288	MANAGEMENT STATEMENT	27.9.2017						

Note: Entries may be affected by subsequent endorsements.

LOTS 71, 72, & 73 CORIO ROAD, RAVENSWOOD - PROPOSED MODIFICATION TO INTENSTIVE AGRICULTURE (POULTRY FARM)

Form 2 – Responsible Authority Report
(Regulation 17)

DAP Name:	Metro Outer JDAP
Local Government Area:	Shire of Murray
Proposed Amendments:	• Change the type of poultry farm from 'broiler' (meat production) to 'fertile egg production'; • Construction of 16 tunnel ventilated sheds located on two (2) farms of eight (8) sheds each; • Construction of two 15m x 60m egg packing and amenities buildings; • Construction of an additional dwelling for a manager's residence; • Retention three existing poultry sheds for 'storage' as well as retention of existing ancillary buildings
Applicant:	Harley Dykstra Pty Ltd
Owner:	Teresa Anne & Robert John Clayton (Lots 71 & 72) Sprock Group Pty Ltd (Lot 73)
Value of Amendment:	$11,000,000
Responsible Authority:	Local Government
Authorising Officer:	Manager Planning and Environment Services
LG Reference:	P047/2021 - 1
DAP File No:	DAP/21/01966
Date of Original DAP decision:	29 July 2021
Application Received Date:	24 November 2023
Application Statutory Process Timeframe:	90 Days
Attachment(s):	1. Development application submission including: • Certificates of Title • Development Plans • Previous Approval • Environmental Assessment and Management Plan • Bushfire Management Plan • Transport Impact Statement 2. Development Plans (Rural Worker's Dwelling) 3. Agency Submissions

Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☐ Yes ☒ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel resolves to:

1. **Accept** that the DAP Application reference DAP/21/01966 as detailed on the DAP Form 2 dated 24 November 2023 is appropriate for consideration in accordance with regulation 17 of the *Planning and Development (Development Assessment Panels) Regulations 2011*;

2. **Approve** DAP Application reference DAP/21/01966 and accompanying plans:

   - Development Site Plan, 23765-01, REV: E, 1 November 2023
   - Landuse Context and Buffer Plan, 22533-02, REV: A, 07 August 2023
   - A_Egg Packing & Amenities Elevation, PRO003-DRG-10-04, Rev: C, 10/20/23
   - A_Overall Site Plan, PRO003-DRG-10-05, REV:C, 10/20/23
   - A_Overall Site Elevation, PRO003-DRG-10-06, REV:C, 10/20/23
   - A_Overall Site 3DLayout, PRO003-DRG-10-07, REV:C, 10/20/23
   - A_Typical Shed Floor Plan, PRO003-DRG-10-01, REV:C, 10/20/23
   - A_Typical Shed Elevation, PRO003-DRG-10-02. REV:C, 10/20/23
   - A_Egg Packing & Amenities Floor Plan, PRO003-DRG-10-03, 10/20/23
   - Rural Worker's Dwelling, Received 17/1/24.

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of the Shire of Murray Local Planning Scheme No. 4, for the proposed amendment to the approved Intensive Agriculture (Poultry farm) at Lots 71 72 & 73 Corio Road, Ravenswood subject to the following conditions:

Amended Conditions

4. The finished floor level of each poultry shed is to be at least two metres higher than the maximum ground water level of the site. This may be reduced to 1m where a double liner is installed in accordance with the Department Water and Environment Regulation's Water Quality Protection Note. 26.

10. Prior to applying for a Building Permit, the Bushfire Management Plan prepared by Envision Bushfire Protection dated September 2023 is to be amended to include the rural worker's dwelling and demonstrate compliance with the Guidelines for Planning in Bushfire Prone Areas to the satisfaction of the Local Government.

    Prior the occupation of the development, information is to be provided to demonstrate that the measures contained in the bushfire mitigation strategies identified in section 5.1 of the Bushfire Management Plan prepared by Envision

Bushfire Protection dated September 2023 (as amended by this condition) are to be implemented to the satisfaction of the Local Government. This information must include a completed 'Certification by Bushfire Consultant' from the Bushfire Management Plan.

Compliance with the ongoing requirements of this Bushfire Management Plan are required for the duration of the development.

11. The Management Strategies contained within the Environmental Assessment and Management Plan - Lots 71, 72 & 73 Corio Road, Ravenswood, prepared by Aurora Environmental dated 16 November 2023, are to be implemented to the satisfaction of the Local Government for the duration of the development.

New Conditions

12. Prior to the occupation of the development, an Acoustic Assessment must be prepared and provided to the Local Government which demonstrates to Local Government's satisfaction, that the completed development in full operation will comply with the Environmental Protection (Noise) Regulations 1997.

    The Acoustic Assessment must include the following information:

    (a) noise sources compared with the assigned noise levels as stated in the Environmental Protection (Noise) Regulations 1997, when the noise is received at the nearest "noise sensitive premises";

    (b) tonality, modulation and impulsiveness of noise sources; and

    (c) confirmation of the implementation of noise attenuation measures. Any further works must be carried out in accordance with the Acoustic Report and implemented as such for the duration of the development.

13. Building materials of the poultry sheds and the rural worker's dwelling must be of a colour not detrimental to the character of the natural landscape of the locality, being non-reflective and of muted tones.

14. At least one occupant of the rural worker's dwelling shall be engaged in rural activities on the lot.

15. The rural worker's dwelling and the amenities building of the poultry operation are to be serviced by an alternative effluent waste water disposal system with nutrient retention capabilities as approved by the Local Government.

16. Prior to occupation of the rural worker's dwelling, a notification under Section 70A of the Transfer of Land Act is to be prepared in a form acceptable to the local government and lodged with the Registrar of Titles for endorsement on the Certificate of Title for the subject lot. This notification is to be sufficient to alert prospective landowners to the use and occupation restrictions of the rural worker's dwelling.

New Advice Notes

5. The proponent must ensure that they comply with the Food Standards Code (Standard 4.2.2 - Primary production and processing standards for poultry meat).

6. All drinking water provided on site must meet the health-related requirements and risk management framework set out in version 3.7 of the Australian Drinking Water Quality Guidelines 2011.

All other conditions and requirements detailed on the previous approval dated 29 July 2021, shall remain unless altered by this application.

Details: outline of development application

Region Scheme	Peel Region Scheme
Region Scheme Zone/Reserve	Rural
Local Planning Scheme	Shire of Murray Local Planning Scheme No. 4.
Local Planning Scheme Zone/Reserve	Rural
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan Land Use Designation	N/A
Use Class (proposed) and permissibility:	Intensive Agriculture (AA) Rural Worker's Dwelling (AA)
Lot Size:	Lot 71 – 40HA Lot 72 – 41.4HA Lot 73 – 40HA
Net Lettable Area (NLA):	N/A
Number of Dwellings:	N/A
Existing Land Use:	Intensive Agriculture (Poultry Farm)
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The application proposes to amend a previous Metropolitan Outer Joint Development Assessment Panel approval (DAP/21/01966) to construct and operate a broiler poultry farm. The modifications include the following:

- Change the type of poultry farm from 'boiler' (meat production – maximum 600,000 birds) to 'fertile egg production' with a maximum of 293, 760 birds, of which 29, 280 are roosters;
- Construction of 16 tunnel ventilated sheds located on two (2) farms (Pods) of eight (8) sheds each. Both Pods will have a smaller development area of 292m x 109.5m (31,974m²), each shed will be 15m wide and each separated by 16.5m;
- Construction a 4m wide covered and enclosed passageway will run down the middle of each farm, containing an egg conveyor and electrical controllers;
- Construction of two 15m x 60m egg packing and amenities buildings located on the southern side of Pod 1 and northern side of Pod 2. The egg packing sheds will have a wall height of 2.8m be constructed with 50mm insulated wall panels with Colorbond finish and roof;
- Construction of an additional rural worker's dwelling as a manager's residence;
- Provisions of an additional crossover to access Corio Road and internal access driveways to service the sheds;
- Landscape/vegetation screening adjacent to Corio Road; and
- Retain three existing poultry sheds as 'storage sheds' as well as retention of existing ancillary buildings and infrastructure within the central part of Lot 72.

A brief overview of the fertile egg production poultry farm operations:

- Operate 24/7 with up to 12 staff on-site 7am to 5pm, 7 days per week. Clean-out staff are contracted at key points through-out the year for approximately a week;
- Two managers will reside on-site in a new manager's dwelling and within the existing house on the lot;
- Each new shed will house around 16,500, females and 1,830 males, equating to approximately 18,360 birds, approximately 293,760 birds across the entirety of the site, at any one time;
- Each hen will produce approximately 175 eggs over the breeding season a production of approximately 33.6 million eggs per year;
- Overall batch cycle for hens and roosters will be utilised for egg production for the first season of laying for approximately 65 weeks;
- The poultry farm will operate as a closed loop system i.e. there will be no nutrient export to the environment;
- Spent litter and manure will be removed from the site in covered trucks and transported to a licenced recycling centre within the Shire for reuse as a fertiliser;
- Dead birds to be stored in refrigerators and removed from the property weekly; and
- Some activity will take place at the site at night, such as catching operations and the arrival and departure of associated vehicles.

Background:

The site currently accommodates a free-range poultry farm comprising three sheds capable of producing 48,000 meat birds (per batch) for the broiler market. The majority of structures on site are located on the central part of Lot 72. Three poultry sheds exist on the site along with two smaller sheds, a concrete pad, a workshop with a cool room, an amenity building, water tanks and other incidental structures associated with the existing poultry farm operation. An existing dwelling is located on the northern part of Lot 73.

The surrounding area is predominantly characterised by rural zoned land with agricultural operations. There is group of Farmlet zoned lots (approx. 10Ha) to the South West and Special Use (Tourist Accommodation) to the North East of the site. This site directly abuts a market garden to the south.

On 29 July 2021 the Outer Metropolitan Joint Development Assessment Panel (DAP/21/01966) approved an application for an expansion of the existing 'broiler' farm.

Legislation and Policy:

Legislation

- Planning and Development Act 2005
- Peel Region Scheme (PRS)
- Planning and Development (Local Planning Schemes) Regulations 2015 (Regulations).
- Shire of Murray Local Planning Scheme No.4 (LPS4).
- Environmental Protection (Noise) Regulations 1997 (Noise Regs)

State Government Policies

- Priority Agricultural and Rural Land Use Policy (Peel Region Scheme)
- State Planning Policy 2.1 - Peel-Harvey Coastal Plain Catchment (SPP2.1)
- State Planning Policy 2.5 – Rural Planning (SPP2.5)
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP3.7)
- Draft State Planning Policy 2.9 – Planning for water
- EPA GS3 – Separation Distances between Industrial and Sensitive Land Uses (GS3)
- WAPC Fact Sheet – Poultry Farms
- Environmental Code of Practice for Poultry Farms in Western Australia 2004 (Code of Practice)
- Code of Practice for Poultry in Western Australia 2003
- Planning for the Proposed Peel Food Zone (Department Primary Industries and Regional Development)

Local Policies

- Rural Worker's Dwellings Local Planning Policy
- General Development Provisions Building Setbacks Car Parking Standards

Consultation:

Public Consultation

As Intensive Agriculture is an 'AA' discretionary land use, public advertising of the proposal is discretionary. For the following reasons it was decided not the publicly advertise the proposal:

- A poultry farm has already been established on the site.

- The poultry facilities have been sited to maintain a 1,000m buffer to sensitive premises;
- The amended proposal reduces the number of birds on site at any time;
- There are less vehicle movements associated with the amended proposal;
- The poultry sheds are set back further from the lot boundaries; and
- The previous application was not publicly advertised.

Referrals/consultation with Government/Service Agencies

A summary of the comments from consulted government agencies is provided in the table below:

Department of Primary Industries and Regional Development (DPIRD)
DPIRD provided no objection to the proposed amendment. DPIRD requested that, where the 2m separation to groundwater cannot be achieved, a double liner be installed in accordance with the relevant sections of the Water Quality Protection Note. 26.
Comment: Amended Condition 4 recommended to address the reduction is separation from groundwater.
Department Water Environmental Regulation
DWER did not object to the proposal however identified matters to be addressed by way of conditions and advice notes. These include matters relating to: • Peel Harvey Coastal Plain Catchment; • Native Vegetation Regulation; • Stormwater Management; • Sewerage Sensitive Area; • Disposal of manure and litter; and • Groundwater Extraction.
Comment: These matters are sufficiently catered for with existing conditions of approval which are not proposed to be modified.
Department of Health
DOH sought clarification on staff amenities and the specifications or size of the onsite wastewater treatment system and disposal area/s. DOH also provided advice on and drinking water management. A condition requiring a site and soil evaluation was also requested.
Comment: The condition requiring a site and soil evaluation is not considered to be necessary given the size of the lot and the condition requiring the provision of ATU's. Relevant additional advice notes are recommended.
APA Group

APA had no objection to the proposal and no technical commentary to make.
Department of Biodiversity Conservation and Attractions
DBCA advised that a portion of the property is currently mapped as a Conservation Category Wetland (CCW) on the Geomorphic Wetlands (Swan Coastal Plain) dataset, however this area no longer supports wetland values commensurate with a CCW, and it is commensurate with a Multiple Use wetland.

Design Review Panel Advice

Not Applicable.

Other Advice

Not Applicable.

Planning Assessment:

The amended proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies outlined in the Legislation and Policy section of this report. The following matters have been identified as key considerations for the determination of this application:

- Potential land use conflicts;
- Increase in development footprint;
- Rural Worker's Dwelling; and
- Bushfire.

Potential Land Use Conflict

The land is zoned Rural under the Shire's LPS4 and the PRS. It is therefore considered an appropriate site to conduct an Intensive Agriculture, poultry farm. It is accepted that poultry farms may have off-site impacts, however, the proposed facilities have been strategically located, limiting impacts on existing sensitive premises. It should also be noted that the GS3 buffer is generic rather than statutory, and that no lot in the vicinity of the development will be completely consumed by the most restrictive buffer. It is also recognised that a number of management measures will limit impacts on adjoining properties in relation to noise, dust and odour on adjoining properties.

It is noted that the amended proposal contains significantly more roosters than the existing approval. Although the roosters will be housed inside the sheds, it is recommended that a condition require an acoustic report that demonstrates compliance with the Noise Regs be provided prior to occupation of the development.

Increase in Development Footprint

Although the amended proposal contains a larger footprint in terms of built form, the increase is not considered to have a material impact as all structures will be sited at least 100m from a property boundary. Coupled with this, there are reduced

number of birds on site at any one time and the associated vehicular movements will be reduced.

Rural Worker's Dwelling

A Rural Worker's Dwelling is a discretionary use within the Rural Zone under LPS4.

The Shire's Rural Worker's Dwelling Local Planning Policy recognises that rural enterprise is a key economic activity and employer within the Shire and that sometimes it is necessary to have employees living onsite. The Policy contains conditions that are to be applied to an approval for a Rural Worker's Dwelling relating to the ongoing rural use of the land and a notification on title.

Bushfire

It is noted that the submitted Bushfire Management Plan (BMP) did not address the proposed Rural Worker's Dwelling. Upon review of the information provided in the BMP, however, it is accepted that this oversight is relatively minor and can be addressed through a condition of approval.

Conclusion:

The amended proposal is an appropriate use of rural zoned land that will contribute materially to the district's rural economy. It has been sited to limit off site impacts and proposes a number of strategies to ensure that the established amenity of the area is maintained.

The amended application is compliant with the planning framework and supported subject to the recommended modified and additional conditions.

Alternatives

The JDAP may wish to refuse this application and provide sufficient reasons for doing so.

APPLICATION FOR AMENDED DEVELOPMENT APPROVAL – EGG PRODUCTION FARM

Lots 71, 72 and 73 Corio Road, Ravenswood

Harley Dykstra

PLANNING & SURVEY SOLUTIONS

DOCUMENT CONTROL

Control Version	Date	Status	Distribution	Comment
A	5/9/2023	Draft	Internal	For Review
B	18/9/2023	Draft	Client	For Review
C	20/9/2023	Draft	Client	For Review
D	13/11/2023	Draft	Client	For Review
E	16/11/2023	Final	Shire of Murray/WAPC	For Determination

Prepared for: Proten

Prepared by: Jayde Sleight

Reviewed by: Clayton Plug

Date: 16/11/2023

Job No: 23765

Version: E

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APPENDIX C – PREVIOUS DEVELOPMENT APPROVAL
APPENDIX D – ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN
APPENDIX E - BUSHFIRE MANAGEMENT PLAN
APPENDIX F - TRANSPORT IMPACT STATEMENT

1 INTRODUCTION

This Application for Amended Development Approval ('the Application') has been prepared by Harley Dykstra on behalf of Proten. For the purpose of this application, Proten acts under the authority of the registered proprietors of Lot 71, 72 and 73 Corio Road, Ravenswood (Certificates of Title at **Appendix A** refers).

The Application seeks the approval of the Shire of Murray (under delegation from Metro Outer JDAP) for an amendment to the currently approved broiler (meat bird) poultry farm located at Lot 71, 72 and 73 Corio Road, Ravenswood to a fertile egg production facility. Fertile egg production will take place over all three lots, collectively comprising the subject site.

This report includes a description of the site and details the proposed fertile egg production facility. The proposal is supported by comprehensive development plans and in addition to planning considerations, addresses environmental, traffic and bushfire management matters.

As part of the proposed amendment, the three existing poultry sheds will be replaced by a total of 16 tunnel ventilated sheds located in two (2) farms of eight (8) sheds each. Similar to the current development approval, the new sheds will have sealed concrete floors and operate as a closed system which means that engineered structures will be used to ensure that waste (e.g. nutrients) are not discharged to the environment.

Other existing incidental structures on the site will be retained and will generally continue to be used as part of the poultry farm operation.

The location of the new sheds has been informed by the relevant planning and environmental guidance to ensure sufficient separation from sensitive premises (dwellings) on surrounding landholdings is achieved.

A copy of the development plans which illustrate the nature and extent of development are included at **Appendix B.**

2 SUBJECT SITE

2.1 Property Description, Ownership and Locality

The subject site is described as Lots 71, 72 and 73 Corio Road, Ravenswood. The subject site is 121.482ha in area and is located approximately 4km north-east of the Ravenswood urban area boundary and 7km south west of the North Dandalup urban area boundary.

A summary of the land particulars is provided in **Table 1** and a copy of the Certificates of Title is included at **Appendix A**.

LOT NO.	PROPERTY ADDRESS	LANDOWNER	AREA	VOL.	FOLIO	PLAN NO.
71	No street address	Robert John Clayton & Teresa Ann Clayton	40.013 ha	2793	432	DP 71624
72	No street address	Robert John Clayton & Teresa Ann Clayton	41.410 ha	2793	433	DP 71624
73	511 Corio Road, Ravenswood	Sprock Group Pty Ltd	40.059 ha	2793	434	DP 71624

TABLE 1 – SUMMARY **OF LAND**

The site derives access from Corio Road, which is of bitumen sealed construction and connects with Lakes Road to the north and Paterson Road to the south.

An Aerial Locality Plan has been included at **Figure 1** which illustrates the location of the site relative to the Ravenswood and North Dandalup townsites and surrounding land. Surrounding land uses includes intensive agriculture (horticulture) immediately to the south, rural small holdings ('farmlets') comprising lots of approximately (10 -13 ha) to the south-west and other broad acre rural land uses (e.g. livestock grazing).

The location of all dwellings situated within 1000m of the subject site are identified on the Landuse Context and Buffer Plan at **Appendix B.** No other sensitive land use (i.e., schools, caravan parks etc) are located within 1000m of the existing operations. This situation has not changed since the current development approval was granted.

FIGURE 1 – AERIAL LOCALITY PLAN (SUBJECT SITE OUTLINED IN RED)

2.2 Existing Development

The site currently accommodates a free-range poultry farm comprising three sheds capable of producing 48,000 meat birds (per batch) for the broiler market. The majority of structures on site are located on the central part of Lot 72. In addition to the three poultry sheds, existing structures include two smaller growing sheds for young birds. These shed structures would be retained for use as storage but are not proposed to be used for their originally intended purpose as growing sheds. There is also a legacy concrete pad associated with a poultry shed that has since been removed, a workshop with cool room, amenities building, water tanks and other incidental structures associated with the existing poultry farm operation.

An existing dwelling is located on the northern part of Lot 73. Livestock grazing is also undertaken on cleared areas of the site with established pasture.

The existing use of the site is depicted by **Figure 2** below. **Plates 1 – 4** illustrates the existing use of the site.

Although approval was granted for a broiler facility by the JDAP on 29th July 2021, this development has not yet been implemented. A copy of the current Development Approval is attached at **Appendix D.**

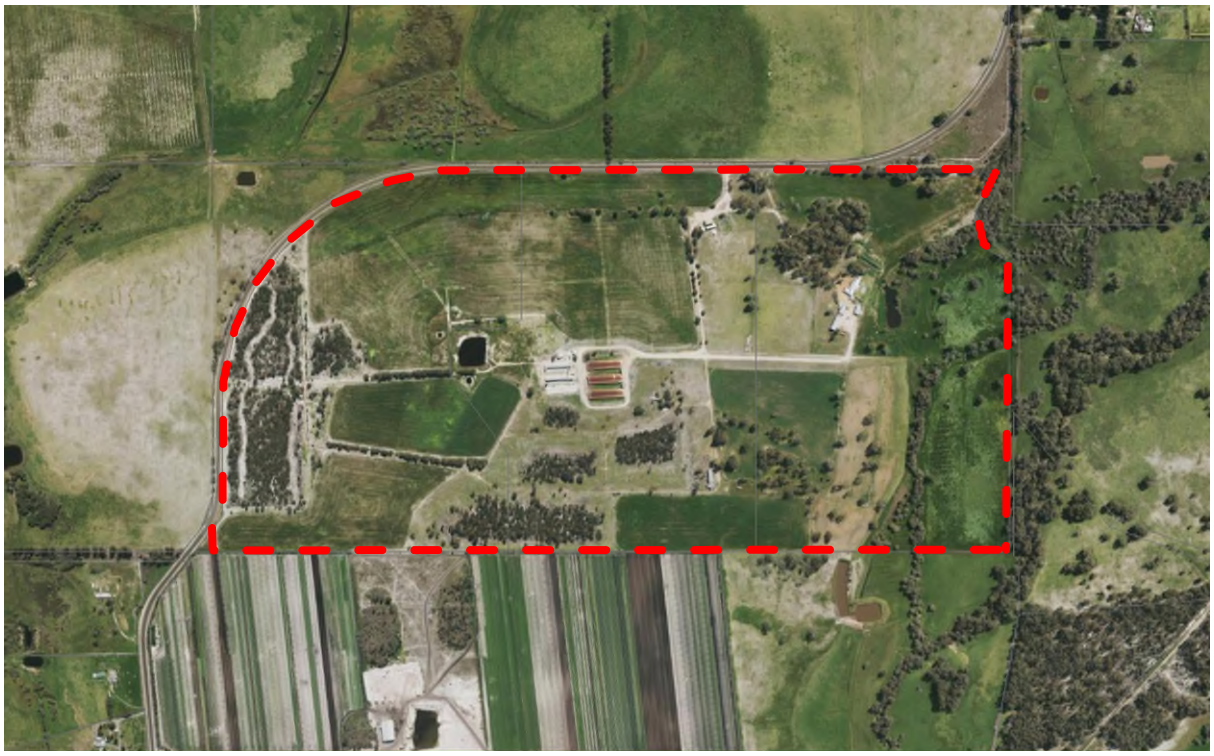

FIGURE 2 – AERIAL PHOTOGRAPH (SUBJECT SITE OUTLINED IN RED)

PLATE 1 – AERIAL PERSPECTIVE FACING SOUTH EAST PLATE 3 – AERIAL PERSPECTIVE FACING SOUTH EAST

PLATE 2 – AERIAL PERSPECTIVE FACING EAST

PLATE 3 – AERIAL PERSPECTIVE FACING SOUTH EAST

PLATE 4– AERIAL PERSPECTIVE FACING NORTH EAST

2.3 Topography and Landform

Contours derived from a site survey indicates the land is relatively flat, with the highest point of approximately 16.5m AHD near the western boundary with the land gently sloping to approximately 10m AHD (associated with a watercourse) near the eastern boundary.

2.4 Geology and Soils and Land Capability

An Environmental Assessment and Management Plan prepared by Aurora Environmental ('the Environmental Assessment' at **Appendix D**) provides a detailed description of site conditions. The Environmental Assessment notes the site is located on the Swan Coastal Plain and according to the Geological Survey of Western Australia, geology associated with the land comprises alluvial and inland eolian deposits and includes Bassendean Sands and Bassendean Sands in a thin veneer over the Guildford Formation.

Further, the Environmental Assessment advises the Department of Primary Industries and Regional Development (DPIRD) soil mapping indicates the subject site contains soil types described as Bassendean B2 Phase, Bassendean B4 Phase and Pinjarra P9 Phase.

The Environmental Assessment considers the phosphorous export risk and waterlogging risk based on Landgate mapping and advises that whilst the areas where Farms 1 and 2 are proposed are mostly not prone to waterlogging, peripheral areas (e.g. the western portion of Farm 1 at 13.5m AHD) is likely to require some fill to achieve sufficient (1m) separation from groundwater.

2.5 Hydrology

The Environmental Assessment advises a tributary and floodplain of the North Dandalup River traverses the eastern portion of the subject site. This area is designated as sumpland (resource enhancement) on geomorphic wetland mapping. The geomorphic wetland mapping also shows that the floodplain area immediately north of the existing poultry sheds has a 'conservation' management category. However, Aurora Environmental has concluded based on-site inspection and earlier hydrological investigation that the mapped area is degraded and used as pasture with little native vegetation. The area is not associated with groundwater dependent ecosystems and does not warrant retention in its current form (noting that hydrology of the area will not be impacted by the proposal).

Groundwater associated with the subject site was previously characterised by HydroConcepts (2017) as part of the process to secure a groundwater licence from the Department of Water and Environmental Regulation. A groundwater license for the abstraction of 258,500KL per annum is held by the landowner and will be transferred to Proten.

Information from these earlier investigations is detailed in the Environmental Assessment and summarised below.

All existing soaks and production bores within the subject site are hosted in Bassendean Sands which forms part of the Perth-superficial Swan aquifer. Groundwater flow within the superficial aquifer is generally towards the south.

There are two DWER monitoring bores located at the north-western corner of the subject site that have been monitored monthly since their installation in 2008. These bores show that groundwater levels are relatively stable with no discernible trend over that period. Seasonal fluctuations are about 1 m annually, with the low in March-April and peak in September-October. The groundwater levels rise quickly following the commencement of winter rainfall to a high of approximately 13 m AHD which results in surface inundation in lower-lying areas to the north of the subject land and suggests that the thin aquifer is close to saturation. Proposed Farm 1 is located on part of the site that has an existing ground level ranging between 13.5m and 15m AHD and the location of Farm 2 has an existing ground level ranging between 14m and 16m AHD. It is proposed to use sand fill to achieve a minimum separation of 1 m to the maximum groundwater level (14 m AHD). Although this is less than the usual 2 m separation, the fact that the operation is a closed system will prevent discharge of nutrients to the environment and 1 m is considered sufficient to reduce the risk of inundation.

2.6 Vegetation

As is evident from the Aerial Photograph at **Figure 2** and **Plates 1-4,** native vegetation on the subject land has largely been cleared, including the area proposed for Farm 1. The construction of Farm 2 will require the removal of approximately 50 paddock trees (refer to Plate 9 of the Environmental Assessment). Further, the Environmental Assessment advises clearing in relation to the construction of Farm 2 satisfies exemptions available under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* on the basis that:

- The area proposed to be cleared does not contain any riparian vegetation;
- The area of vegetation proposed to be cleared is less than 5 ha.
- The area proposed to be cleared does not comprise an environmentally sensitive area as declared under section 51B of the EP Act. In addition, the area does not contain features such as wetlands. Due to the degraded nature of the understorey, threatened species are unlikely to occur.

2.7 Aboriginal Heritage

The Department of Aboriginal Affairs Heritage database (Department of Planning, Lands and Heritage, 2021b) indicates that no listed Aboriginal heritage places are known to occur on the subject land. The nearest known sites are Registered Site 4325 Gas pipeline 84 – Artefacts and scatters (500 m to north) and Lodged Site: 3305 Gibbs Sandpit, Pinjarra – Artefacts and scatter, camp (700 m to the south). The North Dandalup River is listed as an 'Other Heritage Place'.

2.8 Bushfire Prone Areas

According to the map of Bushfire Prone Areas, the subject site and surrounds are identified as bushfire prone (refer to **Figure 3**). A Bushfire Management Plan prepared in support of the proposal is included at **Appendix E**.

FIGURE 3 – BUSHFIRE PRONE AREAS MAPPING

3 PROPOSED DEVELOPMENT

3.1 DEVELOPMENT & LAND USE SUMMARY

This application seeks to facilitate an amended approval for an egg production facility and redesign on the subject site in accordance with the Development Plans included at **Appendix B.**

The current development approval is for 16 sheds with a total area of 34,848m2 to accommodate a total of 50,000 birds per shed, resulting in 600,000 birds on site at any one time. The approved sheds can support 5.5 batches of birds per year which results in the production of a maximum of 3.3 million birds per annum.

Instead, the following development is proposed by this application:

- Decommissioning of the three (3) existing free range sheds;
- Construction of 16 new tunnel ventilated sheds (15m x 144m) in two separate farms each comprising 8 sheds (34,560m^2 of sheds in total). Each farm will be 322.7m apart to enhance biosecurity;
- Construction of two egg packing and amenities buildings (15m x 60m);
- An additional 4 bedroom dwelling;
- An additional crossover to Corio Road and internal access driveways to service the sheds; and
- Landscaping/vegetation screening adjacent to Corio Road.

Other ancillary buildings and infrastructure within the central part of Lot 72 will be retained.

The proposed facility will house approximately 293,760 birds at any one time with 1 batch of birds per year. This will result in the production of approximately 30 million eggs across the whole site per annum.

The existing free range sheds will be decommissioned and retained, with the revised site design enabling the continued use of the property for a productive intensive agricultural land use. Further, the proposed change to fertile egg production from the currently approved broiler meat production will significantly reduce the bird numbers on the site (from a maximum of 600,000 as a broiler farm to 293,760 as a fertile egg production farm). The development will result in significant improvement to the operational efficiencies of the poultry farm, with mitigation of any potential offsite impacts (including nutrient export, noise, odour, dust) through modern shed design and the implementation of best practice facility management.

3.2 BUILT FORM & SHED DESIGN

3.2.1 Position, Setbacks & Orientation

The 16 new 15m x 144m sheds will be grouped in two farms, each comprising eight (8) sheds. Individual sheds shall be 16.5m apart. The farms will be separated by a distance of 322.7m and will

be setback a minimum of 100m from all external property boundaries. The proposed location of the 2 farms on site is similar to the location of the 2 farms in the current development approval.

The existing lots will be amalgamated prior to the commencement of the use so that no new structures will cross internal lot boundaries. A 4m wide covered and enclosed passageway will run down the middle of each farm, containing an egg conveyor and electrical controllers.

Farm 2 will be separated from the mapped Resource Enhancement Wetland traversing the eastern part of the site (through Lot 73) and the associated wetland buffer by 118m.

The tunnel ventilated sheds comprise of ventilation fans at one end of the sheds with 24m x 1.8m cool cells on the other end of each shed. Access to the sheds is via the fan end, which enables the delivery and removal of birds, removal of litter and replacement of bedding etc. Daily management and egg collection will occur via the covered passageway at the cool cell end. The orientation of the sheds is shown on the development plans (**Appendix B**).

The shed orientation enables the majority of poultry shed operations to occur internal to the site, including truck movements and use of loaders, forklifts etc which will occur on a servicing area adjacent to the primary shed access. Only delivery and pickup vehicles will be external as per the traffic plan.

Each farm will be equipped with an egg packing and amenities building located at the end of each corridor. These buildings will be 15m by 60m, accommodating egg packing, a cool room, lunchroom, toilet showers, and a cool room.

3.2.2 Colours & Materials

The new sheds will be of steel frame construction with 50mm PIR insulated (white or green) panel walls and zinc alum roof sheeting.

3.3 LANDSCAPING

Similar to the current development approval, screening vegetation is proposed to be planted on the northern and western sides of Farm 1 to soften its visual impact when viewed from Corio Road. It is noted there is already a number of mature and semi-mature trees in this location that will be retained to enhance the intended visual screening effect.

3.4 OPERATIONAL DETAILS

3.4.1 Bird Management

The floors of the sheds will be concrete and covered with wood shavings or straw before the birds are placed in the shed. The sheds are tunnel fan ventilated to keep the birds at the appropriate temperature year around.

Point of lay pullets and cockerels will arrive on each farm site once per year when they are approximately 18 weeks of age. Each individual farm will receive new chickens 6 months apart, resulting in two movements of birds onto the site per year.

Once the hens commence laying eggs from approximately 20 weeks of age, the eggs are collected from the nests within the shed and conveyed to the egg room via the fully enclosed corridor, from where they will be transported offsite in fully closed temperature-controlled trucks, to a hatchery to produce day old chicks that will be used for broiler production on other sites. The shed doors closed at the time of collection. Eggs are collected from the cool room up to four times per week. After a 45 week period of laying, the birds are removed from the farm. The sheds are then empty for approximately six to seven weeks before the next batch of birds arrives (annually). This allows for cleaning and maintenance.

The spent litter, comprising of manure and wood shavings/straw, will be removed from the property in covered trucks and be used for beneficial reuse as a fertiliser in permitted locations. Removal will be undertaken using a bobcat type front end loader, with litter placed on a covered conveyor belt before being loaded into a covered truck for removal from the site once per annum, from each farm (twice per year from the combined 2 farm site). The machinery will access the sheds from the fan end through wide doors. It will be ensured that no dust or odour pollution will escape during this process.

Similar to the current development approval, litter shall not be stockpiled or composted on site. Any dead birds will be collected from the sheds at least daily and refrigerated (within the coolroom) before being removed from the property once a week in a fully covered truck.

Feed is delivered in sealed trucks and pumped into sealed silos on the farm on a weekly basis.

3.4.2 Egg Production

It is anticipated that hens will lay eggs from approximately 20 weeks of age until 65 weeks of age, providing a 40-week production phase.

Each shed will house around 16,500, females and 1,830 males, equating to approximately 18,360 birds per shed and approximately 293,760 birds across the entirety of the site, at any one time. This equates to an overall production across the whole site of approximately 30,000,000 eggs per 45 week production cycle, per annum.

3.4.3 Tunnel Ventilation

Tunnel ventilation sheds have fans at one end of the shed which draw air into the shed through cooling pads in the walls at the other end of the shed, over the birds and out the fan end of the shed. Temperature sensors in the poultry house allow the fan, and cooling settings to be adjusted as necessary. Tunnel ventilation provides for temperature, humidity and air quality to be checked and adjusted regularly. It allows the operator to exercise a greater degree of control over the climate within each shed in the interests of animal welfare and odour and dust management.

3.5 STAFF & HOURS OF OPERATION

The poultry farm will be a 24 hour per day/7 day per week operation. During normal operations, up to 12 staff (including 2 onsite on-site managers) will attend the site during the day, between the hours of 7am to 5pm, 7 days per week. The 2 onsite managers will remain in attendance after hours and will reside in the existing and the proposed dwelling.

Staff parking will be accommodated in the vicinity of the existing amenities building. Given the large area of suitable parking space available on the site, formal construction and line-marking of parking bays is not considered necessary except where to comply with any legislative requirements.

3.6 SERVICING

No reticulated water is available to the site and accordingly water requirements shall be provided by onsite means including via the existing groundwater license.

The existing overhead power supply will be upgraded/relocated as part of the amalgamation of the lots prior to commencement of the proposed poultry farm.

3.7 CONSTRUCTION TIMING/STAGING

Construction of the new sheds is anticipated to commence within the first six months following the granting of all necessary approvals and may take 18 to 24 months to complete.

4 PLANNING CONTEXT

4.1 STATUTORY FRAMEWORK

4.1.1 Peel Region Scheme

The subject land is zoned 'Rural' in the Peel Region Scheme (PRS), as is the land immediately to the north, west and south. An extract from the PRS zoning maps is included at **Figure 4** below.

The purpose of the Rural zone is:

'to provide for the sustainable use of land for agriculture, assist in the conservation and wise use of natural resources including water, flora, fauna and minerals, provide a distinctive rural landscape setting for the urban areas and accommodate carefully planned rural living developments.'

The proposed use of the subject site for a poultry farm is consistent with the intended purpose of the Rural zone.

The WAPC has made a resolution under Clause 21 of the PRS requiring development for a new poultry farm or for any extension or addition in excess of 100 m^2 to the improvements of an existing poultry farm to require separate determination by the WAPC under the PRS, in addition to determination by the Shire under Local Planning Scheme No. 4.

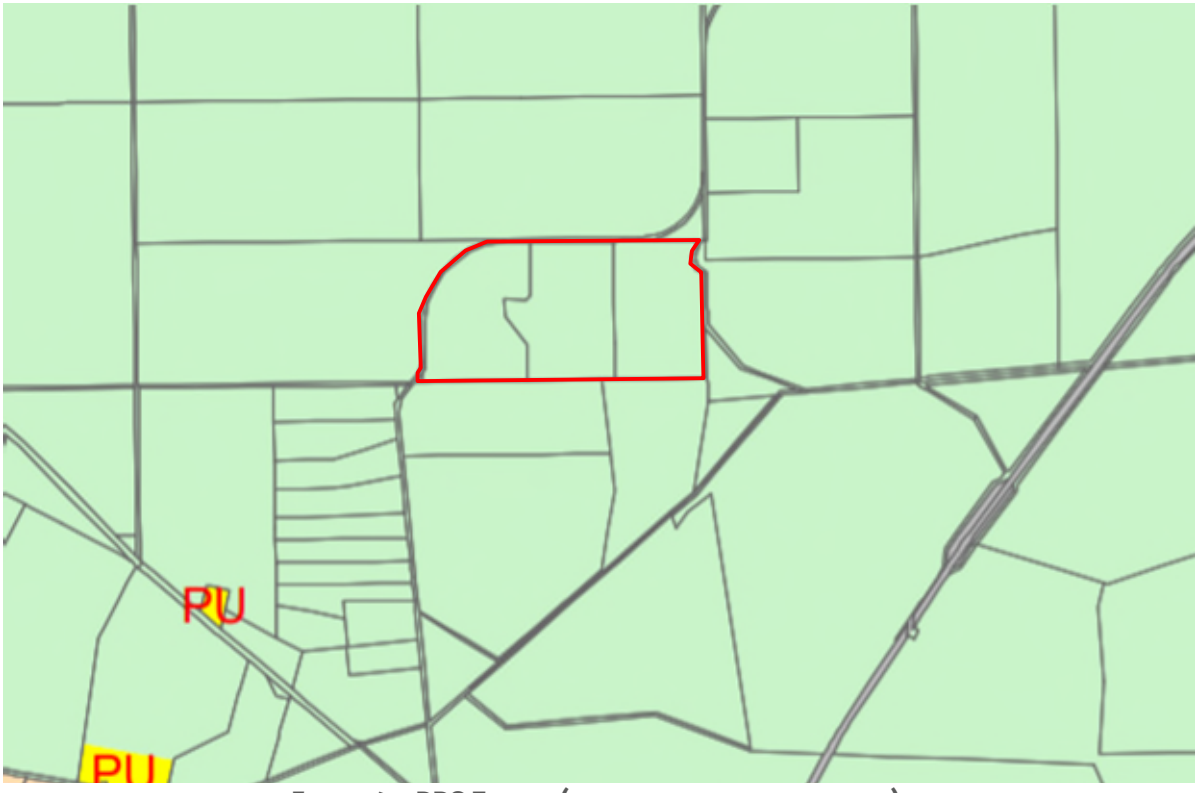

FIGURE 4 – PRS ZONING (SUBJECT SITE OUTLINED IN RED)

4.1.2 Shire of Murray Local Planning Scheme No. 4

The subject land is zoned 'Rural' in the Shire of Murray's Local Planning Scheme No. 4 (LPS 4). An extract from the LPS 4 zoning maps is included at **Figure 5** below.

Land due north, south east and west of the subject site are also zoned Rural. Land to the south-west comprising lots in the order of 10 -13 ha is zoned 'Farmlet'. Lot 5 Corio Road, identified as 'Special Use – Tourist Development' is located to the north-east of the site and land zoned to the north-west is zoned Special Rural (SR40). The 'Special Use – Tourist Development' designation was intended to provide for a tourist development on the subject land. It is understood that a tourist development has never eventuated and that the subject land is currently used as an equestrian training facility.

The proposed upgrading and expansion of the existing poultry sheds would be considered 'Intensive Agriculture' meaning:

'the use of land for the purposes of trade, commercial reward or gain, including such buildings and earthworks, normally associated with the following:

(a) the production of grapes, vegetables, flowers, exotic and native plants, fruit and nuts;

(b) the establishment and operation of plant and fruit nurseries;

(c) the development of land for irrigated fodder production and irrigated pasture (including turf farms);

(d) the keeping, rearing or fattening of pigs, poultry (for either egg or meat production), rabbits (for either meat or fur production), and other livestock in feed lots, including cattle feed lots, or the development of land for this purpose…'

Intensive Agriculture is an 'AA' use in the Rural zone, which is a use the Council may, at its discretion permit, provided it is satisfied that such use would not be contrary to the orderly and proper planning of the area.

Part IX – The Peel Harvey coastal Plain catchment states the following with regard to Intensive Agriculture:

9.1.5 In considering an application to develop land for Intensive Agriculture within the PeelHarvey Coastal Plain Catchment the Council shall:

a) take account of soil types, slope, groundwater flows, surface water drainage and proximity to the Peel-Harvey Estuary;

b) take account of the objectives of the Statement of Planning Policy No. 2 with respect to the potential impact of the development on the environment and water quality; and

c) consult with the Department of Agriculture and the Department of Environmental Protection and take account of any advice in making its determination or defer its decision pending a formal assessment by the Environmental Protection Authority under Part IV of the Environmental Protection Act.

Table II – *Non Residential Development Standards* prescribes relevant development standards that are applied to non-residential development and provides:

'Where a use is permitted in a Zone other than that stated in this Table, the Council may apply the standards to that Zone within which the use is proposed as is appropriate'.

No car parking standard is specified for Intensive Agriculture and hence the manner by which car parking is provided for this land use is open to discretion. Car parking provision is addressed in further detail under Section 4 of this report.

This application demonstrates the use of the subject site for an amendment to the currently approved poultry farm is consistent with the applicable planning framework and appropriate in this instance having regard to the site layout, environmental, traffic and bushfire management measures set out in this proposal. The proposed management measures, which can be applied via conditions of planning approval, will ensure any potential nuisance impacts from odour, noise and dust are mitigated and suitable environmental controls are complied with at all times.

FIGURE 5 – LPS 4 ZONING (SUBJECT SITE OUTLINED IN RED)

4.2 POLICIES

4.2.1 Priority Agricultural and Rural Land Use Policy

The Priority Agricultural and Rural Land Use Policy applies to rural land within the Peel Region Scheme area of the Peel-Harvey coastal catchment, and hence is relevant to this proposal. It is noted the subject site is not identified as 'Priority Agricultural Land' under the Policy.

To reduce the risk of nutrient export into the Peel-Harvey coastal plain catchment, 'closed and zero discharge' production systems are encouraged. As the proposed poultry farm development will be a closed system, no nutrients will be discharged to the environment and there is no risk of nutrient export to the Peel-Harvey coastal plain catchment.

At clause 5.9, the Policy advises proposals for new or expanded agricultural activities must be supported by a land capability assessment. The Environmental Assessment at **Appendix D** addresses land capability and advises that application of sand fill to achieve separation from the maximum groundwater level by 1 m is considered sufficient to protect groundwater and to reduce the risk of inundation.

The Policy advises a quantitative nutrient budget for phosphorus and nitrogen is also required to the satisfaction of the local government (in consultation with the Department of Primary Industries and Regional Development and the Department of Water and Environmental Regulation), demonstrating the proposal and nutrient management practices will not contribute to an increase in nutrient levels in surface or groundwater. Again, given the proposal is for a closed system, which will result in no risk of nutrient export, preparation of a nutrient budget should not be required.

Clause 6.1 of the Policy provides that land uses with the potential to create conflict with agricultural activities should be separated from such activities by buffers, to protect the primacy of agricultural activities within the priority agricultural land areas and, in doing so, protect people from emissions such as spray draft, noise, dust and odour. This Application has been prepared with due regard for this policy objective.

4.2.2 State Planning Policy 2.1 Peel-Harvey Coastal Plain Catchment

The subject site is included within the Peel-Harvey coastal plain catchment and hence SPP 2.1 is applicable to this proposal.

The objectives of SPP 2.1 are to:

- *improve the social, economic, ecological, aesthetic, and recreational potential of the Peel-Harvey coastal plain catchment;*
- *ensure that changes to land use within the catchment to the Peel-Harvey estuarine system are controlled so as to avoid and minimise environmental damage;*
- *balance environmental protection with the economic viability of the primary sector;*
- *increase high water-using vegetation cover within the Peel-Harvey coastal plain catchment;*

- *reflect the environmental objectives in the draft Environmental Protection Policy (Peel-Harvey Estuarine System) 1992; and*
- *prevent land uses likely to result in excessive nutrient export into the drainage system.*

SPP 2.1 provides that intensive agriculture (including poultry farming) which is likely to drain towards the Peel-Harvey Estuarine System shall be managed to reduce or eliminate nutrient export from the land.

The Environmental Assessment at **Appendix D** considers the requirements of SPP 2.1 and advises that as the premises will operate as a closed system, no nutrients will be discharged to the environment. Accordingly, the Application is able to satisfy the objectives of SPP 2.1 via the imposition of appropriate conditions of planning approval relating to nutrient management.

4.2.3 State Planning Policy 2.5 – Rural Planning

This version of SPP 2.5 (December 2016) introduced policy direction for animal premises (including poultry farms). The gazettal of SPP 2.5 also revoked the previous State Planning Policy 4.3: Poultry Farm Policy.

The intent of SPP 2.5 is to *'protect and preserve Western Australia's rural land assets due to the importance of their economic, nature resource, food production, environmental and landscape values.'*

The policy objectives are as follows:

(a) support existing, expanded and future primary production through the protection of rural land, particularly priority agricultural land and land required for animal premises and/or the production of food;

(b) provide investment security for existing, expanded and future primary production and promote economic growth and regional development on rural land for rural land uses;

(c) outside of the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction;

(d) provide a planning framework that comprehensively considers rural land and land uses, and facilitates consistent and timely decision-making;

(e) avoid and minimise land use conflicts;

(f) promote sustainable settlement in, and adjacent to, existing urban areas; and

(g) protect and sustainably manage environmental, landscape and water resource assets.

Clause 5.1 of SPP 2.5 includes the following relevant provisions regarding the protection of rural land and land uses:

(d) protecting land, resources and/or primary production activities through the State's land use planning framework;

(e) creating new rural lots only in accordance with the circumstances under which rural subdivision is intended in Development Control Policy 3.4: Subdivision of rural land;

(f) preventing the creation of new or smaller rural lots on an unplanned or ad-hoc basis, particularly for intensive or emerging primary production land uses;

(g) comprehensively planning for the introduction of sensitive land uses that may compromise existing, future and potential primary production on rural land; and

(h) accepting the impacts of well-managed primary production on rural amenity.

SPP 2.5 recognises that animal premises are important contributors to the food needs of Western Australia's residents and to the State's economy. With regard to animal premises (including poultry farms) SPP 2.5 provides:

(a) animal premises are a rural land use, and are generally supported and encouraged on rural land provided rural amenity and environmental impacts can be effectively managed;

(b) animal premises that require large sites or buffers, and could limit existing or potential industrial land uses, should generally not be located in State strategic industrial areas or within their buffers;

(c) expansion of existing animal premises may be supported where off-site impacts (such as odour, dust or noise) are mitigated or managed to achieve maintenance or reduction of impacts, in accordance with an accepted code of practice;

(d) in addition to environmental issues, planning decision-makers must consider the following matters in assessing proposals-

(i) the staging of the proposal and ultimate design capacity;

(ii) the transport of animals to and from the site;

(iii) the handling and disposal of deceased or 'retired' animals on or off-site;

(iv) the transport, handling and/or disposal of animal feed and/or waste on or off-site;

(v) outdoor pens or roaming areas for animals;

(vi) the potential impacts of operating hours; (vii) shed configuration, including rotation and/or automation;

(viii) servicing, including location and size of effluent disposal ponds;

(ix) biosecurity (based on advice from the industry); and

(e) where an animal premises proposal may affect the nutrient load of a river, estuary or associated tributary and the system and/or its receiving water body has no further capacity to assimilate nutrients without an adverse impact on ecosystem health, a reduction in nutrient export is to be demonstrated.

Clause 5.12 of SPP 2.5 – '*Preventing and managing impacts in land use planning*' provides for the suitability of land uses to be considered having regard to the ability to manage offsite impacts (including impacts on sensitive uses). SPP 2.5 notes separation distances should be applied as set out in environmental policy and health guidance, prescribed standards, accepted industry standards and/or Codes of Practice.

The WAPC has prepared the *Rural Planning Guidelines,* which at Appendix 2 includes a table to assist the implementation of clause 5.12 of SPP 2.5 by identifying the separation distances to sensitive land uses recommended by State government agencies and industry bodies. With regard to poultry farms, the following separation distances are recognized:

- EPA – 300m to 1000m
- National Industry Standard – 250m to 500m
- State Industry Standard – 300m to 500m.

The guidelines state by meeting the EPA standard, the industry standards would also be satisfied (given the industry standards recommend a lesser buffer). This proposal has been informed by the EPA recommended separation distance and further, conservatively adopts a separation distance of 1000m.

Within this Planning Report and via the preparation of an Environmental Assessment and Management Plan (**Appendix D)** and Transport Impact Statement (**Appendix F**) the provisions of SPP 2.5 have been comprehensively addressed.

Similar to the current approval, this amendment will introduce improved environmental management to minimise nutrient export and achieves separation from sensitive land uses in accordance with the accepted codes of practice and environmental guidance statement and as such satisfies each of the abovementioned policy provisions.

4.2.4 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

State Planning Policy 3.7 (SPP 3.7) seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. SPP 3.7 applies to development applications over land designated as bushfire prone by the Map of Bushfire Prone Areas prepared by the Department of Fire and Emergency Services.

Section 6.5 of the Policy provides that any development application within a designated bushfire prone area is to be accompanied by information that appropriately addressees the *Guidelines for Planning in Bushfire Prone Areas*. Accordingly, a BMP has been prepared by Envision Bushfire Protection in accordance with SPP 3.7 and is included at **Appendix E**. Further details are included at Section 5 of this report.

4.3 OTHER RELEVANT DOCUMENTS

4.3.1 EPA GS3 – Separation Distances between Industrial and Sensitive Land Uses

EPA Guidance Statement 3 provides advice on the use of generic separation distances (buffers) between industrial and sensitive land uses to avoid conflicts between incompatible land uses. The distances outlined in Appendix 1 of the Guidance Statement are intended to operate as a default distance for the purposes of:

- identifying the need for specific separation distance or buffer definition studies; and
- providing general guidance on separation distances in the absence of site specific technical studies.

The Guidance Statement is intended to be consistent with the relevant environmental codes of practice and management guidelines prepared in relation to specific industries, including poultry farming. Under Appendix 1 of the Guidance Statement a generic buffer distance of 300m-1000m is recommended, depending on the size of the poultry farming operation, to manage potential nuisance from noise, dust and odour.

The Application achieves a minimum separation distance of 1000m from the nearest sensitive premises (rural dwellings) as illustrated by the Land Use Context and Buffer Plan at **Appendix B**. Given the higher range generic buffer distance is satisfied and the details provided in the Environmental Assessment and Management Plan (**Appendix D)** no site specific technical investigations should be required to support the proposal.

4.3.2 WAPC Fact Sheet – Poultry Farms

The WAPC has produced a Fact Sheet which outlines a range of land use planning considerations relevant to the establishment, expansion or modification of poultry farms in Western Australia. This fact sheet was prepared to assist planners implement *State Planning Policy 2.5: Rural Planning*. The Fact Sheet addresses matters including the following:

- Scale of the proposal
- Access to water
- Vehicle access
- Visual impacts
- Buffers
- Waste Management
- Biosecurity

The Application has considered and provided responses to each of the above matters. In terms of the design and layout of poultry farms, the Fact Sheet refers to the *Environmental Code of Practice for Poultry Farms (2004).* This Code of Practice is discussed below.

4.3.3 Environmental Code of Practice for Poultry Farms in Western Australia 2004

The *Environmental Code of Practice for Poultry Farms in Western Australia 2004* ('Code of Practice') was prepared to provide a point of reference to all stakeholders to better understand the poultry industry by outlining clear and precise guidelines to inform planning, biosecurity and best management practices. The Code of Practice has been given due regard as part of the design and preparation of management strategies for the site. In particular, the following design parameters have been considered and satisfied:

- 500m to existing or future residential zone – nearest residence is 3km to the south west.
- 300m to existing or future rural residential zone – Farmlet zone is 700m to the south west.
- 100m from farm boundary – all sheds are at least 100m from the boundary.
- 50m to wetlands, waterways and floodways (from edge of wetland buffer) – sheds are 165m away from the creek line that runs into the North Dandalup River.

Further details in relation to separation from groundwater and the identified Conservation Category Wetland are addressed by the Environmental Assessment and Management Plan.

4.3.4 Code of Practice for Poultry in Western Australia 2003

This document was prepared by the former Department of Agriculture and Department of Local Government and Regional Development. Whilst not specifically referenced in the *Environmental Code of Practice for Poultry Farms in Western Australia 2004* document, it is understood this document has been superseded by the 2004 document.

4.3.5 Shire of Murray Health Local Law 2018

The Shire of Murray Health Local Law 2018 at clause 5.21 (3) advises commercial poultry establishments are to manage operations in accordance with the *Environmental Code of Practice for Poultry Farms in Western Australia 2004* produced by the Western Australian Broilers Growers Association and Poultry Farmers Association of Western Australia, in conjunction with state and local authorities to control environmental and health nuisances.

5 SITE MANAGEMENT

5.1 ENVIRONMENTAL MANAGEMENT

5.1.1 Overview

An Environmental Assessment and Management Plan has been prepared in support of the Application to construct and operate 16 new tunnel ventilated poultry sheds on the subject site. A copy of the Environmental Assessment and Management Plan is included at **Appendix D.**

5.1.2 Nutrient Management

This is not a free-range operation (unlike the current operating farm) and so birds never have access to the land outside the sheds. The used litter containing the manure is removed from the shed directly into covered trucks and removed from site.

Once the birds are removed from the site, the sheds will be dry cleaned, washed, and sanitised in preparation for the next batch of chickens to arrive. No wash water will escape the sheds due to the following structural obstructions and operational procedures:

- The sheds will be built on concrete pads, so that any excess wash water can be air dried by the fan system.
- Use of high pressure, low volume spraying units will be used during the cleaning process, which creates very little excess wash water.

There will be no discharge of wastewater as a result of the cleaning process and all litter will be removed off site (refer below). Management of dead birds will comprise onsite storage in a cool room with pick up once a week.

5.1.3 Odour & Dust Management

Odour and dust risks will be minimised by:

- Removing litter from sheds between batches of birds in as short a time as is practicable (this usually takes a day). Compared to the current development approval, the volume and frequency of litter removal is significantly reduced. It will only take place once per year per shed and it will be done in accordance with best practice.
- Removal of litter will occur via a covered conveyor belt, which will be loaded onto covered trucks to prevent dust and odour dispersal.
- Litter removal process will be suspended during high wind periods.
- Immediate removal of litter from the property (i.e. without stockpiling/ storage on the property).
- Maintaining drinking and cooling systems to ensure that litter does not become too wet. Moisture content of between 30 – 40% and less than 50% will reduce the risk of odour

generation. Should litter become too wet, it will be rotary hoed or have extra absorbent material added to assist in drying this out within the shed.

- A speed limit of 25km per hour will be applied to vehicles within the property to reduce the risk of dust dispersal. Litter being removed from the property will be covered to prevent discharge of odour and dust.
- Planting screen trees adjacent to Farm 1. Planting will comprise local native species such as jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*). The planting will assist in minimising visual impacts and will replace the paddock trees to be removed to construct Farm 2.

The preparation and implementation of Odour and Dust Management Plans would be anticipated as a condition of planning approval.

5.1.4 Noise Management

Daytime noise resulting from the operation of the poultry farm will be consistent with that associated with farming activities in a rural area. While some activity will intermittently take place at night, such as catching operations and the arrival and departure of associated vehicles, there is not anticipated to be a high level of noise that would result in offsite disturbance due to the separation distances from the nearest dwellings being no less than 1000m. As such, it is considered the proposed amendment of the poultry farm will comply with the *Environmental Protection (Noise) Regulations 1997* and will not have an adverse impact on the amenity of the locality in relation to noise emissions.

Noise risks will be minimised by:

- Selecting equipment which has specifications for low noise generation (e.g. fans, pumps and other equipment).
- Use of 'quietened' equipment (subject to Occupational Safety and Health Act and regulation compliance).
- Maintaining and servicing equipment so that it runs smoothly and quietly.
- Induction of staff to ensure that they operate equipment quietly (with signs to reinforce the need for noise minimisation).
- Scheduling most activities to occur during daylight hours (except for collection of birds for removal from farm at the end of the production cycle).

The preparation and implementation of a Noise Management Plan would be anticipated as a condition of planning approval.

5.2 BUSHFIRE MANAGEMENT

A BAL Assessment and Bushfire Management Plan has been prepared in support of the application to construct and operate 16 new tunnel ventilated poultry sheds on the subject site. A copy of the Bushfire Management Plan is included at **Appendix E.** The Bushfire Management Plan demonstrates that compliance with SPP 3.7 and the associated Guidelines can be achieved.

The proposal satisfies the Acceptable Solution for Element 1 – *Location* as it shall be sited in an area classified as a 'moderate' threat.

With regard to Element 2 – *Siting and Design of Buildings*, the poultry sheds within both Farms 1 and 2 can achieve a BAL not exceeding BAL–29 via the establishment and ongoing management of an Asset Protection Zone.

The acceptable solution for Element 3 - *Vehicle Access* requires access to a through-road that provides alternative destinations for evacuation, and alternative directions from which assistance from emergency services can be received. Corio Road satisfies this requirement. In addition, driveways longer than 50 m should comply with the technical requirements for private driveways, width and grade and have provision for a turnaround or to enter and leave in a forward direction. The internal access driveways proposed as part of this development are able to satisfy these standards.

The proposal is able to satisfy the acceptable solution for the provision of a suitable water supply (Element 4 – *Water*). Whilst the site does not have access to a reticulated water supply, it has access to a soak and ground water. Potable water is provided at the caretaker's residence and the dwelling in domestic tanks. A filter treatment system from the ground water supply is stored in a 110,000 L tank which shall supply water to the sheds. Suitably located water tanks/hydrants shall also be provided.

5.3 TRAFFIC MANAGEMENT

A Transport Impact Statement (TIS) has been prepared in support of the Application to construct and operate 16 new tunnel ventilated poultry sheds on the subject site. A copy of the TIS is included at **Appendix F.**

The TIS considers likely traffic generation across the site for the whole year. Due to the cyclical nature of the poultry farm business, daily traffic movements depend on the production cycle on the site. As such, there are some site operations that only take place over a short period of approximately 4 weeks, occurring twice per year. Operations will be staged so that one shed is operating at a time, with the cycles approximately 6 months apart.

The TIS advises on the basis of a 'worst case' scenario that 27 vehicle movements (56 two-way trips) may be generated per day at the peak of the production cycle. It is noted that it is highly unlikely that the daily number of vehicles estimated would be experienced due to the cyclical nature of the operations.

In any case, the TIS concludes the proposed development will have no material impact on the safe and efficient operation of the surrounding road network and via swept path analysis, that all internal traffic movements can be accommodated by the site layout and proposed access driveways. Further, there are significantly less truck movements associated with this proposal compared to the currently approved application as the proposed sheds are only emptied and restocked once per year versus 5.5 times per year for a broiler farm.

6 CONCLUSION

This application proposes an amendment to the currently approved development application for a broiler (meat bird) poultry farm located at Lot 72 Corio Road, Ravenswood. The proposal involves the construction of 16 new tunnel ventilated sheds over Lots 71, 72 & 73 which will operate as a closed system.

The new tunnel ventilated facilities will enable operations to occur in accordance with best practise for breeder farms. The proposed facility will house 293,760 birds at any one time and produce 30 million eggs per annum. This amended proposal will have less impact on the amenity and environment than the currently approved broiler farm.

In comparison this proposed development generally has less impact than the current development approval:

- Less birds on site (293,760 vs 600,000).
- A smaller building footprint (34,560m^2 vs 34,848m^2).
- Smaller volume of litter produced.
- Less traffic movements.

Accordingly, favourable determinations from the Shire of Murray and WAPC are therefore respectfully requested.

Should any further information be required to facilitate approval, do not hesitate to contact the author of this report.

APPENDIX A | CERTIFICATE OF TITLE

WESTERN AUSTRALIA

REGISTER NUMBER	
71/DP71624	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	**N/A**

VOLUME **2793** FOLIO **432**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 71 ON DEPOSITED PLAN 71624

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ROBERT JOHN CLAYTON
TERESA ANN CLAYTON
BOTH OF PO BOX 393 PINJARRA
AS JOINT TENANTS

(T N227304) REGISTERED 15/1/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP71624
PREVIOUS TITLE:	1990-498
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF MURRAY

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING L654331

LANDGATE COPY OF ORIGINAL NOT TO SCALE 18/07/2023 01:39 PM Request number: 65361259

Landgate
www.landgate.wa.gov.au

WESTERN AUSTRALIA

REGISTER NUMBER	
72/DP71624	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

VOLUME 2793 FOLIO 433

RECORD OF CERTIFICATE OF TITLE

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BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 72 ON DEPOSITED PLAN 71624

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ROBERT JOHN CLAYTON
TERESA ANN CLAYTON
BOTH OF PO BOX 393 PINJARRA
AS JOINT TENANTS

(T N227304) REGISTERED 15/1/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

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SKETCH OF LAND:	DP71624
PREVIOUS TITLE:	1990-498
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF MURRAY

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING L654331

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Landgate
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WESTERN AUSTRALIA

REGISTER NUMBER	
73/DP71624	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

VOLUME 2793 FOLIO 434

RECORD OF CERTIFICATE OF TITLE

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The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 73 ON DEPOSITED PLAN 71624

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

SPROCK GROUP PTY LTD OF 511 CORIO ROAD RAVENSWOOD WA 6208

(T N227306) REGISTERED 15/1/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *A363740 EASEMENT TO AMPOL EXPLORATION LIMITED, SHELL DEVELOPMENT (AUSTRALIA) PTY LIMITED, TEXACO OVERSEAS PETROLEUM COMPANY AND CALIFORNIA ASIATIC OIL COMPANY. SEE SKETCH ON DEPOSITED PLAN 71624 REGISTERED 15/1/1971.
   *K395712 NOTIFICATION. THE GRANTEES OF EASEMENT A363740 ARE NOW APT PARMELIA PTY LTD PURSUANT TO SECTION 20(5) OF THE PETROLEUM PIPELINES ACT 1969. RECORDED 31/10/2007.
2. *D471316 EASEMENT TO ALCOA OF AUSTRALIA (W.A.) LTD. SEE SKETCH ON DEPOSITED PLAN 71624 REGISTERED 8/5/1987.
3. *P039058 MORTGAGE TO NATIONAL AUSTRALIA BANK LTD REGISTERED 10/2/2022.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP71624
PREVIOUS TITLE:	1990-498
PROPERTY STREET ADDRESS:	511 CORIO RD, RAVENSWOOD.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF MURRAY

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING L654331

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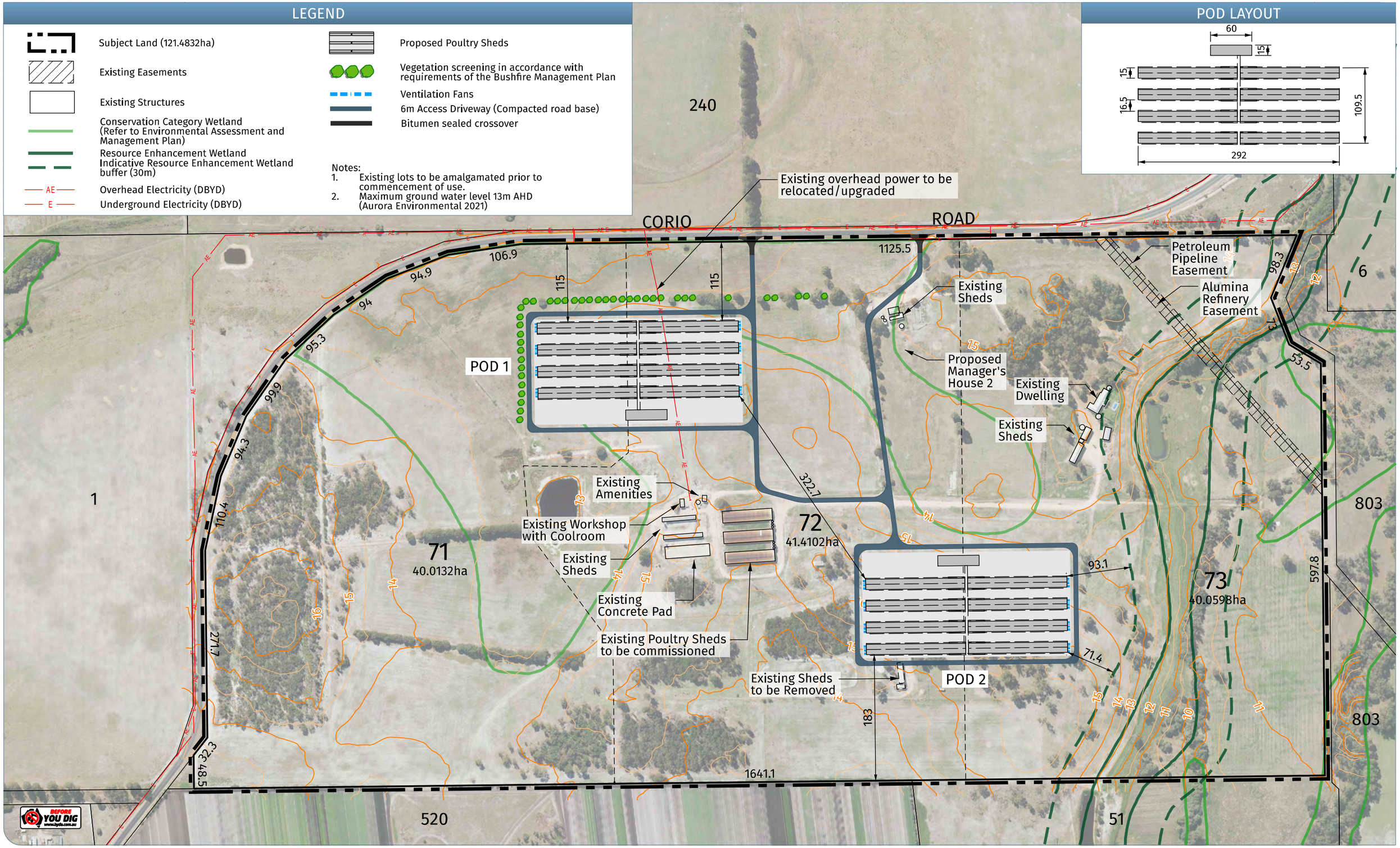
APPENDIX B | DEVELOPMENT PLANS

LEGEND

- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)

POD LAYOUT



DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	23765-01	
Date	01/11/23	
Drawn	NP	
Checked	JS	
Revision	E	
Scale	1:5000@A3	0 50m 100m 150m

PERTH & FORRESTDALE:
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PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
T: 08 9495 1947
E: metro@harleydykstra.com.au
ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

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NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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LEGEND

- Subject Land (121.4832ha)
- 1000m Buffer
- Existing Structures
- Proposed Poultry Sheds
- Existing Dwelling (Distances shown to nearest elevation of dwelling)
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland

241
240
101
5
6
803
1
73
71
72
250
51
801
14
521
102
103
104
105
106
CORIO ROAD
POD 1
POD 2
100
210
1070
1098
1090
1037
1107
1243

LANDUSE CONTEXT & BUFFER PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-02	
Date	07/08/23	
Drawn	NP	
Checked	JS	
Revision	A	
Scale	1:12500@A3	0 100m 200m 300m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
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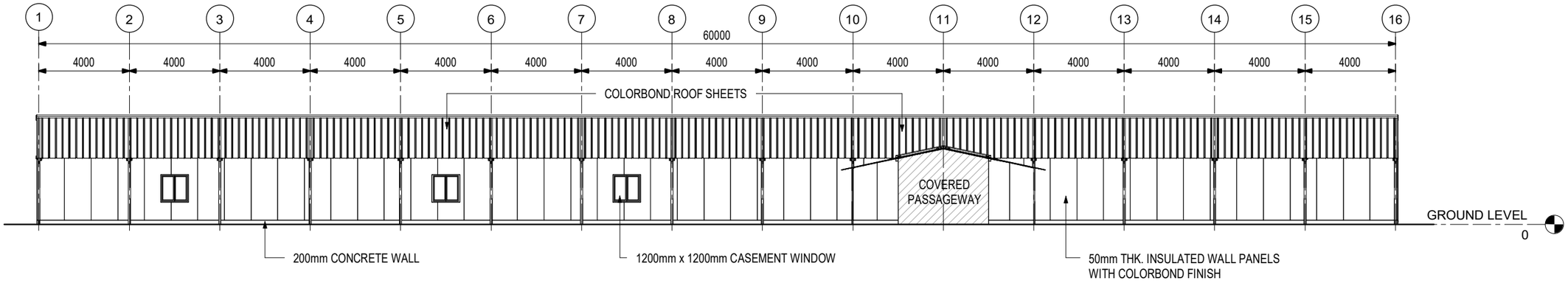

1 EGG PACKING & AMENITIES ELEVATION @ GRID C

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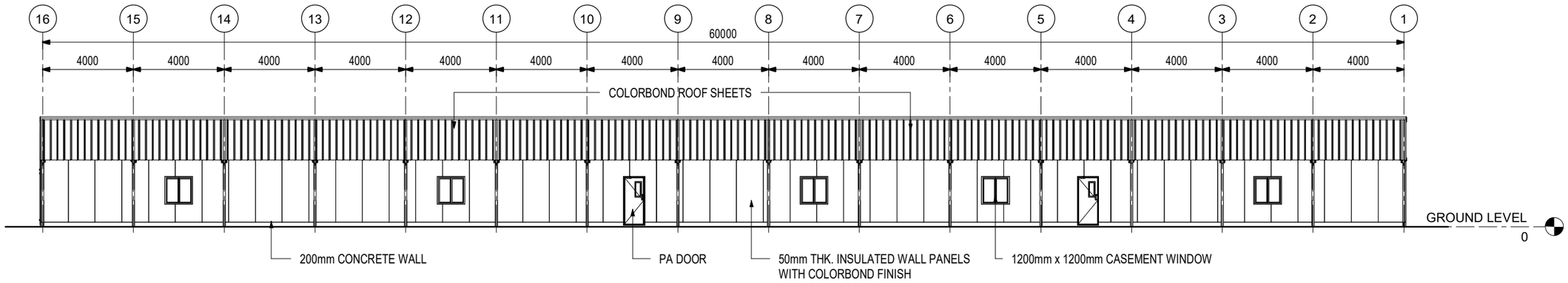

2 EGG PACKING & AMENITIES ELEVATION @ GRID A

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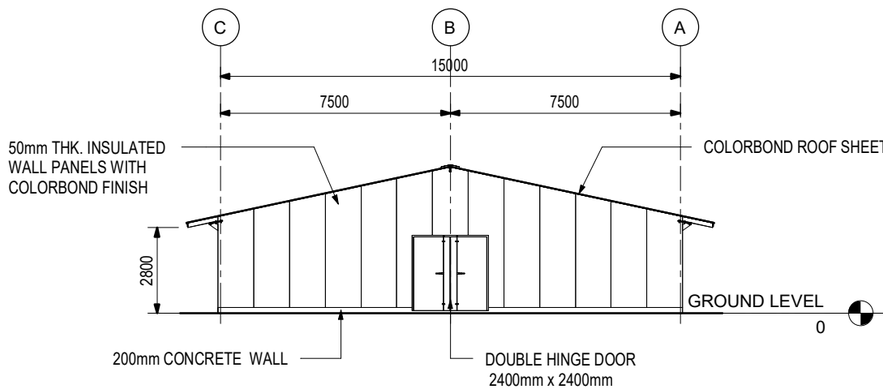

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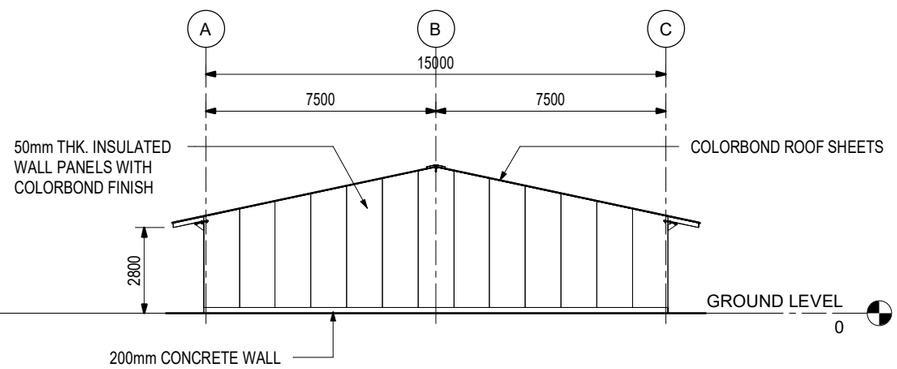

4 EGG PACKING & AMENITIES ELEVATION @ GRID 1

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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT
Breeder Farm

DRAWING TITLE
A_Egg Packing & Amenities Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 200

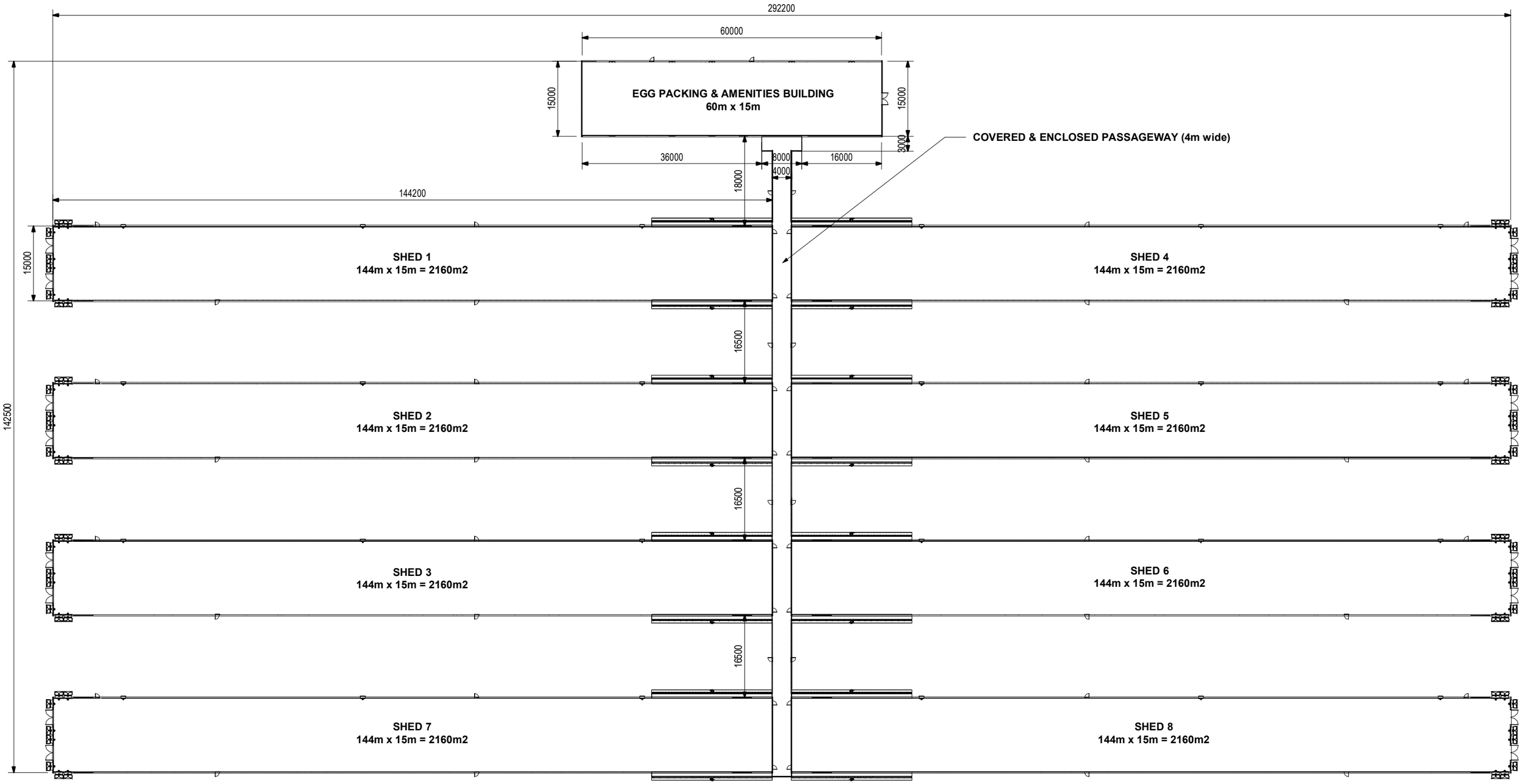
PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-04

SHEET NO.

REV: C

Breeder Farm Layout concept – 8 sheds



1 OVERALL SITE PLAN
1 : 750

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		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT
Breeder Farm

DRAWING TITLE
A_Overall Site Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N

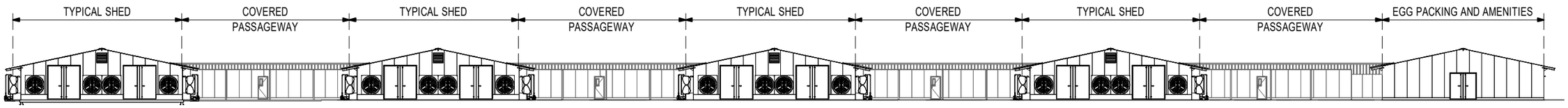
SCALE: 1 : 750

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-05

SHEET NO.

REV: C



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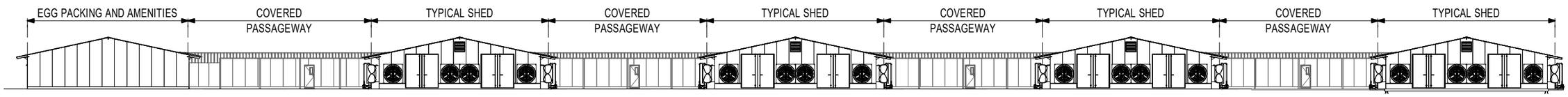

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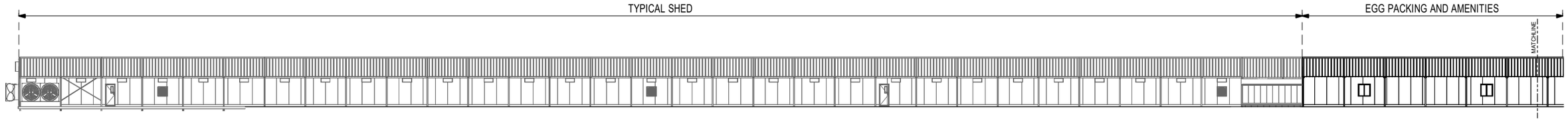

3 NORTH ELEVATION (1 OF 2)

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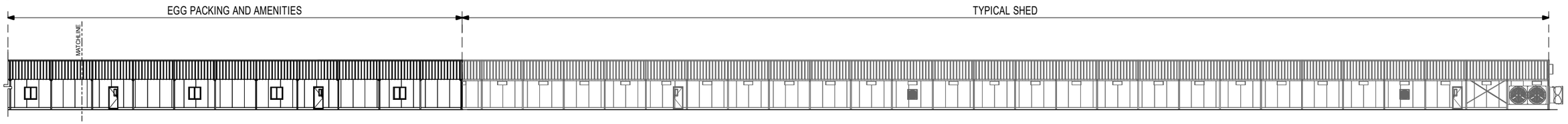

4 NORTH ELEVATION (2 OF 2)

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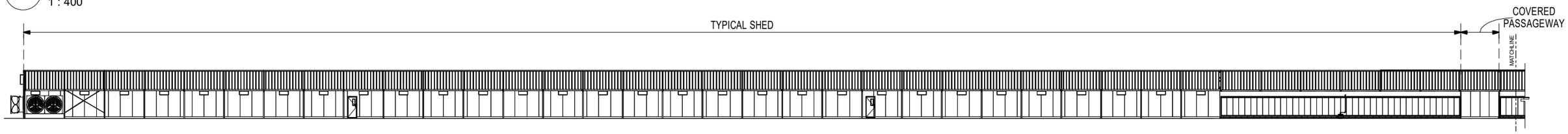

5 SOUTH ELEVATION (1 OF 2)

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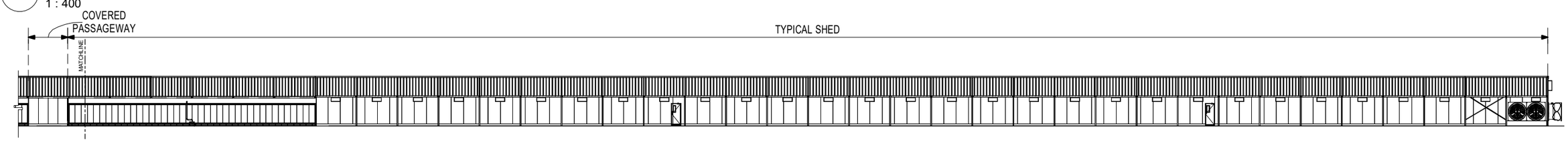

6 SOUTH ELEVATION (2 OF 2)

1 : 400

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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Overall Site Elevation

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 400

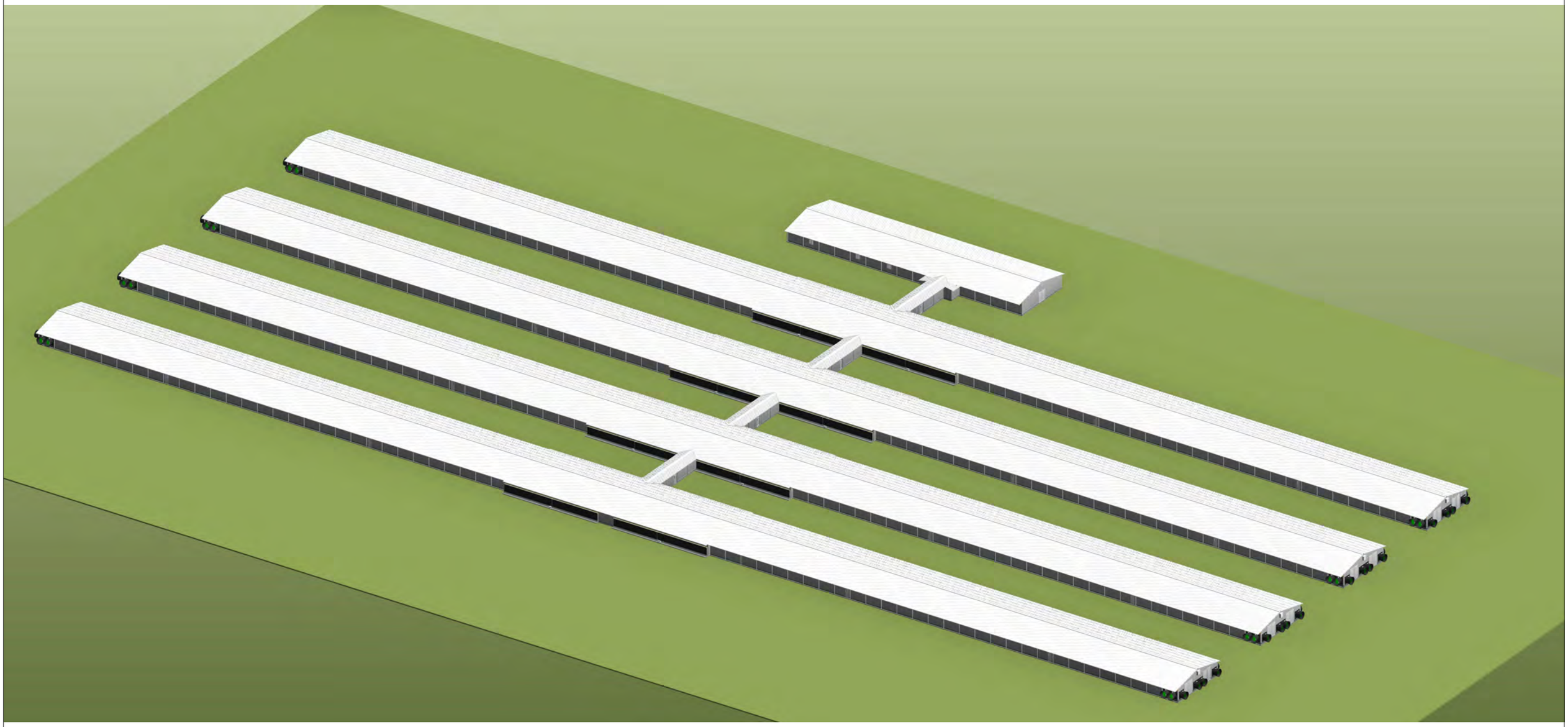
PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-06

SHEET NO.

REV: C

BREEDER FARM LAYOUT CONCEPT - 8 SHEDS



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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Overall Site 3D Layout

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

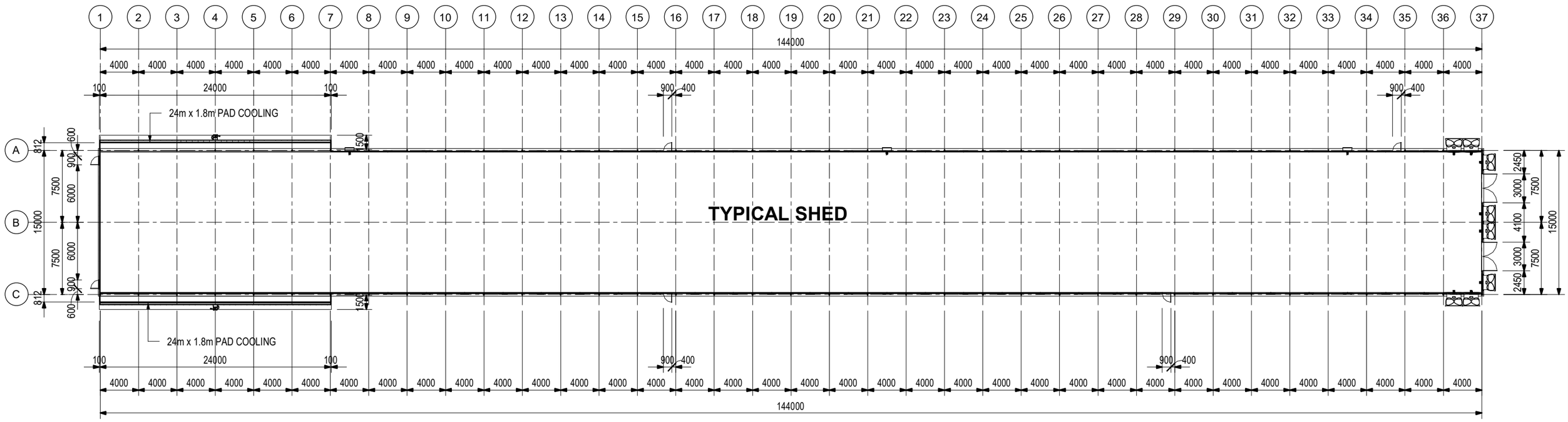
SCALE:

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-07

SHEET NO.

REV: C



1 TYPICAL SHED FLOOR PLAN

1 : 400

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e: mtp@metrowest.com.au

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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Typical Shed Floor Plan

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

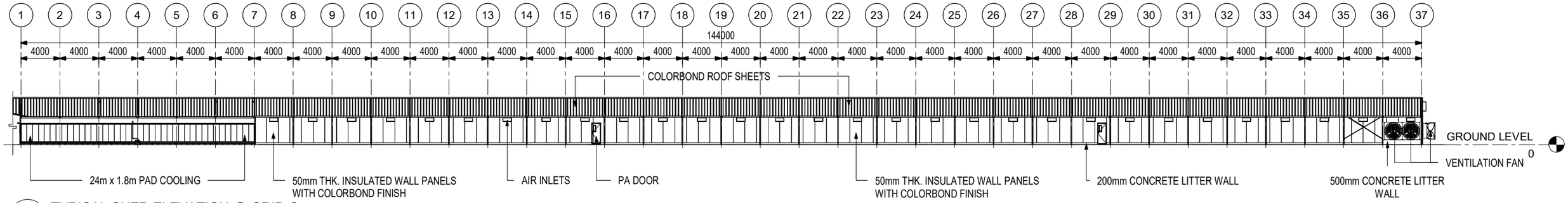
SCALE: 1 : 400

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-01

SHEET NO.

REV: C



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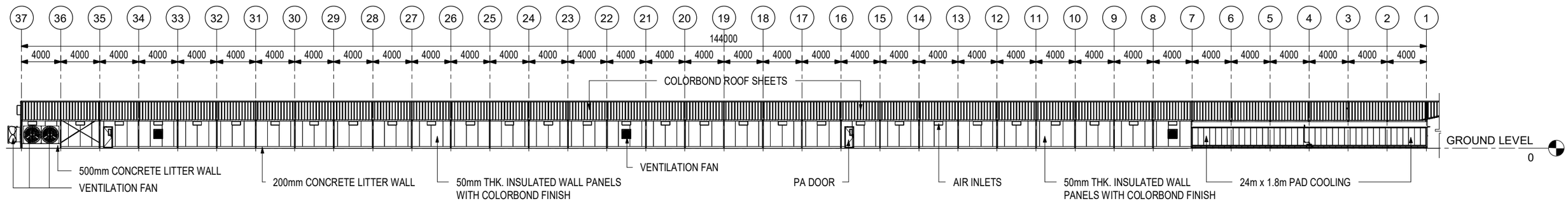

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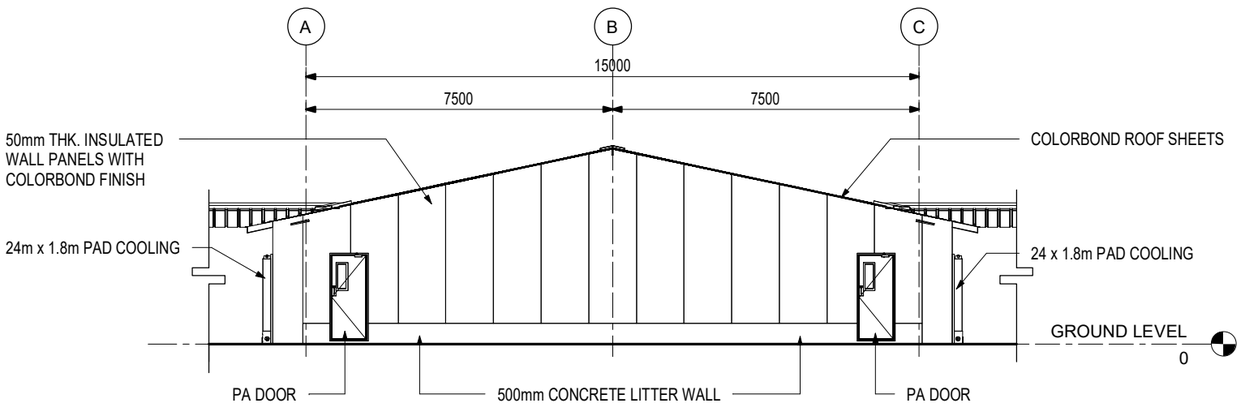

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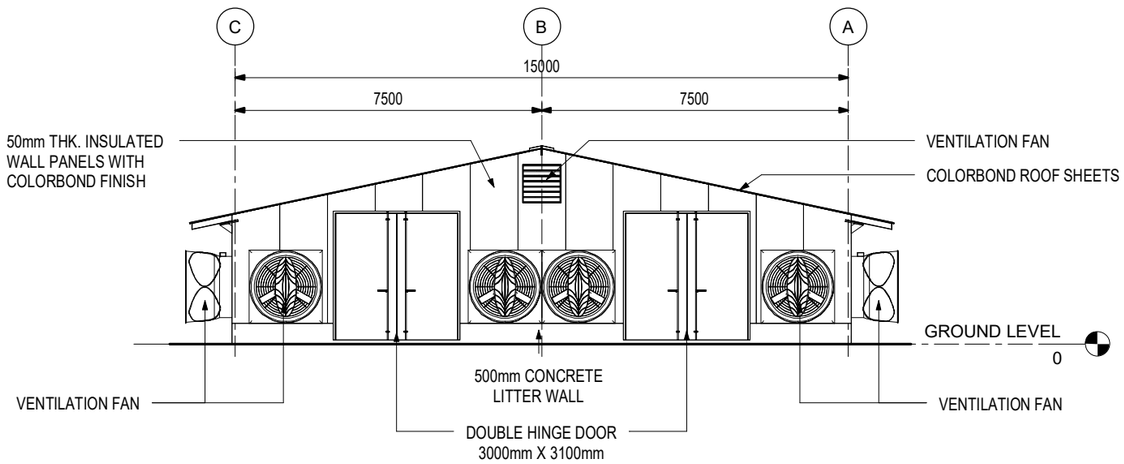

4 TYPICAL SHED ELEVATION @ GRID 37
1 : 150

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aspire | commit | create

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e: mtp@metrowest.com.au

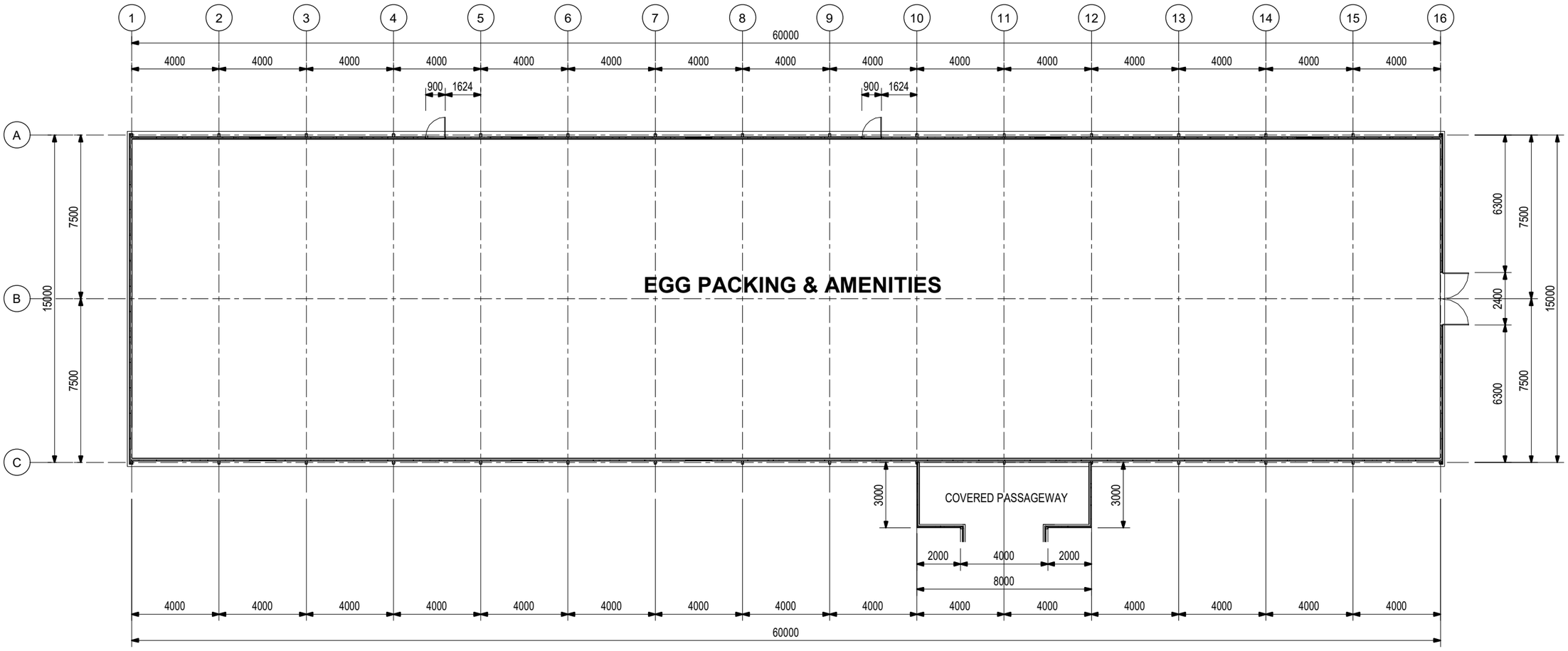
REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:
DRAWN BY:
CHECKED BY:
DATE:

PROJECT: Breeder Farm
DRAWING TITLE: A_Typical Shed Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N
SCALE:
PROJECT NO. PR0003
DRAWING NO. PR0003-DRG-10-02
SHEET NO.
REV: C



1 EGG PACKING & AMENITIES FLOOR PLAN

1 : 200

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aspire | commit | create

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REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT: Breeder Farm

DRAWING TITLE: A_Egg Packing & Amenities Floor Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 200

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-03

SHEET NO.

REV: C

APPENDIX C| PREVIOUS DEVELOPMENT APPROVAL

Government of **Western Australia**
Development Assessment Panels

LG Ref: PO47/2021
DAP Ref: DAP/21/01966
WAPC Ref: 616-245-1
Enquiries: (08) 6551 9919

Mr David Maiorana
Harley Dykstra Pty Ltd
PO Box 316, Kelmscott 6991

Dear Mr Maiorana

METRO OUTER JDAP - SHIRE OF MURRAY AND WESTERN AUSTRALIAN PLANNING COMMISSION (WAPC) - DAP APPLICATION - PO47/2021 - DETERMINATION

Property Location:	Lots 71, 72, 73 Corio Road, Ravenswood
Application Details:	Proposed Intensive Agriculture (Poultry farm)

Thank you for your Form 1 Development Assessment Panel (DAP) application and plans submitted to the Shire of Murray on 24 March 2021 for the above-mentioned development.

This application was considered by the Metro Outer JDAP at its meeting held on 29 July 2021, where in accordance with the provisions of the Shire of Murray Local Planning Scheme No.4 and the Metropolitan Region Scheme, it was resolved to **approve** the application as per the attached notice of determination.

Should the applicant not be satisfied by this decision, an application may be made to amend or cancel this planning approval in accordance with regulation 17 and 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

Please also be advised that there is a right of review by the State Administrative Tribunal in accordance with Part 14 of the *Planning and Development Act 2005*. Such an application must be made within 28 days of the determination, in accordance with the *State Administrative Tribunal Act 2004*.

Should you have any queries with respect to the conditions of approval, please contact Mr Greg Delahunty on behalf of the Shire of Murray on 9531 7642
or Mr Arran Sutherland on behalf of the WAPC on 6551 9730.

Yours sincerely,

DAP Secretariat

4 August 2021

Encl. DAP Determination Notice
Approved Plans

Cc: Mr Arran Sutherland and PSO Admin - Western Australian Planning Commission (WAPC)

Mr Greg Delahunty - Shire of Murray

Government of **Western Australia**
Development Assessment Panels

Planning and Development Act 2005

Shire of Murray Local Planning Scheme No.4 & Metropolitan Region Scheme

Metro Outer Joint Development Assessment Panel

Determination on Development Assessment Panel Application for Planning Approval

Property Location: Lots 71, 72, 73 Corio Road, Ravenswood
Application Details: Proposed Intensive Agriculture (Poultry farm)

In accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, the above application for planning approval was **granted** on 29 July 2021, subject to the following:

PART A – SHIRE OF MURRAY LOCAL PLANNING SCHEME NO.4

Approve DAP Application reference DAP/21/01966 and accompanying plans:

- Development Site Plan, 22533-01, 17 June 2021
- Section Plan, 22533-04, 15 June 2021
- Fill Requirements Pod 1, 22533-05, 17 June 2021
- Fill Requirements Pod 2, 22533-06, 17 June 2021
- Planview and Elevations, Sheet 1/9, 2 February 2021
- Elevation and Schedule and Detail, Sheet 2/9, February 2021
- Section and Detail, Sheet 3/9, February 2021
- Overview, Sheet 4/9, February 2021
- TYP Portal Detail, Sheet 5/9, February 2021
- TYP Post Detail, Sheet 6/9, February 2021
- TYP Beam Detail, Sheet 7/9, February 2021
- TYP Coolcell Beam Detail, Sheet 8/9, February 2021
- Drop Post and General Notes, Sheet 9/9, February 2021

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* and the provisions the Shire of Murray *Local Planning Scheme No. 4*, subject to the following conditions:

Conditions

1. This decision constitutes development approval only and is valid for a period of four (4) years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. Prior to applying for a Building Permit, detailed engineering plans and specifications are to be submitted to and approved by the Local Government for the vehicle access points from Corio Road. The vehicle access points include the crossover, first 20 metres of driveway within the lot and the portion of Corio Road adjacent to the crossover.

   The access points must be constructed in accordance with the approved plans prior to the occupation of the development.

3. Prior to applying for a Building Permit, arrangements must be made to the satisfaction of the Local Government for the amalgamation of lots 71, 72 and 73 Corio Road, Ravenswood into one Certificate of Title.

   The amalgamation must be completed prior to occupation of the development.

4. The finished floor level of each poultry shed is to be at least two metres higher than the maximum ground water level of the site.

5. Prior to applying for a Building Permit, a Landscaping Plan to the satisfaction of the Local Government must be prepared and must include the following detail:

   (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
   (ii) any lawns to be established and areas to be mulched;
   (iii) any natural landscape areas to be retained; and
   (iv) those areas to be reticulated or irrigated.

   The landscaping plan must be implemented in accordance with the approved landscape plan prior to the occupation of the development, and must be maintained at all times to the satisfaction of the Local Government for the duration of the development.

6. Prior to applying for a Building Permit, a Waste Management Plan must be submitted and include the following detail to the satisfaction of the Local Government:

   (i) the location of waste storage areas and waste collection areas;
   (ii) Sealed concrete floor pads to the poultry sheds and wash down water that is directed to a treatment system;
   (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
   (iii) management of the waste storage areas, including cleaning, rotation and moving waste to and from the collection areas;
   (iv) procedures for dealing with dead animals;
   (v) location for off-site waste disposal;
   (iv) contingencies actions in the event of a contamination event; and
   (iv) frequency of waste collection.

   All works must be carried out in accordance with the approved Waste Management Plan and maintained at all times, for the duration of development.

7. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the Local Government for its approval.

   The approved plans must be implemented and all works must be maintained for the duration of the development.

8. The carpark must:
   (i) provide a minimum of seven (7) spaces designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to applying for a Building Permit;
   (ii) include one (1) car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
   (iii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and
   (iv) comply with the above requirements for the duration of the development.

9. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures must be implemented within the time and in the manner directed by the Local Government in the event that sand or dust is blown from the site.

10. Prior to the occupation of the development the owner responsibilities identified in section 5.1 of the Bushfire Management Plan prepared by Envision Bushfire Protection dated February 2021 are to be implemented to the satisfaction of the Local Government. Compliance with the requirements of this Bushfire Management Plan are required for the duration of the development.

11. The Management Strategies contained within the Environmental Assessment and Management Plan - Lots 71, 72 & 73 Corio Road, Ravenswood, prepared by Aurora Environmental dated 17 March 2021, are to be implemented to the satisfaction of the Local Government for the duration of the development.

Advice Notes

1. With regard to the proposed vehicle access points, the Corio Road pavement will be required to be upgraded and sealed to accommodate the turning movements of the proposed service vehicles and the crossover and first 20 metres inside the lot constructed to a sealed standard.

2. The applicant is advised to contact Dial Before You Dig on 1100, or APA directly on APAprotection@apa.com.au prior to undertaking any physical works on property containing or proximate to a pipeline.

3. The applicant is to advised that the proposal is located within the Peel-Harvey coastal plain catchment and the provision of the Environmental Protection (Peel Inlet– Harvey Estuary) Policy 1992 and the Statement of Planning Policy No 2.1, Peel- Harvey Coastal Plain Catchment (SPP 2.1) apply.

4. The proposed activity shall comply with the Environmental Code of Practice for Poultry Farms in Western Australia (Department of Environment, 2004) and Code of Practice for Poultry in Western Australia (Department of Agriculture and Department of Local Government and Regional Development, 2003).

   This includes, but not limited to:
   - shed location, design and construction including sealed concrete pads,
   - management of waste, litter and manure,
   - wash down water directed to treatment system,
   - storage and handling of toxic and hazardous substances, and
   - monitoring and reporting.

5. Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).

   Proposed clearing outside of the ESA for the buildings is likely to be exempt under Regulation 5, Item 1, however should any clearing be required for the buildings located within the mapped ESA, a clearing permit would be required.

6. The subject area is located in the Murray groundwater area (Nambeelup subarea) as proclaimed under the Rights in Water and Irrigation Act 1914. Any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department including water to irrigate paddocks.

7. The applicant is advised to assess and mitigate potential accidental pesticide spray drift from the vegetable farm immediately south of the proposed sheds.

8. The proposal is required to comply with Australian Standard 4465: 2006 – Australian Standard for Construction of Premises and Hygienic Production of Poultry Meat for Human Consumption.

   The proponents are required to: provide a scale drawing of the premises showing all fittings, amenities and surrounds; to be audited by the Department of Health for compliance with AS 4465: 2006; and ensure parties responsible for managing the Food Safety Plan are trained in HACCP procedures.

9. The applicant is advised that the Department of Health is to conduct a building assessment prior to commencement of production.

10. No works within the Parmelia Pipeline easement are to be commenced without an APA Group representative onsite.

11. No stockpiles or storage of material is permitted on the Parmelia Pipeline easement at any time.

12. All plans which include the area of the Parmelia Pipeline easement should have the pipeline easement clearly identified with hatching. The area must also be clearly labelled as 'high pressure gas pipeline right of way – no works to occur without the prior authorisation of the pipeline operator'.

PART B – METROPOLITAN REGION SCHEME

1. **Approve** DAP Application reference DAP/21/01966 and accompanying modified plans date stamped **17 June 2021** by the Department of Planning, Lands and Heritage (22533-02, rev D; 22533-01, rev F; 22533-04, rev B; 22533-03, rev A; 22533-05, rev B and 22533-06, rev A) in accordance the provisions of Clause 21 of the Peel Region Scheme subject to the following conditions:

Conditions

1. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. All stormwater is to be contained and disposed of on-site at all times, to the specification of the Shire of Murray and to the satisfaction of the Western Australian Planning Commission.

3. All recommendations and implementation measures identified in section 6 of the bushfire management plan (version 2, prepared by Envision Bushfire Protection, dated 27 February 2021) shall be satisfactorily implemented prior to the occupation of the development, and for the ongoing duration of the development, to the specification of the Shire of Murray and to the satisfaction of the Western Australian Planning Commission.

Advice Notes

1. This decision constitutes development approval under the Peel Region Scheme only. It is the proponent's responsibility to comply with all other applicable legislation and obtain all required approvals, licences and permits prior to commencement of this development.

2. The Western Australian Planning Commission acknowledges that the development is proposed over multiple lots. In this regard, the landowner/applicant is advised that an application for subdivision approval will be required to be lodged to the Western Australian Planning Commission under Part 10 of the *Planning and Development Act 2005* for approval to amalgamate the subject lots into a single lot prior to the commencement of development.

3. In relation the Parmelia Pipeline easement, APA Group advises the landowner/applicant of the following:
   - no works shall occur on the easement area without prior authorisation and require an APA representative onsite; and
   - no stockpiles or storage of material is to be stored within the easement area.

4. The land is located within the Murray groundwater area (Nambeelup subarea) as proclaimed under the *Rights in Water and Irrigation Act 1914*. The Department of Water and Environmental Regulation advises the landowner/applicant of the following:
   - any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department of Water and Environmental Regulation including water to irrigate paddocks;
   - the groundwater resource is fully allocated. If additional water resources are required, a source may be secured through either a water trade agreement from another groundwater user in the area, or an alternative water source.

   The landowner/applicant is advised to liaise with the Department of Water and Environmental Regulation in this respect.

Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) or local government approval under regulation 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

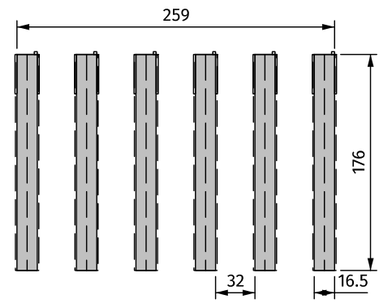
LEGEND

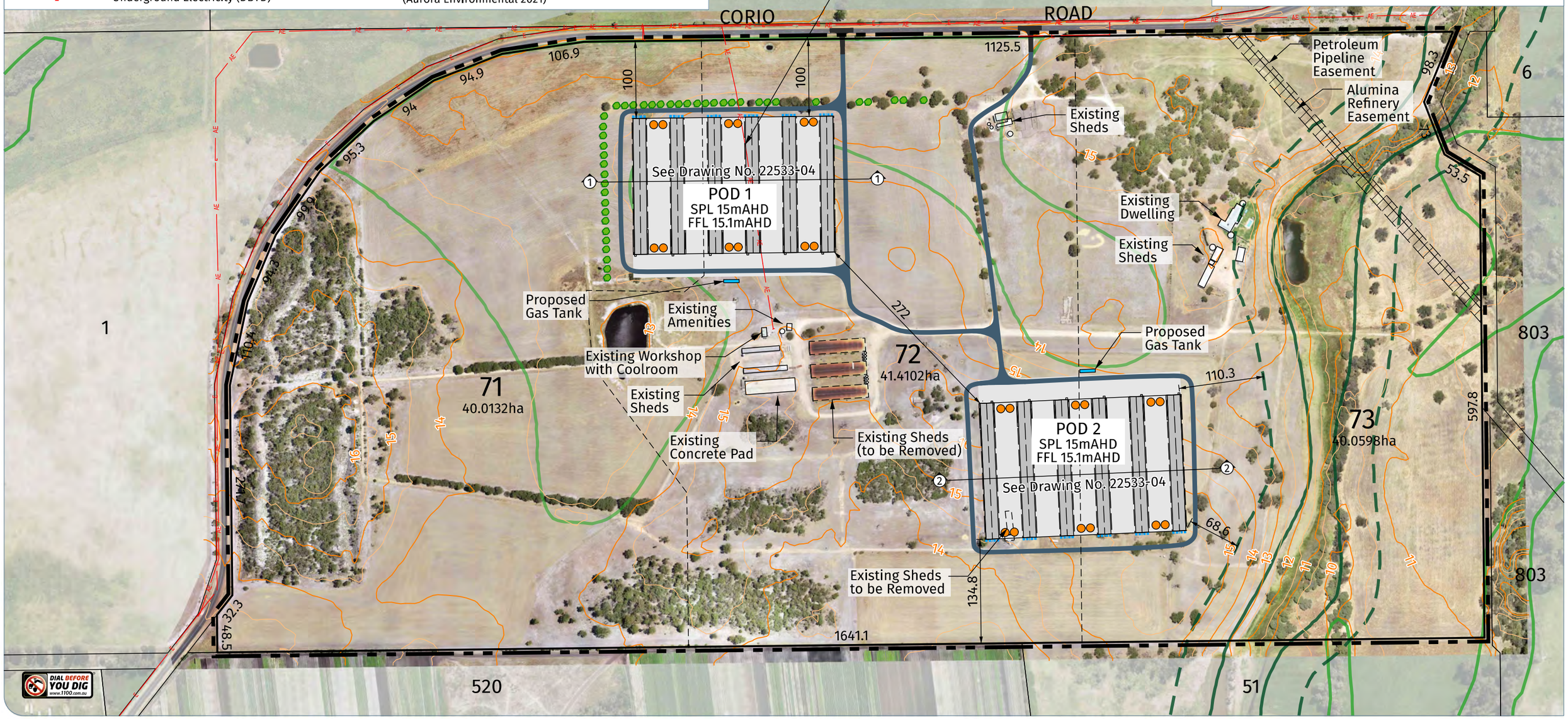
- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Proposed Silos
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)

DEVELOPMENT ASSESSMENT PANEL
APPROVED
29-Jul-2021

POD LAYOUT





DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-01	
Date	17/06/21	
Drawn	NP	
Checked	BdR	
Revision	F	
Scale	1:5000@A3	0 50m 100m 150m

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
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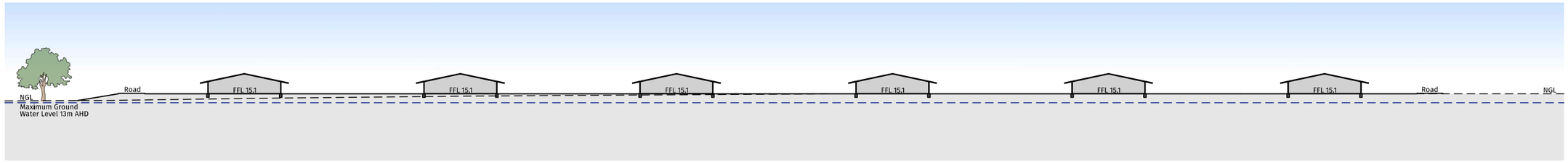
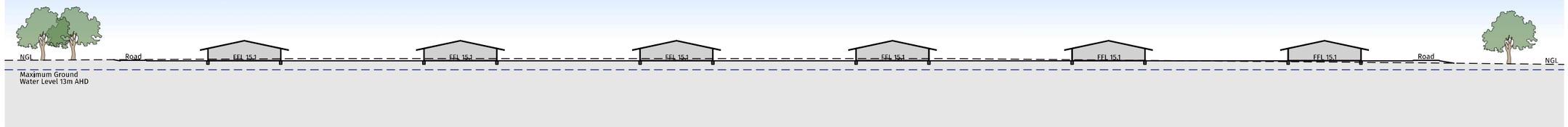
DEVELOPMENT
ASSESSMENT PANEL

APPROVED

29-Jul-2021



SECTION 1: POD 1



SECTION 2: POD 2

SECTION PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No. | 22533-04
Date | 15/06/21
Drawn | NP
Checked | DM
Revision | B

Scale | 1:1000@A3

0 10m 20m 30m

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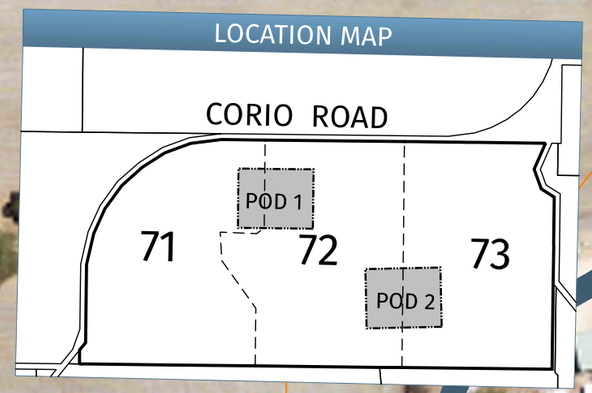
LOCATION MAP



71
40.0132ha

POD 1
SPL 15mAHD
FFL 15.1mAHD

72
41.4102ha

13
14
15

LEGEND

Cut/Fill Extent
Cut or Fill Required (1.05m AHD):

- +1.5m to +2.0m Fill
- +1.0m to +1.5m Fill
- +0.5m to +1.0m Fill
- 0 to +0.5m Fill
- 0 to -0.5m Cut
- -0.5m to -1.0m Cut
- -1.0m to -1.5m Cut

DEVELOPMENT SITE PLAN
FILL REQUIREMENTS - POD 1
Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-05	
Date	17/06/21	
Drawn	NP	
Checked	DM	
Revision	B	
Scale	1:1500@A3	0 20m 40m

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DEVELOPMENT ASSESSMENT PANEL

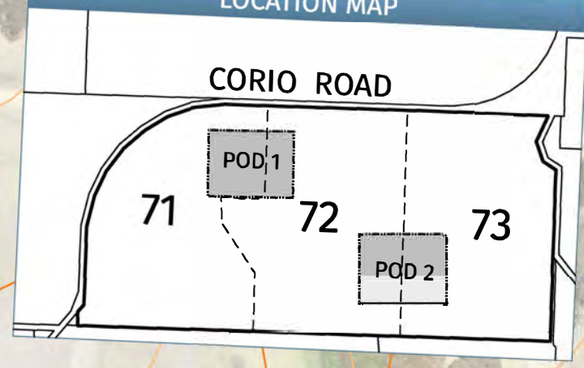
APPROVED

29-Jul-2021

72
41.4102ha

73
40.0598ha

LOCATION MAP



LEGEND

Cut/Fill Extent

Cut or Fill Required (15.0mAHD):

+1.5m to +2.0m Fill

+1.0m to +1.5m Fill

+0.5m to +1.0m Fill

0 to +0.5m Fill

0 to -0.5m Cut

-0.5m to -1.0m Cut

-1.0m to -1.5m Cut

DEVELOPMENT SITE PLAN
FILL REQUIREMENTS - POD 2
Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-06
Date	01/06/21
Drawn	NP
Checked	DM
Revision	A
Scale	1:1500@A3

0 20m 40m

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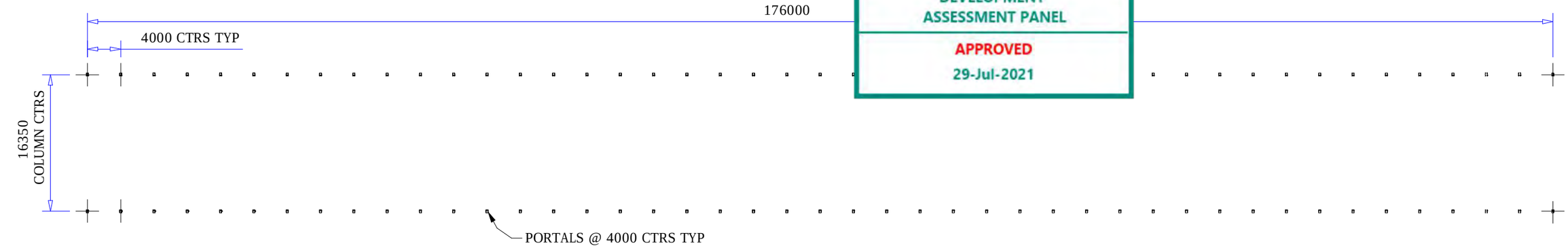
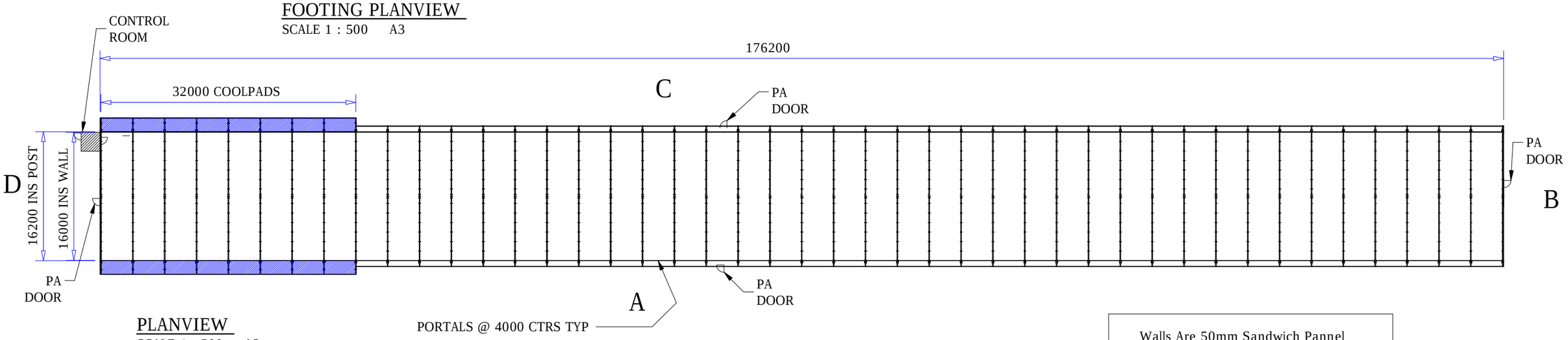
DEVELOPMENT ASSESSMENT PANEL
APPROVED
29-Jul-2021

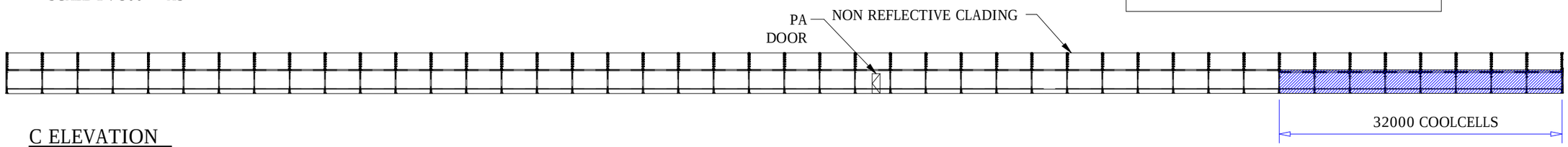


FOOTING PLANVIEW
SCALE 1 : 500 A3

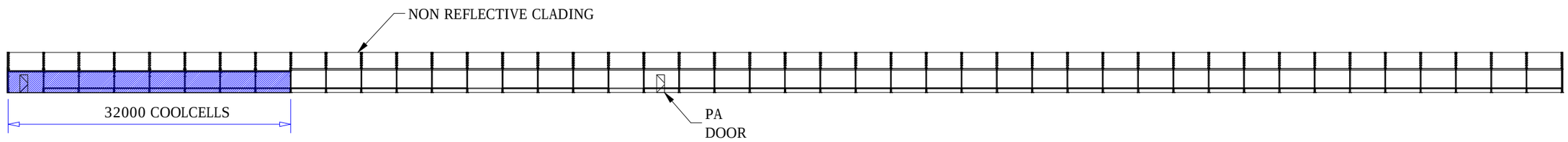


PLANVIEW
SCALE 1 : 500 A3

Walls Are 50mm Sandwich Pannel



C ELEVATION
SCALE 1 : 500 A3



A ELEVATION
SCALE 1 : 500 A3

NOTE :
PA DOORS TO BE OPENED OUTWARD WITH A SINGLE HANDED DOWNWARD LEAVER ACTION
HANDLE TO BE BETWEEN 900 AND 1100 MM ABOVE FFL

DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date		Date	
T Belardo					2/02/2021	AS NOTED A3

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PLANVIEW & ELEVATIONS

Edition

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DEVELOPMENT ASSESSMENT PANEL

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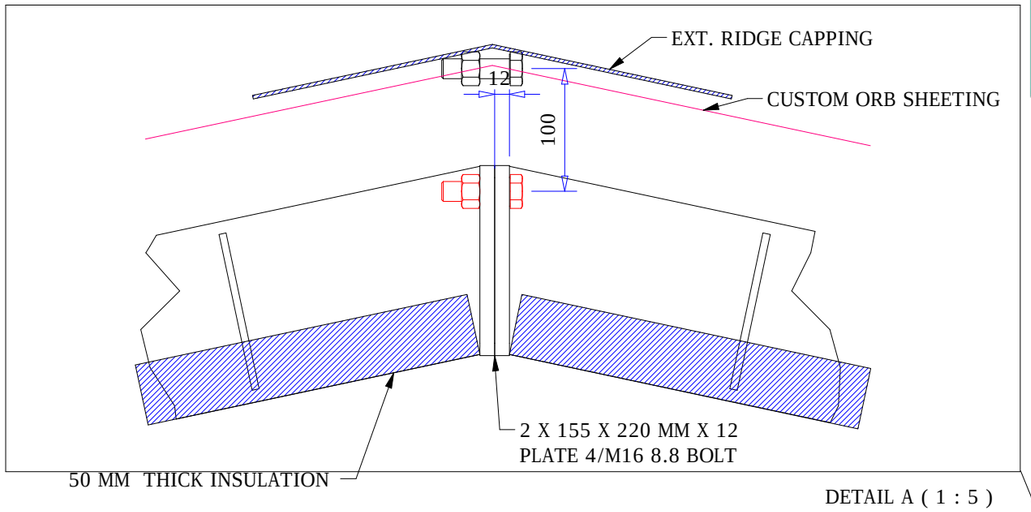
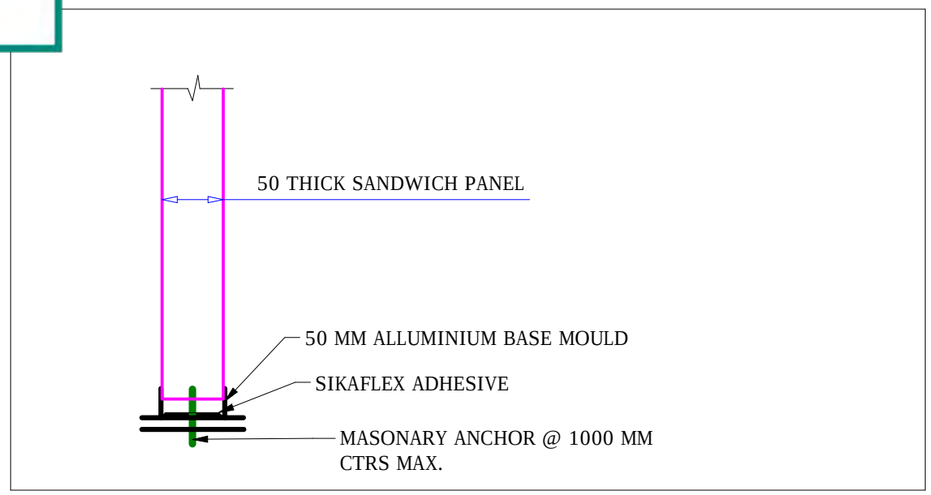


DETAIL A (1 : 5)

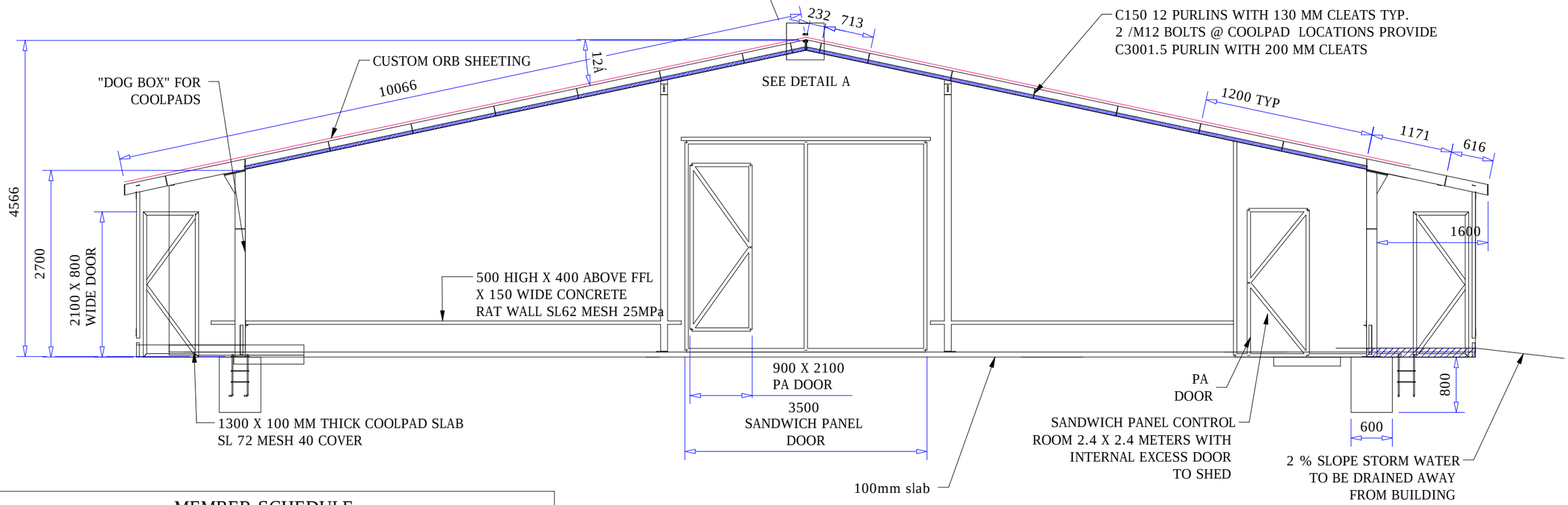
SANDWICH PANEL TO CONCRETE DETAIL



SCALE 1 : 5 A3

D ELEVATION

SCALE 1 : 50 A3



MEMBER SCHEDULE		
MARK	SIZE	REMARKS
COLUMNS	150 X 100 X 4	GRADE 450
RAFTERS	150 X 100 X 4	GRADE450
ROOF PURLINS	C15012	GALVANISED
PURLINS @ EAVES	C20015	GALVANISED
GIRT G1 @ WALL	C15012	GALVANISED
GIRT G2 @ WALL	100 50 X 2 MM RHS	GALVANISED

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ELEVATION & SCHEDULE & DETAIL

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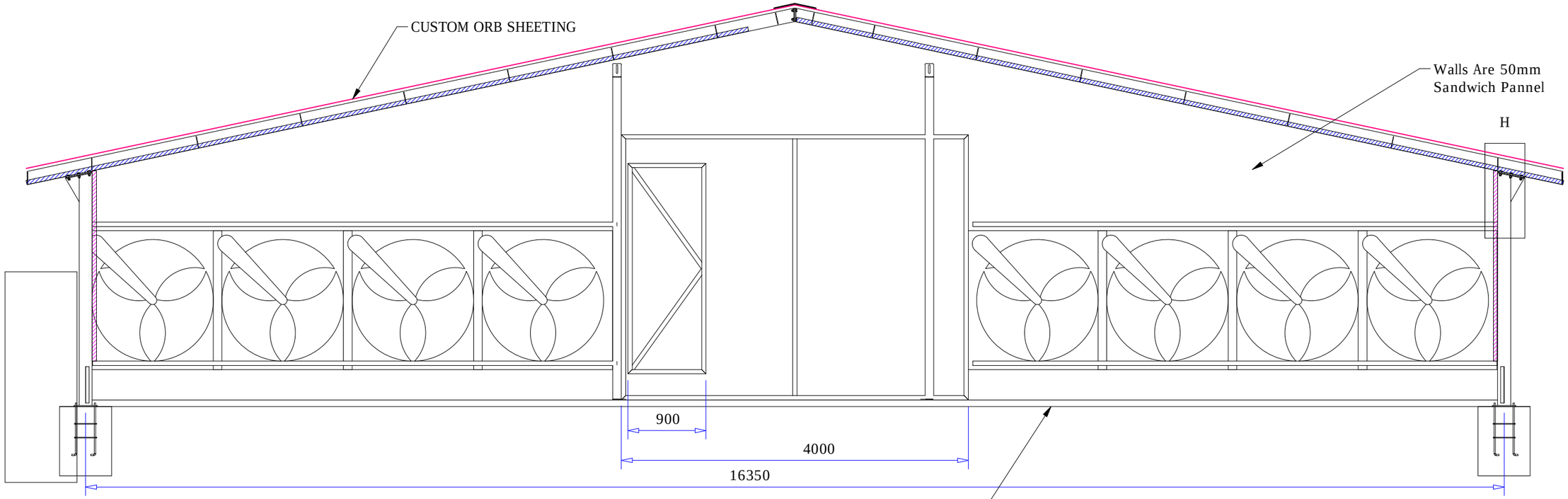
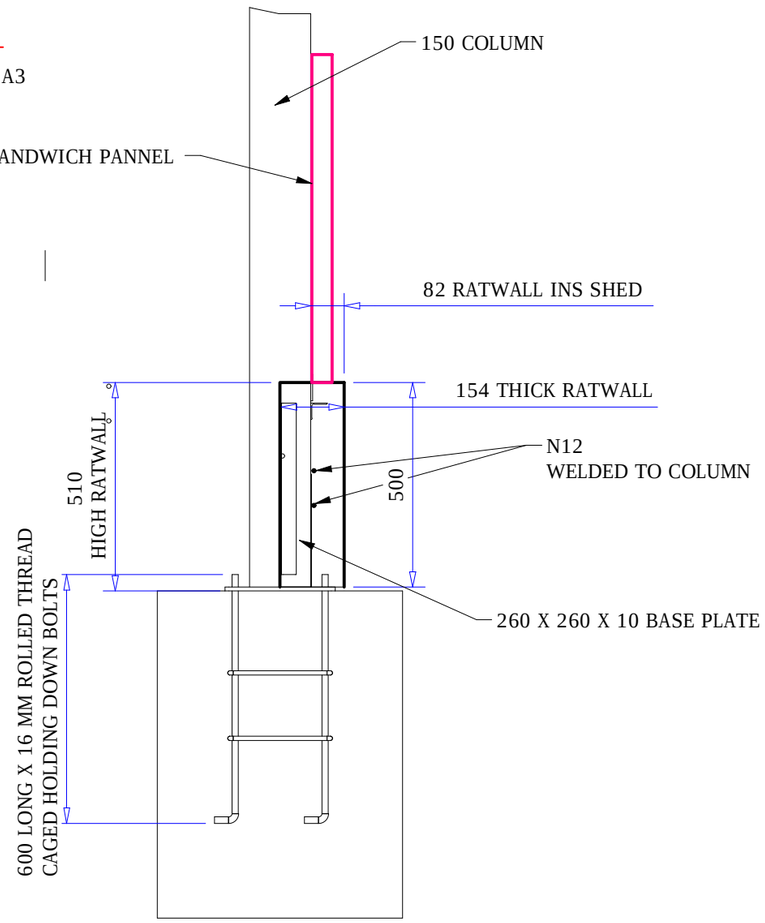
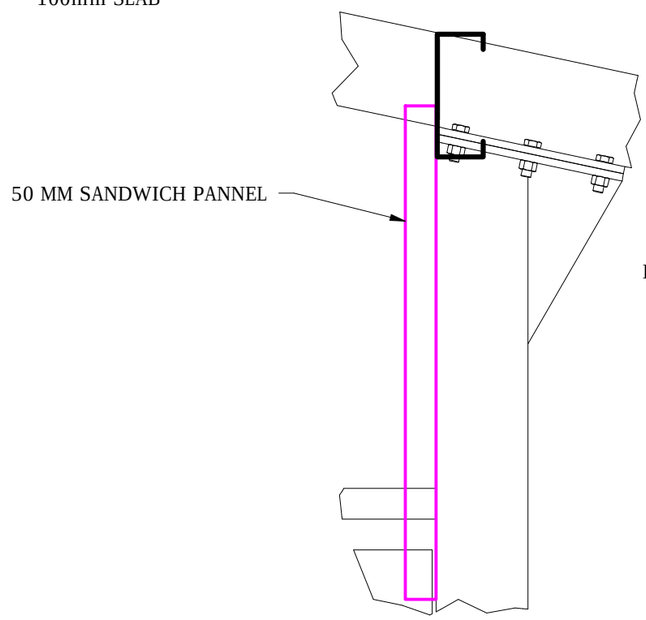


B ELEVATION

SCALE 1: 50 A3



FOOTING DETAIL E (1 : 15) A3



H (1 : 10)

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SECTION & DETAIL

Edition

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DEVELOPMENT
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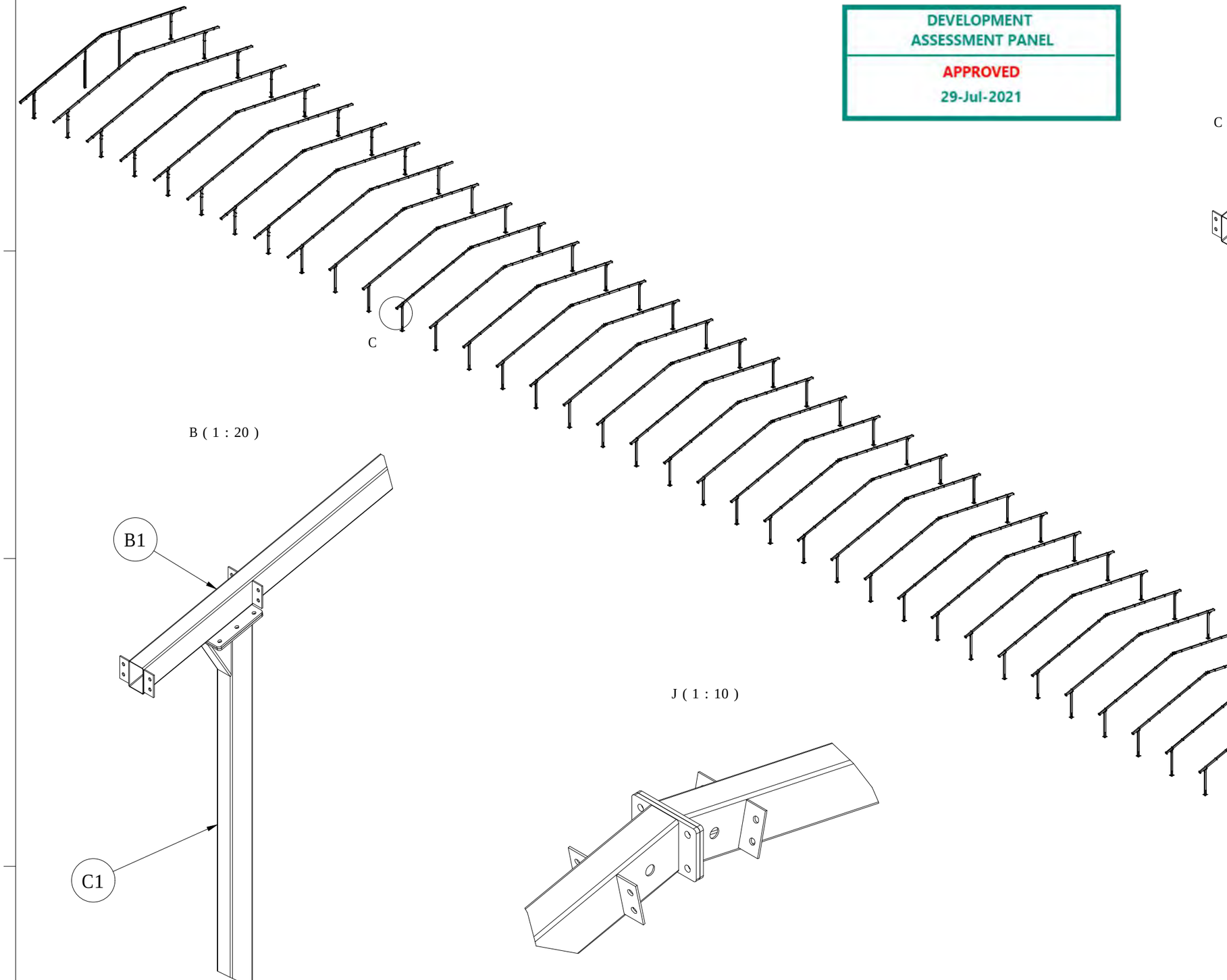
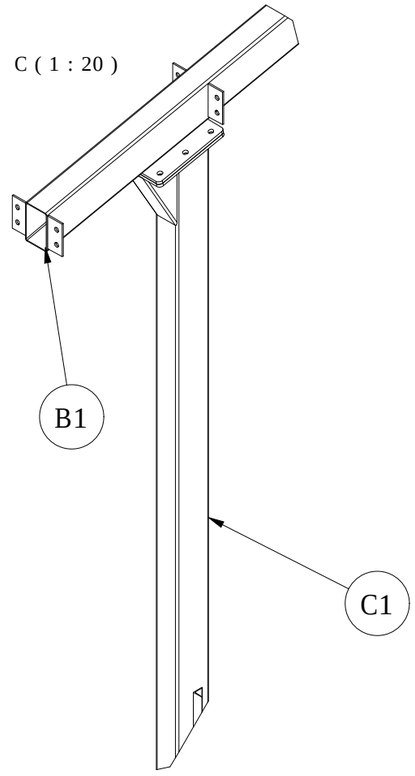


C (1 : 20)



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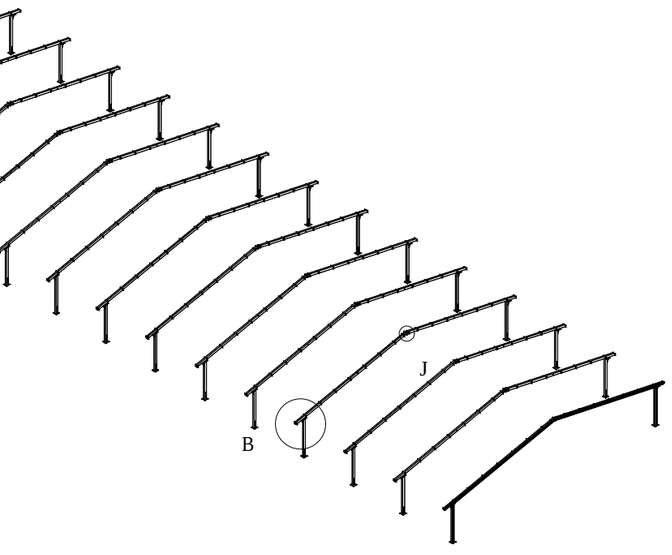
J (1 : 10)



ALL STEELWORK TO BE PAINTED

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OVERVIEW

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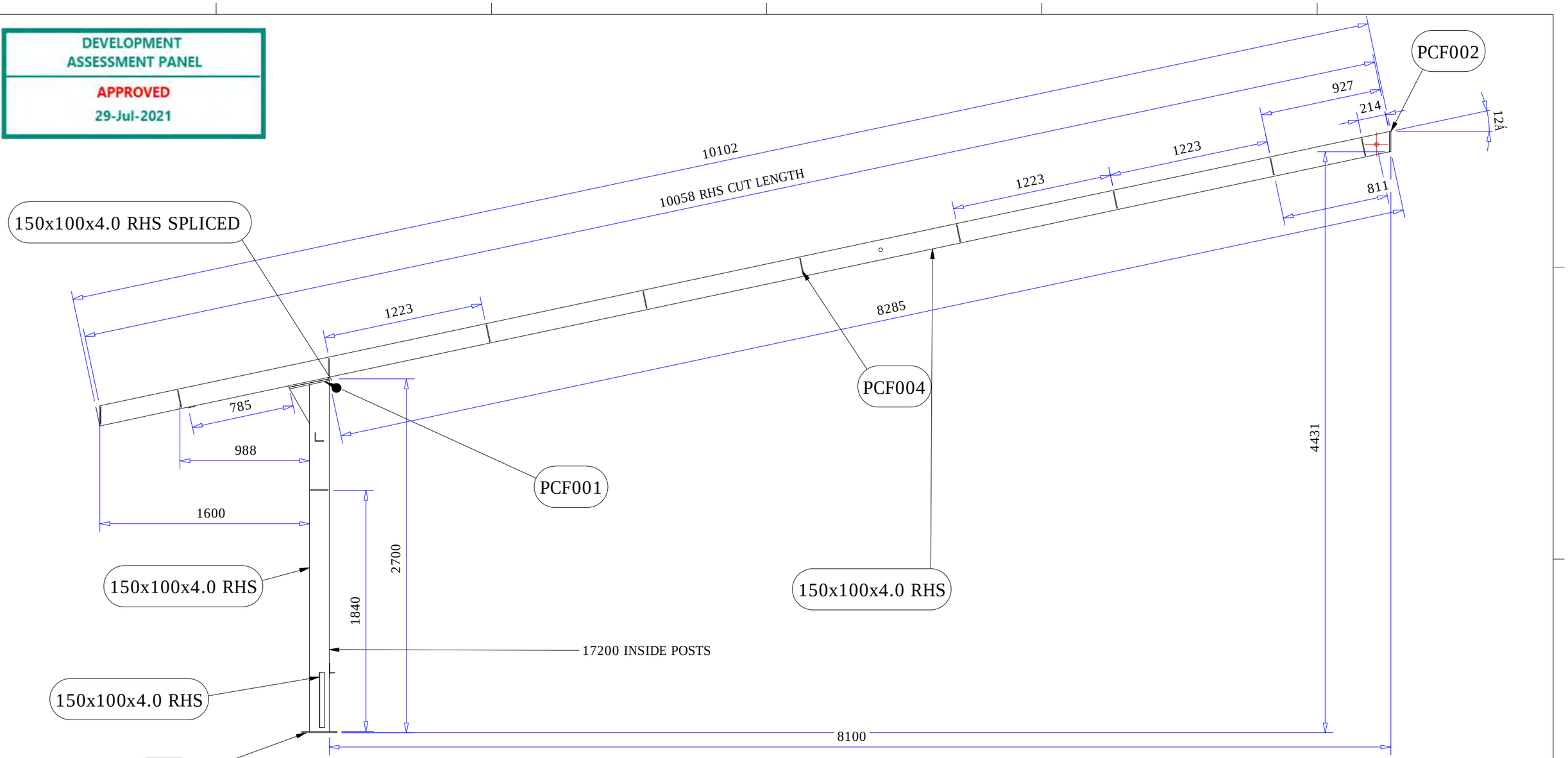

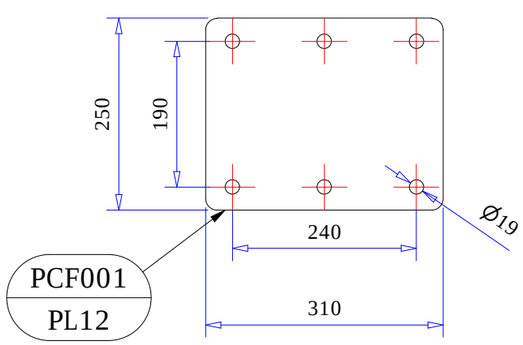

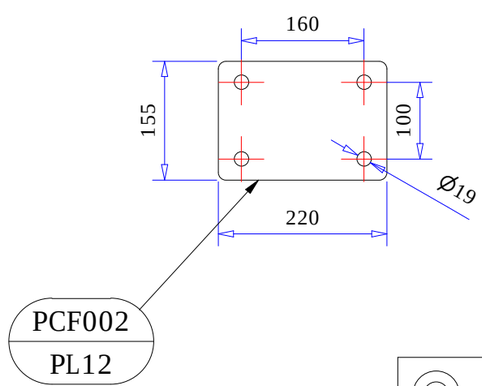

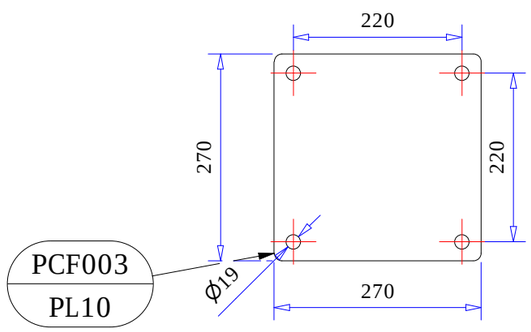

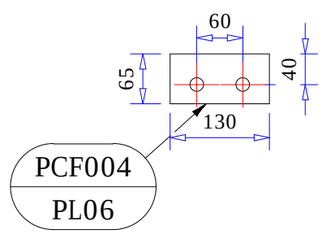

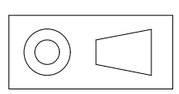

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TYP. PORTAL DETAIL

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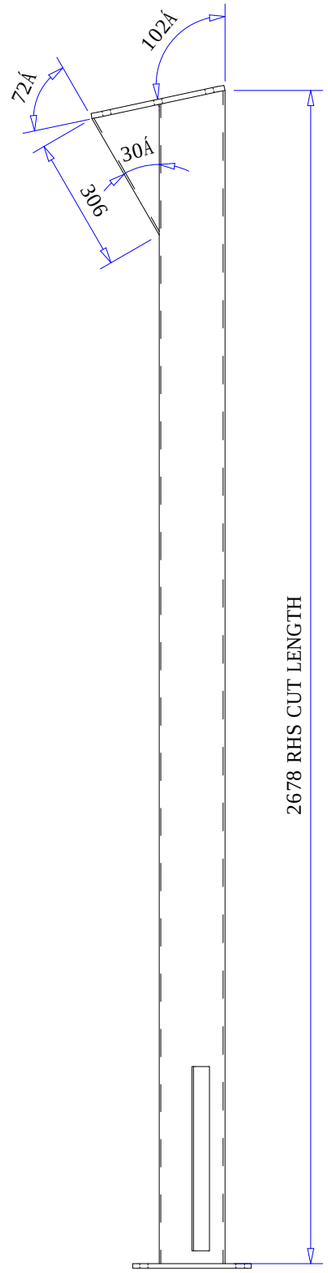

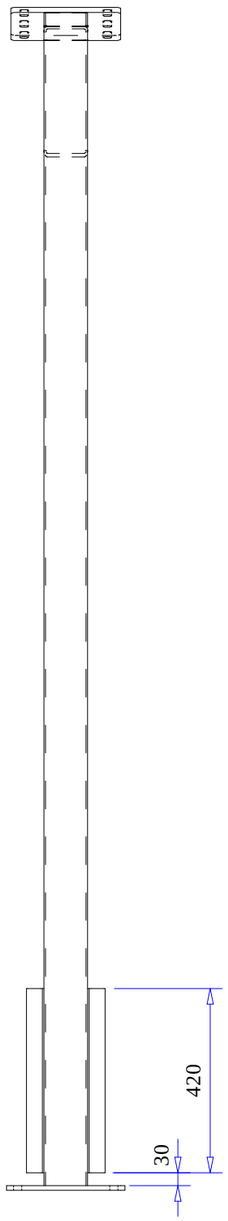

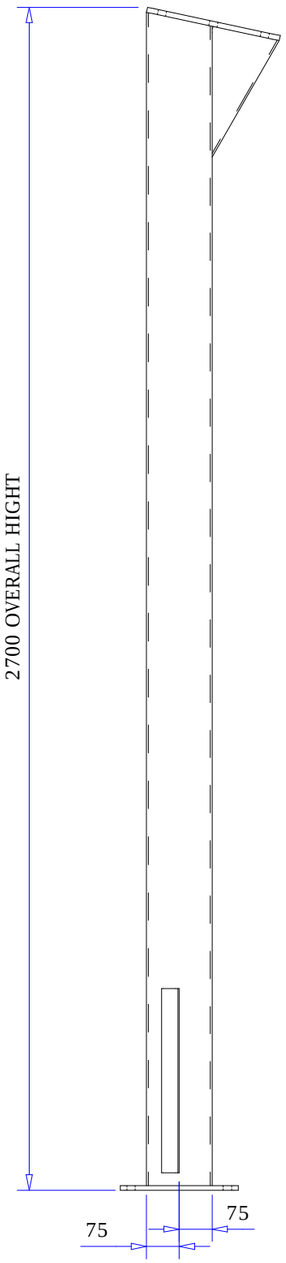

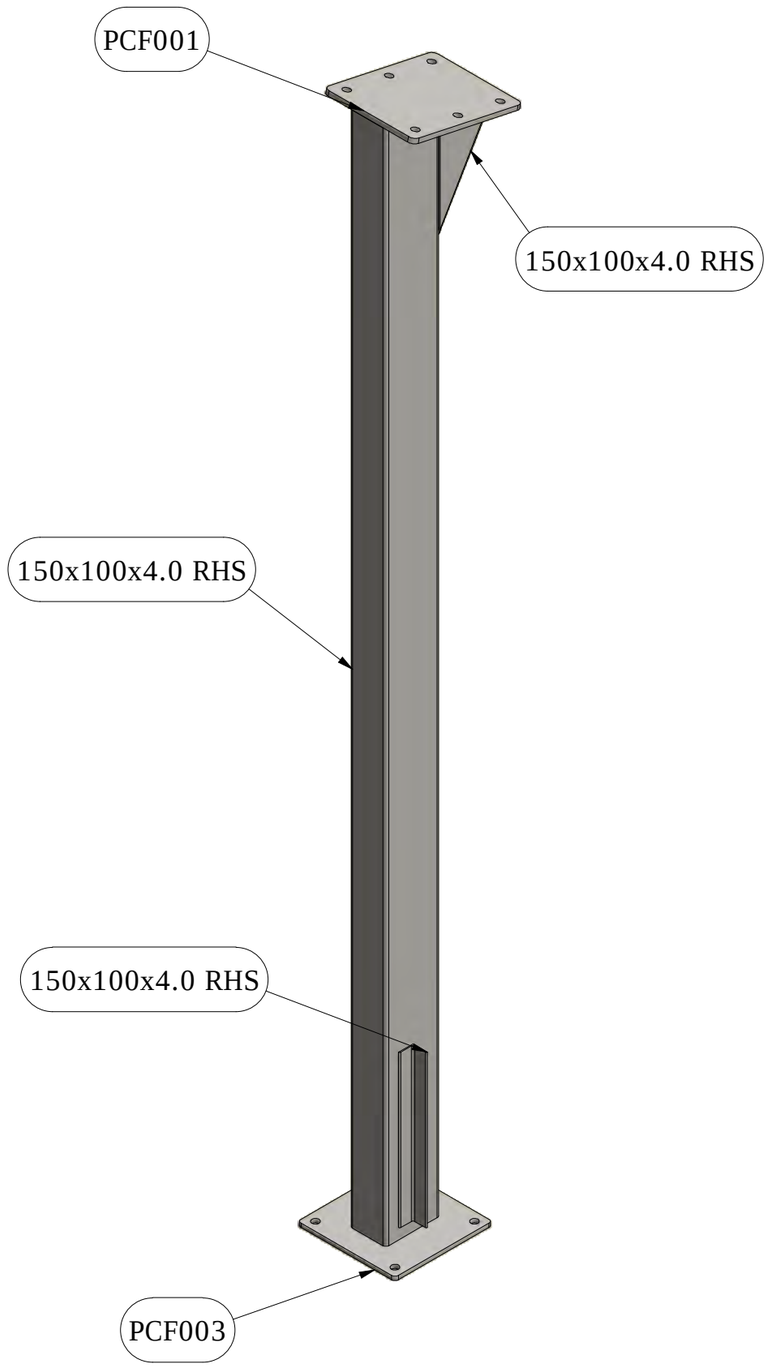

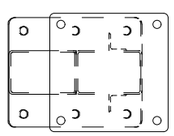

DEVELOPMENT ASSESSMENT PANEL

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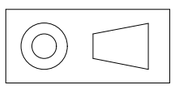

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TYP POST DETAIL

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Sheet 6 / 9

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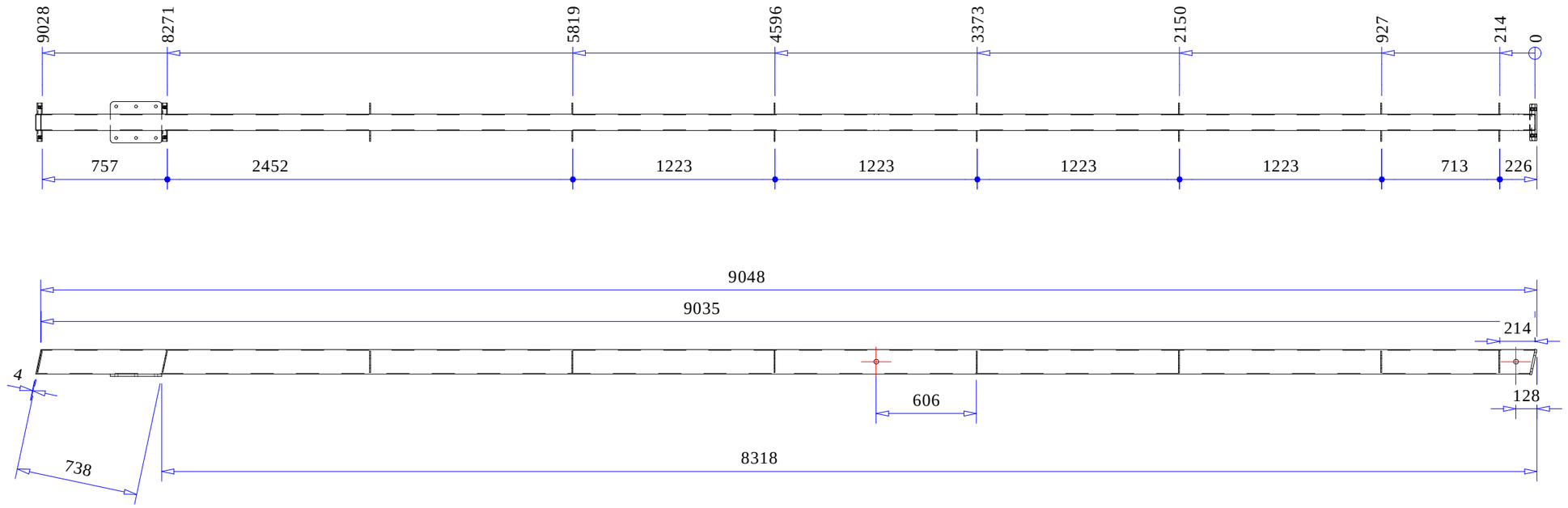

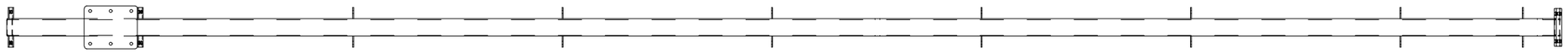

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TYP BEAM DETAIL

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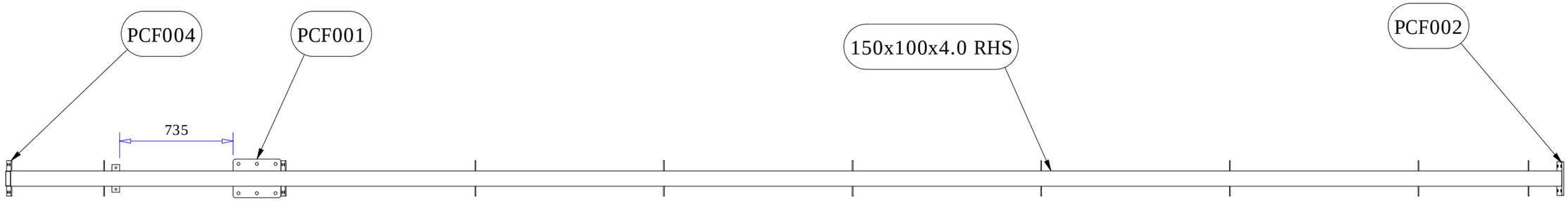

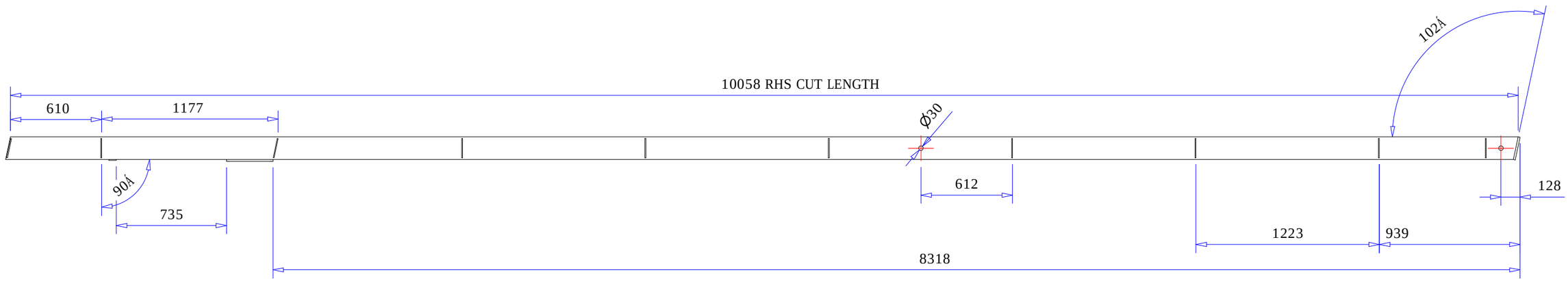

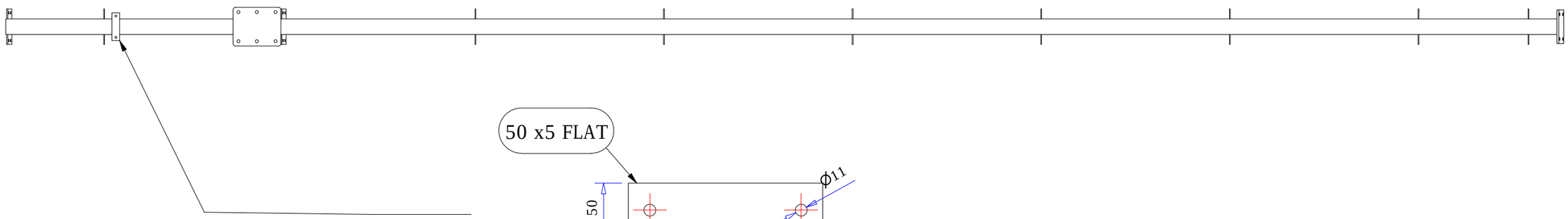

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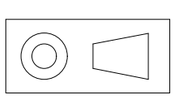

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TYP COOLCELL BEAM DETAIL

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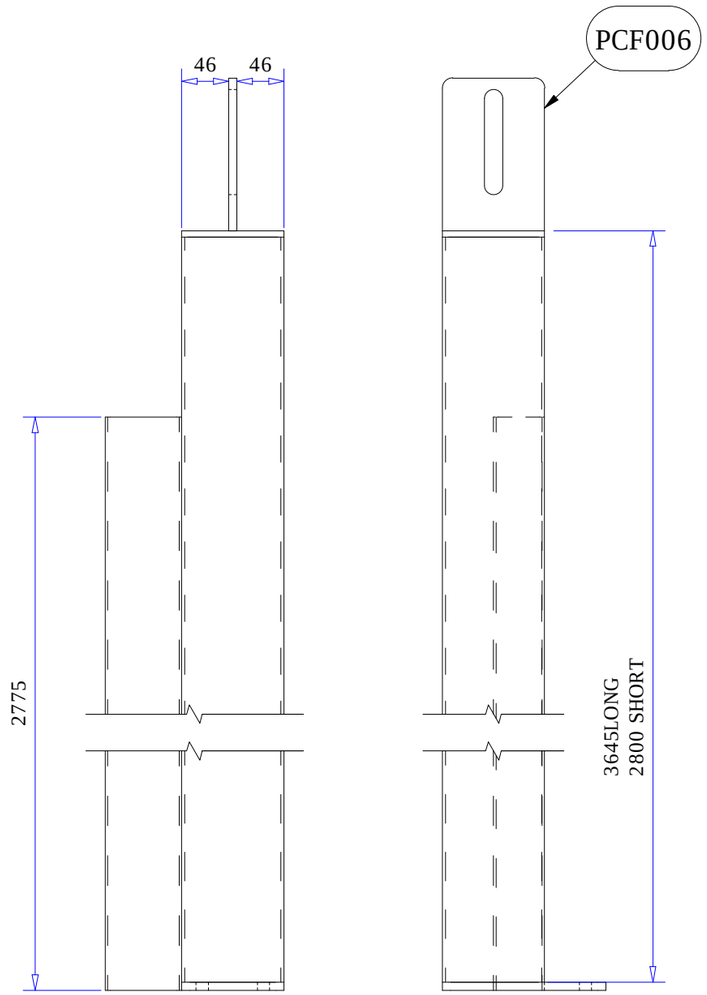
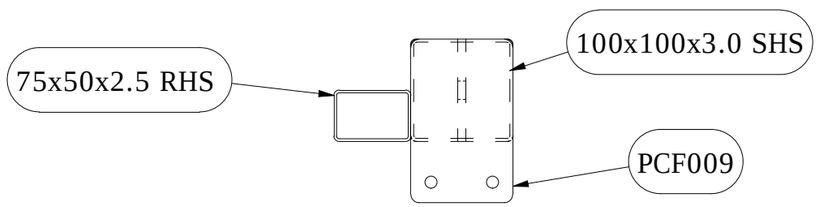
DROP POST DETAIL





Galvanized material to be used were available and cold gal paint to be used on all welds and non galvanized parts

DEVELOPMENT ASSESSMENT PANEL
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BRIEF SPECIFICATIONS GENERAL SLAB AND FOOTING REQUIREMENTS:

1. TOP SOIL AND VEGETATION SHALL BE STRIPPED FROM SITE TO A MINIMUM DEPTH OF 100mm.
2. PRIOR TO THE PLACEMENT TO ANY CONTROLLED FILL, THE EXPOSED SUB GRADE SHALL BE COMPACTED TO A MINIMUM 95 % RELATIVE DENSITY.
3. ALL ORGANIC MATTER AND SOFT AREAS SHALL BE REMOVED AND REPLACED WITH GRANULAR MATERIAL. ALL FILLING SHALL BE CLEAR GRANULAR MATERIAL PLACED IN MAXIMUM 150mm COMPACTED LAYERS AND COMPACTED BY WATERING AND USE OF VIBRATING ROLLER OR COMPACTOR TO ACHIEVE CONTROLLED FILL
4. AS PER AS2870. FILL SHALL BE COMPACTED TO MINIMUM AS1289.1.1 (1993), OR WHEN TESTED PASS THE REQUIRED MIN. 100kPa BEARING CAPACITY FOR THE FOOTING.
5. GROUND SURFACES AROUND THE POLTRY SHED TO BE GRADED SO THAT NO WATER PONDS AROUND THE FOOTINGS. PROVIDE 100mm FALL OVER THE FIRST 1000mm FROM THE BUILDINGS. THE BUILDER IS TO DETERMINE THE PRESENCE OF ANY ADDITIONAL FILLED AREAS, WHICH WOULD NECESSITATE THE USE OF MODIFIED FOOTINGS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE TO BE OBTAINED FROM THE ARCHITECTS DRAWINGS OR FROM SITE. ENGINEERS DRAWINGS MUST NOT BE SCALED.
2. THE APPROVAL OF A SUBSTITUTION BY THE ENGINEER IS NOT AN AUTHORIZATION FOR AN EXTRA. ANY EXTRA INVOLVED MUST BE TAKEN UP WITH THE ARCHITECT BEFORE WORK COMMENCES.
3. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.

STRUCTURAL STEEL

1. ALL STEELWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AS4100, SAA STEEL STRUCTURES CODE.
2. WELDS TO BE 6mm CONTINUOUS FILLET LAID DOWN WITH APPROVED COVERED ELECTRODE IN ACCORDANCE WITH AS1554 -WELDING CODE. BOLTS 16 mm DIA, BLACK IN 19 mm CLEARANCE
3. HOLES, GUSSET PLATES 10mm THICK UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS NOMINATED 'HS' TO BE SNUG TIGHTENED ONLY UNLESS NOTED.

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DROP POST & GENERAL NOTES | Edition | Sheet 9 / 9

APPENDIX D | ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN

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www.auroraenvironmental.com.au

Closed System Breeder Poultry Farm
Environmental Assessment and Management Plan
Lots 71, 72 & 73 Corio Road, Ravenswood
Shire of Murray, WA

Prepared For:	Metrowest Technical Projects 70 Belmont Avenue BELMONT WA 6104
Report Number:	AA2023/120
Report Version:	4
Report Date:	16 November 2023

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Aurora Environmental has implemented a comprehensive range of quality control measures on all aspects of the company's operation.

An internal quality review process has been applied to each project task undertaken by us. Each document is carefully reviewed and signed off by senior members of the consultancy team prior to issue to the client.

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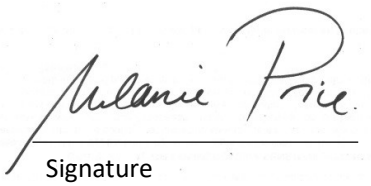
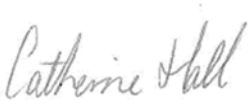
Report No: AA2023/120

Author:	Melanie Price Principal Environmental Scientist		16 November 2023	
		Signature	Date	
Reviewed by:	Dr Catherine Hall Senior Environmental Scientist		16 November 2023	
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pdf	MTP-AP0640_EAMP_001_mp_V3.docx	V3	27 October 2023	Metrowest Technical Projects	MP
pdf	MTP-AP0640_EAMP_001_mp_V4.docx	V3	16 November 2023	Metrowest Technical Projects	MP

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GLOSSARY

Closed system intensive animal production is where facilities (sheds and hardstands) are designed to house and manage livestock in such a way that waste does not enter the environment.

Free range: Animals that are not closely confined and have some access to the outdoors (RSPCA, 2023).

Sensitive land use: Land uses sensitive to emissions include residential developments, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing facilities (EPA, 2005).

Separation distances: Distances provided between the operation and sensitive receptors (e.g. residences, recreational areas, towns etc.) are an important secondary measure for reducing the risk of amenity impacts. Separation distances are measured as the shortest distance measured from the operation to the nearest part of a building associated with the sensitive land use (Tucker and O'Keefe, 2013).

LIST OF ABBREVIATIONS

AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
APVMA	Australian Pesticides and Veterinary Medicines Authority
ASS	Acid Sulfate Soils
BOM	Bureau of Meteorology
°C	degrees Celsius
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
EHO	Environmental Health Officer
EPA	Environmental Protection Authority
EPP	Environmental Protection Policy
ESA	Environmentally Sensitive Area
IBRA	Interim Biogeographic Regionalisation for Australia
kL	kilolitre
km	kilometre
m	metres
mg/L	milligrams per litre
mm	millimetre
PBI	Phosphorus Buffering Index
PFAWA	Poultry Farmers Association of Western Australia
RSPCA	Royal Society for the Prevention of Cruelty to Animals
SPP	State Planning Policy
TDS	Total dissolved solids
WABGA	Western Australian Broiler Growers Association
WAPC	Western Australian Planning Commission

EXECUTIVE SUMMARY

Aurora Environmental has been engaged to undertake an environmental assessment and prepare a management plan for Lots 71, 72 and 73 Corio Road, Ravenswood in the Shire of Murray, where Metrowest Technical Projects (Metrowest) is proposing to upgrade an existing poultry farm (currently in three sheds) to a poultry breeding farm which will produce eggs.

It is intended that the new operation will comprise a modern closed system, which means that engineered structures will be used to ensure that waste (e.g. nutrients) are not discharged to the environment. The 121.483 ha property currently operates as a broiler poultry farm, with three sheds on Lot 72 containing 48,000 birds and producing up to 264,000 birds per year. It is proposed that these sheds be removed.

Metrowest proposes to replace the existing sheds with sixteen poultry sheds in two pods (eight sheds per pod plus a packing shed), which will house up to 12,870 meat birds per shed with 293,760 birds per year. This will result in an output of approximately 33.6 million eggs per year.

This assessment includes consideration of the environmental setting of the site. Planning policies and guidelines are analysed, including zoning, current policies and recommended separation distances to sensitive receptors. Management strategies have been developed for the operation based on a thorough assessment of the environmental and planning matters.

The operation will be serviced via existing access tracks, workshop and cool room. The new sheds will be grouped into two 'pods' with eight poultry sheds each (plus a packing shed per pod). The poultry sheds will be 120 m long and 15 m wide and spaced 16.5 m apart. The sheds will be tunnel ventilated to regulate temperature year-round. Ventilation fans will be located at each end of the sheds (east and west).The packing sheds (one per pod) will be 60 m by 15 m and will be used for sorting eggs and for staff amenities. The sheds will be constructed of steel with concrete floors.

The North Dandalup River, located to the east of the subject land, and groundwater are considered the primary environmental receptor. The North Dandalup River flows into the Dandalup River, then the Murray River and ultimately the Peel Inlet. The Peel Inlet forms part of the Peel Yalgorup System which is a nationally significant wetland and listed under the Ramsar Convention.

- The site zoning of 'Rural' is compatible with the proposed poultry farm use.
- The proposed poultry farm has appropriate separation from a tributary of the North Dandalup River of 166 m (466 m to the North Dandalup River).
- Vertical separation from groundwater for most of the pod areas exceeds the 2 m separation to maximum ground water as the elevations are predominantly 15 m AHD and maximum groundwater level is 13 m AHD. However, the northern portion of Pod 1 and the north eastern portion of Pod 2 may not meet the 2 m separation. Fill will be required to achieve the 2 m separation. As the operation is a closed system, Aurora Environmental considers that 1 m clearance from the maximum groundwater (i.e. 14 m AHD) is considered acceptable as there will be no nutrient discharge and no risk to groundwater quality.
- Management of nutrients will occur through the establishment of the closed system, where birds will be kept in sealed sheds, with concrete floors to prevent the export of nutrients to the Peel

Harvey System, which is 20 km to the south west (based on river flow). In addition, removal of waste and cleaning will be done in a way that there will be no residual risk of discharge.

- Separation distances from the pods to adjacent residences exceeds 1000 m.

The environmental and planning setting of the site is considered compatible with the proposed expansion of the poultry farm based on recommended separation distances set out in *Environmental Code of Practice for Poultry Farms in Western Australia* (Western Australian Broiler Growers Association (WABGA *et al.*, 2004). Based on available information, it is considered that the proposed development can be operated without impacting on the environment, health or amenity of surrounding property owners and the wider public.

A number of commitments are proposed by MetroWest in order to ensure the site is managed to minimise environmental impacts and nuisance to neighbours. Contingencies are proposed, to allow for appropriate responses, should operational issues be identified.

1 INTRODUCTION

1.1 INTRODUCTION

Metro West Pty Ltd plans to lodge a development application with the Shire of Murray to replace an existing meat bird (broiler) poultry operation at Lots 71, 72 and 73 Corio Road in the locality of Ravenswood. The 121.483 ha land holding is shown in Figures 1 - 4. It is proposed to amalgamate the three lots to create a single lot for the land use.

1.2 SCOPE

The scope of this assessment is to:

- Describe the proposal;
- Summarise the environmental features of the subject land and surrounds;
- Analyse the capability of the area in the context of planning and environmental frameworks; and
- Outline the operations of the poultry farm and environmental management approaches in line with legislation, policies and guidelines.

1.3 PROPOSAL

Poultry will be raised to provide fertile eggs for breeding and this farm will operate as a closed system, indicating that the birds will remain in a sealed shed at all times. A more complete description of the operational process, management, timing and production is included in Section 4.

The operation will comprise the construction of 16 new poultry sheds in two Pods of eight sheds each (Appendix A) with dimensions of 120 m by 15 m with a 16.5 m space between the sheds. Each pod will also have an egg packing and staff amenity shed which will be 60 m by 15 m. All sheds will be a minimum of 100 m from the subject land boundary. Appendix B contains the elevations of the sheds.

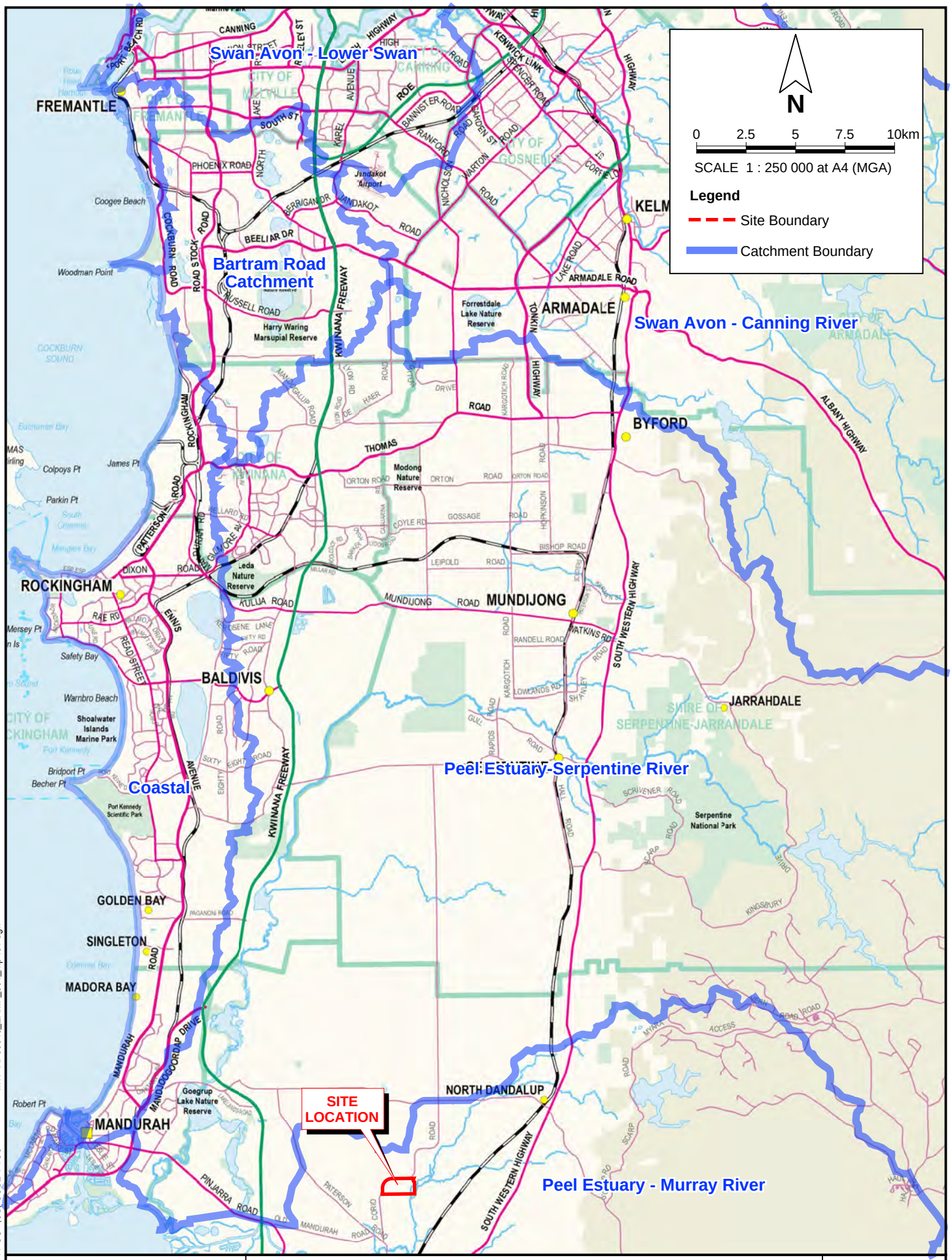
The poultry sheds will be airtight, to assist with climate and temperature control for the birds. The floors of the sheds will be concrete and spread with sawdust bedding. Sheds will be tunnel ventilated, with fans at one end of each shed. Access for operations, at the opposite end of each shed are aligned toward the centre of the subject land to further reduce the risk of noise, dust and odour.

The process and management of the poultry farm is described in Section 4. In summary, 20 week old chickens will be transported from an external farm to each of the 120 m sheds.

There will be approximately one rooster for every 10 hens. Each hen will produce approximately 175 eggs over the breeding season. This will result in the production of approximately 33.6 million eggs per year.

After removal of poultry, cleaning of the shed will be undertaken. It is proposed to remove the spent litter, comprising manure and bedding, from the property for beneficial reuse by a contractor. Removal will be done using a bobcat type front end loader, with litter placed in a covered side tipper truck for removal from the site. Loading of the litter will be via an enclosed conveyor belt into a covered truck. Litter is not proposed to be stockpiled or composted on site.

Dead birds will be removed from sheds daily, stored in refrigerators and removed from the property weekly by a contractor. Dead birds will be processed in a rendering plant for beneficial reuse.



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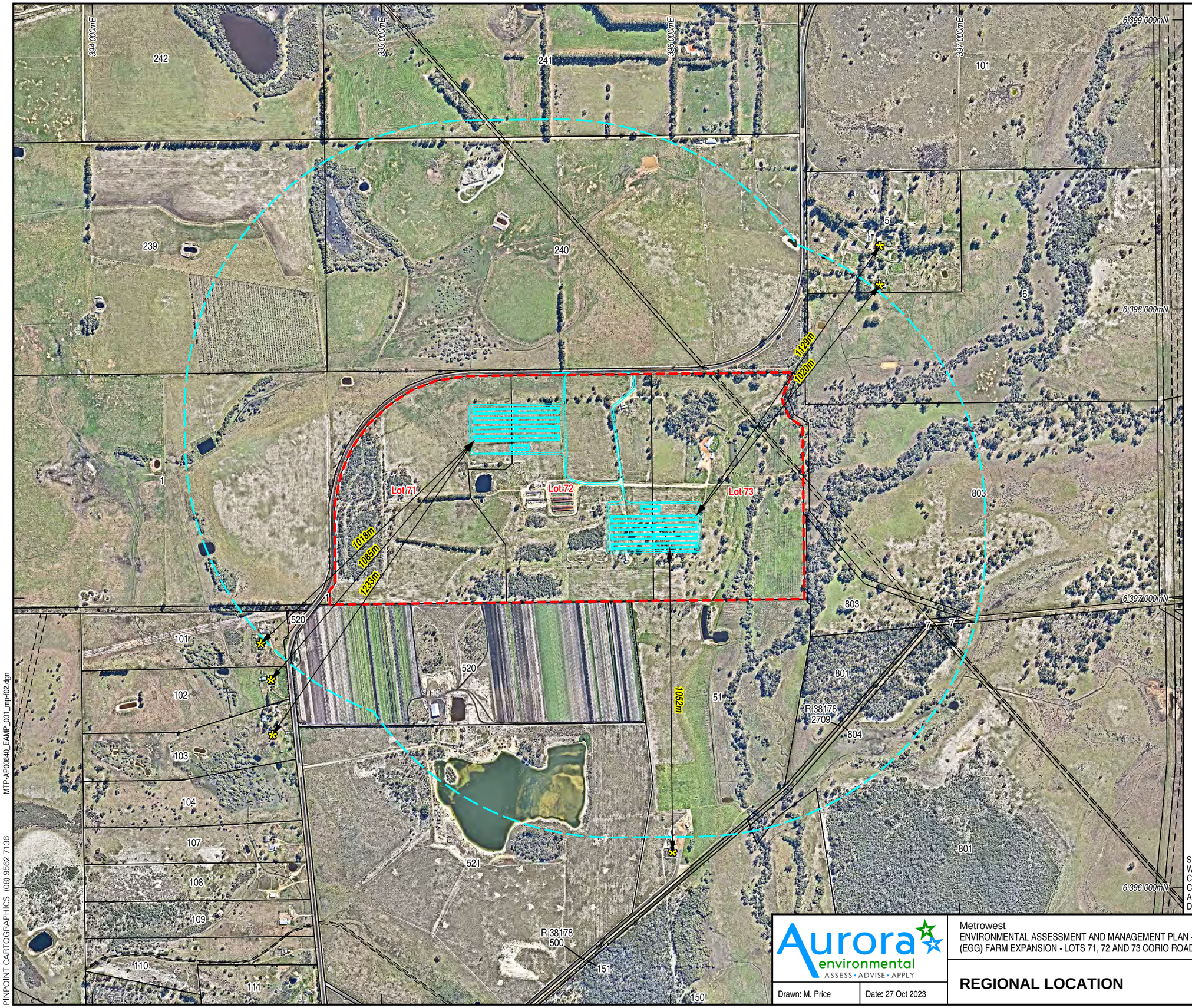
Metrowest
ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN - CLOSED SYSTEM POULTRY BREEDING (EGG) FARM EXPANSION - LOTS 71, 72 AND 73 CORIO ROAD, RAVENSWOOD - SHIRE OF MURRAY WA

Figure 1

REGIONAL LOCATION

Drawn: M. Price | Date: 4 Sep 2023 | Job: MTP-AP00640

PINPOINT CARTOGRAPHICS (08) 9562 7136 MTP-AP00640_EAMP_001_mp-f01.dgn



SUB-CATCHMENT SOURCE: DoW, 2007.
WETLANDS SOURCE: DBCA, September 2020.
CONTOUR SOURCE: Dept. of Agriculture, 2000.
CADASTRAL SOURCE: Landgate, February 2021.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2021.
DEVELOPMENT SOURCE: Harley Dykstra, Dwg No, 23765-01, Rev E, 23-10-23.

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ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN - CLOSED SYSTEM POULTRY BREEDING (EGG) FARM EXPANSION - LOTS 71, 72 AND 73 CORIO ROAD, RAVENSWOOD - SHIRE OF MURRAY WA

Figure 2

REGIONAL LOCATION

Drawn: M. Price | Date: 27 Oct 2023 | Job: MTP-AP00640

MTP-AP00640_EAMP_001_mp-f02.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136

1.4 PLANNING, LEGISLATION, GUIDELINES AND POLICIES

Shire of Murray

The subject land is zoned 'Rural' in the *Shire of Murray Local Planning Scheme No. 4* (Department of Planning, Lands and Heritage, 2023a) and the *Nambeelup and North Dandalup Local Rural Strategy* (Shire of Murray, 2012) indicates that rural land uses will be the predominant land use for the foreseeable future. The purpose of the rural zone is to '*provide for the use of land for intensive and extensive agricultural pursuits and to protect the long-term productive capacity of agricultural land from incompatible land uses, whilst allowing for small scale tourist uses in a rural landscape*' (Shire of Murray, 2012).

Establishment, operation and expansion of poultry farms requires approval from the Shire of Murray as indicated in Local Planning Scheme No. 4 where the land use falls under the category of 'Intensive Agriculture' which is an AA or discretionary use. The scheme describes items that will be considered during the assessment process:

> **'Part IX – The Peel Harvey Coastal Plain Catchment**
>
> **Section 9.1.5:** In considering an application to develop land for Intensive Agriculture within the Peel-Harvey Coastal Plain Catchment the Council shall:
>
> (i) Take account of soil types, slope, groundwater flows, surface water drainage and proximity to the Peel-Harvey Estuary;
> (ii) Take account of the objectives of the Statement of Planning Policy No. 2 with respect to the potential impact of the development on the environment and water quality; and
> (iii) Consult with the Department of Agriculture (now Department of Primary Industries and Regional Development, DPIRD) and the Department of Environmental Protection (now Department of Water and Environmental Regulation, DWER) and take account of any advice in making its determination or defer its decision pending a formal assessment by the Environmental Protection Authority under Part IV of the *Environmental Protection Act 1986*.'

These items are addressed in this report.

Western Australian Legislation

DPIRD has responsibility for livestock biosecurity (disease prevention, disease surveillance and eradication or control), animal welfare, chemical residues and soil and land conservation. DPIRD administers the following Acts and regulations relevant to poultry producers:

- *Biosecurity and Agriculture Management (BAM) Act 2007* and Regulations. This legislation aims to manage the impact and spread of those pests already present in the state and safely manage the use of agricultural and veterinary chemicals.
- *Exotic Diseases of Animals Act 1993.* This legislation provides for the detection, containment and eradication of certain diseases affecting livestock and other animals and for incidental matters.
- *Animal Welfare Act 2002.* This legislation provides for the welfare, safety and health of animals, to regulate the use of animals for scientific purposes, and for related purposes.

- *Veterinary Chemical Control and Animal Feeding Stuffs Act 1976.* This legislation provides for the control of veterinary chemical products and regulates the production, marketing and sale of animal feed stuffs.
- *Soil and Land Conservation Act 1945.* This legislation relates to the conservation of soil and land resources and to the mitigation of the effects of erosion, salinity and flooding.

Provisions of the *Health Act 1911* would apply to the poultry farm if a local government Environmental Health Officer determined that operations created a nuisance that was not appropriate for the nature, location and scale of the farm.

Statement of Planning Policy (SPP) No. 2.1 Peel-Harvey Coastal Plain Catchment

The Peel-Harvey coastal plain catchment policy seeks to ensure that land use changes within the Peel-Harvey estuarine system do not cause environmental damage to the estuary. The objectives of this policy are to:

- Improve the social, economic, ecological, aesthetic, and recreational potential of the Peel-Harvey coastal plain catchment.
- Ensure that changes to land use within the catchment to the Peel-Harvey estuarine system are controlled so as to avoid and minimise environmental damage.
- Balance environmental protection with the economic viability of the primary sector.
- Increase high water-using vegetation cover within the Peel-Harvey coastal plain catchment.
- Reflect the environmental objectives in the *Environmental Protection Peel Inlet-Harvey Estuary Policy 1992*.
- Prevent land uses likely to result in excessive nutrient export into the drainage system.

In 2008, a *Water Quality Improvement Plan for the Rivers and Estuary of the Peel-Harvey System* (Environmental Protection Authority, EPA, 2008a) was released, with a focus on the management of phosphorus. The water quality objective of the plan is to reduce median loadings of total phosphorus to estuarine waters to be less than 75 tonnes per annum in an average year with:

- the median load of total phosphorus flowing in the estuary from the Serpentine River being less than 21 tonnes;
- the median load of total phosphorus flowing in the estuary from the Murray River being less than 16 tonnes; and
- the median load of total phosphorus flowing in the estuary from the Harvey River being less than 38 tonnes.
- Water qualities in streams in winter are to meet mean concentrations of 0.1 mg/L at current mean flows.

Amongst other things, these objectives are to be achieved through management of agricultural land use planning and practices.

Regulation by other Government Agencies

Regulation by other Government Agencies includes:

- Transporting poultry: *Road Traffic Act 1994* (Western Australian Police Service)
- Agricultural and veterinary chemicals: *Agricultural and Veterinary Chemicals Act 1994* (Australian Department of Agriculture, Fisheries and Forestry / Australian Pesticides and Veterinary Medicines Authority (APVMA))
- Use, storage, handling and disposal of pesticides: *Health (Pesticides) Regulations 2011* (Department of Health)
- Storage of fuels, solvents, explosive and dangerous goods: *Dangerous Goods Safety Act 2004* (Department of Mines and Petroleum)
- Licence to take surface water and groundwater: *Rights in Water and Irrigation Act 1914* (Department of Water and Environmental Regulation (DWER))
- Sale, supply and use of poultry manure: *Health (Poultry Manure) Regulations 2001* (Department of Health)

Where applicable, these regulations are considered in this assessment.

Other Policies and Guidelines

Operation and management of issues related to poultry farms is guided by a number of policies and guidelines, listed below and discussed in applicable sections of the document.

Policies and planning documents which are relevant to the proposed development of the site as a poultry farm are identified below:

- *State Planning Policy 2.5 Rural Planning* (Western Australian Planning Commission, WAPC, 2016).
- *Environmental Code of Practice for Poultry Farms in Western Australia* (WABGA *et al.*, 2004).
- *National Water Biosecurity Manual, Poultry Production* (Department of Agriculture, Fisheries and Forestry, 2009a).

These operational guidelines and policies are considered in this report.

Under the *Transform Peel* program, the *Peel Food Zone* has been identified as an area for intensive agriculture (where site conditions allow and risk management can be implemented) (DPIRD, 2017). The subject land is in an area that has been identified, using layers of information (land capability, proximity to services) as potentially suitable for 'closed system intensive livestock' (GHD, 2017).

2 EXISTING ENVIRONMENT

2.1 CURRENT LAND USE

Current land uses on the subject land (Plate 1) include:

- A residence;
- A broiler poultry farm (three sheds with 48,000 bird capacity at any one time); and
- Livestock grazing.

The subject land has been largely cleared of native vegetation and the only additional clearing that will be required is approximately 21 paddock trees for Pod 2.

Surrounding land uses are shown in Appendix C and Plate 1 and comprise:

- Special Use – Tourist Development Zone - Lot 5 Corio Road (to the north east);
- Intensive agriculture (horticulture) immediately to the south;
- Rural small holdings to the south west; and
- Other rural land uses (e.g. livestock grazing).

The area immediately to the south of the subject land has been identified as an extraction area for basic raw materials (Shire of Murray, 2012 and State Planning Policy 2.4 Basic Raw Materials (Government Gazette, 2000) (Plate 1).

2.2 CLIMATE

The Ravenswood area has a Mediterranean climate, characterised by hot dry summers and mild wet winters. Climate data has been sourced from the Bureau of Meteorology (BOM) averages for the closest weather station which is located in Mandurah (Plate 2) (BOM, 2021).

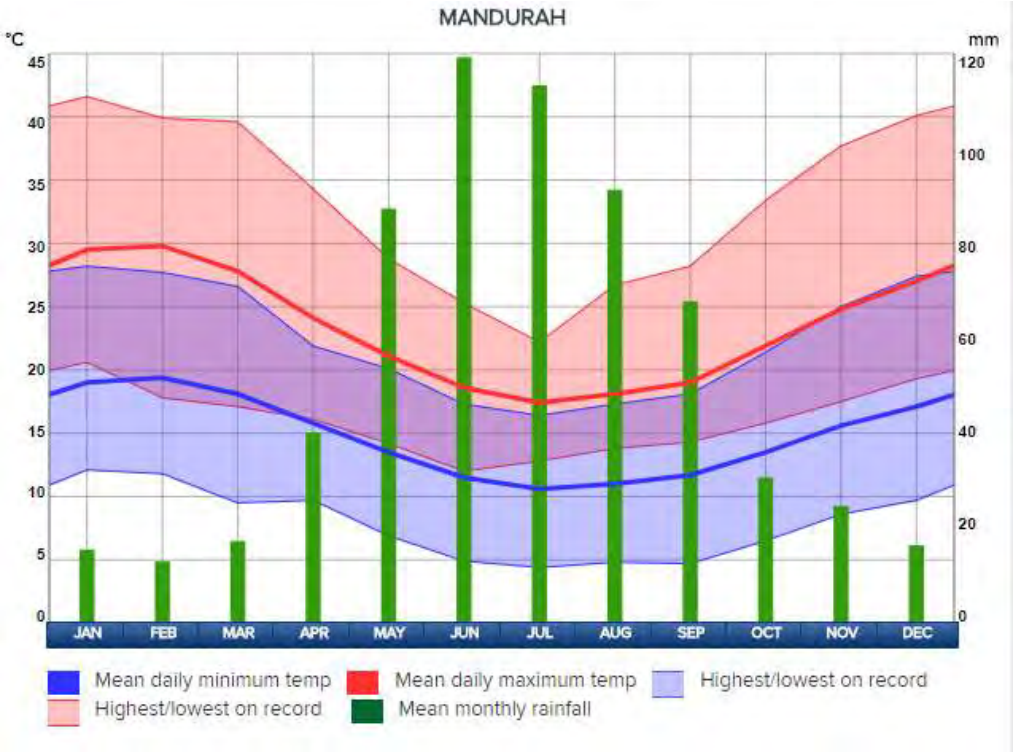
The warmest month is February with a mean maximum temperature of 29.8 °C with an average minimum temperature of 19 °C. During Summer, daytime temperatures often exceed 40 °C. In winter, the coolest month is July with a mean maximum temperature of 17.4 °C with a mean minimum temperature of 10.6 °C.

Ravenswood's distance from the ocean (compared to Mandurah) reduces the ocean's moderating effects, with inland temperatures often 4 or 5 °C warmer during summer days (or cooler during winter nights). Frosts are rare as a result but do occur occasionally.

The area receives a moderate seasonal rainfall of about 622.9 mm a year. Mean monthly rainfall is highest in June at 119.2 mm. The lowest mean monthly rainfall is 13 mm in February. Recent trends indicate a declining rainfall (DPIRD, 2023).

PLATE 1: SURROUNDING LAND USES

PLATE 2: CLIMATE



Source: Weatherzone, 2017 http://www.weatherzone.com.au/climate/station.jsp?lt=site&lc=9977

2.3 TOPOGRAPHY

The subject land is relatively flat (Locate V5, 2023). the highest point is near the western boundary (16 m Australian Height Datum (AHD)), with a gentle slope to approximately 12 m AHD (associated with a water course) near the eastern boundary (Figure 3). Proposed Pod 1 is at 13.5 - 15 m AHD and Pod 2 at 13 - 16 m AHD.

2.4 GEOLOGY AND GEOMORPHOLOGY

The subject land is located on the Swan Coastal Plain which has been formed from sedimentary processes to form an undulating plain. Geology associated with the subject land is described as alluvial and inland eolian deposits (Czc; generally quartzose; Myers and Hocking, 1998) and includes Bassendean Sands (Qpb) and Bassendean Sands in a thin veneer over the Guildford Formation (Qpb/Qpa) (Geological Survey of Western Australia, 1978). Bassendean sands generally occur in dunes up to 4 - 6 m high with the sand being moderately sorted and fine to medium grained, and individual grains being sub-angular to sub-rounded. It is generally off-white to pale grey and occasionally brown, reflecting increased humus content. Iron oxide coating on grains causes yellow staining of the sand if close to the water table. In much of the Pinjarra area, the sand layer is approximately 0.5 to 2 m thick and the overall topography is subdued. The Bassendean sands in this area are usually residual due to erosion processes, with local incorporation of sand derived by weathering of the Guildford Formation.

2.5 SOIL TYPES AND LAND CAPABILITY

The subject land comprises Bassendean sands. These are characterised as:

N

0 50 100 150 200 250m

SCALE 1 : 7 500 at A3 (MGA)

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Topographic Contour
- Watercourse
- Sub-catchment Boundary

Geomorphic Wetlands

- Conservation Category
- Resource Enhancement
- Multiple Use
- 5626 Wetland UFI Number

SUB-CATCHMENT SOURCE: DoW, 2007.
WETLANDS SOURCE: DBCA, September 2020.
CONTOUR SOURCE: Dept. of Agriculture, 2000.
CADASTRAL SOURCE: Landgate, February 2021.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2021.
DEVELOPMENT SOURCE: Harley Dykstra, Dwg No, 23765-01, Rev E, 23-10-23.

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Figure 3

ENVIRONMENTAL FEATURES

Drawn: M. Price | Date: 27 Oct 2023 | Job: MTP-AP00640

PINPOINT CARTOGRAPHICS (08) 9562 7136 MTP-AP00640_EAMP_001_mp-f03.dgn

> *A complex of low dunes, sand plains and swampy flats with pale deep sands and semi-wet and wet soils. The soils are highly leached, infertile and acidic, and the low-lying areas are subject to inundation during winter* (Department of Water, 2011).

DPIRD soil mapping (Soil Landscape Mapping – Best Available (DPIRD-027); Locate, 2023) indicates the subject land contains soil sub-types as shown in Table 1 and Figure 4. The poultry farm infrastructure will be located on soil types BsB2 and BsB4.

TABLE 1: SOIL TYPES

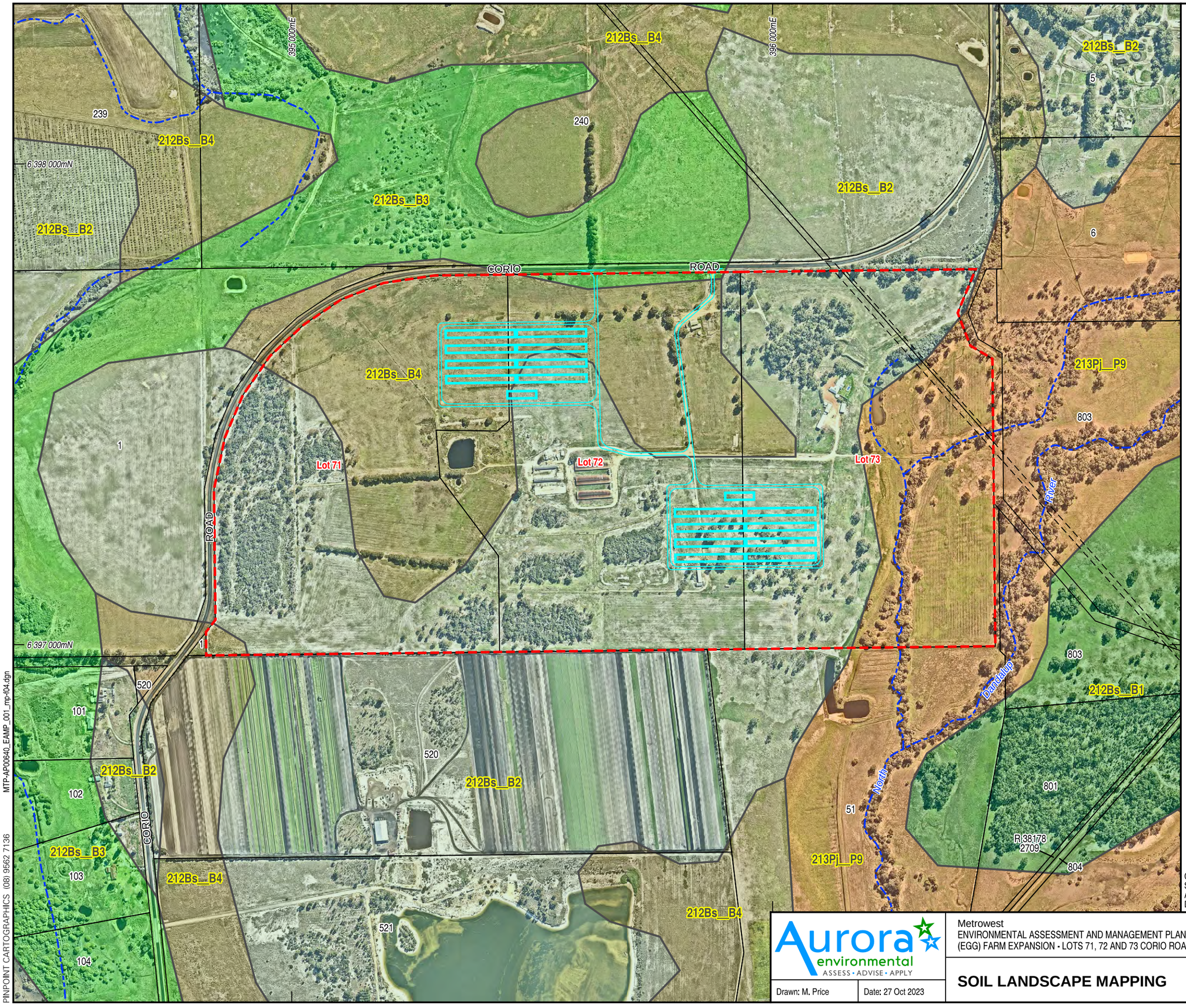
MAP UNIT	NAME	SUMMARY DESCRIPTION
212Bs_B2	Bassendean B2 Phase	Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale-yellow B horizon or a weak iron-organic hardpan 1-2 m.
212Bs_B4	Bassendean B4 Phase	Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan.
213Pj__P9	Pinjarra P9 Phase	Shallowly incised stream channels of minor creeks and rivers with deep acidic mottled yellow duplex soils.

Source: Locate, 2023. DPIRD, Soil-landscape Mapping – Best Available (DPIRD-027).

Phosphorus Export Risk

Land capability mapping (Locate, 2023; Plate 3) indicates that the Bassendean Sands have a limited ability to sorb (retain) phosphorus. Phosphorus is the main nutrient of concern in terms of eutrophication risk of the Peel Harvey Estuarine system.

Soil testing of the subject land as part of the Regional Estuaries Initiative (Appendix E) indicates that the phosphorus buffering index (PBI) is 'exceeding low' for most of the areas tested which comprise Bassendean Sands (PBI less that 2.5; Appendix E). Testing indicates that there has historically been low to no phosphorus applied to most of the subject land so the overall phosphorus status is 'low' except for one paddock to the west of the current poultry operation (with high levels of phosphorus in the soils assessed at 80% of maximum production). High phosphorus status indicates that the soil has an adequate phosphorus level for agricultural production such as grazing. The eastern portion of the subject land which is associated with the North Dandalup River floodplain has a high phosphorus status assessed at 80% of maximum production, which is offset by also having a high PBI of 186.8.



N

0 50 100 150 200 250m

SCALE 1 : 7 500 at A3 (MGA)

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Watercourse

Soil Landscape Mapping

212Bs_B1 **Bassendean B1 Phase**

212Bs_B2 **Bassendean B2 Phase**
Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2m

212Bs_B3 **Bassendean B3 Phase**

212Bs_B4 **Bassendean B4 Phase**
Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan

213Pj_P9 **Pinjarra P9 Phase**
Shallowly incised stream channels of minor creeks and rivers with deep acidic mottled yellow duplex soils

CADASTRAL SOURCE: Landgate, August 2023.
SOILS SOURCE: Dept of Agriculture, November 2004.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown April 2023.
DEVELOPMENT SOURCE: Harley Dykstra, Dwg No. 23765-01, Rev E, 23-10-23.

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Metrowest
ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN - CLOSED SYSTEM POULTRY BREEDING (EGG) FARM EXPANSION - LOTS 71, 72 AND 73 CORIO ROAD, RAVENSWOOD - SHIRE OF MURRAY WA

SOIL LANDSCAPE MAPPING

Figure 4

Job: MTP-AP00640

PINPOINT CARTOGRAPHICS (08) 9562 7136 MTP-AP00640_EAMP_001_mp-l04.dgn

PLATE 3: PHOSPHORUS EXPORT RISK

Source: Locate V5, 2023 (Soil landscape land quality – Phosphorus Export Risk. Purple shading indicates high phosphorus export risk. Yellow shading indicates moderate export risk.

Waterlogging Risk

The areas where Pods 1 and 2 are proposed are mostly not prone to waterlogging (Locate V5, 2023; Plate 4). Peripheral areas (e.g. western portion of Pod 1 at 12 m AHD) are likely to require fill to minimise waterlogging.

PLATE 4: WATERLOGGING RISK

Source: Locate V5, 2023 (Soil landscape land quality – Waterlogging Risk. Purple shading indicates high risk of waterlogging. Buff colour indicates low waterlogging risk.

Acid Sulfate Soils

DWER mapping for acid sulfate soils (ASS) on the Swan Coastal Plain (Locate V5, 2023) does not indicate areas of ASS risk within 1 km of the subject land.

2.6 CATCHMENTS

The subject land is part of the Peel Harvey Estuarine System (Figure 1) which is considered to be of national importance and contains Ramsar Wetlands (Department of Climate Change, Energy, the Environment and Water, 2023). Progressive nutrient enrichment of estuarine waters over several decades of catchment land use practices has contributed to lowered estuarine and riverine water quality and the appearance of algal blooms. The goal is to reduce nutrient input into the system through best practice management of intensive agriculture (and other land uses).

The subject land is in the Murray sub catchment with smaller sub catchment divides running from north east to south west across the middle of the subject land (Figures 1 and 3). The southern and eastern portion of the subject land is part of the North Dandalup Below Dam subcatchment. Water from this area flows into a tributary of the North Dandalup River, the North Dandalup River then the Dandalup River, then Murray River and ultimately, the Peel Inlet (20 km downstream). The north and western portion of the subject land is in the Dandalup River sub catchment (Figure 3) so water flows into the Dandalup River and ultimately discharges into the Peel Inlet.

2.7 WATERCOURSES AND WETLANDS

A tributary and floodplain of the North Dandalup River is associated with the eastern portion of the subject land and is approximately 120 m from Pod 2 of the proposed poultry operation (Figures 2 and 3 and Plate 1).

Consanguineous wetland mapping (Locate V5, 2023; Hill *et al*. 1993) indicates that the Mungala wetland suite occurs in the area. These wetlands are generally found in the transition between Bassendean Dunes and Pinjarra Plain. Underlying stratigraphy is a complex of sands, clays, calcrete and laterite. Wetlands generally lie along depressions at the distributary ends of the creeks or adjacent to intermittent or disconnected drainage lines. They generally have variable salinity and comprise lakes, sumplands, floodplains and creeks.

Geomorphic wetland mapping (Locate V5, 2023) indicates that part of the wetland mapped on the northern portion of the subject land comprises a 'Conservation' management category floodplain (Id: 14629 Figure 3). A Conservation category wetland generally supports a high level of attributes and functions and represent the highest priority wetlands for protection and management (EPA, 2008b). However, HydroConcept (2017) and a site visit by Aurora Environmental in September 2017 indicate that the mapped area is degraded and used as pasture, with little native vegetation (Plate 5). The area is not associated with groundwater dependent ecosystems and does not warrant retention in its current form (noting that hydrology of the area will not be impacted by the proposal).

Other wetland areas associated with the North Dandalup River and its tributaries have designations of Sumpland (Resource Enhancement; Id: 16001), Palusplain (Multiple Use; Id: 15802) and Palusplain (Conservation; Id: 5628) (Figure 3). These wetlands are a minimum of 106 m from the poultry sheds (Figure 3).

PLATE 5: AREA MAPPED AS CONSERVATION CATEGORY WETLAND

Note: Photo looking across the subject land, south from Corio Road. The wetland comprises pasture and has no features consistent with a conservation category wetland.

2.8 WATER FEATURES AND GROUNDWATER

Groundwater associated with the subject land has been characterised by HydroConcepts (2017) as part of the process to secure a groundwater licence from DWER. The information is summarised below.

The district supports three distinct aquifers, each assigned the name of its major contributing geological unit which include:

- Perth – superficial Swan (unconfined with semi-confined areas);
- Perth Lower Leederville Aquifer (unconfined to confined depending on location depth and lithology); and
- Yarragadee Aquifer.

All existing soaks and production bores within the subject land are hosted in Bassendean Sands. These form part of the superficial Swan aquifer which is up to 15 m thick.

Groundwater flow within the superficial aquifer is towards the south under shallow hydraulic gradients and is recharged from direct infiltration of rainfall. Abstraction from the deepened soak on Lot 520 Corio Road (immediately to the south of the subject land; Plate 6) has produced a drawdown cone that has modified the generally southerly groundwater flow within the aquifer. A portion of this drawdown is likely to extend beneath the subject land.

There are two DWER monitoring bores (HS94A – Code 61410640 and HS94B – Code 61410639; DWER, 2017; Plate 7) located at the north-western corner of the subject land that have been monitored monthly since their installation in 2008. These bores show that groundwater levels are relatively stable with no discernible trend over that period.

Seasonal fluctuations in groundwater level are approximately 1 m annually, with the low in March-April and peak in September-October (Plate 8). The groundwater levels rise quickly following the commencement of winter rainfall to a high of approximately 13 m AHD (Plate 8), which results in surface inundation in lower-lying areas to the north of the subject land and suggests that the thin aquifer is close to saturation.

Approximately 30% of proposed Pod 1 and 80% of Pod 2 meet the 2 m separation required at 15 m AHD. It is proposed to use sand fill to achieve a minimum separation of 1 m to maximum groundwater level (approximately 14 mAHD) for the areas that do not meet the 2 m separation. Although this is less than the guidance for 2 m separation for part of the Pod areas, the 1 m separation above the highest groundwater table is considered sufficient to reduce the risk of inundation as the operation is a closed system which will prevent discharge of nutrients to the environment.

Water features associated with the subject land include two operating soaks, referred to as Central and Eastern soaks (Plate 6), that have been excavated below the water table and are sustained by groundwater inflow. The soaks are inundated all year round and are up to two metres deep.

There are two bores on the property with one (Chicken Bore) providing water for poultry production and another bore near the house (House Bore) for irrigation of lawns and gardens. The landowners have an abstraction licence for groundwater use of 258,500 KL per annum Appendix F).

Ground water quality monitoring was undertaken for the subject land in July 2017 (Appendix G). Salinity in the superficial aquifer indicates that the groundwater is typically fresh. The field measured salinity in the soaks were 155 mg/L TDS in the Central Soak and 330 mg/L TDS in the Eastern Soak and 110 mg/L TDS in the House Bore. The field measured pH at Eastern Soak and House Soak was slightly alkaline at 7.4, whilst the pH at Central Soak was slightly acidic at 6.5.

Total Nitrogen levels of the ground water exceeded the trigger value of 0.75 mg/L for south west Australia estuaries (ANZECC, 2000) at Eastern Soak (1.9 mg/L) and Central Soak (4.0 mg/L) but was lower at House Bore (0.2 mg/L).

Total phosphorous levels of groundwater exceeded the trigger value of 0.03 mg/L for south west Australia estuaries (ANZECC, 2000) at Central Soak (0.57 mg/L) with lower values at Eastern Soak (<0.005 mg/L) and House Bore (0.018 mg/L).

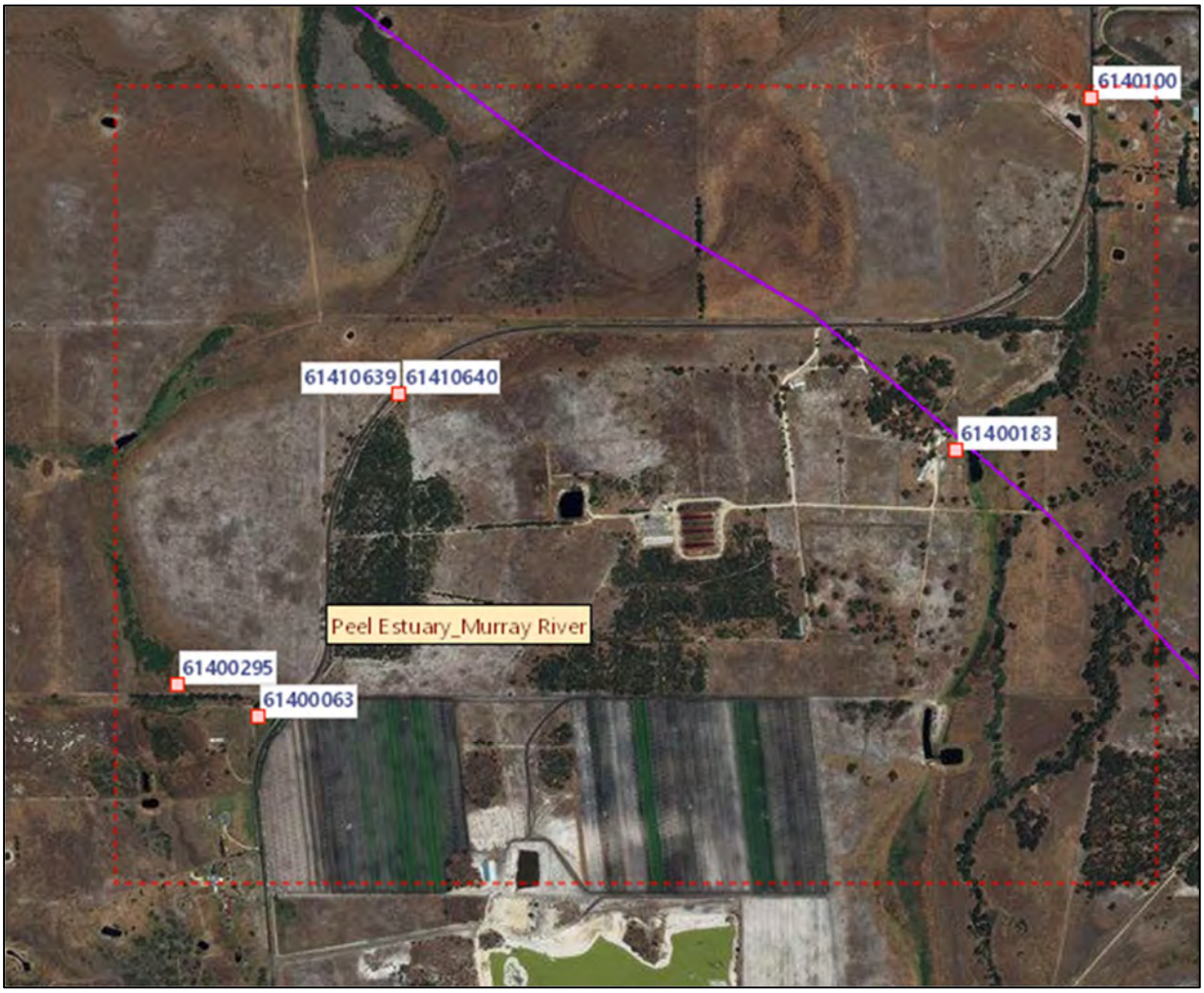
These nutrient levels reflect baseline values for the site and reflect existing, surrounding and historic land uses in the area.

The *Murray Drainage and Water Management Plan* (Department of Water, 2011) indicates that values of Total Nitrogen and Total Phosphorus exceeding 3.0 mg/L and 0.25 mg/L respectively are cause for examination of nutrient management in a landscape that has a long-term history of agricultural land uses.

PLATE 6: BORES AND SOAKS

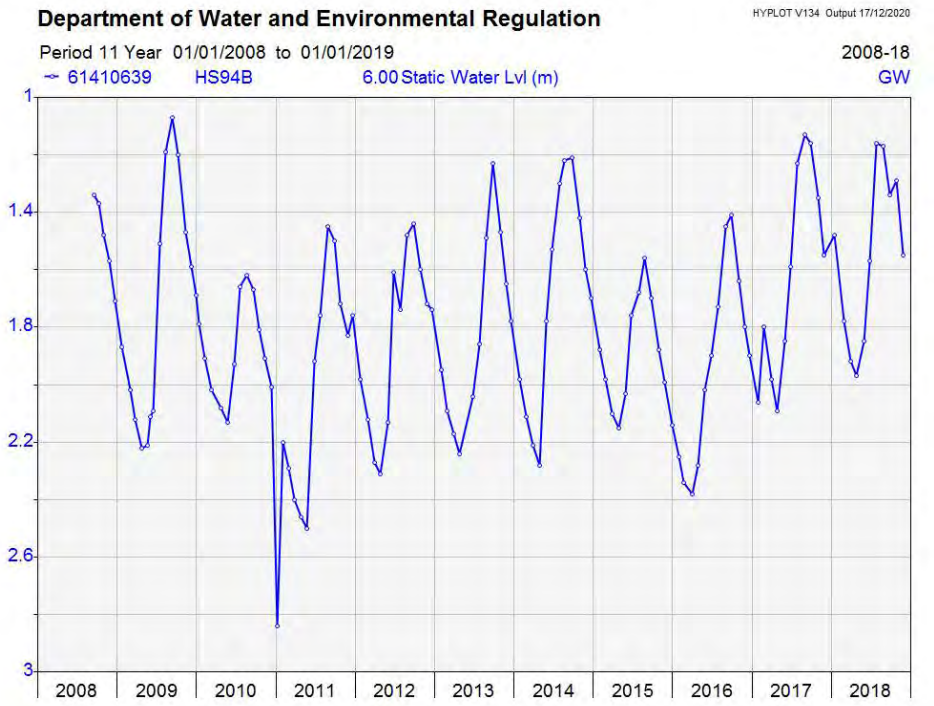
Source: HydroConcept Pty Ltd, 2017

PLATE 7: WATER INFORMATION NETWORK BORES



Source: Department of Water and Environmental Regulation (2023).

PLATE 8: GROUNDWATER LEVELS AT 61410639



Sourced: Water Information Network (DWER, 2023):
https://kumina.water.wa.gov.au/waterinformation/WIR/Reports/Publish/61410639/gw02c.htm

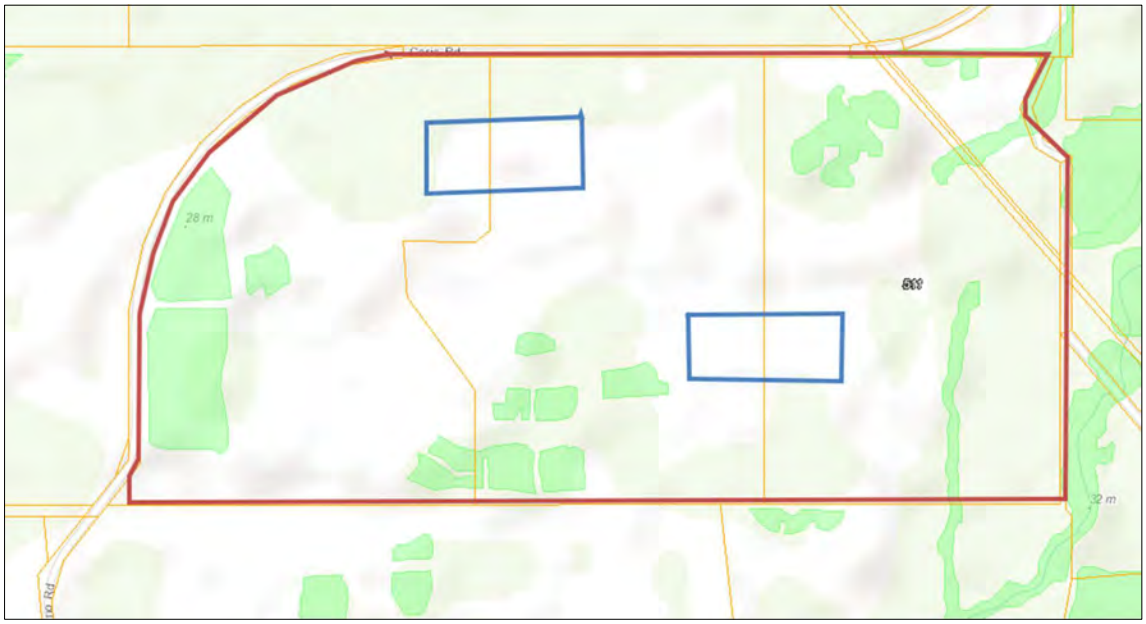
2.9 VEGETATION

The subject land is located in the Perth subregion of the Swan Coastal Plain biogeographical region, one of 89 bioregions recognised under the Interim Biogeographic Regionalisation for Australia (IBRA). This subregion is characterised by a low lying coastal plain, which was historically vegetated with *Banksia* or Tuart on sandy soils, *Casuarina obesa* on outwash plains and paperbarks in swampy areas.

The DPIRD dataset for Pre-European Vegetation indicates that the vegetation historically comprised Bassendean_1000: Woodland/ low woodland/ low forest or woodland (Locate V5, 2023).

Native vegetation on the subject land has largely been cleared, including the area proposed for Pod 1 (Plate 9). The construction of Pod 2 will require the removal of approximately 21 paddock trees (Plate 10).

PLATE 9: NATIVE VEGETATION



Source: Locate V5, 2023. Native vegetation Extent.

PLATE 10: PADDOCK TREES TO BE CLEARED

2.10 HERITAGE

The Aboriginal Cultural Heritage Inquiry System (Department of Planning, Lands and Heritage, 2023b) indicates that no Aboriginal cultural heritage places are known to occur on the subject land. The nearest known places are 4325 Gas pipeline 84 – Artefacts and scatters (500 m to north) and 3305 Gibbs Sandpit, Pinjarra – Artefacts and scatter, camp (700 m to the south). The North Dandalup River is listed as Place 27937 (Appendix H).

There are no 'pending' or 'historic' listings in the database.

3 PLANNING AND OPERATIONAL GUIDELINES

This section outlines the guidance provided in various planning documents in relation to poultry farm establishment or expansion. Additional detail about how management strategies will be implemented at the site is presented in the following section.

3.1 PEEL FOOD ZONE

Depth to maximum groundwater level is a key criterion for intensive livestock enterprises which need to be located on land with water tables greater than two metres from the surface throughout the year (WABGA *et al.* 2004).

Data from a maximum groundwater depth model was used in the Peel Food Zone analysis (GHD, 2017). Initially most of the proposed Peel Food Zone was mapped as unsuitable for intensive livestock due to the large areas of low-lying land which is frequently waterlogged during winter. However, the State Government noted that sand fill is commonly used on the coastal plain to raise the land surface, improve site drainage and increase the separation to shallow water tables. In determining the extent of the Peel Food Zone and suitability for intensive livestock purposes, GHD (2017) assumed that where average water table depth was between 0.5 m and 2 m, sand fill would be used to increase the separation to the shallow water table, meaning that while these areas where constrained, they could still be considered for intensive agriculture if fill was available and cost effective. Including this assumption increased the area of the proposed Peel Food Zone suitable for closed-system intensive livestock production (Appendix I). Therefore, the use of fill is proposed on the subject land, pending detailed design to ensure adequate separation to maximum groundwater level.

3.2 ZONING

State Planning Policy No. 2.5: Rural Planning (SPP 2.5; WAPC, 2016) seeks to protect and preserve Western Australia's rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values. The policy notes that animal premises are important contributors to the food and economic need of Western Australia. The WAPC policy states that animal premises on rural land are a valid rural land use and are generally supported and encouraged where rural amenity and environmental impacts can be effectively managed.

The subject land is zoned Rural, consistent with this policy (Appendix D). In order for the site to be developed as a poultry farm, however, it requires Shire of Murray approval for this use, as intensive agriculture (which includes poultry farms) is a discretionary land use under Shire of Murray Local Planning Scheme No. 4.

3.3 BUFFER DISTANCES

WAPC *SPP 2.5 Rural Planning* states that avoiding land use conflict can be achieved through application of separation distances based on environmental policy and health guidance, prescribed standards, accepted industry standards and/or codes of practice by considering:

(i) whether the site is capable of accommodating the land use; and/or

(ii) whether surrounding rural land is suitable, and can be used to meet the separation distances between the nearest sensitive land use and/or zone, and would not limit future rural land uses; and

(iii) whether if clauses (i) and/or (ii) are met, a statutory buffer is not required.

The Environmental Protection Authority (EPA) guidance statement *Separation Distances Between Industrial and Sensitive Land Uses* (EPA, 2005) and *Draft Guidance Statement – Separation Distances between Industrial and Sensitive Land Uses* (Department of Environmental Regulation, 2015; withdrawn) acknowledges that the *Environmental Code of Practice for Poultry Farms in Western Australia* (WABGA *et al.*, 2004) guides planning and separation distances and indicates that buffer distances of between 300 m and 1000 m are recommended, depending on the size of the poultry farm.

A separation distance to rural dwellings is not specified for Western Australia. In New South Wales, a 150 m separation from sheds is considered adequate for rural dwellings (Department of Primary Industries, NSW, 2012).

Figure 2 shows dwellings in relation to the proposed operation with the closest dwellings external to the subject land being a minimum of 1000 m from the proposed Pods at:

- Lot 5 (No. 441) on Corio Road (to the north east).
- Lot 101 (No. 684) Corio Road (to the south west);
- Lot 51 (No. 819) Venn Road (to the south).

The *Environmental Code of Practice for Poultry Farms in Western Australia* (WABGA *et al.*, 2004) sets out additional recommended buffer distances between poultry farm infrastructure, adjacent properties and environmental receptors, as summarised in Table 2.

The proposed poultry farm layout meets buffer requirements for 'new poultry sheds':

- Recommended 1000 m separation from offsite commercial poultry farms. There are no other poultry farms within 1 km.
- Recommended 500 m to existing or future residential zone. The closest area zoned 'Residential Development' is 3 km to the south west (south of Old Mandurah Road) and the closest area zoned 'Residential' is 4 km to the south (near South West Highway).
- Recommended 300 m to existing or future rural residential zone. The 'Farmlet' zone to the south west is 700 m from the nearest shed.
- Recommended 100 m to farm boundary. All sheds will be at least 100 m from the external farm boundary.
- Recommended 50 m separation between poultry shed water discharge and groundwater bores. Other than clean rainwater from the roofs, no waste water will be discharged from the sheds. Central Soak and Chicken Bore (Plate 6) are more than 50 m from the proposed new sheds.
- While it is recommended that there be 20 m between sheds, it is considered that 16.5 m distance between the sheds will be sufficient and has the added benefit of reducing the development footprint.

- Recommended separation of 50 m to waterways, wetlands and floodways. The distance to the closest shed from the creek line that runs into North Dandalup River is 165 m to the floodplain. The area currently mapped as a 'Conservation Wetland' is not considered to be an accurate representation of the wetland/ floodplain.
- Recommended 100 m separation from non-project related groundwater bores. The nearest significant water user is the intensive horticulture operation to the south (Lot 250 Corio Road), which is more than 200 m from the nearest shed.

The recommended vertical separation to groundwater of 2 m cannot be met at all locations within the footprint of Pods 1 and 2, with maximum groundwater at 13 m AHD. The majority of proposed Pod 1 is at 13.5 – 15 m AHD and Pod 2 at 13 - 16 m AHD. In light of this, sand fill will be required to raise the floor level to an acceptable height. Given the closed nature of the systems, it is proposed to ensure that there is a separation of at least 1 m to maximum groundwater. This means that the minimum floor height of each shed will be set at 14 m AHD.

TABLE 2: RECOMMENDED BUFFERS FOR POULTRY FARMS

Facility	Poultry sheds (same farm operator)	Poultry sheds (different Farm operator)	Existing or future residential zone	Existing or future rural residential zone	Farm boundary	Water supply bores	Wetlands, waterways and floodways	Water table
New poultry sheds	20m	1000m	500m	300m	100m	50m from discharge area	50m	2m
New free to range sheds [1] Not applicable to this operation	20m between enclosures	1000m	500m	300m	100m	50m	200m	3m
Manure storage compounds	Not applicable to this operation							
Burial of dead birds	Not applicable to this operation					100m	50m	3m
Manure/ litter application to land	Not applicable for this operation							

Source: WABGA *et al.* 2004. Notes: [1] buffer starts 20 m outwards from the shed perimeter.

3.4 CLEARING OF NATIVE VEGETATION

In 2004, amendments to the *Environmental Protection Act 1986* (EP Act) introduced provisions for regulating the clearing of native vegetation which requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety, unless a relevant exemption applies. Under the Act, it is an offence to clear native vegetation without the authority of a permit or an exemption.

There are two types of exemptions. The first is described in Schedule 6 of the EP Act and relates to clearing required by other written laws. The second type of exemption is found in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Regulations). The exemptions under the Regulations do not apply in environmentally sensitive areas (ESAs) declared under section 51B of the EP Act.

Regulation 5, Item 1 exemption applies when clearing to construct a building. Clearing must be done by or with the prior authority of the owner of the property on which the clearing is to take place. The exemption states:

> *Clearing of a site for the lawful construction of a building or other structure on a property, being clearing which does not, together with all other limited clearing on the property in the financial year in which the clearing takes place, exceed five hectares, if –*
>
> *(a) the clearing is to the extent necessary; and*
>
> *(b) the vegetation is not riparian vegetation.*

Table 3 outlines the details under which the exemption applies and describes how the proposed clearing in relation to the construction of Pod 2 complies with the exemption. The entity applying the exemption is responsible for ensuring that the clearing meets the requirements outlined in Table 3.

TABLE 3: EXEMPTION FOR CLEARING PERMIT REGULATION 5, ITEM 1

DETAIL	HOW THE EXEMPTION APPLIES
Clearing of native vegetation for the lawful construction of a building or other structure is exempt as long as other relevant approvals have been obtained, including any planning approvals and building licence.	MetroWest will have a building licence for the project from the Shire of Murray. To exercise the exemption, reference to the proposed clearing in the building licence application is recommended.
"Building" means a roofed building or other roofed structure that is permanently fixed to the ground, and includes a transportable building that is: (a) connected to a sewerage system or septic tank; or (b) intended to be used as a permanent building.	The approval includes the construction of poultry sheds and associated infrastructure which are considered to be buildings.
Clearing may also be carried out for the construction of other structures.	Other structures include water tanks, service sheds and bitumised and kerbed car parks.
Clearing must only be to the extent necessary for the building or other structure.	Clearing will be in accordance with the building licence.
This exemption does not allow clearing of riparian vegetation. "Riparian vegetation"	The area proposed to be cleared does not contain any riparian vegetation.

DETAIL	HOW THE EXEMPTION APPLIES
means the distinctive vegetation associated with a wetland or watercourse.	
Under this item clearing for a building, combined with other exempt clearing activities on the property, must not exceed five hectares in a financial year.	The area of vegetation proposed to be cleared is less than 5 ha.
This exemption does not apply in an environmentally sensitive area.	The area proposed to be cleared does not comprise an environmentally sensitive area as declared under section 51B of the EP Act. In addition, the area does not contain features such as wetlands. Due to the degraded nature of the understorey, threatened species are unlikely to occur.

4 OPERATION AND MANAGEMENT STRATEGIES

This section sets out management strategies to be employed at the site in order to manage potential environmental impacts associated with site operations. The proposed site layout is presented in Appendix A.

4.1 PRODUCTION

The production process is described as follows:

Process

- Roosters and hens chickens will be transferred to the property at 20 weeks of age and placed into the 160 m production sheds.
- During the production cycle, body weight control remains critical to ensure optimum egg production and fertility rates by the birds.
- Internal lights in the sheds will be used to control the onset of sexual maturity. Light will be gradually increased from approximately 10 hours per day at the point of transfer to 13 hours per day by the time the poultry are 23 weeks old.
- Egg production will commence from approximately 20 to 25 weeks of age. The early eggs are usually small and not used for setting.
- Once egg weight is consistently 50 g each (approximately 26 weeks of age), the eggs will be packed and transported to another facility for incubating.
- The hens and roosters will be utilised for egg production for the first season of laying (until approximately 65 weeks old).
- The poultry will be removed for processing and the sheds are cleaned and litter removed for beneficial use. The cleaning and reset process for the next flock takes 6 - 7 weeks.

Management

- Deceased and culled birds will be removed from sheds daily and stored in refrigerators on site before being collected weekly and taken off site for disposal.
- The operation will have a farm manager living on site.
- The sheds will have dry wood shavings or straw placed on the floor to absorb the bird's excreta. This will be removed from the site once each farm is depopulated 12 months after the birds arrive on site. Therefore, birds and used litter are removed from site once per year (compared to meat birds at six times per year).
- Sheds will be built on concrete pads so that any moisture in the litter is retained in the sheds during a batch of birds. Once the birds are removed, the sheds undergo a dry-cleaning process to remove all organic matter.
- The sheds are washed using a high pressure, but low volume water spray units to prevent water from leaving the shed. The sheds will be air dried using the tunnel ventilation system.

Frequency

- The production cycle on a breeding farm generally lasts 12 months.

- Birds are on site from 20 weeks of age until 65 weeks of age – approximately 45 weeks.
- Bird numbers (highest at the point of transfer)
- Mortality is low, approximately 5%.
- Hens are stocked at 6.5 hens per m^2.
- Roosters are stocked at a ratio of 1:10 (1 male per 10 females).
- Each new shed will house 16,000 birds at any one time with 1 batch of birds per year.

Number of eggs

- Over the breeding phase, each hen will lay approximately 175 - 180 eggs.
- Not all eggs will meet the standard weight (50 g) of a settable egg.
- The target rate is 165 settable eggs per hen.
- The breeding cycle for settable eggs is from approximately 25 weeks to 65 weeks of age.
- Approximately 33.6 million eggs will be produced on site each year.

4.2 STAFF

The operation will employ twelve full time staff, including a farm manager. Clean out and other staff will be contracted at key points of the breeding phase.

4.3 ODOUR, DUST & NOISE MANAGEMENT PLAN

Risks due to odour, dust and noise are best addressed through the incorporation of adequate separation distances and specific operational practices which are outlined in *Environmental Code of Practice for Poultry Farms in Western Australia* (WABGA *et al.*, 2004) and *Separation Distances between Industrial and Sensitive Land Uses* (EPA, 2005). As outlined in Section 3.2, the nearest residences are located 1 km north east, south west and south of the nearest proposed shed. Therefore, the requirement for the buffer distance for sensitive receptors has been met. All sheds will be set back at least 100 m from the subject land boundaries (Figure 3).

Daytime site noise will generally be in line with that associated with farming activities in a rural area. While some activity will take place at the site at night, such as catching operations and the arrival and departure of associated vehicles, there is not anticipated to be a high level of noise that would result in offsite disturbance due to the distances to roads and dwellings.

Odour and dust risks will be minimised by:

- Removal of spent litter will be undertaken using a bobcat type front end loader inside the sheds. The loader will place the spent litter onto a covered conveyor belt inside the sheds. The covered conveyor belt will load the litter onto a covered truck which will be parked just outside the shed doors. This system will ensure that no dust is emitted into the environment.
- Immediate removal of litter from the property (i.e. without stockpiling/ storage on the property).
- A cool pad will be used to achieve a comfortable temperature for the poultry in summer. Compared to fogging coolers, this has the benefit of preventing the litter from becoming too wet.

- The goal will be to have litter with a moisture content between 30 – 40% and less than 50% as this will reduce the risk of odour generation (WABGA *et al*., 2004). Should litter become too wet, it will have extra absorbent material added.
- A speed limit of 25 km per hour will be applied to vehicles within the property to reduce the risk of dust dispersal.

Visual impacts will be reduced by:

- Planting screen trees adjacent to the northern pod. Planting will comprise local native species such as jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*). The planting will assist in minimising visual impacts and will replace the paddock trees to be removed to construct Pod 2.

Noise risks will be minimised by:

- Selecting equipment which has specifications for low noise generation (e.g. fans, pumps and other equipment).
- Use of 'quietened' equipment such as forklifts and bobcats which are fitted with lights instead of beepers (subject to Occupational Safety and Health Act and regulation compliance).
- Maintaining and servicing equipment so that it runs smoothly and quietly.
- Induction of staff to ensure that they operate equipment quietly (with signs to reinforce the need for noise minimisation).
- Scheduling most activities to occur during daylight hours (except for collection of birds for removal from farm).
- Bird removal trucks will arrive in the late afternoon and be loaded during the night. The trucks will depart the property at approximately 8am to reduce the risk of truck noise during the night.

4.4 NUTRIENT AND WASTE MANAGEMENT

The subject land is within the area subject to the Environmental Protection Authority's *Environmental Protection (Peel Inlet-Harvey Estuary) Policy* (EPP) (EPA, 1992) and supported in State Planning Policy (SPP) 2.1 Peel-Harvey Coastal Plain Catchment (under review) which sets criteria for planning considerations, including goals for nutrient loads to downstream waterways and wetlands.

The *Peel Sustainable Horticulture* program (Peel Harvey Catchment Council, 2017) has developed model policies which apply to market gardens but are useful for consideration in this project. The policy states the following:

- Proposals for new horticulture should not apply phosphorus at rates exceeding 6.5 kg P/ha/year (Kelsey *et al*., 2011).
- Proposals for new horticulture should not apply nitrogen at rates exceeding 45 kg/N/ha/year (Kelsey *et al*., 2011)

Once a batch of chickens is removed, the sheds will be cleaned and sanitised for the next batch of chickens to arrive. Wash water will not escape the sheds as they will be built on concrete pads, with any excess wash water air dried by the fan system. In addition, washdown will be done with a high pressure, low volume spraying units.

The risks associated with management of litter (fly breeding, uncontrolled runoff, and nutrient infiltration to groundwater) will effectively be eliminated for this operation as:

- Each shed is a sealed system with no escape of litter or water.
- All litter from the sheds will be removed at the end of each batch period for beneficial reuse as each batch of birds is replaced.
- Removal of litter will be undertaken by an appropriately licensed operator using covered trucks. The contractor will remove the litter to an appropriate site to be processed for use (e.g. as a soil conditioner).
- There will be no storage or deposition of litter on the subject land.
- The small amount of wash water generated will not be discharged from the sheds.

In terms of the nutrient content of manure to be removed from the subject land, the Environmental Code (WAGBA *et al.* 2004) suggests that meat birds used for laying produce an average of 400 g of manure with 25% moisture at shed clean out.

It is estimated that 293,760 birds will produce approximately 6,109 tonnes of dry manure per annum (not including wood shavings). Table 4 indicates the volumes of manure and nutrient content. As this will be a closed system, no nutrients will be discharged to the environment.

TABLE 4: COMPOSITION OF MANURE

	TOTAL N	AMMONIUM NH4 –N	TOTAL PHOSPHORUS	POTASSIUM
Dry Poultry Manure Composition (% dry solids) *	4.1	0.3	1.4	2.1
293,760 birds will produce 6,109 tonnes of dry manure per annum (not including wood shavings)				
Nutrients (tonnes)	250.5	18.3	85.5	128.3
No nutrient discharge due to closed system and removal of litter				

* Source: WABGA *et al.* 2004.

4.5 WATER SUPPLY

The landowners currently have a licence to abstract 258,500 KL per annum of groundwater from the subject land (Appendix F).

4.6 BIOSECURITY

Adequate biosecurity is required on a poultry farm to maintain sanitation, disease control and vermin management and is integral to the health of the flock and quality of the product. This means that access to a poultry farm needs to be limited to authorised personnel with a high standard of hygiene at all times.

This poultry farm will comply with the *National Farm Biosecurity Manual for Poultry Production* (Department of Agriculture, Fisheries and Forestry, 2009b) and *Biosecurity and Agriculture Management Act and Regulations.* In addition, the sheds will be airtight to ensure temperature control, which will assist in reducing the risk of contraction and spread of avian diseases.

4.7 PEST CONTROL

The main pests of concern in an enclosed poultry facility are rodents such as the black rat (*Rattus rattus*) and the European mouse (*Mus musculus*). Snakes may be attracted by the presence of rodents. The goal of pest management is to reduce pests to an acceptable level. Pest management will be approached in an integrated manner and will be implemented using the following methods:

- The sheds will be sealed systems, which will assist in excluding rodents and snakes.
- Monitoring of pest levels outside the sheds will be undertaken through deploying sampling devices/traps and visual inspections.
- Preventative measures will include:
  - Securely storing feed;
  - Frequent clean-up of spilled food;
  - Reducing shelter for rats and mice; and
  - Deployment of bait stations.

Stable fly (*Stomoxys calcitrans*) is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act). Control and management of Stable Fly is guided by the *Biosecurity and Agriculture Management (Stable Fly) Management Plan 2016* which specifies measures to reduce fly breeding in 11 local government areas, including the Shire of Murray. Fly breeding risk for the proposed poultry farm is minimal as litter will be removed from site when sheds are cleaned out (without storage on-site).

4.8 BIRD DEATHS, ACCIDENT MANAGEMENT AND EMERGENCY RESPONSE

A mortality rate of 5% of chickens per batch is generally allowed for on layer farms (WABGA *et al.* 2004). In a year, this could equate to 14,688 birds (if 293,760 birds are housed annually). Management of dead birds will comprise onsite storage in a refrigerator with pick up at least weekly by a contractor.

Mass bird deaths due to factors such as abnormal heat stress or disease rarely occur. However, a plan is required for disposal of the birds should mass deaths occur and management of the issue should the cause be an infectious disease.

When disease is the cause of death, the farm manager will obtain a veterinary report and immediately contact the Shire of Murray Environmental Health Officer (EHO). The EHO will assist by reporting the incident to the DPIRD and provide data to the Department of Health. These agencies will provide guidance to the landowner on disease control and hygiene, transport and disposal of diseased dead birds.

4.9 CHEMICAL STORAGE & USE

Various chemicals will be kept at the site for use in site operations, such as disinfectants, pesticides, and pharmaceutical products. This is typical of rural operations. Chemicals will be stored in an enclosed shed(s) at least 200 m from water courses. Each shed will have a concrete floor with chemical containers

stored on a plastic bund to minimise the risk of spills affecting soil and groundwater. Spill kits containing absorbent materials (e.g. kitty litter) will be kept at each pod and service area to clean up any spills which occur. Records will be retained of any incident involving spills.

Material safety data sheets for chemicals used will be kept with the chemicals. Chemicals will be used in accordance with manufacturer's directions, and containers will be disposed of in an appropriate manner.

4.10 LIGHTING FOR SHEDS

Lights are used to control the onset of sexual maturity in the poultry. Light length is gradually increased from approximately 10 hours at the point of transfer to the 160 m sheds to 13 hours by 23 weeks of age. Sheds will be lit internally for this purpose. Light will not be visible from outside the sheds.

Outside lighting will be minimal to meet health and safety requirements for night workers. External lights will be directed away and/or shaded from off-site vantage points. The distances from the sheds to external residences is a minimum of 1 km. Night lighting will be minimised, with no spotlights or flood lights to reduce the risk of visibility.

4.11 STAFF AND VISITOR MANAGEMENT

Staff amenities will be provided at in the 60 m shed in each pod.

Staff induction will be a key part of operations to ensure that strict hygiene and management practices are maintained.

Visitors and their vehicles must remain outside of the designated production areas. There will be an induction process for people who visit the production area.

A sign will be placed close to the entry of the production area to advise visitors of biosecurity requirements (Plate 11).

PLATE 11: BIOSECURITY SIGNAGE

4.12 ACCESS AND VEHICLE MOVEMENTS

The access tracks that currently service the existing sheds will be retained and used for the expanded operation (Appendix A). Additional access tracks will be constructed to access individual sheds within the Pods.

Vehicle movements to the farm will include staff commuting, importing of poultry bedding, feed and removal of eggs, poultry and litter.

Given the cyclical nature of the poultry farm business, the daily traffic movements depend on the production cycle on the site. As such, there are some site operations that only take place over a short period of approximately 4 weeks, occurring twice per year. Operations will be staged so that one shed is operating at a time, with the cycles approximately 6 months apart. The following offers a brief description of the different traffic movements anticipated for the site.

1. Bedding:

Delivery of bedding materials will only take place once per year per shed, occurring when the sheds are set up for the birds. Semi or B double trucks will deliver the bedding material within a one-week window for each shed.

2. Bird Transfer:

Delivery of young hens and roosters will take place over a couple of days per shed, occurring twice per year. They will be delivered by semi trucks.

3. Feed Delivery:

A B double truck will deliver feed two times per week. This will only take place when birds are onsite.

4. Dead Bird Collection:

Dead birds will be collected daily and stored in a refrigerated space. They will then be collected by a Heavy Rigid (HR) truck on a weekly basis.

5. Egg Collection:

The site will be producing eggs for breeding purposes. The production of eggs will take place continuously throughout the year, with a dip in production for 4 weeks while one of the 2 farms on the site are being cleaned and repopulated. A HR truck will pick up eggs on a weekly basis.

6. Live Bird Collection:

Approximately every 6 months one of the farms will be emptied of birds for cleaning and repopulation. Over a period of a couple of days semi trucks will pick up the live birds from the sheds.

7. Litter Removal:

Spent litter will be removed from the sheds once the birds have been taken off site. Over the course of a few days to a week, semi trucks will remove the litter from the site. This process occurs approximately every 6 months when one of the sheds is being cleaned and repopulated.

8. Clean out:

A contracting crew of approximately four people will be employed to undertake the cleaning of sheds over a period of one week, occurring every 6 months. They will travel to and from site in light vehicles during that one-week period.

9. Staff:

Twelve staff members will travel to and from site in their personal cars (light vehicles) on a daily basis with reduced numbers of staff on weekends and holidays.

10. Waste Collection:

The site will have rubbish collected by a standard rubbish truck on a weekly basis.

A summary of vehicle movements is included in Table 5.

TABLE 5: VEHICLE MOVEMENTS

VEHICLE MOVEMENTS	NUMBER OF MOVEMENTS
Average number of daily vehicle movements	21
Maximum number of daily vehicle movements	28
Minimum number of daily vehicle movements	6

4.13 RESPONSE TO COMPLAINTS AND CONTINGENCIES

If the site operators are contacted regarding complaints about odour, noise or any other relevant issue, the complaint will be logged (date received, date/time of event of concern, contact person). The potential cause of the complaint will be considered by the operator and the complainant contacted within one week to provide a response. If repeat complaints are received, management will investigate what site practices are potentially causing the issue and consider modification of these practices in order to resolve the issue. If the complaints do not appear to relate to a particular site activity or weather conditions, it may be necessary to liaise with Shire of Murray staff to try to reach a resolution with the complainant.

5 SUMMARY AND COMMITMENTS

Expansion of the current poultry farm to create a breeder egg operation will require construction of two pods, each containing eight poultry sheds to contain a total of 293,760 birds per year. There will also be a packing shed associated with each pod.

Poultry will be imported to the property at 20 weeks of age and place in the 160 m sheds. Egg laying will occur until the poultry are 65 weeks old, after which the birds will be taken offsite for processing.

The operation will meet environmental guidance set out in *Environmental Code of Practice for Poultry Farms in Western Australia* (WABGA *et al.*, 2004), with sand fill as required to ensure that the sheds meet a 1 m clearance to maximum groundwater levels (approximately 14 m AHD). This is considered sufficient to protect groundwater and to reduce the risk of inundation. Having a separation for some areas of 1 m rather than 2 m is considered acceptable as the system is closed with no opportunity for discharge of nutrients to the environment.

A review of available guidelines has identified recommendations for separation distances between poultry farm operations (overall, and for specific farm elements) and various receptors. The proposed site layout meets the lateral separation distance requirements identified, including separation from adjacent residences and waterways. The North Dandalup River, groundwater and ultimately the Peel Harvey Estuary system are considered the primary environmental receptors. Management of litter and associated nutrients is shown to meet the output requirements of *Peel Sustainable Horticulture* program (Peel Harvey Catchment Council, 2017). The installation of lined ponds to capture the small volumes of wash water is recommended.

In order to ensure that the site is managed in a way that should minimise opportunity for environmental impacts, the commitments listed in Table 6 are made in support of this proposal:

TABLE 6: COMMITMENTS AND RESPONSIBILITIES

ITEM	ACTION	RESPONSIBILITY/ TIMING
Separation distances: Sensitive receptors, waterways and residences	Separation distances to be maintained as outlined in: • Environmental Code of Practice for Poultry Farms in Western Australia (WABGA *et al.*, 2004).	Proponent (at all times)
Separation to groundwater	Retain a separation from maximum groundwater of at least 1 m (at approximately 13 m AHD) with floor height of sheds to be a minimum of 14 m AHD.	Proponent (construction)
Site security and biosecurity	Installation of a gate and signage at the site entry. Entry by authorised personnel only.	Proponent
Odour, dust and pest management	Loading of spent litter via covered conveyor belt to covered truck. Other commitments as outlined in Section 4.1.	Proponent (at all times)
Nutrient management	Construction of sheds as closed systems with no egress of nutrients or wash water.	Proponent (at all times)

ITEM	ACTION	RESPONSIBILITY/ TIMING
	Removal of spent litter from the subject land for beneficial reuse. Other practices as outlined in Section 4.3.	
Management of pests and predators	Monitoring of pests, with treatment and control as required.	Proponent (during operations)
Disposal of dead birds	Storage in refrigerator and removal from the property at least weekly by contractor.	Proponent (during operation)
Mass death of birds	Mass death to be dealt with as per Section 4.7	Proponent with advice from relevant agencies and authorities (in case of mass death) including the Shire of Murray
Safe storage and use of chemicals	Storage of chemicals in enclosed areas with concrete floors, located at least 200m from waterways. Availability of materials safety data sheets for chemicals used on site. Use of chemicals in accordance with manufacturer's directions.	Proponent (during operations)
Lighting of sheds	Internal lighting of sheds will not be visible from sensitive receptors. Minimal external lighting for safety of staff. External lights will be directed away from external vantage points.	Proponent
Response to complaints	Logging of complaints received, review of associated issues, and documentation of follow-up undertaken. Contingencies for operation modification, if required.	Proponent (during operations)

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APPENDIX A

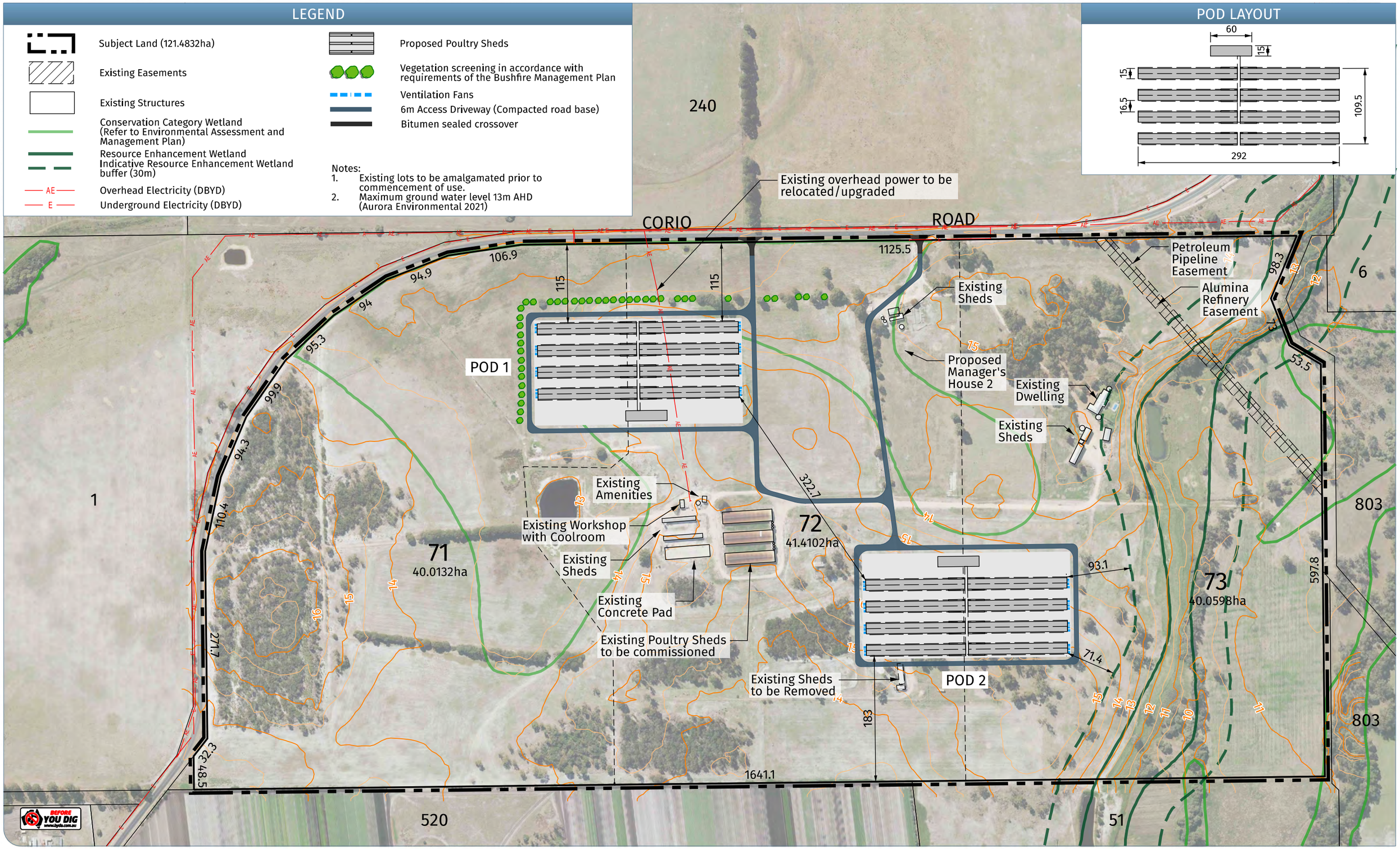
Development Site Plan

LEGEND

- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)

POD LAYOUT



DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	23765-01	
Date	01/11/23	
Drawn	NP	
Checked	JS	
Revision	E	
Scale	1:5000@A3	0 50m 100m 150m

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
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15/2 Hensbrook Loop,
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NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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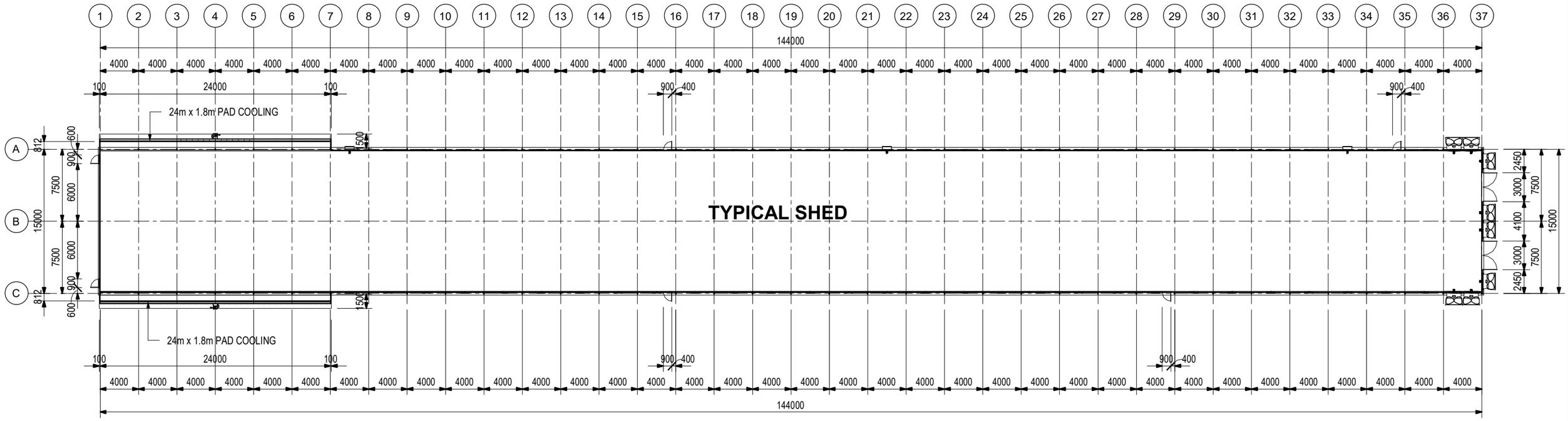
APPENDIX B

Shed Plans and Elevations



1 TYPICAL SHED FLOOR PLAN

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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Typical Shed Floor Plan

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

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PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-01

SHEET NO.

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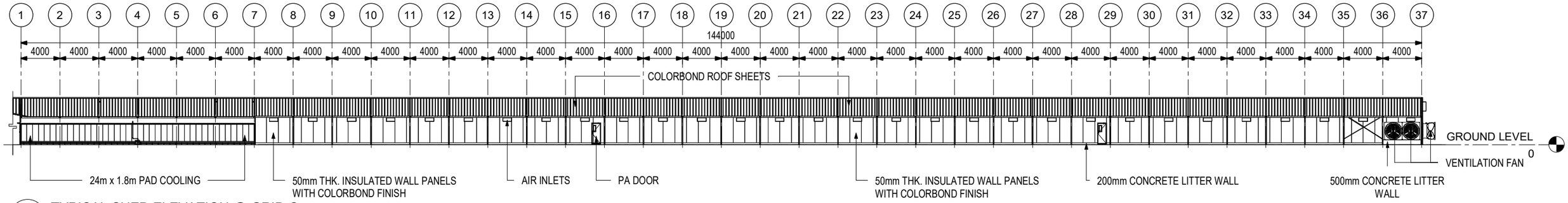

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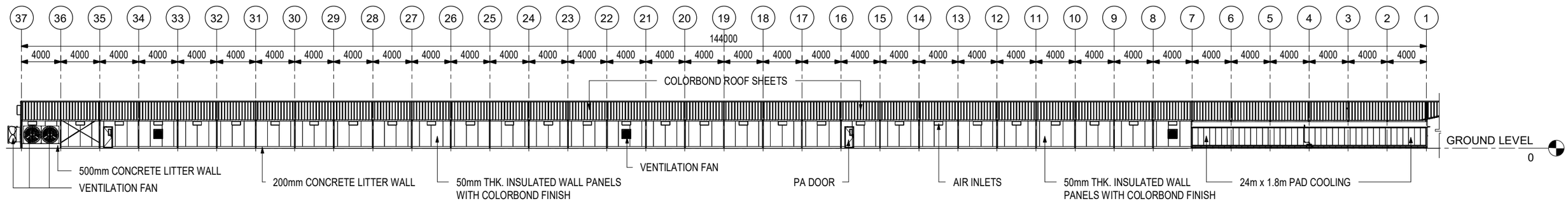

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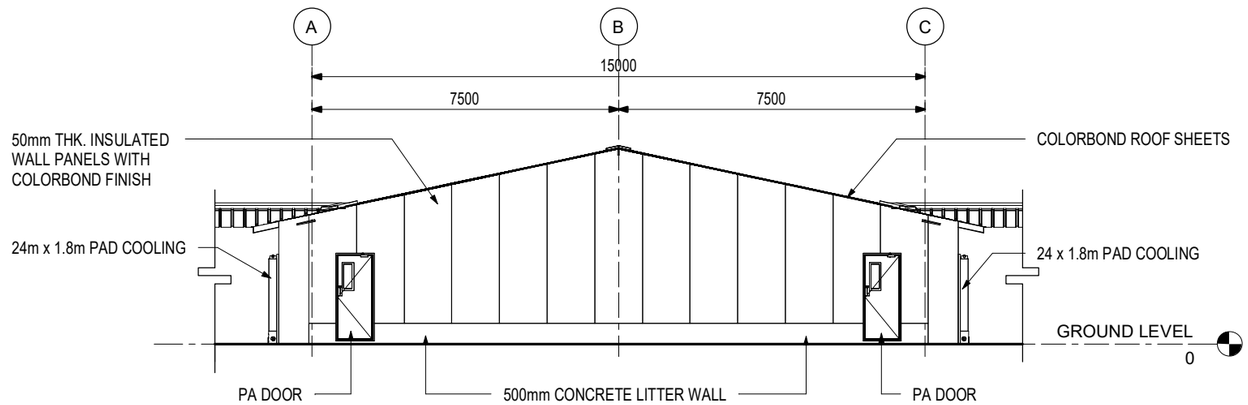

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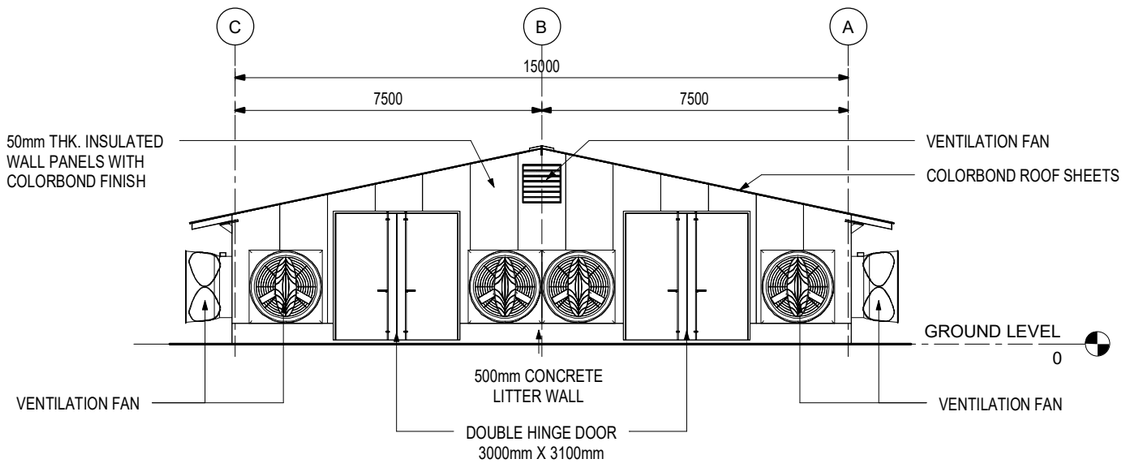

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		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT: Breeder Farm

DRAWING TITLE: A_Typical Shed Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE:

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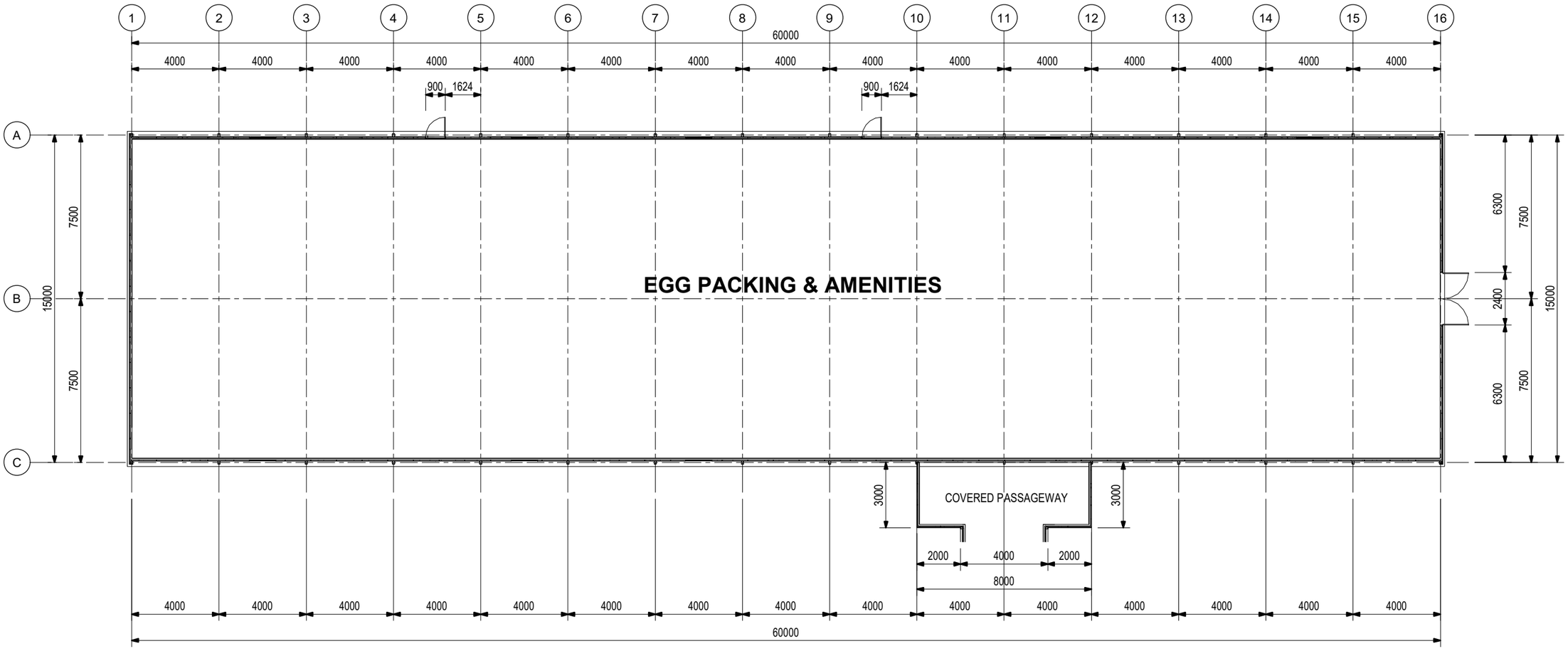

1 EGG PACKING & AMENITIES FLOOR PLAN

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CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT: Breeder Farm

DRAWING TITLE: A_Egg Packing & Amenities Floor Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N

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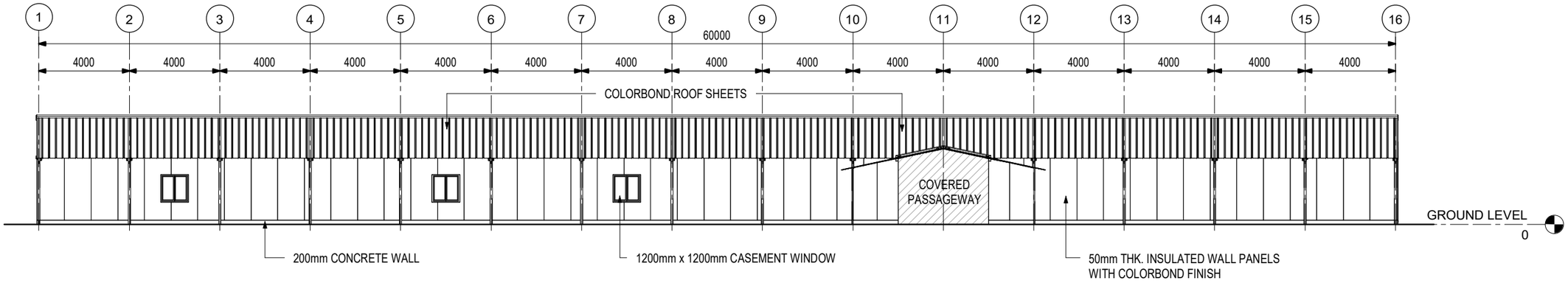

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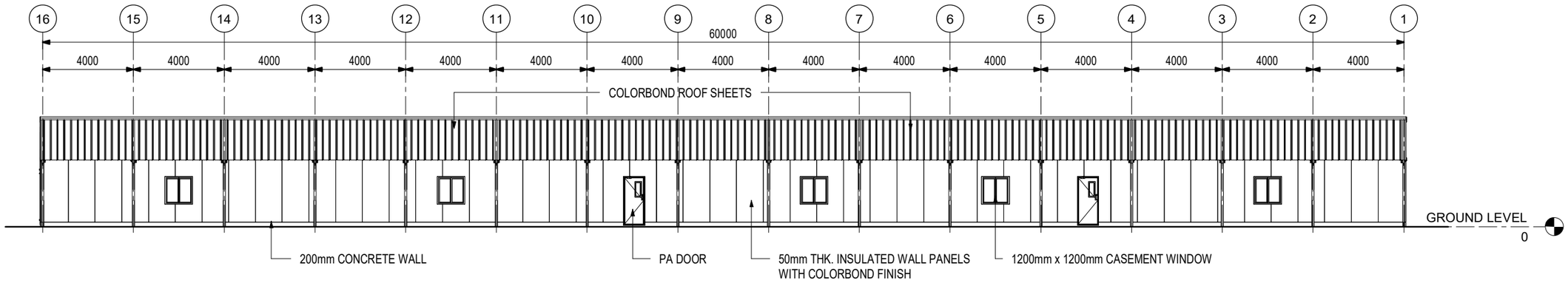

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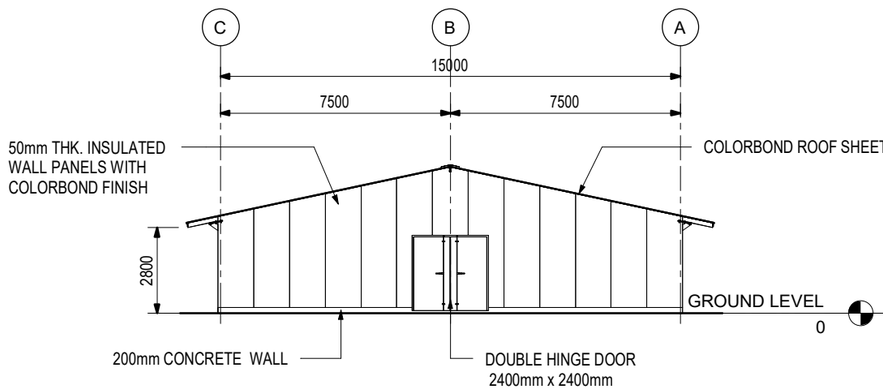

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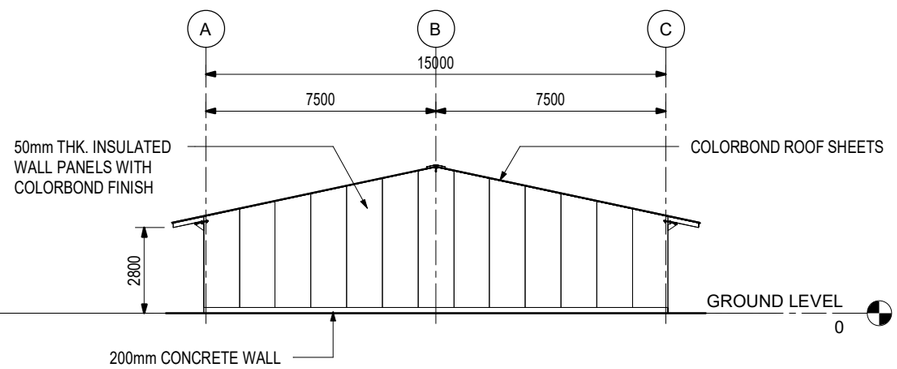

4 EGG PACKING & AMENITIES ELEVATION @ GRID 1

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		C	10/20/23				

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ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT: Breeder Farm

DRAWING TITLE: A_Egg Packing & Amenities Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 200

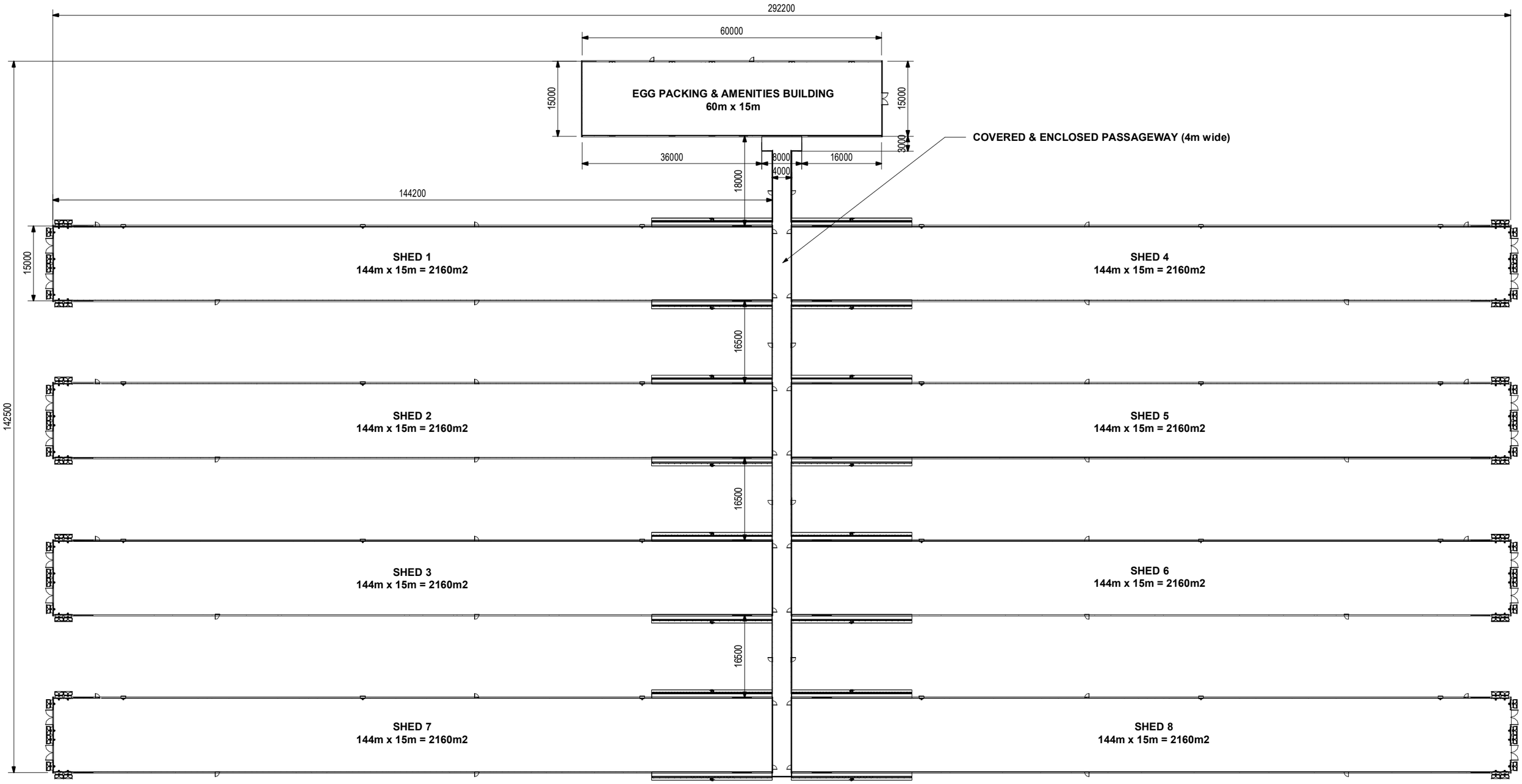
PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-04

SHEET NO.

REV: C

Breeder Farm Layout concept – 8 sheds



1 OVERALL SITE PLAN
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ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT
Breeder Farm

DRAWING TITLE
A_Overall Site Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 750

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-05

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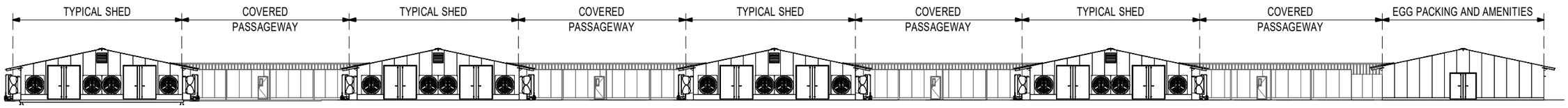

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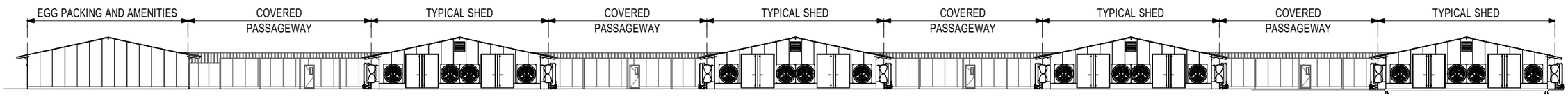

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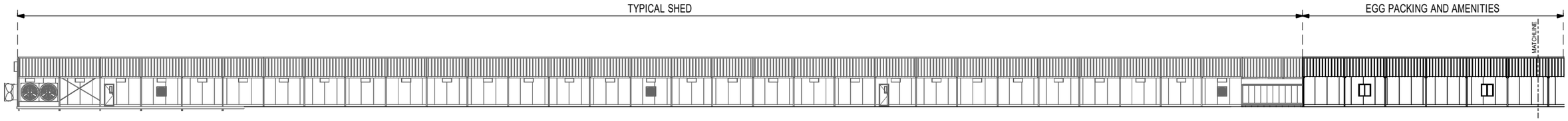

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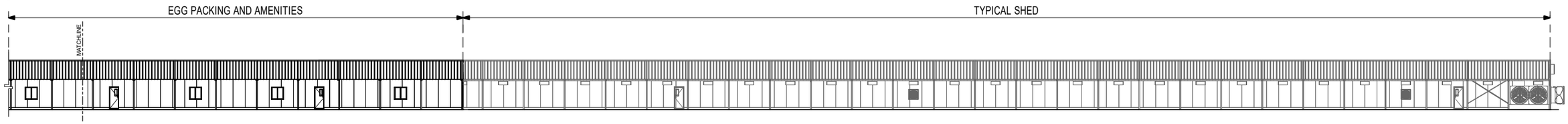
1 : 400



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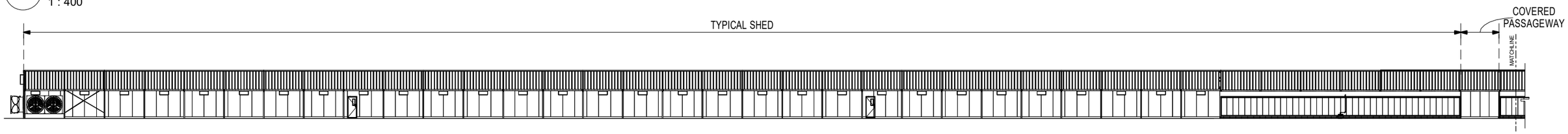
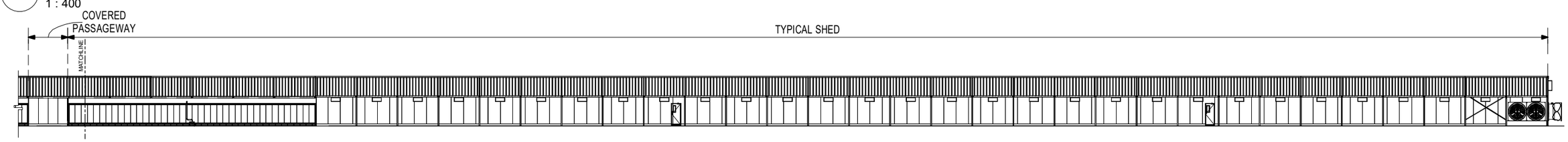
1 : 400



5 SOUTH ELEVATION (1 OF 2)
1 : 400



6 SOUTH ELEVATION (2 OF 2)
1 : 400

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REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Overall Site Elevation

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 400

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-06

SHEET NO.

REV: C

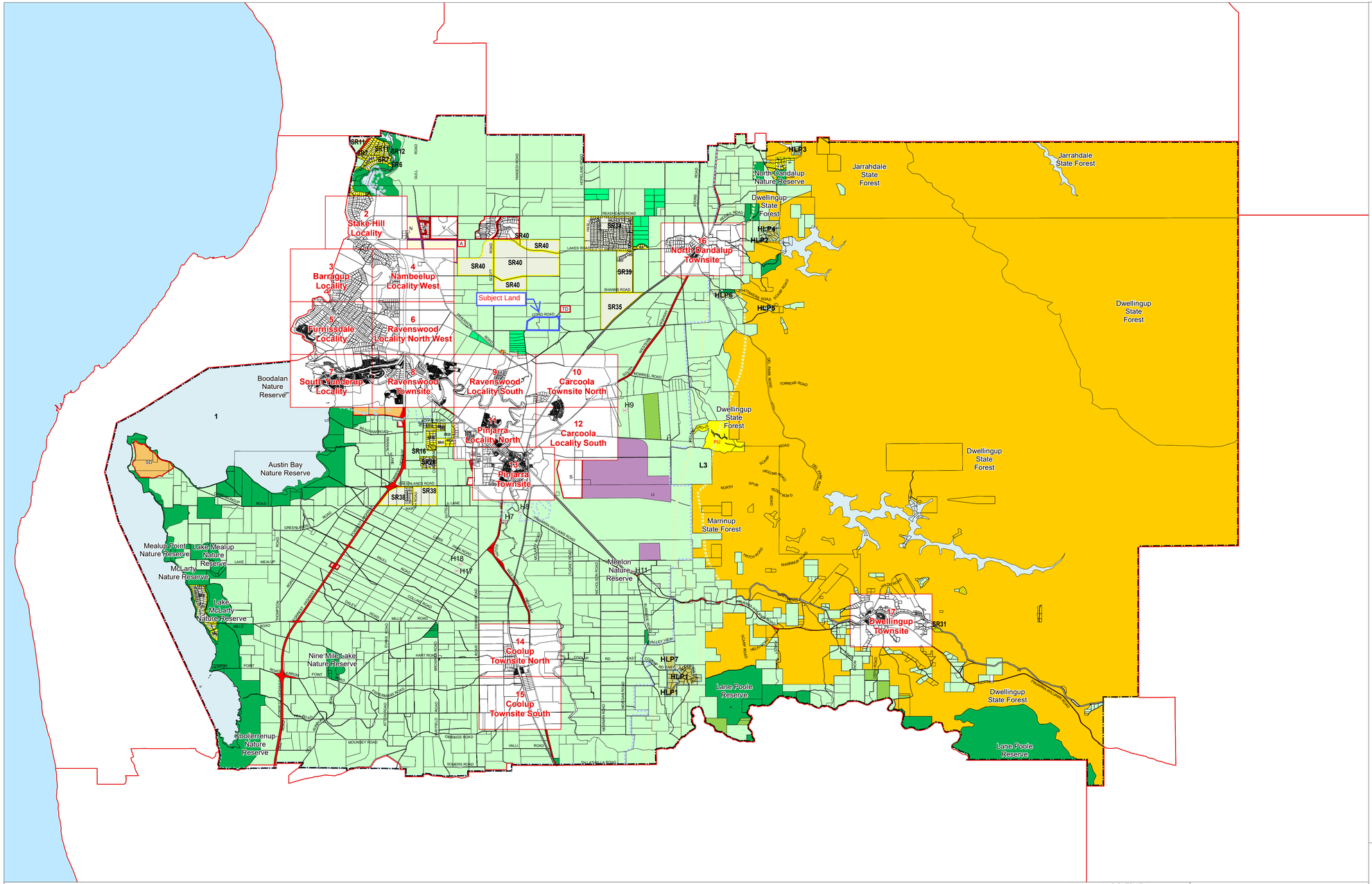
APPENDIX C

Land Use Context

Surrounding Land Uses

APPENDIX D

Zoning



LEGEND

REGION SCHEME RESERVES (PRS)

- Other Regional Roads
- Regional Open Space
- Primary Regional Roads
- Railways
- State Forests
- Waterways
- Public Purposes
- HS Public Purposes - High School
- H Public Purposes - Hospital
- PU Public Purposes - Public Utilities
- SU Public Purposes - Special Uses
- U Public Purposes - University

LOCAL SCHEME RESERVES

- Civic / Cultural
- Major Highway
- Public Purposes
- A Public Purposes : Ambulance depot
- C Public Purposes : Cemetery
- D Public Purposes : Drain
- FF Public Purposes : Fire Fighting Facility
- GR Public Purposes : Government Requirements
- HA Public Purposes : Hall Site
- HS Public Purposes : High School
- H Public Purposes : Hospital
- OS Public Purposes : Office and Stables
- P Public Purposes : Police
- PSC Public Purposes : Pre-school
- PS Public Purposes : Primary School
- PWD Public Purposes : Public Works Department
- PU Public Purposes : Public Utility
- RS Public Purposes : Race Course and Show Ground
- SEC Public Purposes : SEC Depot
- S Public Purposes : Sewage Pumping Station
- T Public Purposes : Telecom
- WSD Public Purposes : Water Supply
- Public Recreation / Conservation
- Railway
- Road to be closed
- State Forest

LOCAL SCHEME ZONES

- Canal Development
- Commercial
- Farmlet
- Hills Landscape Protection
- Hotel / Motel
- Industry
- Private Clubs and Institutions
- Residential
- Residential Development
- Rural
- Service Commercial
- Special Residential
- Special Rural
- Town Centre
- CCP Caravan / Chalet Park
- N Nambeelup Industrial Development
- P Pinjarra Industrial Development
- PR Private Recreation
- SD Special Development
- A Special Use : Abattoir
- ACV Special Use : Art/Craft Village
- ETC Special Use : Employment and Training Centre
- FSC Special Use : Freeway Service Centre
- G Special Use : Garden Centre
- HB Special Use : Home Business
- K Special Use : Kennel
- MLFC Special Use : Masonic Lodge and Function Centre
- W Special Use : Place of Worship
- AGC Special Use : Processing of Agricultural Chemicals
- RH Special Use : Recreation Hall
- RRRH Special Use : Residential,Resort,Retirement,Hire Accom
- RTTS Special Use : Residential/Horse Training,Trotting,Stabling
- R Special Use : Roadhouse
- SS Special Use : Service Station
- SS&B Special Use : Service Station and Boat Display
- SSS Special Use : Service Station and Shop
- SR Special Use : Single Residential
- S Special Use : Stable
- TD Special Use : Tourist Development
- V Special Use : Various (see scheme text)

OTHER CATEGORIES

(see scheme text for additional information)

- Scheme Area Boundary
- Local Government boundary
- R20 R Codes
- A1 Additional Uses
- **SR1** Special Rural Area
- Floodprone Areas (100 Year Flood)
- **HLP1** Hills Landscape Protection Area
- **1** Peel - Harvey Coastal Plain Catchment Area
- **L1** Places of Landscape Value
- **DCA1** SCA - Development Contribution Area
- Places of Heritage Value
- No Zone

VERSION No 1

Shire of Murray

Town Planning Scheme No. 4

(District Scheme)

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

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Shire of Murray

Town Planning Scheme No. 4

(District Scheme)

N

0 2000 4000 6000 8000 Meters

MAP OVERVIEW

Authorised: T.Servaas

Plot Date: 22 June 2023

G.Gazette: Friday, 23 June 1989

Town Planning Scheme Map No. 1 of 17
MAP: Murray Overall

Shire of Murray

Town Planning Scheme No. 4

(District Scheme)

APPENDIX E

Subject Land Nutrient Mapping

Interpreting your whole farm nutrient maps

Summary

A!set!of!14!maps,!a!tabular!report!and!a!farm!summary!status!sheet!are!provided!as!part!of!your!involvement!in!the!Regional!Estuaries!Initiative!(REI)!or!Revitalising!Geographe!Waterways!(RGW)!projects.!The!paddock!boundaries!shown!in!the!presented!maps!are!based!on!the!information!you!verified!as!representing!your!paddocks.!!

Soil!sampling!followed!transects!in!paddocks!after!a!discussion!between!you!and!the!soil!sampling!team.!Composite!soil!samples!comprising!at!least!30!sub!samples,!each!0/10!cm,!from!each!paddock!were!collected.!The!composite!sample!was!dried,!sieved,!and!sent!to!an!Australasian!Soil!and!Plant!Analysis!Council!(ASPAC)!certified!laboratory!for!analysis.!The!raw!soil!test!data!was!classified!and!used!to!colour!code!the!paddock!maps!and!provided!tables.!

The!map!set!includes:!

- an!outline!map!showing!paddock!boundaries!and!names!
- a!map!showing!the!sampling!transects!
- a!colour!coded!map!of!soil!phosphorus!buffering!index!(PBI)!
- a!colour!coded!map!of!the!soils!pH!status!
- four!colour!coded!maps!of!soil!phosphorus!(P)!status!for!different!production!levels!
- a!phosphorus!environmental!risk!index!map!!
- a!colour!coded!map!of!soil!potassium!(K)!status!
- a!colour!coded!map!of!soil!sulphur!(S)!status!
- three!colour!coded!maps!of!fertility!indices!for!P,!K!and!S!

In!each!map!the!paddock!colour!coding!indicates!the!status!of!that!soil!test.!Most!maps!are!colour!coded!using!a!traffic!light!approach,!being!green,!yellow!and!red,!or!green!and!blue!shades!for!people!with!colour!blindness.!Using!the!traffic!light!metaphor,!green!means!that!the!status!is!high!or!“OK”,!yellow!is!medium!status!and!means!you!may!need!to!consider!applying!a!particular!nutrient!or!amendment,!and!red!is!regarded!as!low!status!and!means!you!need!to!stop!and!closely!examine!this!paddock!because!the!level!is!low!and!a!fertiliser!or!amendment!is!likely!required.!The!status!is!described!in!the!key!provided!for!each!map.!The!actual!soil!test!value!or!index!is!shown!in!each!paddock.!!

The!farm!summary!status!sheet!includes!information!on!the!number!of!paddocks!that!were!sampled,!the!total!area!sampled,!and!the!areas!(ha)!of!varying!classifications!of!PBI,!pH!

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status,!P!status,!K!status,!S!status!and!PERI!status!on!your!farm.!The!tabular!report!contains!the!raw!soil!test!data,!colour!coded!in!a!similar!way!to!the!maps.!

Further!details!and!supporting!information!for!these!maps!and!tables!is!provided!on!the!following!pages!and!the!maps!themselves.!

Transect map

This!map!shows!the!transects!used!for!sampling!in!each!paddock!that!was!sampled.!Each!point!represents!a!location!in!the!paddock!where!a!0/10!cm!sub!sample!was!collected.!The!collected!sub!samples!were!combined!into!a!composite!sample,!which!was!then!dried,!sieved,!and!sent!to!an!ASPAC!(http://www.aspac/australasia.com)!laboratory!for!analysis.!Where!GPS!data!was!not!captured,!transects!are!generalised!from!hand!drawn!lines!on!field!maps!by!the!sampler.!In!some!cases,!sampling!transects!may!cross!paddock!boundaries!due!to!poor!satellite!reception,!differences!found!between!mapped!and!actual!paddock!boundaries!when!sampling!was!undertaken,!or!because!of!requests!by!landowners!to!sample!in!particular!locations.!Transects!may!not!be!straight!due!to!paddock!hazards!and!vegetation.!

Phosphorus Buffering Index

Phosphorus!Buffering!Index!(PBI)!is!the!agreed!national!measure!to!estimate!how!strongly!a!soil!will!retain!P!(Burkitt!et!al.,!(2002),!and!is!a!refelction!of!soil!type.!Phosphorus!Buffering!Index!is!used!in!conjunction!with!Colwell!P!to!determine!the!soils!P!status!(Windsor!et!al.,!2010`!Bolland!et!al.,!2010b`!Gourley!et!al.,!2007).!The!PBI!classes!used!here!(Table!1)!include!some!modification!of!the!Australian!PBI!standards!(Gourley!et!al.,!2007)!for!soils!with!PBI!<!15!to!suit!the!sandy!soils!in!WA!(Windsor!et!al.,!2010`!Bolland!et!al.,!2010b).!

Table&1.&Phosphorus&Buffering&Index&ranges,&classification,&and&expected&soil&texture&

PBI	Classification	Typical Soil Texture
<5	Exceedingly low	Sand ↑
≥5-10	Excessively low	
≥10-15	Extremely low	
≥15-35	Very Very low	
≥35-70	Very low	
≥70-140	Low	
≥140-280	Medium	
≥280-840	High	↓ Loam/Clay

!

Low!PBI!values!are!usually!associated!with!sandy!soils!while!high!PBI!values!are!associated!with!clay!and!loam!soils!that!are!red,!brown!and!orange!in!colour.!Soils!with!finer!texture!(clays!and!loams)!will!commonly!have!high!PBI!values,!as!these!tend!to!contain!soil!minerals!such!as!iron!and!aluminium!oxides!that!retain!P!and!other!nutrients.!Coarse!textured!sandy!soils!have!a!low!surface!area!and!are!often!comprised!of!soil!minerals!such!as!quartz!that!have!little!capacity!to!retain!P!or!other!nutrients.!

Soil Acidity

Soil!acidity!is!assessed!by!classifying!soil!pH!(measured!in!Calcium!Chloride,!$CaCl_2$)!into!one!of!four!pH!ranges!(Table!2).!The!target!soil!pH!above!which!your!soil!acidity!is!regarded!as!being!"OK"!is!5.5!(Gazey!and!Davies,!2009).!Below!this!value,!soil!pH!is!arbitrarily!broken!up!by!0.5!pH!increments!to!result!in!marginal!pH!(5.0/5.5),!low!pH!(4.5/5.0)!and!very!low!pH!(<4.5).!The!classification!of!pH!is!made!on!the!basis!of!pH!to!influence!the!relative!availability!of!nutrients!(Truog,!1948),!not!its!influence!on!aluminium!concentration!and!aluminium's!effect!on!plant!roots.!It!is!difficult!to!maintain!productive!pastures!when!the!soil!is!acidic!(low!pH).!Acidity!reduces!the!availability!of!many!plant!nutrients!in!the!soil!and!can!damage!plant!roots.!

Table&2.&Soil&pH&ranges&defining&soil&pH&status&

pH ($CaCl_2$)	Status
<4.5	Very Low
≥4.5-5.0	Low
≥5.0-5.5	Marginal
≥5.5	OK

!

Phosphorus Status

Four!P!status!maps!are!provided!to!represent!different!production!levels!(80%,!85%,!90%,!95%!of!maximum!production)!to!cater!for!differing!production!goals!of!growers,!and!in!recognition!that!P!is!a!key!nutrient!to!manage!for!water!quality!purposes!(Ruprecht!et!al.,!2013).!Those!with!a!lower!stocking!rate!(80!to!85%!production!target,!beef!and!sheep!enterprises)!are!likely!to!require!less!P!in!the!soil!than!those!with!a!high!requirement!for!feed!(90!to!95%,!dairy!enterprises).!

The!maps!are!colour!coded!by!P!status!where!green!is!regarded!as!high!P!status!(P!fertiliser!likely!not!required),!yellow/orange!is!regarded!as!medium!P!status!(P!may!be!required!depending!upon!economics!and!your!production!goals),!and!red!is!regarded!as!low!P!status!(you!need!to!stop!and!closely!examine!this!paddock!because!the!level!is!low!and!a!P!based!fertiliser!is!likely!required).!

The!Phosphorus!(P)!soil!test!(Colwell,!1965)!is!used!in!conjunction!with!the!soils!Phosphorus!Buffering!Index!(PBI`!Burkitt!et!al.,!2002)!to!determine!soil!P!status.!The!PBI!

can!be!likened!to!a!measure!of!the!soil!type,!with!sandy!soils!having!a!low!PBI!and!heavier! clay!soils!having!a!much!higher!PBI.!The!higher!the!PBI,!the!more!P!is!needed!to! overcome!what!is!bound!by!the!soil.!The!amount!of!P!required!to!increase!production!for! each!level!of!PBI!has!been!determined!from!field!trials!and!the!soil!test!level! corresponding!to!target!production!levels!are!called!critical!levels.!The!critical!levels!of!P! used!to!assess!your!soil!test!are!derived!from!field!trials!that!were!used!to!create!the! Australian!standards!(Gourley!et!al.,!2007),!with!some!modification!for!soils!with!PBI!<!15! to!suit!the!sandy!soils!in!WA!(Windsor!et!al.,!2010`!Bolland!et!al.,!2010b).!The! classification!of!your!P!soil!test!into!high,!medium!or!low!P!status!is!based!on!a!conversion! of!the!tabular!or!stepped!ranges!(Table!3)!provided!by!Bolland!et!al.!(2010b)!into!smooth! mathematical!functions.!!

Table&3.&Critical&Colwell&P&values&defining&soil&P&status&for&different&PBI&ranges&at&80%,&85%,&90%&and&95%&of&maximum& production&(Bolland&et&al.,&2010b)&

80% maximum production			
	Colwell P (mg kg^{-1})		
PBI	Low	Medium	High
<5	<4	4-6	>6
≥5-10	<6	6-8	>8
≥10-15	<8	8-11	>11
≥15-35	<11	11-14	>14
≥35-70	<14	14-16	>16
≥70-140	<16	16-18	>18
≥140-280	<18	18-21	>21
≥280-840	<21	21-30	>30

85% maximum production		
Colwell P (mg kg^{-1})		
Low	Medium	High
<5	5-7	>7
<7	7-10	>10
<10	10-13	>13
<13	13-16	>16
<16	16-18	>18
<18	18-21	>21
<21	21-25	>25
<25	25-35	>35

90% maximum production			
	Colwell P (mg kg^{-1})		
PBI	Low	Medium	High
<5	<6	6-8	>8
≥5-10	<8	8-11	>11
≥10-15	<11	11-15	>15
≥15-35	<15	15-20	>20
≥35-70	<20	20-22	>22
≥70-140	<22	22-25	>25
≥140-280	<25	25-30	>30
≥280-840	<30	30-42	>42

95% maximum production		
Colwell P (mg kg^{-1})		
Low	Medium	High
<7	7-10	>10
<10	10-15	>15
<15	15-20	>20
<20	20-25	>25
<25	25-29	>29
<29	29-34	>34
<34	34-40	>40
<40	40-55	>55

!

Note!that!the!critical!levels!used!to!determine!P!status!are!aimed!at!growing!clover,!which!has!a!higher!P!requirement!than!grasses.!If!your!pasture!is!dominated!by!grass!then!it!is!likely!that!the!critical!levels!used!may!overPestimate!your!P!needs!

If!your!soil!has!low!P!status!and!does!need!P,!refer!to!Summers!and!Weaver!(2011)!as!a!guide,!or!engage!a!Fertcare!accredited!advisor!to!determine!how!much!P!to!apply!to!achieve!your!desired!production!level.!

Phosphorus Environmental Risk Index

Phosphorus!Environmental!Risk!Index!(PERI)!is!determined!as!the!ratio!of!Colwell!P!to!PBI,!and!provides!insight!into!the!degree!of!saturation!of!the!soil!with!P.!PERI!is!only!one!of!a!range!of!factors!that!should!be!considered!in!understanding!P!loss!risk,!and!is!associated!with!the!likelihood!that!soluble!P!can!be!lost!from!the!soil!via!a!range!of!pathways.!Consideration!should!also!be!given!to!landscape!slope,!landscape!shape,!proximity!to!watercourses,!depth!to!groundwater,!the!degree!of!waterlogging,!drainage,!pasture!type!and!cover,!fertiliser!timing,!Colwell!P,!PBI!and!stocking!rate!to!better!understand!the!risk!of!P!loss,!and!the!forms!of!P!that!may!be!lost!from!paddocks!and!the!farm.!The!classification!ranges!(Table!4)!used!are!notional!based!on!knowledge!gained!for!Fertcare!Accredited!Advisor!training!(Chris!Dowling,!BackPaddock!pers.!comm.)!

Table&4.&PERI&ranges&and&classification&

PERI range	Classification
<0.3	Low
0.30-0.65	Marginal
0.65-1.00	High
1.00-1.30	Very high
>1.30	Extreme

!

!

Potassium Status

Soil!Potassium!(K)!status!(low,!medium,!high)!is!determined!by!classifying!Colwell!K!into!one!of!three!soil!K!ranges!(Summers!and!Weaver,!n.d.`!Table!5).!The!critical!K!levels!used!(0P50,!50P100,!>100!mg/kg)!are!consistent!with!Bolland!and!Russell!(2010a),!and!similar!to!the!critical!Colwell!K!values!provided!by!Gourley!et!al.!(2007).!Gourley!et!al.!(2007)!stratifies!critical!Colwell!K!values!by!soil!texture.!Using!the!equations!provided!by!Gourley!et!al.!(2007)!for!sandy!soils!(typically!found!in!the!coastal!catchments!associated!with!these!projects),!a!Colwell!K!value!of!100!mg/kg!yields!90%!of!maximum!production,!which!is!the!critical!value!used!here.!

Table 5. Critical Colwell K values defining K status

Colwell K (mg kg^{-1})	Status
<50	Low
≥50-100	Marginal
≥100	OK

!

The K soil test result is commonly low in coastal soils and muriate of potash (KCl) often needs to be applied to overcome the deficiency. The application of approximately 1 unit of K (1 kg of K) will be needed to raise the soil test by 1 unit for soils with PBI < 300. For soils with PBI > 300, approximately 2 units of K (2 kg of K) is required to increase the soil test by 1 unit (Meat and Livestock Australia, n.d.).

Sulphur Status

The critical levels of Sulphur (S) used to assess your soil test are derived from Australian standards (Gourley et al., 2007`Table 6). The S soil test (Blair et al., 1991` KCl40S) is classified as high S status when the value is > 5.9 (90% of maximum production). Medium S status is arbitrarily assigned when the S soil test value results in <5% reduction in maximum production, and low S status when >5% reduction in maximum production is achieved. Sandier soils are more likely to need S applications as the S can leach from these soils. The need for S is commonly associated with the need for K in spring on clover pastures grown on sandy soils after winter rains.

Table 6. Critical KCl40S values defining Sulphur status

KCl40S (mg kg^{-1})	Status
<4.9	Low
≥4.9-5.9	Marginal
≥ 5.9	OK

!

Sulphur is relatively cheaply available as coarse rock gypsum, which if applied in autumn will remain available until spring when it is needed most on sandy soils. Applications of very soluble S in fertilisers designed for hay making are only suitable when applied in spring.!!

Sulphur in superphosphate is in a good coarse form of S, but if P is not needed then it is an expensive form of S when compared to gypsum.

Fertility Index Maps

There are three fertility index maps, one each for P, K, and S showing an index assessed against critical values for 90% of maximum production. The index maps provide additional

information!about!your!soils!P,!K!and!S!status.!The!index!is!a!ratio!of!your!measured!soil!P,!K!or!S!value!to!the!critical!value!(Simpson!et!al.,!2011).!!

Index!values!near!to!1!are!optimal,!while!values!less!than!1!are!considered!deficient!and!values!greater!than!1!are!considered!in!excess.!How!far!above!or!below!1!your!index!values!are!will!tell!you!how!far!above!or!below!the!desired!target!value!your!soil!test!levels!are!(Table!7).!!

Table&7.&&Fertility&index&ranges&and&classification&

Index range	Classification
<0.75	Very deficient
0.75-0.90	Deficient
0.90-1.10	Optimal
1.10-1.50	Excess
>1.50	Well in excess

!

For!index!values!of!1!or!above,!application!of!that!nutrient!would!not!be!expected!to!deliver!additional!pasture!growth.!Whilst!for!index!values!less!than!1!additional!pasture!growth!would!be!expected!when!the!nutrient!for!that!index!is!applied.!

For!example,!the!critical!K!value!at!which!you!should!achieve!90%!of!maximum!production!is!100!parts!per!million!(ppm).!If!your!soil!test!measured!100!ppm!of!K,!your!K!fertility!index!value!would!be!1!or!on!target.!If!your!soil!test!measured!50!ppm!of!K,!your!K!fertility!index!value!would!be!0.5,!or!half!as!much!as!it!should!be!to!achieve!90%!of!maximum!production.!If!your!soil!test!measured!200!ppm!of!K,!your!K!fertility!index!value!would!be!2,!or!twice!as!much!as!it!needs!to!be!to!achieve!90%!of!maximum!production.!!

Tabular Report

The!tabular!report!following!your!maps!contains!the!raw!soil!test!data!for!PBI!(Burkitt!et!al.,!2002),!Colwell!P!(Colwell,!1965),!Colwell!K!(Colwell,!1965),!KCl40S!(Blair!et!al.,!1991)!and!pH!($CaCl_2$)!(Gazey!and!Davies,!2009),!using!the!same!classifications!as!for!the!maps.!In!addition,!the!tabular!report!includes!the!fence!to!fence!paddock!area!(hectares),!classifications!of!K!and!S!status!for!80%,!85%,!90%!and!95%!of!maximum!production,!P,!K!and!S!fertility!indices!(Simpson!et!al.,!2011)!for!80%,!85%,!90%!and!95%!of!maximum!production!and!the!soils!PERI!status.!These!tables!use!the!same!traffic!light!colour!scheme!as!the!maps.!Rows!in!the!table!that!do!not!contain!data!represent!paddocks!that!were!not!sampled.!

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Rob Clayton, 2010/2011
Status Summary

Paddocks and Areas

paddocks nominated:	18
paddocks sampled:	18
area sampled (ha):	83.63

PBI class (ha)

exceedingly low:	46.01
excessively low:	
extremely low:	10.81
very very low:	7.78
very low:	
low:	
medium:	19.03
high:	

pH status (ha)

very low:	16.92
low:	35.59
marginal:	12.52
OK:	18.6

P status (ha)

high:	25.4
medium:	7.67
low:	50.56

K status (ha)

high:	.65
medium:	
low:	82.98

S status (ha)

high:	21.09
medium:	
low:	62.54

PERI status (ha)

low:	31.25
marginal:	
high:	22.51
very high:	6.37
extreme:	23.5

Note: Area calculations for P, K and S status determined at 90% of maximum production

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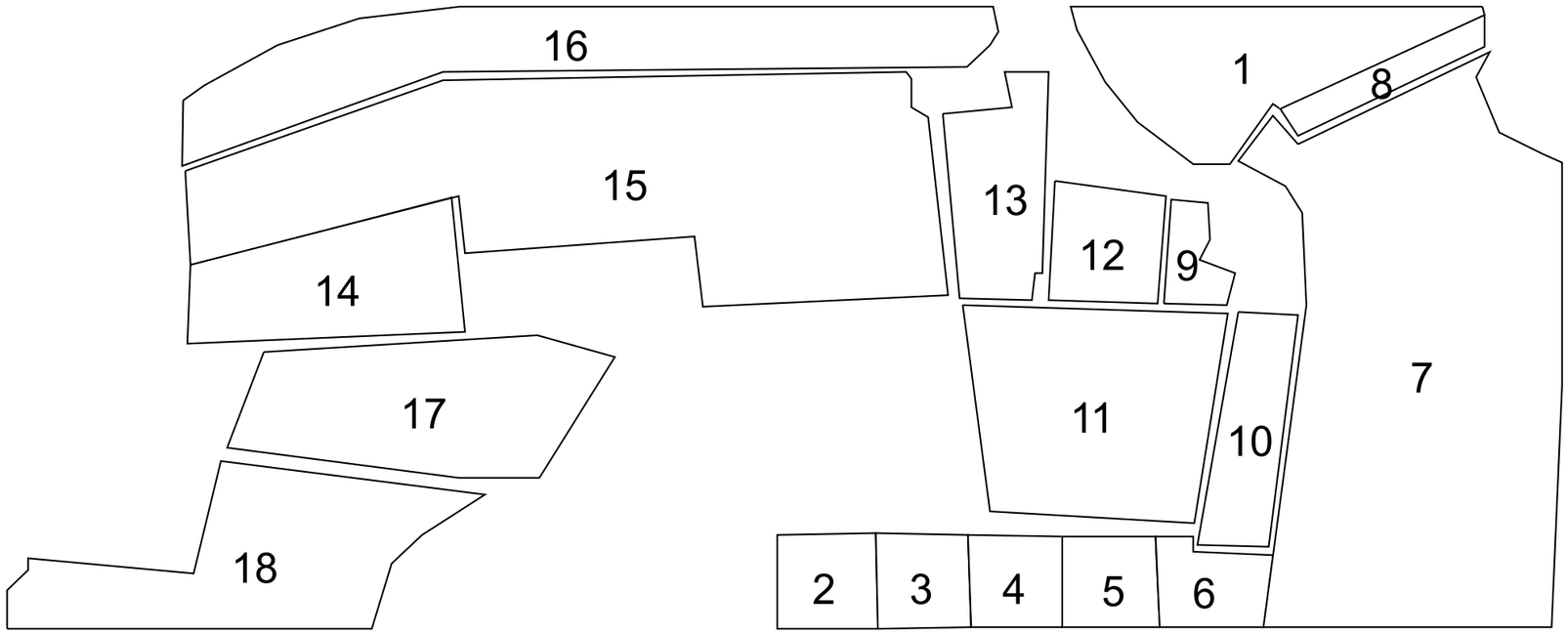
Rob Clayton, 2016/2017

Paddock outline

This map shows the outline of your paddocks and paddock names based on the information you verified as representing your paddocks. The paddock boundaries provide the basis for the colour coded maps that follow.



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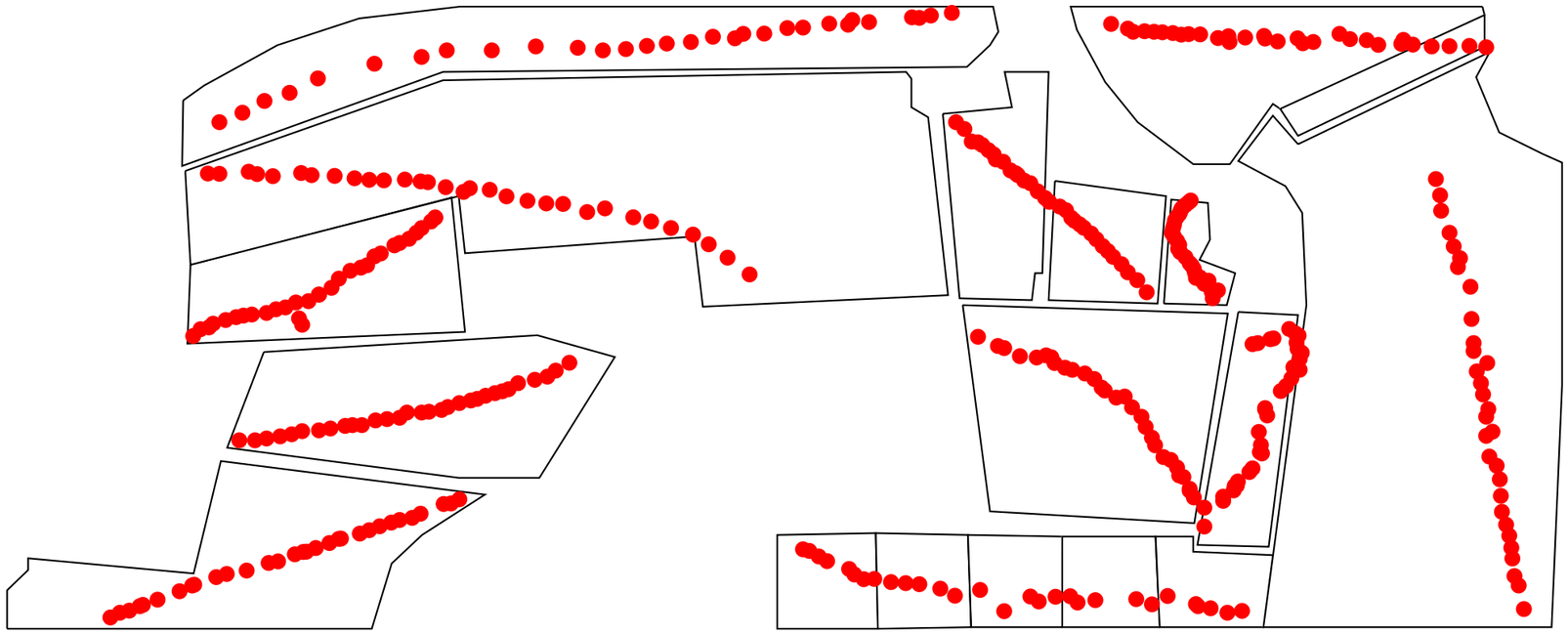
Paddock transects



This map shows the transects used for sampling in each paddock that was sampled. Each point represents a location in the paddock where a 0-10 cm sub sample was collected. The collected sub samples were combined into a composite sample, which was then dried, sieved, and sent to an ASPAC (http://www.aspac-australasia.com) laboratory for analysis. Where GPS data was not captured, transects are generalised from hand drawn lines on maps by the sampler. In some cases, sampling transects may cross paddock boundaries due to poor satellite reception, differences found between mapped and actual paddock boundaries when sampling was undertaken, or because of requests by farmers to sample in particular locations. Transects may not be straight due to paddock hazards and vegetation. Transects may occupy specific regions of paddocks when advice regarding paddock soil type variation has been provided by the farmer. Extraneous points not associated with the general transect trend can be ignored.

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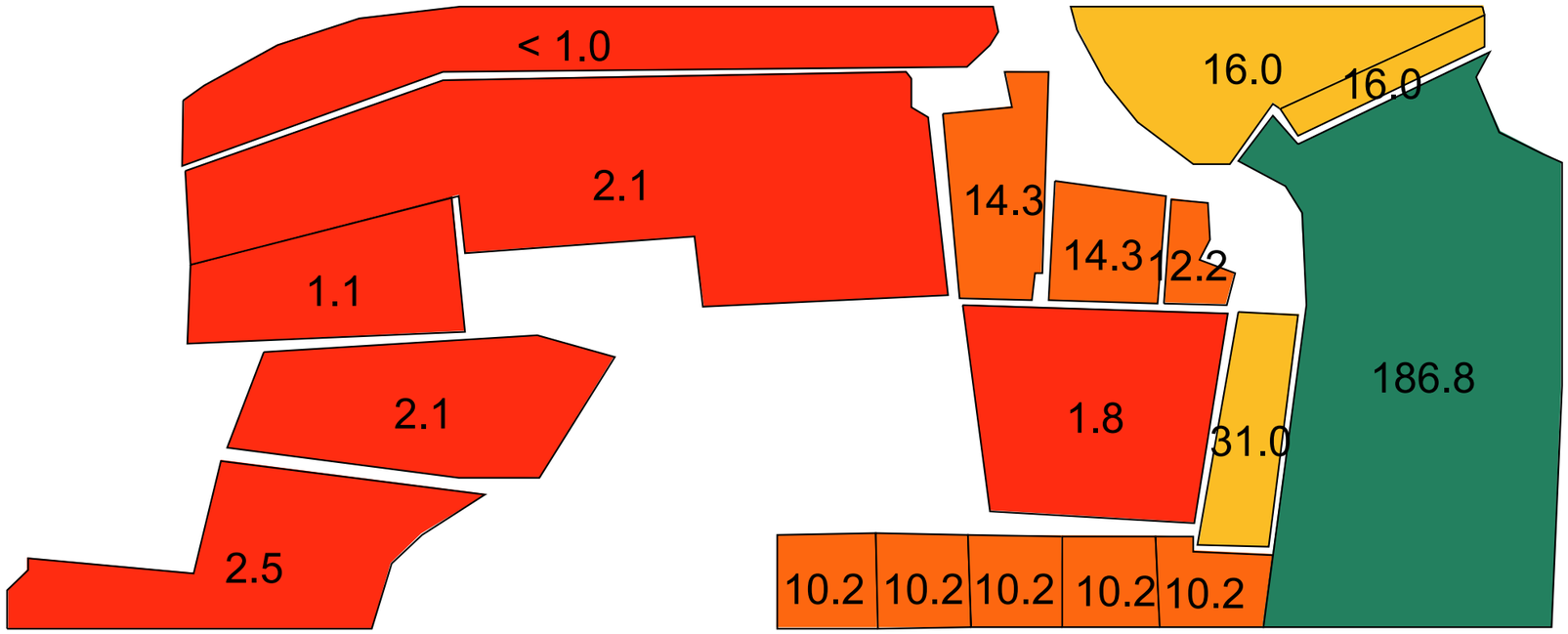
Rob Clayton, 2016/2017

Phosphorus buffering index

- Exceedingly Low
- Excessively Low
- Extremely Low
- Very Very Low
- Very Low
- Low
- Medium
- High



This map uses a colour scale to classify soil phosphorus buffering index (PBI). Examine the map key and associated colours to determine PBI status. Paddocks shaded black have no data. Phosphorus buffering index is the agreed national measure to estimate how strongly a soil will retain phosphorus (Burkitt et al., (2002). The PBI classes used here include some modification of the Australian PBI standards (Gourley et al., 2007) for soils with PBI < 15 to suit the sandy soils in WA (Windsor et al., 2010; Bolland et al., 2010).

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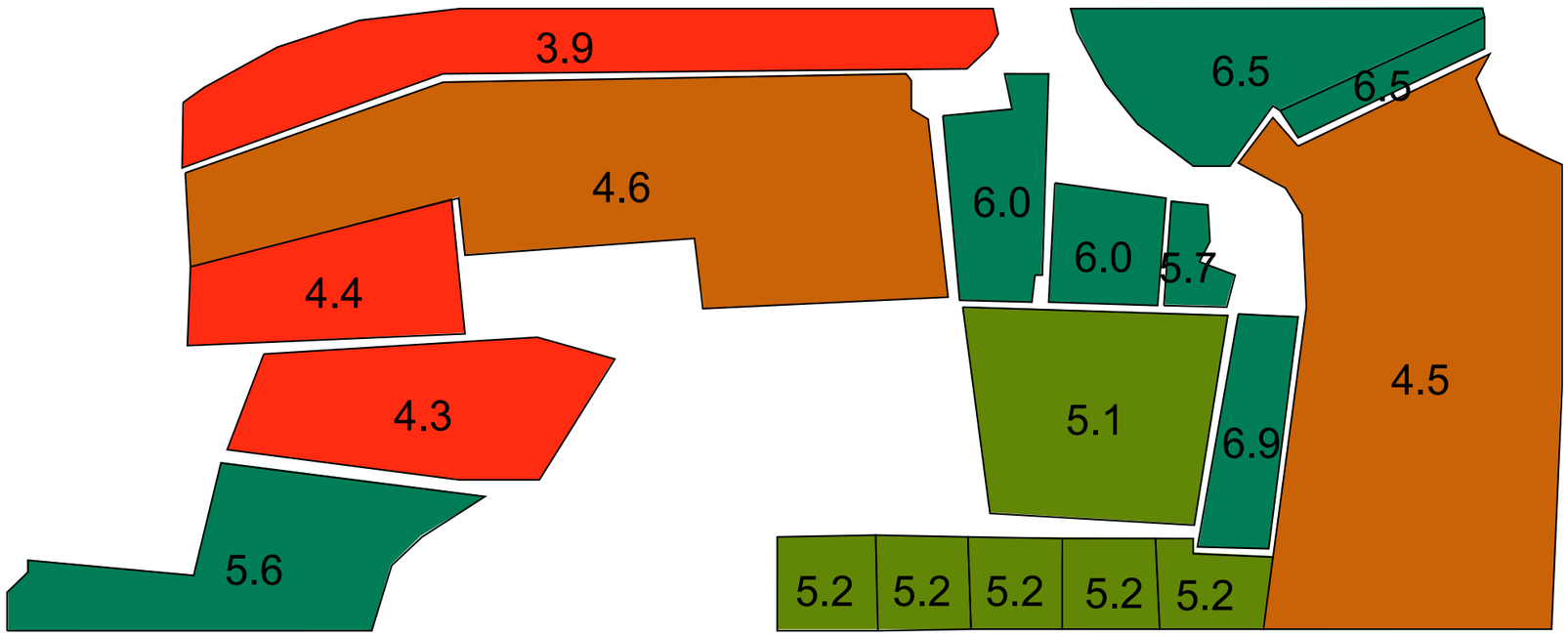
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Soil acidity status

- Very Low
- Low
- Marginal
- OK



This map uses a colour scale to classify soil acidity. Examine the map key and associated colours to determine your soils pH status. Paddocks shaded black have no data.

Soil acidity is assessed by classifying the soil pH into one of four pH ranges. The target soil pH above which your soil acidity is regarded as being “OK” is 5.5 (Gazey and Davies, 2009). Below this value, soil pH is arbitrarily broken up by 0.5 pH increments to result in marginal pH (5.0-5.5), low pH (4.5-5.0) and very low pH (<4.5).

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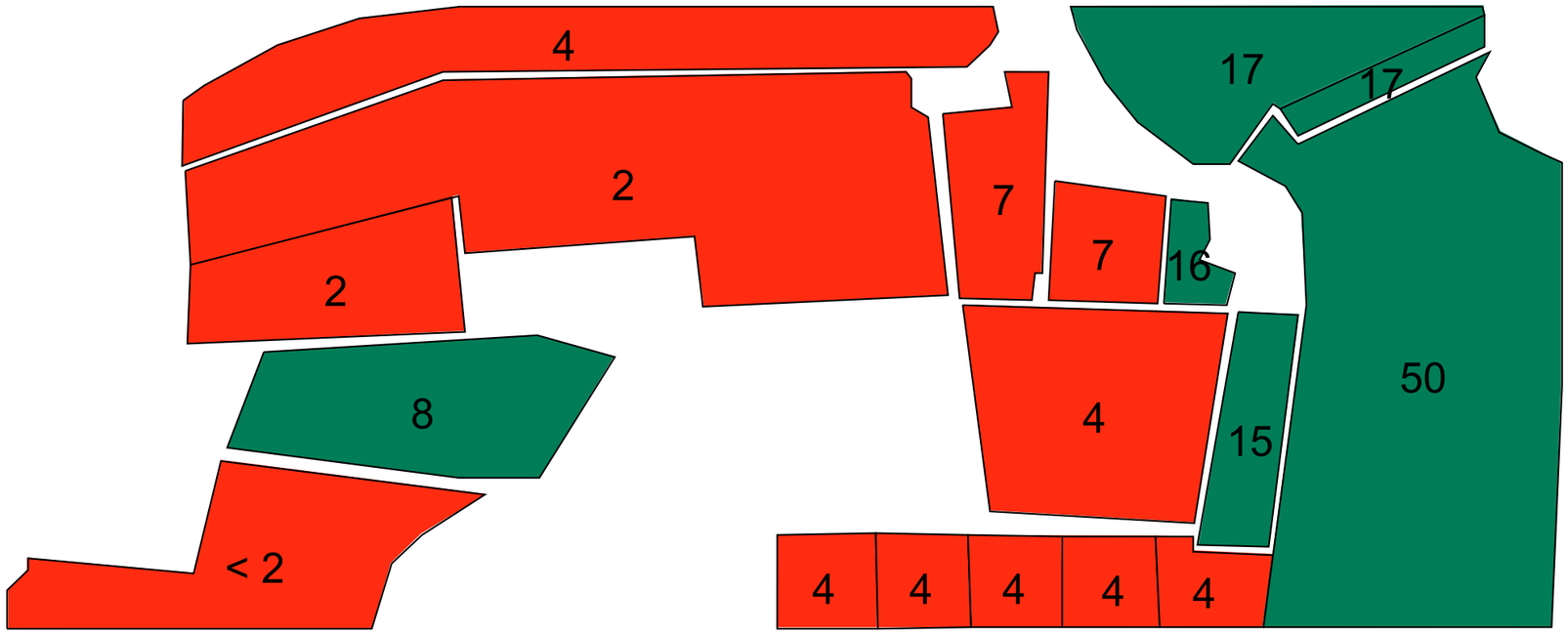
Phosphorus status assessed at 80% of maximum production

- Low
- Medium
- High



This map uses a colour scale to classify soil phosphorus (P). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

The Colwell P soil test (Colwell, 1965) is used in conjunction with the soils Phosphorus Buffering Index (PBI; Burkitt et al., 2002) to determine soil P status. The critical levels of Colwell P used are derived from Australian standards (Gourley et al., 2007) with modification for soils with PBI < 15 (Windsor et al., 2010; Bolland et al., 2010).

Four P status maps are provided to represent different production levels (80%, 85%, 90%, 95% of maximum production) to cater for differing production goals of growers.

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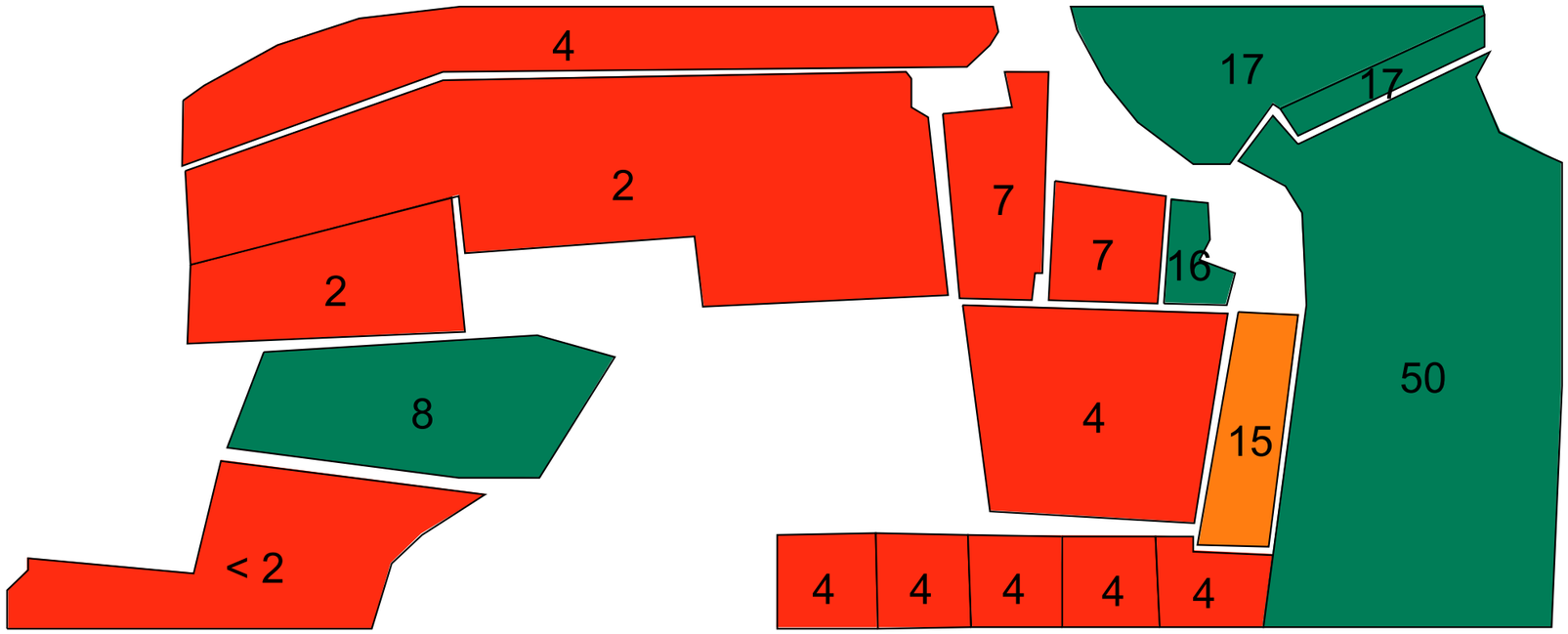
Rob Clayton, 2016/2017

Phosphorus status assessed at 85% of maximum production

- Low
- Medium
- High



This map uses a colour scale to classify soil phosphorus (P). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

The Colwell P soil test (Colwell, 1965) is used in conjunction with the soils Phosphorus Buffering Index (PBI; Burkitt et al., 2002) to determine soil P status. The critical levels of Colwell P used are derived from Australian standards (Gourley et al., 2007) with modification for soils with PBI < 15 (Windsor et al., 2010; Bolland et al., 2010).

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ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Phosphorus status assessed at 90% of maximum production

- Low
- Medium
- High

This map uses a colour scale to classify soil phosphorus (P). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

The Colwell P soil test (Colwell, 1965) is used in conjunction with the soils Phosphorus Buffering Index (PBI; Burkitt et al., 2002) to determine soil P status. The critical levels of Colwell P used are derived from Australian standards (Gourley et al., 2007) with modification for soils with PBI < 15 (Windsor et al., 2010; Bolland et al., 2010).

Four P status maps are provided to represent different production levels (80%, 85%, 90%, 95% of maximum production) to cater for differing production goals of growers.

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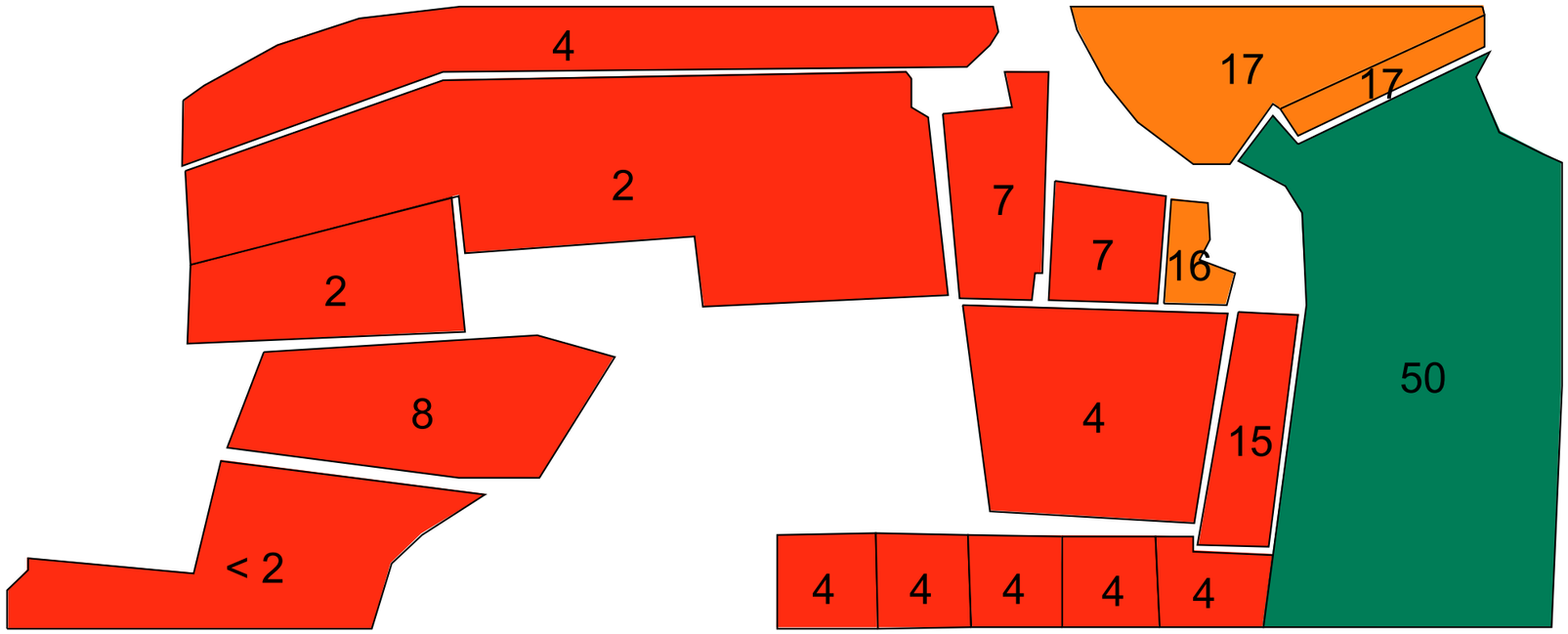
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Phosphorus status assessed at 95% of maximum production

- Low
- Medium
- High



This map uses a colour scale to classify soil phosphorus (P). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

The Colwell P soil test (Colwell, 1965) is used in conjunction with the soils Phosphorus Buffering Index (PBI; Burkitt et al., 2002) to determine soil P status. The critical levels of Colwell P used are derived from Australian standards (Gourley et al., 2007) with modification for soils with PBI < 15 (Windsor et al., 2010; Bolland et al., 2010).

Four P status maps are provided to represent different production levels (80%, 85%, 90%, 95% of maximum production) to cater for differing production goals of growers.

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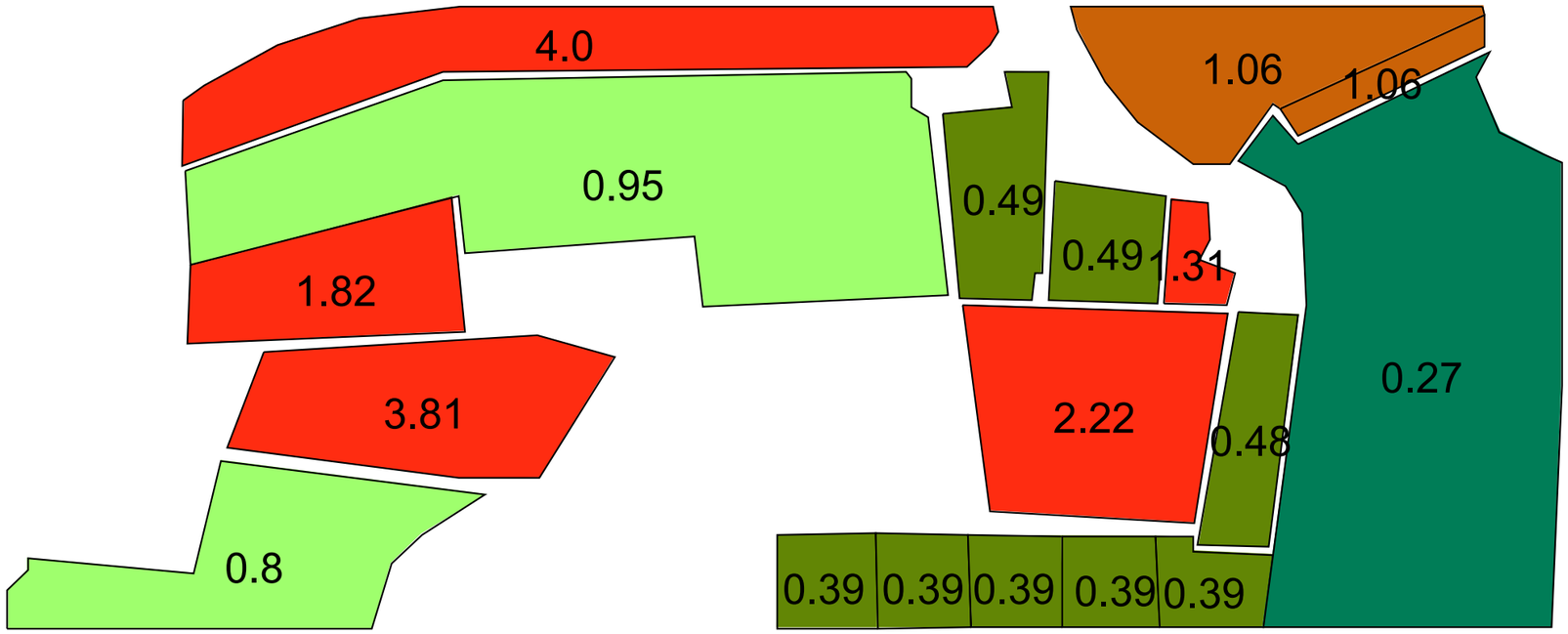
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Phosphorus Environmental Risk Index

- Low
- Marginal
- High
- Very High
- Extreme



This map uses a colour scale to classify the Phosphorus Environmental Risk Index (PERI). Examine the map key and associated colours to determine PERI. Paddocks shaded black have no data. PERI is determined as the ratio of Colwell P to PBI, and provides insights into the degree of saturation of the soil with phosphorus (P). PERI is only one of a range of factors that should be considered in understanding P loss risk, and is associated with the likelihood that soluble P can be lost from the soil via a range of pathways. Consideration should also be given to landscape slope, landscape shape, proximity to watercourses, depth to groundwater, the degree of waterlogging, drainage, pasture type and cover, fertiliser timing, Colwell P, PBI and stocking rate to better understand the risk of P loss, and the forms of P that may be lost from paddocks and the farm.

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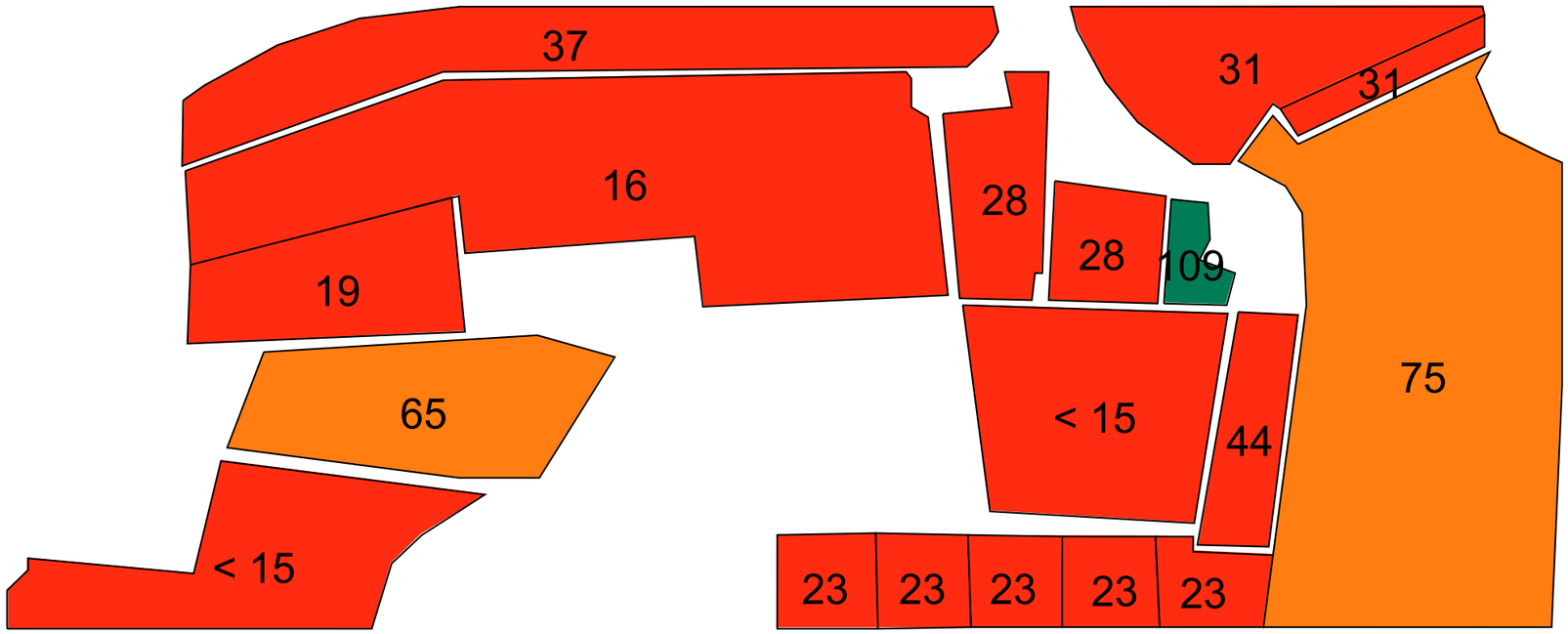
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Potassium status assessed at 90% of maximum production

- Low
- Medium
- High



This map uses a colour scale to classify soil potassium (K). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

Soil Potassium (K) status (low, medium, high) is determined by classifying Colwell K into one of three soil K ranges (Summers and Weaver, n.d.). The critical Colwell K levels used (0-50; low, 50-100; medium, >100 mg/kg; high) are similar to the critical Colwell K values provided by Gourley et al. (2007) for sandy soils. A Colwell K value of 100 mg/kg yields 90% of maximum production, and is the critical value used here to differentiate high K status.

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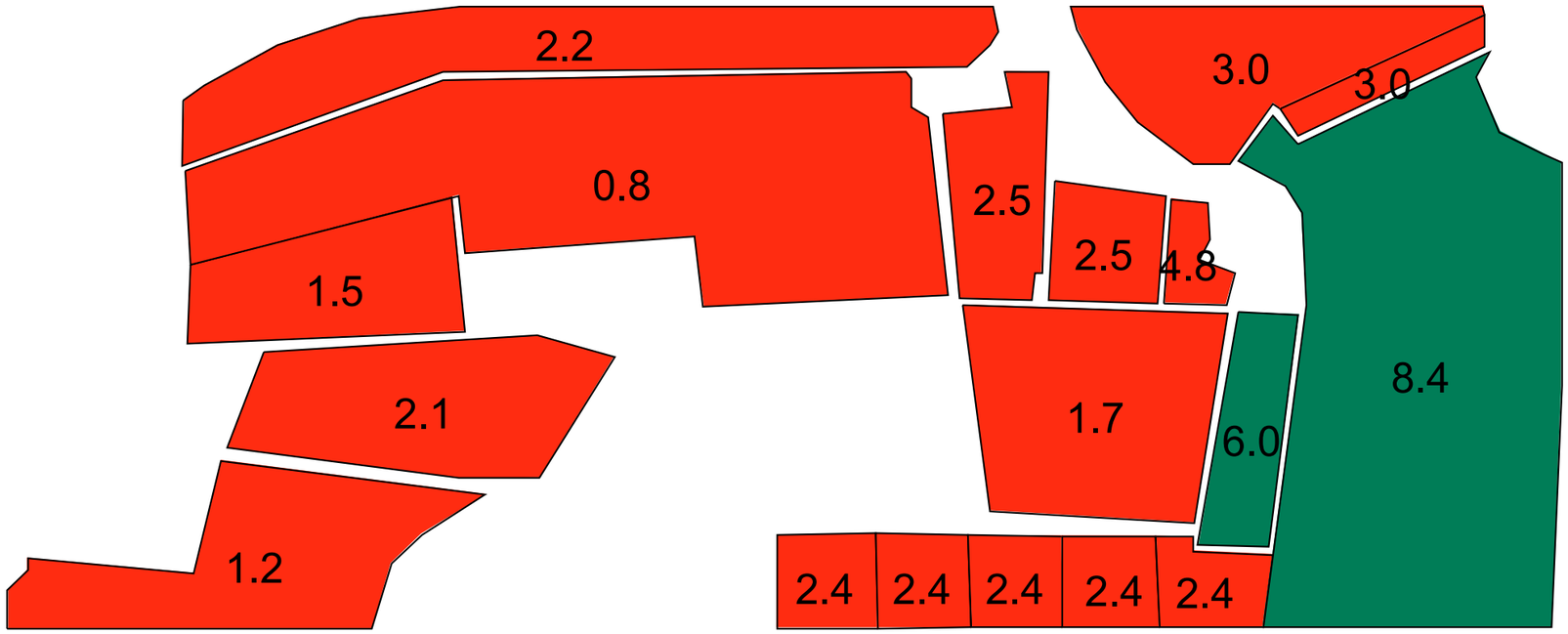
Rob Clayton, 2016/2017

Sulphur status assessed at 90% of maximum production

- Low
- Medium
- High



This map uses a colour scale to classify soil sulphur (S). Examine the map key and associated colours to determine nutrient status. Paddocks shaded black have no data.

The critical levels of KCl40S (potassium chloride extractable S at 40°C; Blair et al., 1991) used to assess your soil test are derived from Australian standards (Gourley et al., 2007). The KCl40S soil test is classified as high S status when the value is > 5.9 (90% of maximum production). Medium S status is arbitrarily assigned when the S soil test value results in <5% reduction in maximum production (85-90% of maximum production), and low S status when >5% reduction in maximum production (<85% of maximum production) is achieved.

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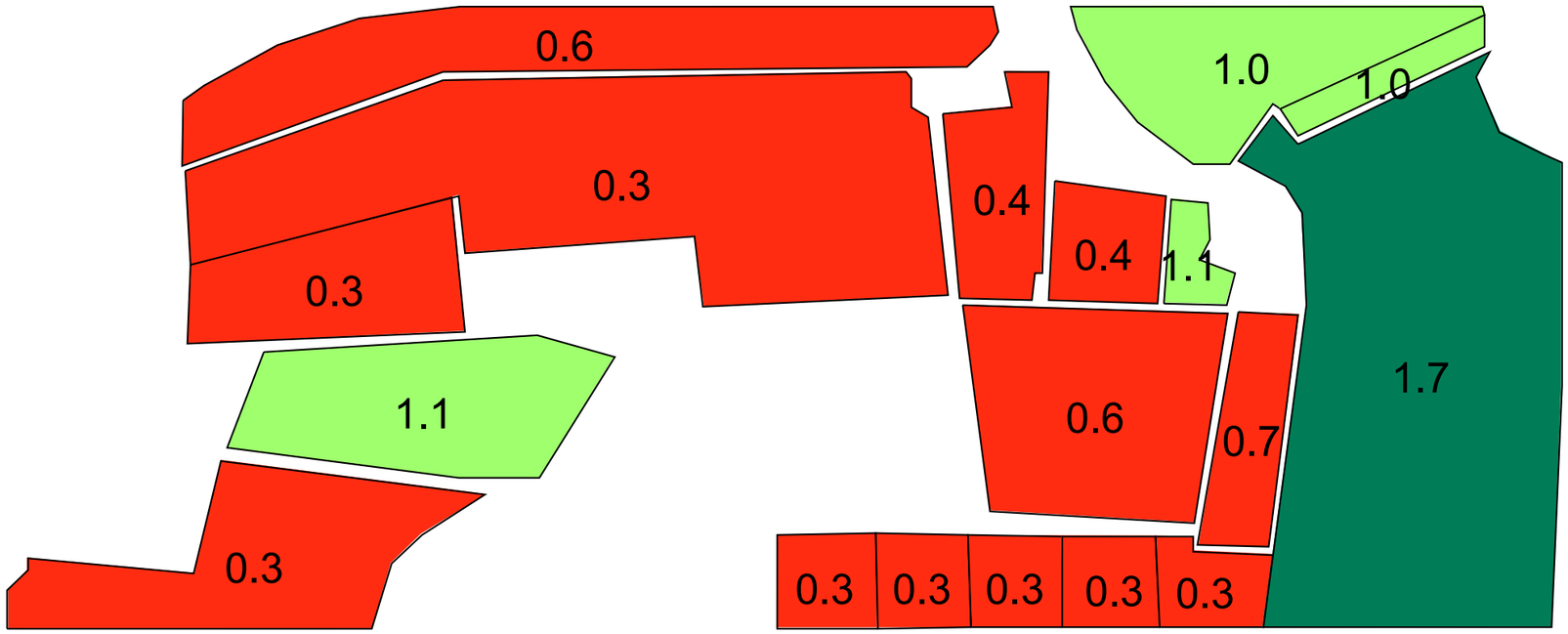
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Phosphorus Fertility Index assessed at 90% of maximum production

- Very deficient
- Deficient
- Optimal
- Excess
- Well in excess



This map uses a colour scale to classify soil phosphorus (P) fertility index assessed against critical values for 90% of maximum production. Examine the map key and associated colours to determine the fertility index. Paddocks shaded black have no data. The index maps provide additional information about your soils P status. The index is a ratio of your measured Colwell P to the critical Colwell P value (Simpson et al., 2011).

Index values near to 1 are optimal, whilst values less than 1 are considered deficient, and values greater than 1 are considered in excess. How far above or below 1 your index values are will tell you how far above or below the desired target value your soil test levels are.

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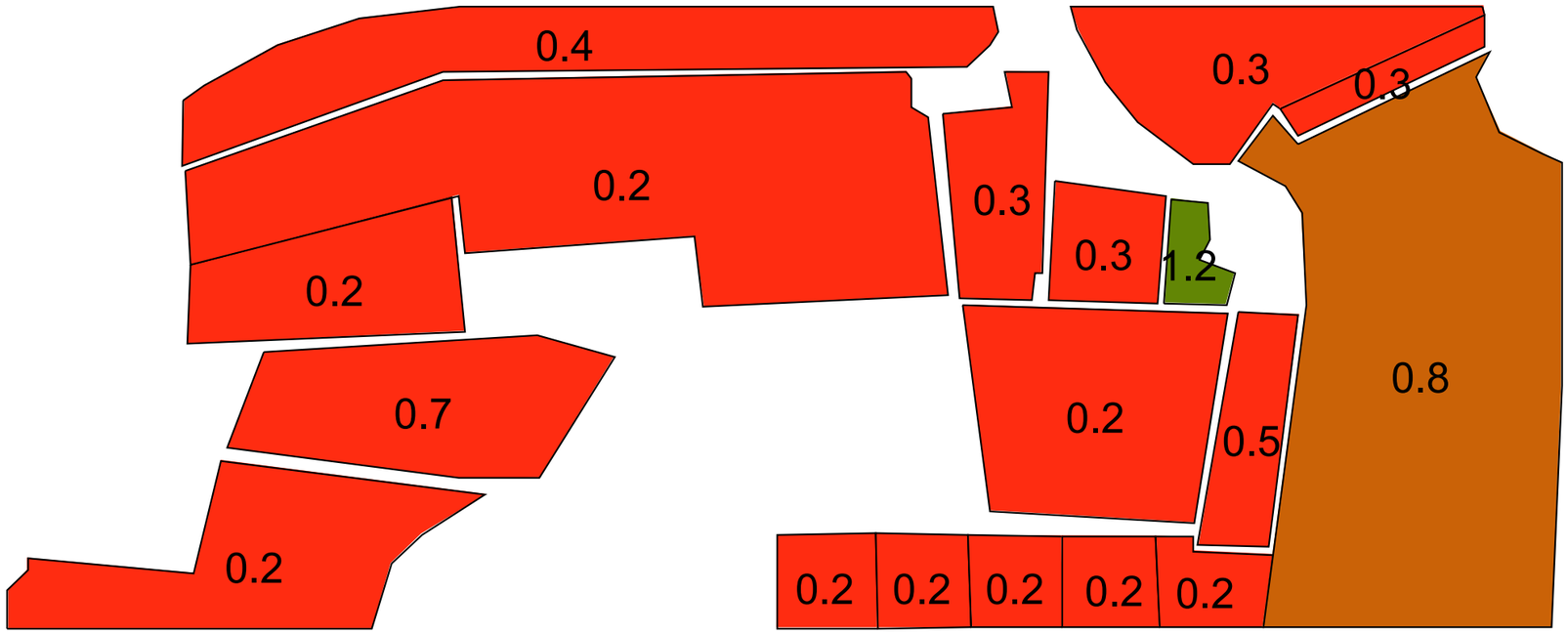
ROYALTIES FOR REGIONS

Rob Clayton, 2016/2017

Potassium Fertility Index assessed at 90% of maximum production

- Very deficient
- Deficient
- Optimal
- Excess
- Well in excess



This map uses a colour scale to classify soil potassium (K) fertility index assessed against critical values for 90% of maximum production. Examine the map key and associated colours to determine the fertility index. Paddocks shaded black have no data. The index maps provide additional information about your soils K status. The index is a ratio of your measured Colwell K to the critical Colwell K value (Simpson et al., 2011).

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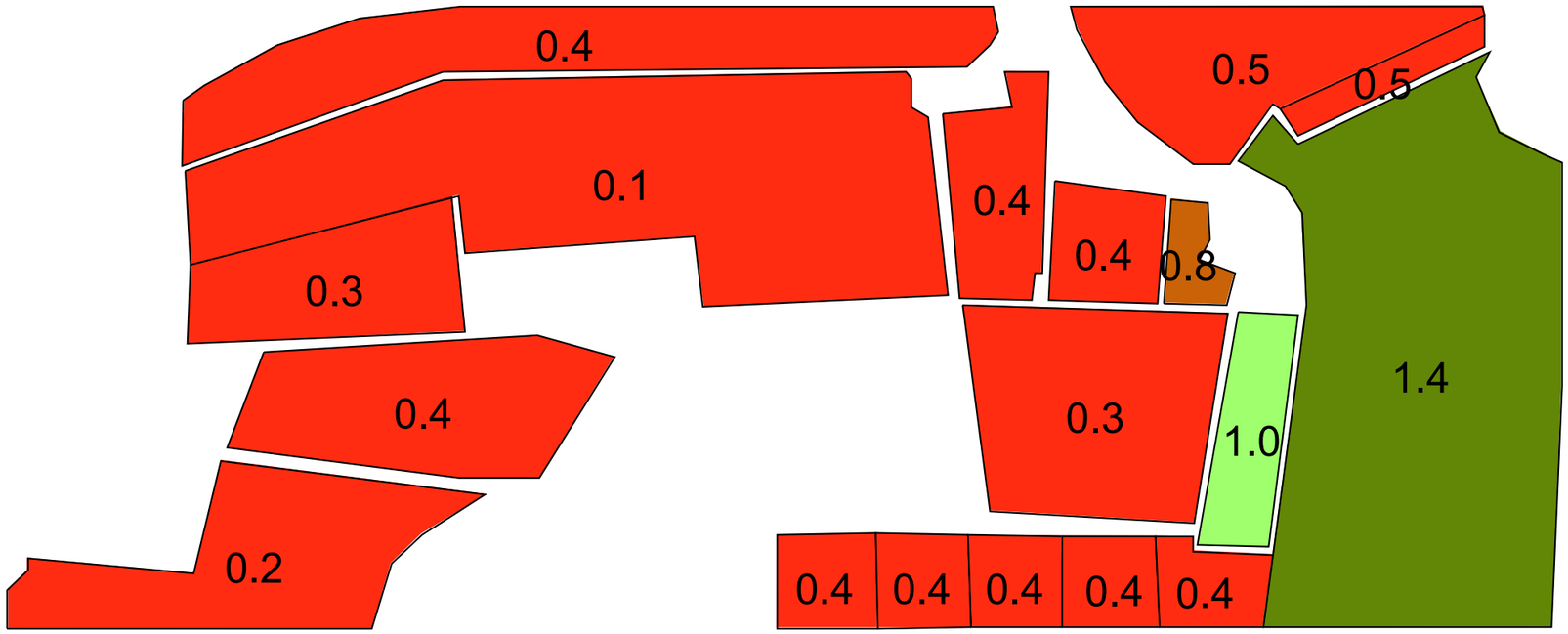
Rob Clayton, 2016/2017

Sulphur Fertility Index assessed at 90% of maximum production

- Very deficient
- Deficient
- Optimal
- Excess
- Well in excess



This map uses a colour scale to classify soil sulphur (S) fertility index assessed against critical values for 90% of maximum production. Examine the map key and associated colours to determine the fertility index. Paddocks shaded black have no data. The index maps provide additional information about your soils S status. The index is a ratio of your measured KCl40S to the critical KCl40S value (Simpson et al., 2011).

Index values near to 1 are optimal, whilst values less than 1 are considered deficient, and values greater than 1 are considered in excess. How far above or below 1 your index values are will tell you how far above or below the desired target value your soil test levels are.

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Results for Rob Clayton, 2016/2017

			Status[7]					Fertility Indices[8]												
				Colwell P[3]				Colwell K[4]				KCl40S[5]				pH ($CaCl_2$)[6]	Phosphorus				Potassium				Sulphur				PERI[9]
ID	Paddock	Area[1]	PBI[2]	80	85	90	95	80	85	90	95	80	85	90	95		80	85	90	95	80	85	90	95	80	85	90	95	
REI58	1	4.8	16.0			17				31				3.0		6.5	1.4	1.2	1.0	0.8	0.5	0.4	0.3	0.3	0.7	0.6	0.5	0.4	1.06
REI59	2	1.3	10.2			4				23				2.4		5.2	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.6	0.5	0.4	0.3	0.39
REI60	3	1.2	10.2			4				23				2.4		5.2	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.6	0.5	0.4	0.3	0.39
REI61	4	1.1	10.2			4				23				2.4		5.2	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.6	0.5	0.4	0.3	0.39
REI62	5	1.2	10.2			4				23				2.4		5.2	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.6	0.5	0.4	0.3	0.39
REI63	6	1.2	10.2			4				23				2.4		5.2	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.6	0.5	0.4	0.3	0.39
REI64	7	19.0	186.8			50				75				8.4		4.5	2.5	2.1	1.7	1.3	1.1	1.0	0.8	0.6	2.0	1.7	1.4	1.1	0.27
REI65	8	0.9	16.0			17				31				3.0		6.5	1.4	1.2	1.0	0.8	0.5	0.4	0.3	0.3	0.7	0.6	0.5	0.4	1.06
REI66	9	0.7	12.2			16				109				4.8		5.7	1.5	1.3	1.1	0.8	1.6	1.4	1.2	0.9	1.2	1.0	0.8	0.6	1.31
REI67	10	2.1	31.0			15				44				6.0		6.9	1.0	0.9	0.7	0.6	0.7	0.6	0.5	0.4	1.5	1.2	1.0	0.8	0.48
REI68	11	6.6	1.8			4				15				1.7		5.1	0.8	0.7	0.6	0.4	0.2	0.2	0.2	0.1	0.4	0.3	0.3	0.2	2.22

28/02/2017

1. Hectares. Fence to fence area, not cleared area
2. Phosphorus Buffering Index. Burkitt LL, Moody PW, Gourley CJP, Hannah MC (2002) A simple phosphorus buffering index for Australian soils. Australian Journal of Soil Research, 40, 497-513. http://dx.doi.org/10.1071/SR01050
3. units = mg/kg. Colwell JD, (1965) An automatic procedure for the determination of phosphorus in sodium hydrogen carbonate extracts of soil. Chem Ind 13: 893-895.
4. units = mg/kg. Colwell JD, (1965) An automatic procedure for the determination of phosphorus in sodium hydrogen carbonate extracts of soil. Chem Ind 13: 893-895.
5. units = mg/kg. Blair GJ, Chinoim N, Lefroy RDB, Anderson GC, Crocker GJ (1991) A soil sulfur test for pastures and crops. Soil Research, 29, 619-626. http://dx.doi.org/10.1071/SR9910619
6. pH measured in 0.01M Calcium Chloride
7. Status based on adaption of Gourley CJP, Melland AR, Waller RA, Awty IM, Smith AP, Peverill KI, Hannah MC (2007) Making better fertiliser decisions for grazed pastures in Australia. Department of Primary Industries Victoria.; Bolland, M, and Russell, B. (2010), Potassium for high rainfall pastures. Department of Agriculture and Food, Western Australia, Perth. Bulletin 4802.; Windsor D, Bolland M, Weaver DM, Russell B (2010) Implementing the Fertiliser Action Plan: an industry led approach based on Fertcare. Australian Fertilizer Industry Conference. Gold Coast, Queensland, August 2010.; Bolland MDA, Russell B, Weaver DM (2010) Phosphorus for high rainfall pastures. Bulletin 4808. Department of Agriculture and Food Western Australia. ISSN: 1833-7236. Status reported for 80%, 85%, 90%, 95% of maximum production to allow for varied production goals.
8. Fertility indices estimated using the approach of Simpson R, Oberson A, Culvenor R, Ryan M, Veneklaas E, Lambers H, Lynch J, Ryan P, Delhaize E, Smith F, Smith S, Harvey P, Richardson A (2011) Strategies and agronomic interventions to improve the phosphorus-use efficiency of farming systems. Plant and Soil, 349, 89-120. Fertility indices assessed against 80%, 85%, 90%, 95% of maximum production to allow for varied production goals.
9. Phosphorus Environmental Risk Index (PERI). This is the ratio of Colwell P to PBI and is an indication of the risk of soluble P loss by various transport pathways. Additional factors need to be considered to understand P loss risk from different pathways and in different forms.
* Rows in the table that do not contain data represent paddocks that were not sampled.

Department of Agriculture and Food
Department of Regional Development
Department of Water
GOVERNMENT OF WESTERN AUSTRALIA

ROYALTIES FOR REGIONS

PHCC Working Together
Peel-Harvey Catchment Council

Results for Rob Clayton, 2016/2017

ID	Paddock	Area[1]	Status[7]					Fertility Indices[8]												PERI[9]
			PBI[2]	Colwell P[3]	Colwell K[4]	KCl40S[5]	pH ($CaCl_2$)[6]	Phosphorus				Potassium				Sulphur				
				80 85 90 95	80 85 90 95	80 85 90 95		80	85	90	95	80	85	90	95	80	85	90	95	
REI69	12	1.7	14.3	7	28	2.5	6.0	0.6	0.5	0.4	0.3	0.4	0.4	0.3	0.2	0.6	0.5	0.4	0.3	0.49
REI70	13	2.5	14.3	7	28	2.5	6.0	0.6	0.5	0.4	0.3	0.4	0.4	0.3	0.2	0.6	0.5	0.4	0.3	0.49
REI71	14	3.9	1.1	2	19	1.5	4.4	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.4	0.3	0.3	0.2	1.82
REI72	15	16.6	2.1	2	16	0.8	4.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.95
REI73	16	7.4	1.0	4	37	2.2	3.9	0.8	0.7	0.6	0.4	0.6	0.5	0.4	0.3	0.5	0.4	0.4	0.3	4.00
REI74	17	5.6	2.1	8	65	2.1	4.3	1.6	1.3	1.1	0.8	1.0	0.8	0.7	0.5	0.5	0.4	0.4	0.3	3.81
REI75	18	6.0	2.5	2	15	1.2	5.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.80

28/02/2017

1. Hectares. Fence to fence area, not cleared area
2. Phosphorus Buffering Index. Burkitt LL, Moody PW, Gourley CJP, Hannah MC (2002) A simple phosphorus buffering index for Australian soils. Australian Journal of Soil Research, 40, 497-513. http://dx.doi.org/10.1071/SR01050
3. units = mg/kg. Colwell JD, (1965) An automatic procedure for the determination of phosphorus in sodium hydrogen carbonate extracts of soil. Chem Ind 13: 893-895.
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6. pH measured in 0.01M Calcium Chloride
7. Status based on adaption of Gourley CJP, Melland AR, Waller RA, Awty IM, Smith AP, Peverill KI, Hannah MC (2007) Making better fertiliser decisions for grazed pastures in Australia. Department of Primary Industries Victoria.; Bolland, M, and Russell, B. (2010), Potassium for high rainfall pastures. Department of Agriculture and Food, Western Australia, Perth. Bulletin 4802.; Windsor D, Bolland M, Weaver DM, Russell B (2010) Implementing the Fertiliser Action Plan: an industry led approach based on Fertcare. Australian Fertilizer Industry Conference. Gold Coast, Queensland, August 2010.; Bolland MDA, Russell B, Weaver DM (2010) Phosphorus for high rainfall pastures. Bulletin 4808. Department of Agriculture and Food Western Australia. ISSN: 1833-7236. Status reported for 80%, 85%, 90%, 95% of maximum production to allow for varied production goals.
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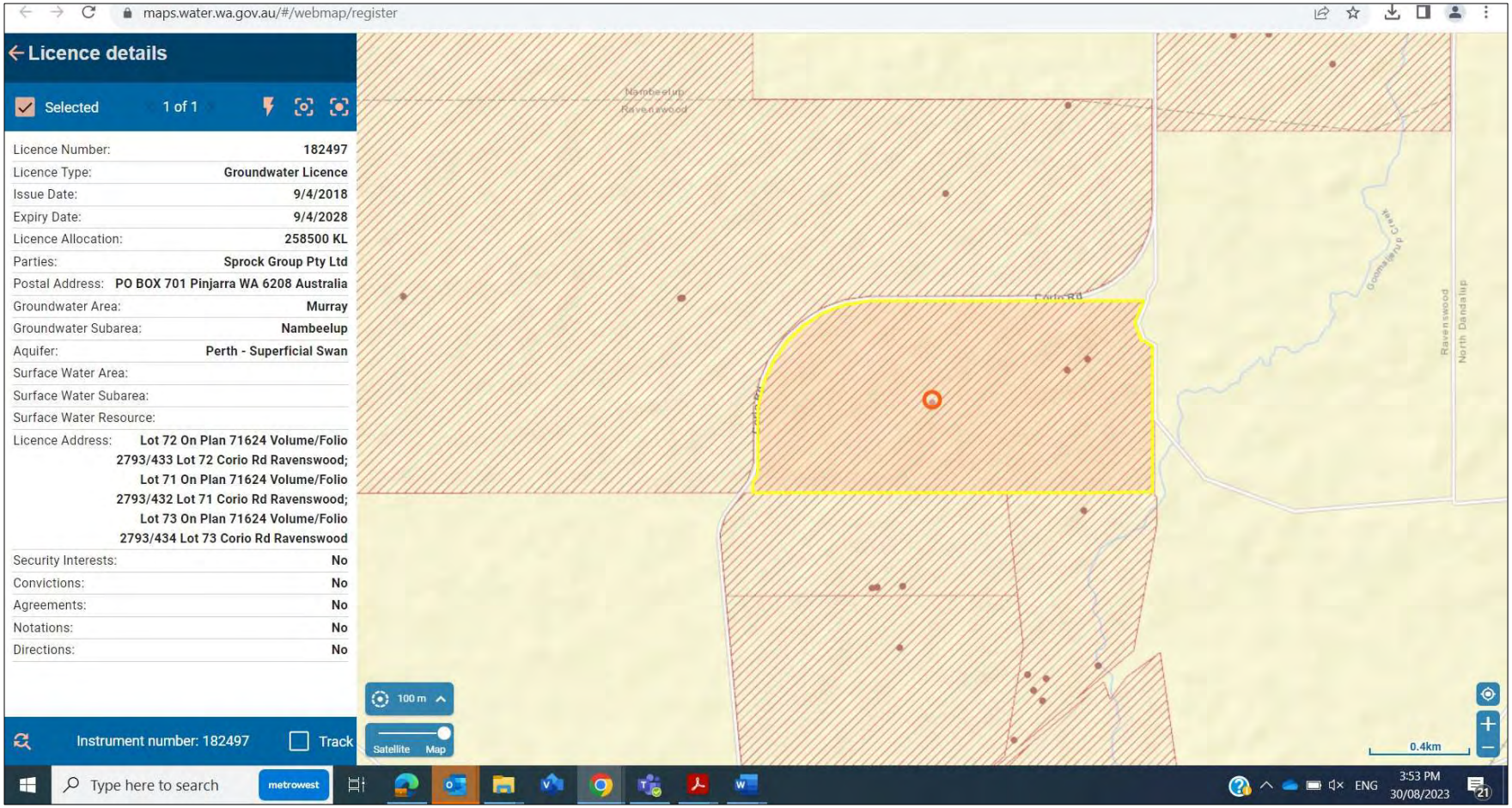
* Rows in the table that do not contain data represent paddocks that were not sampled.

APPENDIX F

Groundwater Abstraction Licence


maps.water.wa.gov.au/#/webmap/register
Licence details
Selected 1 of 1
Licence Number: 182497
Licence Type: Groundwater Licence
Issue Date: 9/4/2018
Expiry Date: 9/4/2028
Licence Allocation: 258500 KL
Parties: Sprock Group Pty Ltd
Postal Address: PO BOX 701 Pinjarra WA 6208 Australia
Groundwater Area: Murray
Groundwater Subarea: Nambeelup
Aquifer: Perth - Superficial Swan
Surface Water Area:
Surface Water Subarea:
Surface Water Resource:
Licence Address: Lot 72 On Plan 71624 Volume/Folio 2793/433 Lot 72 Corio Rd Ravenswood; Lot 71 On Plan 71624 Volume/Folio 2793/432 Lot 71 Corio Rd Ravenswood; Lot 73 On Plan 71624 Volume/Folio 2793/434 Lot 73 Corio Rd Ravenswood
Security Interests: No
Convictions: No
Agreements: No
Notations: No
Directions: No
Instrument number: 182497
Track
Nambeelup
Ravenswood
Corio Rd
Ravenswood
North Dandalup
100 m
Satellite
Map
0.4km
Type here to search
metrowest
ENG
3:53 PM
30/08/2023

APPENDIX G

Groundwater Quality

16-18 Hayden Court, Myaree, Western Australia 6154
PO Box 4023 Myaree BC, Western Australia 6960
tel: +61 8 9317 2505
email: lab@mpl.com.au
envirolab.com.au
Envirolab Services (WA) Pty Ltd trading as
MPL Laboratories | ABN 53 140 099 207

CERTIFICATE OF ANALYSIS 198747

Client:
Cash Sale
Lots 71-73 Lorio Road
Ravenswood
WA

Attention: Teresa Clayton

Sample log in details:

Your Reference:	**Sprock Pty Ltd**
No. of samples:	3 Water
Date/Time samples received:	27/07/2017 / 14:25
Date completed instructions received:	27/07/2017
Location:	

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last pages of this report for any comments relating to the results.

Report Details:

Date results requested by:	3/08/17
Date of Preliminary Report:	Not issued
Issue Date:	3/08/17

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing
Tests not covered by NATA are denoted with *.

Results Approved By:

Joshua Lim
Operations Manager

NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE

Miscellaneous Inorganics Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	198747-1 Central Soak 27/07/2017 Water	198747-2 Eastern Soak 27/07/2017 Water	198747-3 House Bore 27/07/2017 Water
Date prepared	-	28/07/2017	28/07/2017	28/07/2017
Date analysed	-	28/07/2017	28/07/2017	28/07/2017
pH	pH Units	5.6	7.5	6.3
Electrical Conductivity (EC)	µS/cm	680	540	170
Total Dissolved Solids (grav)	mg/L	410	320	100
Ammonia as N	mg/L	0.32	0.020	0.022
Phosphate as P	mg/L	0.57	<0.005	0.018
Nitrate as NO_3	mg/L	7.0	5.3	<0.5
Free Carbon Dioxide as CO_2	mg/L	12	<5	8
Total Nitrogen	mg/L	4.0	1.9	0.2

Ionic Balance Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	198747-1 Central Soak 27/07/2017 Water	198747-2 Eastern Soak 27/07/2017 Water	198747-3 House Bore 27/07/2017 Water
Date prepared	-	28/07/2017	28/07/2017	28/07/2017
Date analysed	-	28/07/2017	28/07/2017	28/07/2017
Calcium - Dissolved	mg/L	10	27	<0.5
Potassium - Dissolved	mg/L	4.5	6.9	0.8
Magnesium - Dissolved	mg/L	4.5	12	2.5
Sodium - Dissolved	mg/L	31	68	29
Bicarbonate HCO_3 as $CaCO_3$	mg/L	9	98	18
Carbonate CO_3^{2-} as $CaCO_3$	mg/L	<5	<5	<5
Hydroxide OH^- as $CaCO_3$	mg/L	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	9	98	18
Chloride	mg/L	49	95	31
Sulphate	mg/L	21	22	17
Ionic Balance	%	7.4	3.2	-2.9
Hardness as $CaCO_3$	mg/L	44	120	10

Dissolved Metals in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	198747-1 Central Soak 27/07/2017 Water	198747-2 Eastern Soak 27/07/2017 Water	198747-3 House Bore 27/07/2017 Water
Date prepared	-	31/07/2017	31/07/2017	31/07/2017
Date analysed	-	31/07/2017	31/07/2017	31/07/2017
Boron-Dissolved	mg/L	0.03	<0.02	<0.02
Iron-Dissolved	mg/L	5.3	0.19	0.09
Manganese-Dissolved	mg/L	0.063	0.009	<0.005
Silica*	mg/L	17	6.5	11

Method ID	Methodology Summary
INORG-001	pH - Measured using pH meter and electrode base on APHA latest edition, Method 4500-H+. Please note that the results for water analyses may be indicative only, as analysis can be completed outside of the APHA recommended holding times. Soils are reported from a 1:5 water extract unless otherwise specified.
INORG-002	Conductivity and Salinity - measured using a conductivity cell at 25°C based on APHA latest edition Method 2510. Soils reported from a 1:5 water extract unless otherwise specified.
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±5°C
INORG-057	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
INORG-060	Phosphate- determined colourimetrically. Soils are analysed from a water extract.
INORG-081	Anions - a range of anions are determined by Ion Chromatography based on APHA latest edition Method 4110 -B. Soils and other sample types reported from a water extract unless otherwise specified (standard soil extract ratio 1:5).
INORG-005	Free Carbon Dioxide - determined titrimetrically in accordance with APHA latest edition,4500-CO2 C.
INORG-055	Total Nitrogen by colourimetric analysis based on APHA 4500-P J, 4500-NO3 F.
METALS-020	Metals in soil and water by ICP-OES.
INORG-006	Alkalinity - determined titrimetrically based on APHA latest edition, Method 2320-B. Soils reported from a 1:5 water extract unless otherwise specified.
INORG-040	Ion Balance Calculation: Cations in water by ICP-OES; Anions in water by IC; Alkalinity in water by Titration using APHA methods.
METALS-008	Hardness calculated from Calcium and Magnesium as per APHA latest edition 2340B.
METALS-022	Determination of various metals by ICP-MS.

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			28/07/2017	198747-1	28/07/2017 || 28/07/2017	LCS-1	28/07/2017
Date analysed	-			28/07/2017	198747-1	28/07/2017 || 28/07/2017	LCS-1	28/07/2017
pH	pH Units		INORG-001	[NT]	198747-1	5.6 || [N/T]	LCS-1	102%
Electrical Conductivity (EC)	µS/cm	1	INORG-002	<1	198747-1	680 || [N/T]	LCS-1	99%
Total Dissolved Solids (grav)	mg/L	5	INORG-018	<5	198747-1	410 || [N/T]	LCS-1	101%
Ammonia as N	mg/L	0.005	INORG-057	<0.005	198747-1	0.32 || [N/T]	LCS-1	92%
Phosphate as P	mg/L	0.005	INORG-060	<0.005	198747-1	0.57 || [N/T]	LCS-1	114%
Nitrate as NO_3	mg/L	0.5	INORG-081	<0.5	198747-1	7.0 || 6.9 || RPD: 1	LCS-1	98%
Free Carbon Dioxide as CO_2	mg/L	5	INORG-005	<5	198747-1	12 || [N/T]	LCS-1	94%
Total Nitrogen	mg/L	0.1	INORG-055	<0.1	198747-1	4.0 || [N/T]	LCS-1	104%

QUALITY CONTROL Ionic Balance	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			28/07/2017	198747-1	28/07/2017 || 28/07/2017	LCS-1	28/07/2017
Date analysed	-			28/07/2017	198747-1	28/07/2017 || 28/07/2017	LCS-1	28/07/2017
Calcium - Dissolved	mg/L	0.5	METALS-020	<0.5	198747-1	10 || [N/T]	[NR]	[NR]
Potassium - Dissolved	mg/L	0.5	METALS-020	<0.5	198747-1	4.5 || [N/T]	[NR]	[NR]
Magnesium - Dissolved	mg/L	0.5	METALS-020	<0.5	198747-1	4.5 || [N/T]	[NR]	[NR]
Sodium - Dissolved	mg/L	0.5	METALS-020	<0.5	198747-1	31 || [N/T]	[NR]	[NR]
Bicarbonate HCO_3 as $CaCO_3$	mg/L	5	INORG-006	<5	198747-1	9 || [N/T]	LCS-1	109%
Carbonate CO_3^{2-} as $CaCO_3$	mg/L	5	INORG-006	<5	198747-1	<5 || [N/T]	LCS-1	109%
Total Alkalinity as $CaCO_3$	mg/L	5	INORG-006	<5	198747-1	9 || [N/T]	LCS-1	109%
Chloride	mg/L	1	INORG-081	<1	198747-1	49 || 49 || RPD: 0	LCS-1	98%
Sulphate	mg/L	1	INORG-081	<1	198747-1	21 || 21 || RPD: 0	LCS-1	100%
Hardness as $CaCO_3$	mg/L	3	METALS-008	<3	198747-1	44 || [N/T]	[NR]	[NR]

QUALITY CONTROL Dissolved Metals in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			31/07/2017	198747-1	31/07/2017 || 31/07/2017	LCS-1	31/07/2017
Date analysed	-			31/07/2017	198747-1	31/07/2017 || 31/07/2017	LCS-1	31/07/2017
Boron-Dissolved	mg/L	0.02	METALS-022	<0.02	198747-1	0.03 || 0.02 || RPD: 40	LCS-1	120%
Iron-Dissolved	mg/L	0.01	METALS-022	<0.01	198747-1	5.3 || 5.2 || RPD: 2	LCS-1	101%
Manganese-Dissolved	mg/L	0.005	METALS-022	<0.005	198747-1	0.063 || 0.061 || RPD: 3	LCS-1	93%
Silica*	mg/L	0.2	METALS-020	<0.2	198747-1	17 || [N/T]	[NR]	[NR]

QUALITY CONTROL Miscellaneous Inorganics	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	198747-2	28/07/2017
Date analysed	-	[NT]	[NT]	198747-2	28/07/2017
pH	pH Units	[NT]	[NT]	[NR]	[NR]
Electrical Conductivity (EC)	µS/cm	[NT]	[NT]	[NR]	[NR]
Total Dissolved Solids (grav)	mg/L	[NT]	[NT]	[NR]	[NR]
Ammonia as N	mg/L	[NT]	[NT]	[NR]	[NR]
Phosphate as P	mg/L	[NT]	[NT]	[NR]	[NR]
Nitrate as NO_3	mg/L	[NT]	[NT]	198747-2	114%
Free Carbon Dioxide as CO_2	mg/L	[NT]	[NT]	[NR]	[NR]
Total Nitrogen	mg/L	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL Ionic Balance	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	198747-2	28/07/2017
Date analysed	-	[NT]	[NT]	198747-2	28/07/2017
Calcium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Potassium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Magnesium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Sodium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Bicarbonate HCO_3 as $CaCO_3$	mg/L	[NT]	[NT]	[NR]	[NR]
Carbonate CO_3^{2-} as $CaCO_3$	mg/L	[NT]	[NT]	[NR]	[NR]
Total Alkalinity as $CaCO_3$	mg/L	[NT]	[NT]	[NR]	[NR]
Chloride	mg/L	[NT]	[NT]	198747-2	103%
Sulphate	mg/L	[NT]	[NT]	198747-2	101%
Hardness as $CaCO_3$	mg/L	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL Dissolved Metals in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	198747-2	31/07/2017
Date analysed	-	[NT]	[NT]	198747-2	31/07/2017
Boron-Dissolved	mg/L	[NT]	[NT]	198747-2	112%
Iron-Dissolved	mg/L	[NT]	[NT]	198747-2	91%
Manganese-Dissolved	mg/L	[NT]	[NT]	198747-2	93%
Silica*	mg/L	[NT]	[NT]	[NR]	[NR]

Report Comments:

Definitions:

NT: Not tested NA: Test not required INS: Insufficient sample for this test PQL: Practical Quantitation Limit
<: Less than >: Greater than RPD: Relative Percent Difference LCS: Laboratory Control Sample
NS: Not Specified NEPM: National Environmental Protection Measure NR: Not Reported

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph: 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph: 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph: 03 9763 2500 / melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph: 08 7087 6800 / adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph: 07 3266 9532 / brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 7, 17 Willes Rd, Berrimah, NT 0820
Ph: 08 8967 1201 / darwin@envirolab.com.au

Client: SPROCIL PTY LTD	**Client Project Name / Number / Site etc. (I.e. Report Title):**
Contact Person: TERESA CLAYTON	
Project Mgr: " "	**PO No.:**
Sampler: SETH JOHNSON - HYDROCONCEPT	**Envirolab Quote No. :**
Address: LOTS 71, 72-73 CORIO ROAD RAVENSWOOD WA	**Date Results Required:** Or Choose: standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: 0401 351510 **Mob:** 0409 977 881	**Additional Report Format:** esdat / equis /
Email: seth@hydroconcept.com.au teresaclayton@bigpond.com PAYMENT	**Lab Comments:** (call for payment).

Sample Information					Tests Required															Comments
Envirolab Sample ID	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PH	COND	TDS	T. HARDNESS	T. ALKALINITY	CALCIUM	MAGNESIUM	SODIUM	POTASSIUM	AMMONIA	PHOSPHATE	CARBONATE	BICARBONATE	CHLORIDE	SULPHATE	NITRATE	Provide as much information about the sample as you can
1	CENTRAL SOAK	SURF	27.7.17	WATER																SILICA
																				BORON
2	EASTERN SOAK	SURF	27.7.17	WATER																IRON
																				MANGANESE
3	HOUSE BORE	2.5M	27.7.17	WATER																DISSOLVED CO_2

Relinquished by (Company):	**Received by (Company):** MPL	***Lab Use Only***
Print Name:	**Print Name:**	Job Number: 198747. Cooling: Ice / Ice Pack / None
Date & Time:	**Date & Time:** 27.7.17. 14.25	Temperature: 18 Security Seal: Intact / Broken / None
Signature:	**Signature:**	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

APPENDIX H

Aboriginal Heritage

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Directory

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.wa.gov.au/disclaimer

Search Criteria

3 Aboriginal Cultural Heritage (ACH) Directory in Custom search area - Polygon - 115.872090787929°E, 32.5707682333021°S (GDA94) : 115.872090787929°E, 32.5447973397975°S (GDA94) : 115.905478925747°E, 32.5447973397975°S (GDA94) : 115.905478925747°E, 32.5707682333021°S (GDA94) : 115.872090787929°E, 32.5707682333021°S (GDA94)

Disclaimer

The Aboriginal Cultural Heritage Act 2021 (Act) recognises, protects, conserves, and preserves Aboriginal cultural heritage (ACH), and recognises the fundamental importance of ACH to Aboriginal people and its role in Aboriginal communities past, present and future. The Act recognises the value of ACH to Aboriginal people as well as to the wider Western Australian community.

Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported to the ACH Council or exists on the Directory.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land within or adjacent to the following Indigenous Land Use Agreement(s): Gnaala Karla Booja Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

Further advice can also be sought from the Department of Planning, Lands and Heritage at AboriginalHeritage@dplh.wa.gov.au.

Copyright

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Terminology

ID: Reported ACH is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH places on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- Boundary Reliable (Yes/No): Indicates whether the location and extent of the ACH boundary is considered reliable.
- Boundary Restricted = No: ACH location is shown as accurately as the information submitted allows.
- Boundary Restricted = Yes: To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- Culturally Sensitive = No: Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- Culturally Sensitive = Yes: Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact AboriginalHeritage@dplh.wa.gov.au.
- Culturally Sensitive Nature:
  - No Gender / Initiation Restrictions: Anyone can view the information.
  - Men only: Only males can view restricted information.
  - Women only: Only females can view restricted information.

Status:

- ACH Directory: Aboriginal cultural heritage place or cultural landscape.
- Pending: Aboriginal cultural heritage place or cultural landscape with information in a verification stage.
- Historic: Aboriginal heritage places determined to not meet the criteria of Section 5 of the Aboriginal Heritage Act 1972. Includes places that no longer exist as a result of land use activities with existing approvals.

ACH Type:

- Cultural Landscape: a group of areas interconnected through the tangible elements of Aboriginal culture heritage present.
- Place: an area in which tangible elements of Aboriginal cultural heritage are present.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy Place Status: A status determined under the previous Aboriginal Heritage Act 1972:

- Registered Site: the place was assessed as meeting Section 5 of the Aboriginal Heritage Act 1972.
- Lodged: Information was received in relation to the place, but an assessment was not completed to determine if it met section 5 of the Aboriginal Heritage Act 1972.
- Stored Data/Not a Site: The place was assessed as not meeting Section 5 of the Aboriginal Heritage Act 1972.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 94 Datum.

Basemap Copyright

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Satellite, Hybrid, Road basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, HERE, DeLorme, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

Topographic basemap sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Directory

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.wa.gov.au/disclaimer

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	ACH Type	Place Type	Knowledge Holders	Legacy Place Status	Legacy ID
3305	GIBBS SANDPIT, PINJARRA.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Artefacts / Scatter; Camp	*Registered Knowledge Holder names available from DPLH	Lodged	S00201
4325	GAS PIPELINE 84	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	Registered Site	S00816
27937	Dandalup River	No	Yes	No	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative; Hunting Place; Landscape / Seascape Feature; Plant Resource; Water Source	*Registered Knowledge Holder names available from DPLH	Registered Site	

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Directory

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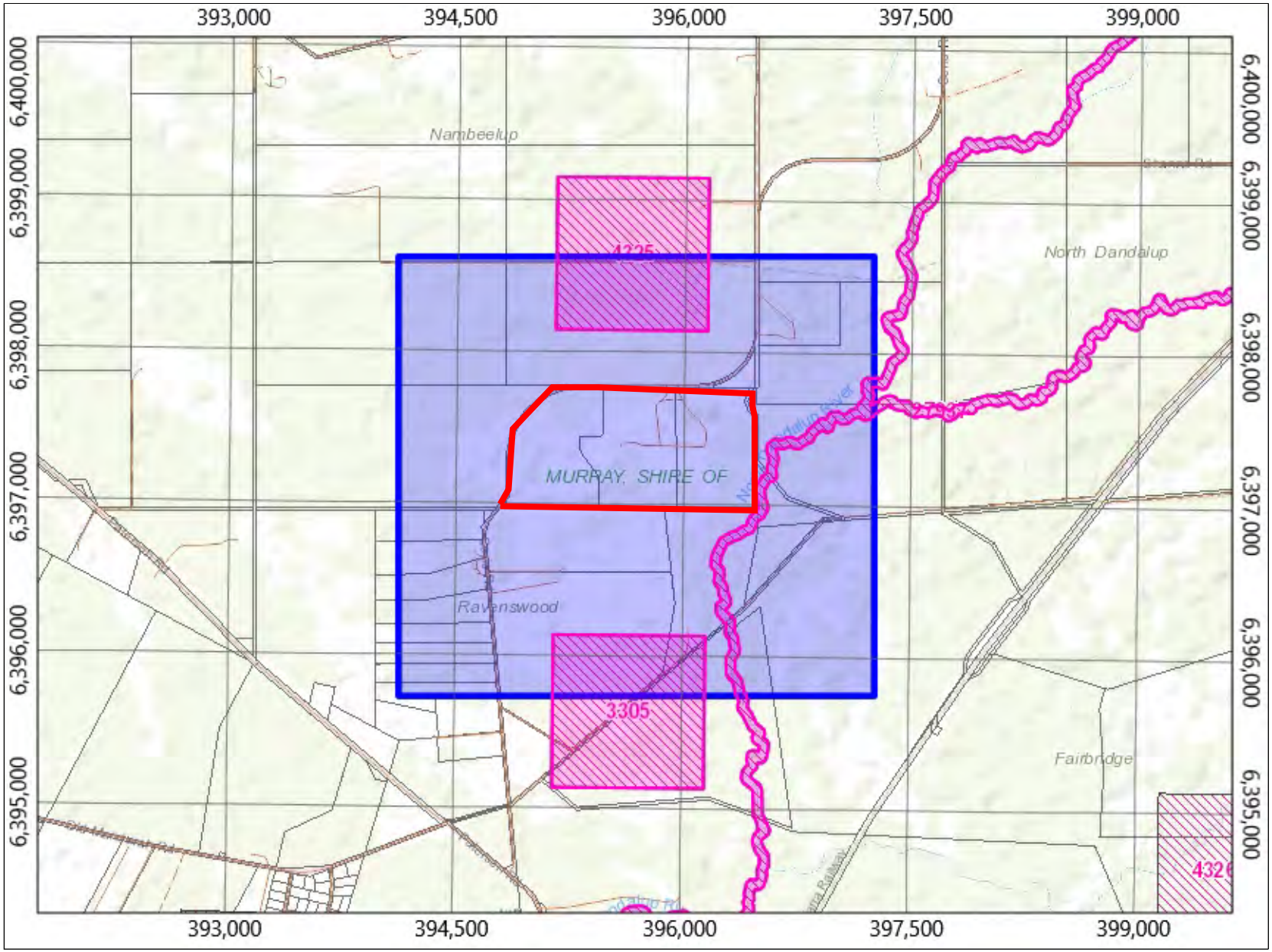

Legend

- Aboriginal Cultural Heritage (ACH) Directory
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

1.49 kilometres

Map Scale 1 : 45,200

MGA Zone 50 (GDA94)

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Mining Tenement, Petroleum Application, Petroleum Title boundary data copyright © the State of Western Australia (Department of Mines, Industry Regulation and Safety).

Search Criteria

2 Other Heritage Places in Custom search area - Polygon - 115.865996808913°E, 32.5710660367588°S (GDA94) : 115.865996808913°E, 32.5389450521316°S (GDA94) : 115.905393094924°E, 32.5389450521316°S (GDA94) : 115.905393094924°E, 32.5710660367588°S (GDA94) : 115.865996808913°E, 32.5710660367588°S (GDA94)

Disclaimer

The Aboriginal Heritage Act 1972 preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

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The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

Further advice can also be sought from the Department of Planning, Lands and Heritage at AboriginalHeritage@dplh.wa.gov.au.

Copyright

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Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Terminology (NB that some terminology has varied over the life of the legislation)

Place ID/Site ID: This a unique ID assigned by the Department of Planning, Lands and Heritage to the place.

Status:

- Registered Site: The place has been assessed as meeting Section 5 of the Aboriginal Heritage Act 1972.
- Other Heritage Place which includes:
  - Stored Data / Not a Site: The place has been assessed as not meeting Section 5 of the Aboriginal Heritage Act 1972.
  - Lodged: Information has been received in relation to the place, but an assessment has not been completed at this stage to determine if it meets Section 5 of the Aboriginal Heritage Act 1972.

Access and Restrictions:

- File Restricted = No: Availability of information that the Department of Planning, Lands and Heritage holds in relation to the place is not restricted in any way.
- File Restricted = Yes: Some of the information that the Department of Planning, Lands and Heritage holds in relation to the place is restricted if it is considered culturally sensitive. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the informants who provided the information. To request access please contact AboriginalHeritage@dplh.wa.gov.au.
- Boundary Restricted = No: Place location is shown as accurately as the information lodged with the Registrar allows.
- Boundary Restricted = Yes: To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the place is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- Restrictions:
  - No Restrictions: Anyone can view the information.
  - Male Access Only: Only males can view restricted information.
  - Female Access Only: Only females can view restricted information.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.

Basemap Copyright

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Satellite, Hybrid, Road basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, HERE, DeLorme, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

Topographic basemap sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.

Aboriginal Heritage Inquiry System

List of Other Heritage Places

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.dplh.wa.gov.au/about-this-website

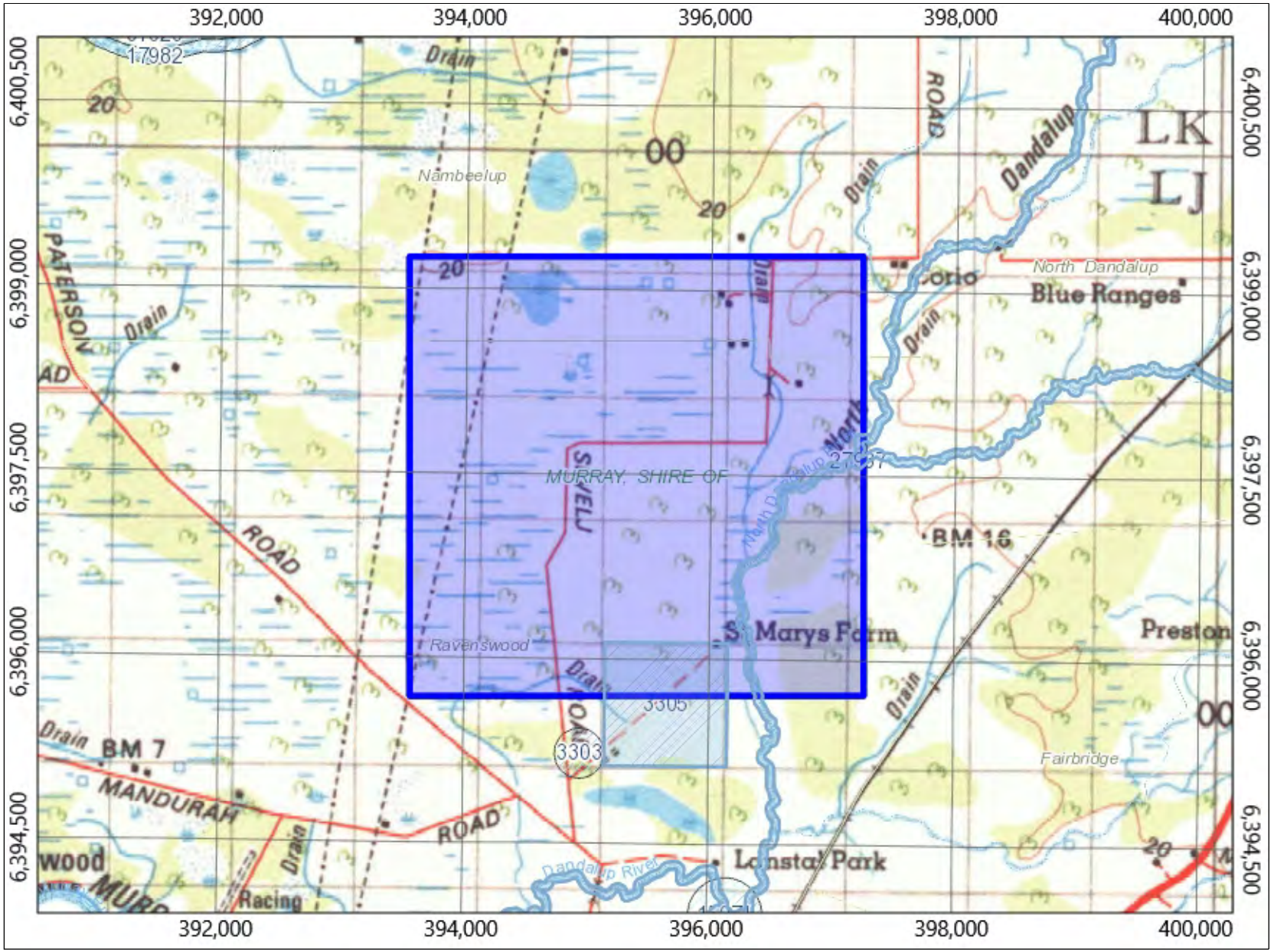
ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
3305	GIBBS SANDPIT, PINJARRA.	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter, Camp	*Registered Knowledge Holder names available from DAA	395639mE 6395648mN Zone 50 [Unreliable]	S00201
27937	Dandalup River	No	No	No Gender Restrictions	Stored Data / Not a Site	Mythological, Hunting Place, Natural Feature, Plant Resource, Water Source	*Registered Knowledge Holder names available from DAA	411593mE 6391902mN Zone 50 [Reliable]	

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Other Heritage Places

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.dplh.wa.gov.au/about-this-website



Legend

- Other Heritage Place
- Search Area
- Town
- Road
- River
- Local Government Authority

1.85 kilometres

Map Scale 1 : 56,000

MGA Zone 50 (GDA94)

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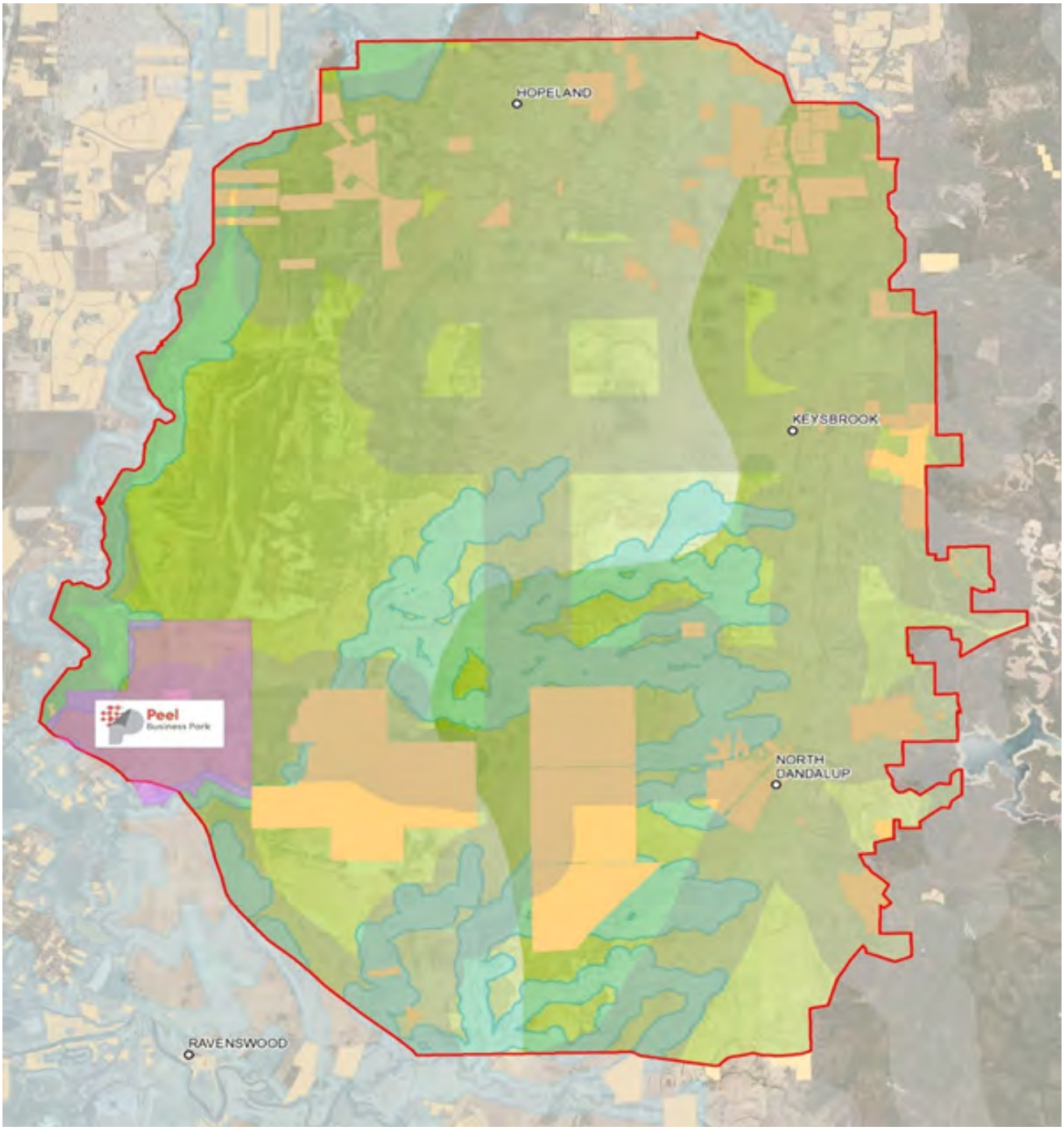
APPENDIX I

Peel Food Zone (GHD, 2017)

Planning for the Proposed Peel Food Zone

2017



Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

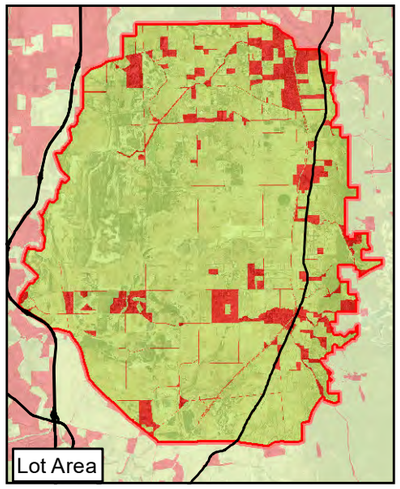
Transform Peel

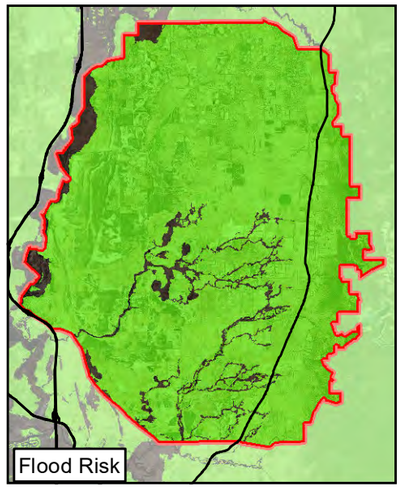
Peel Food Zone

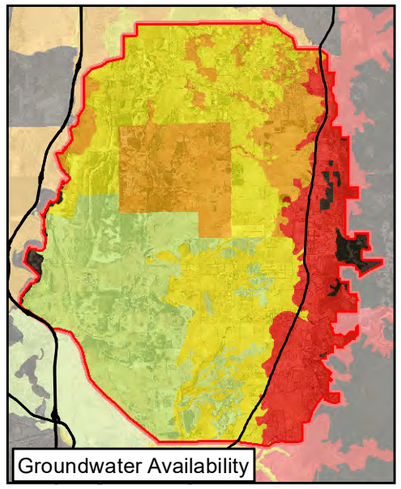
PEEL Development Commission

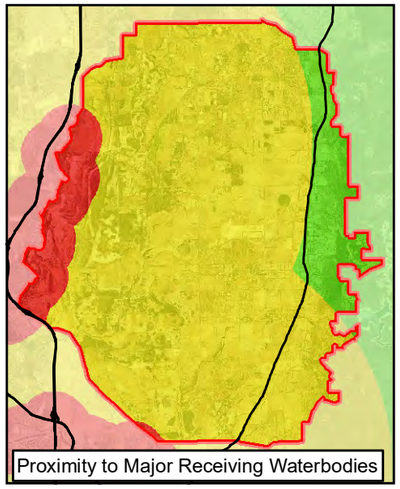
APPENDIX G

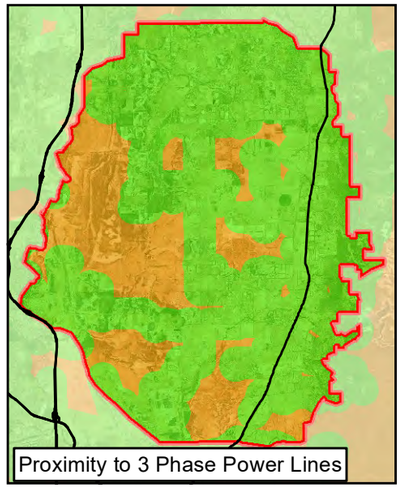
Appendix G – Closed loop intensive livestock

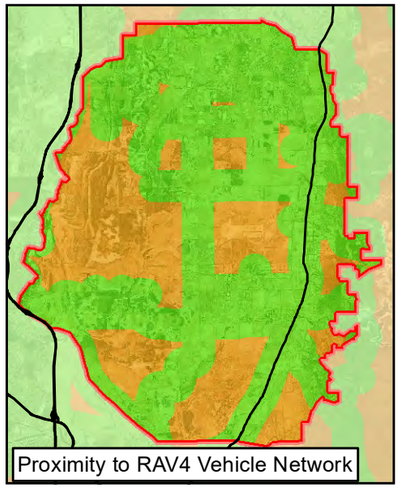


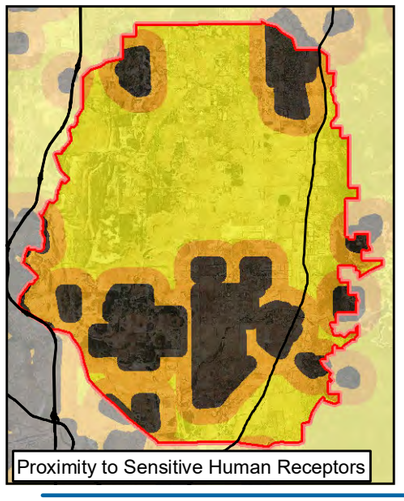


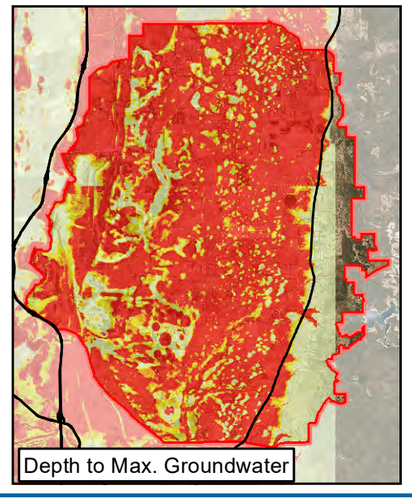


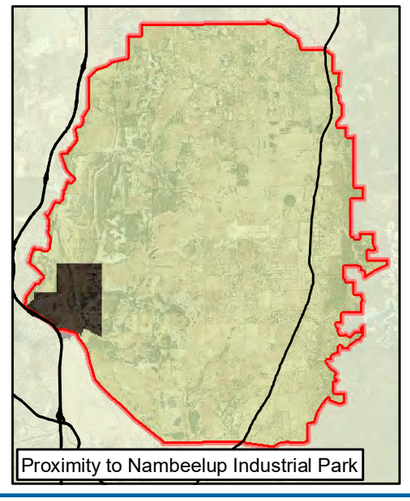












Paper Size A3

0 2.5 5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

LEGEND

State Road
Study Area
Unsuitable
Highly Constrained
Moderately Constrained
Neutral
Opportunity

Department of Agriculture and Food
Planning for the Peel Food Zone Study
Spatial Multi-Criteria Analysis

Job Number 61-35283
Revision 0
Date 01 Jun 2017

Closed-loop intensive livestock - Criteria and Suitability Summary

Appendix G9

G:\61\35283\GIS\Maps\MXD\AppendixF_Livestock\6135283_AppendixF9_LivestockCriteriaSummary_Rev0.mxd

© 2017. Whilst every care has been taken to prepare this map, DAFWA, Landgate, MRWA and GHD make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Landgate: Virtual Mosaic - 20170423; GHD: Study Area - 20170419, Suitability mapping - 20170423; MRWA: State roads - 20140723. Created by:mmikkonen

999 Hay Street, Perth WA 6000 Australia **T** 61 8 6222 8555 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

LEGEND

- Townsite/Locality
- Road
- Study Area

Suitability for Closed Loop Intensive Livestock

- Low Suitability
- High Suitability
- Highly Unsuitable

Paper Size A3

0 2 4

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

Department of Agriculture and Food

Peel Food Zone

SLIP POWERED BY LANDGATE

Department of Agriculture and Food
Planning for the Peel Food Zone Study
Spatial Multi-Criteria Analysis

Job Number	61-35283
Revision	0
Date	29 May 2017

Closed loop intensive livestock - Overall Suitability

Appendix G10

G:\61\35283\GIS\Maps\MXD\AppendixF_Livestock\6135283_AppendixF10_LivestockSuitability_Rev0.mxd

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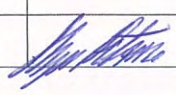
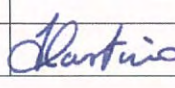
6135283-68234/https://projects.ghd.com/oc/WesternAustralia/planningforthepeelfo/Delivery/Documents/Proposed Peel Food Zone Final Report.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	F. Hannon	J. Lane		J. Lane		04.05.17
0	F. Hannon	K. Petani		F. Castino		12.06.17

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APPENDIX E | BUSHFIRE MANAGEMENT PLAN

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 100 (No. 1) Kentucky Court, Cockburn Central

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 6 Month December Year 2022

Report author or reviewer: Dylan Wray

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☑ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 44656 Accreditation expiry: Month March Year 2024

Bushfire management plan version number: 2

Bushfire management plan date: Day 19 Month December Year 2023

Client/business name: Harvest Properties (WA) Pty Ltd

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
High risk land-use		✔
Vulnerable land-use		✔

None of the above ☑

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

N/A

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer

Date 19/12/2023

Bushfire Management Plan

Poultry Farm Expansion (Farm Buildings)

Lot 72 Corio Road RAVENSWOOD

Client – metrowest

September 2023

envision
bushfire protection

This Bushfire Management Plan ('BMP') has been prepared to align a proposal to construct Poultry Sheds at Lot 72 Corio Road RAVENSWOOD (the site) with State Planning Policy 3.7. *Planning in Bushfire Prone Areas*.

Envision Bushfire Protection

ABN: 90958370365

PO Box 7209 SHENTON PARK WA 6008

P: 0428 066 147

Email: admin@envisionbp.com.au

Version Control

Lot 72 Corio Road RAVENSWOOD			
Version	**Date**	**Author**	
V1	23/02/2021	Anthony Rowe	Draft
V2	27/02/2021	Anthony Rowe	Revised orientation of Pod 2
V3	04/09/2023	Anthony Rowe	Revised layout, and revision to v1.4

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Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information at the time of writing following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Envision Bushfire Protection accepts no liability for the inaction of the owner to provide or maintain the bushfire protection measures identified in this report. Vegetation is dynamic, building materials may distort, and the accumulation and the location of flammable materials near the building may affect the potential for damage or loss of a building to occur.

Failure to maintain the property and/or building to these standards may compromise an insurance policy if currently covering any of your assets or those of any third party that may be consequentially affected due such failure. If not insured, and if you are seeking insurance, this report may not influence the decision of any insurer not to offer cover.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

Scope of this report

Envision Bushfire Protection has been engaged to provide expert bushfire safety and planning advice.

The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7 and identify appropriate mitigation measures to be considered by the determining authority. This is described in a Bushfire Management Plan and prepared with regard to the Department of Planning Lands and Heritage templates.

The investigations and mitigation measures identified in the BMP, has, in turn, formed the basis for the preparation of a Bushfire Emergency Evacuation Plan.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005

Anthony Rowe Level 3 - BPAD36690

Principal Bushfire Consultant **I** Town Planner

BPAD Accredited Practitioner Level 3 I PIA Registered Practicing Planner

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas v1.4.

SUMMARY

The proposal is to construct additional poultry sheds, at a poultry farm at Lot 72 Corio Road RAVENSWOOD (the site).

The site is located within a Bushfire Prone Area (OBRM September 2019) and requires assessment against State Planning Policy 3.7 Planning in Bushfire Prone Areas and the associated Guidelines for Planning in Bushfire Prone Areas V1.4 (the Guidelines).

Two new locations ('Pods') are proposed on the site with each Pod to accommodate six poultry sheds and an outbuilding. The existing poultry sheds will be demolished.

The pods are in separated locations for biodiversity purposes.

The site has a single dwelling and a separate caretaker's residence.

The site has been predominantly cleared of native trees, and has been used for agriculture production, pasture and intensive animal keeping (poultry).

This BMP has been prepared in accordance with the WAPC template *BMP template for a complex development application.*

Compliance with the Bushfire Protection Criteria

The proposal was assessed for compliance with the bushfire criteria in SPP.3.7 policy measures 6.2, 6.4, and 6.7 and Appendix 4 of the Guidelines.

Element 1 - Location

The Acceptable Solution for Element 1 requires a strategic planning proposal, that will be a moderate or low bushfire hazard level on completion. In a contextual consideration of an 'area' (2 km) the site is located within an area that is flat and predominantly grassland used for pastural purpose. The area is classified as a moderate threat.

Element 2 - Siting and Design

Element 2 requires all buildings regardless of building class, if located within a bushfire prone area as identified by the Map, are to be sited not be exposed to a BAL exceeding BAL-29. This may be achieved by having a separation space (Asset Protection Zone) sufficient to achieve BAL-29.

The site is large, 121 ha, and the proposed sheds, Pods 1 and 2, are inset from the site boundary.

Pod 1 is outside of the bushfire prone area map; there is no mandatory requirement to undertake works to establish an Asset Protection Zone, and no applicable bushfire construction standard. Notwithstanding the buildings are outside of the bushfire prone area map, the requirements of the *Bush Fires Act 1954* and *Bush Fire Risk Treatment Standards* 2020, requires a 20 m Risk Treatment Area, around the building.

Pod 2 is within a bushfire prone area. An Asset Protection Zone of 21 m is proposed around Pod 2 to provide flexibility for the future use of the site without diminishing the BAL – 29.

Element 3 - Vehicle Access

The acceptable solution requires access to a through-road that provides providing alternative destinations for evacuation, and alternative directions from which assistance from emergency services can be received. Corio Road is a public road that traverses predominantly pastural land and is flat. The road has a 5.5 m seal and shoulders exceeding 1 m either side: in turn compliant with the minimum horizontal width of 6 m.

The acceptable solution requires driveways longer than 50 m should comply with the technical requirements for private driveways, width and grade and have provision for a turnaround or to enter and leave in a forward direction. The site is large and open, and the proposed buildings, and existing residence are more than 50 m from a public road.

The Guidelines refer to the provision of internal fire breaks being provided in accordance with the Shire's annual firebreak notice requirement. Arrangements between local government and the practical placement vary, and owners may seek variations to the requirements from the Shire. This matter is best addressed as a condition of approval to the satisfaction of the Local Government before operation.

Element 4 - Water

The site does not have access to a reticulated water supply but has access to a soak and ground water. Potable water is provided at the caretaker's residence and the dwelling in domestic tanks. A filter treatment system from the ground water supply is stored in a 110,000 L tank which supplies water to the sheds.

The proposed poultry sheds each exceed 2000 m^2 and are therefore classed as Farm Buildings requiring fire services (water capacity) in accordance with Part H3 of the National Construction Code 2019.

The tank/hydrant should be centrally located, accessible to the driveway and provided with an Asset Protection Zone to BAL-29.

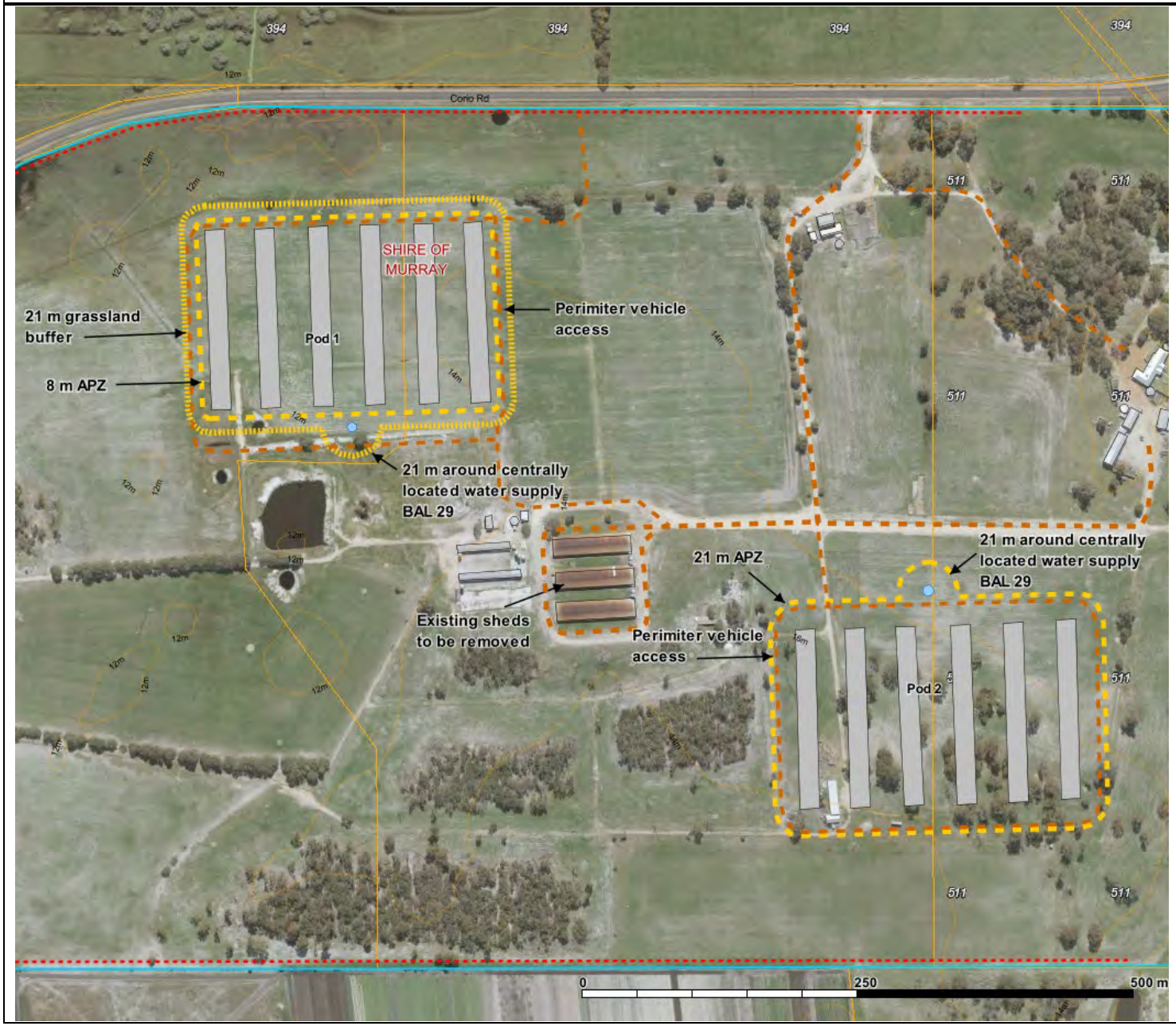
Additional Bushfire Management Strategies

No further 'Additional' management strategies have been identified to those matters addressed in the compliance criteria. It is expected that the owner of the property is aware of the bushfire risk and will respond to the requirement of the Shire Fire Break Notice and DFES publications including the Homeowners Bushfire Survival Manual.

RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The owner responsibilities that will achieve compliance with the Bushfire Protection Criteria is provided in section 6.

Figure EX 1 - Spatial representation of the proposed risk management strategies



Notes

1. Pod 2: The establishment of an Asset Protection Zone (APZ) in accordance with the Standards for Asset Protection Zones (Schedule 1 Guidelines for Planning in Bushfire Prone Areas V1.3).
2. Pod 1: Voluntary Asset Protection Zone (APZ), 8 m to grassland and grassland maintained to 21 m from the buildings. Any 'screening trees' are to be set no closer than 21 m from the buildings.
3. Private driveway access is to be provided in accordance with the Technical requirements provided in the Guidelines at Element 3 Table 6 column 3.
4. Firebreaks are to be maintained inside all boundaries in accordance with the Shire Firebreak notice.
5. The provision of a centrally located water tank/hydrant (Farm building Part H3 NCC: 2019), with 21 m APZ to BAL-29, couplings prescribed (Part H3 NCC: 2019) and Shire specifications.

Note: Pod 1 compliance with SPP 3.7 is volunteered.

LEGEND

- Site Boundary
- Asset Protection Zone
- Accessway
- Water tank for firefighting
- Firebreak-Shire of Murray Firebreak Notice

Property Assessment Details

Prepared by: Anthony Rowe
Accreditation Level: Level 3,
Accreditation no. 36690

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1. PROPOSAL DETAILS

1.1 Introduction

The proposal is to construct 12 additional poultry sheds (2 pods of 6) at Lot 72 Corio Road Ravenswood (the site).

The site is partially located within a Bushfire Prone Area (OBRM September 2019 map) and therefore requires assessment against State Planning Policy 3.7 Planning in Bushfire Prone Areas and the associated Guidelines for Planning in Bushfire Prone Areas V1.3 (the Guidelines).

In accordance with SPP 3.7, the planning authority in determining an application in a declared bushfire prone area must be satisfied the proposal is consistent with the Policy intent, ***to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.***

Two areas (pods) are proposed on the site with each to accommodate six poultry sheds. Each shed is 16.5 m x 176 m, each pod is 259 m x 176 m in dimension. Pod 1 is at the northwest of the site, and outside of the bushfire prone area map, and Pod 2 is to the southeast of the site. The site presently has 3 large poultry sheds in a central area of the site (to be removed). The site also has a single dwelling and a separate caretaker's residence.

The site has been predominantly cleared of native trees (earliest photo is 1979) and has been used for agriculture production, pasture and in 2006 intensive animal keeping (poultry).

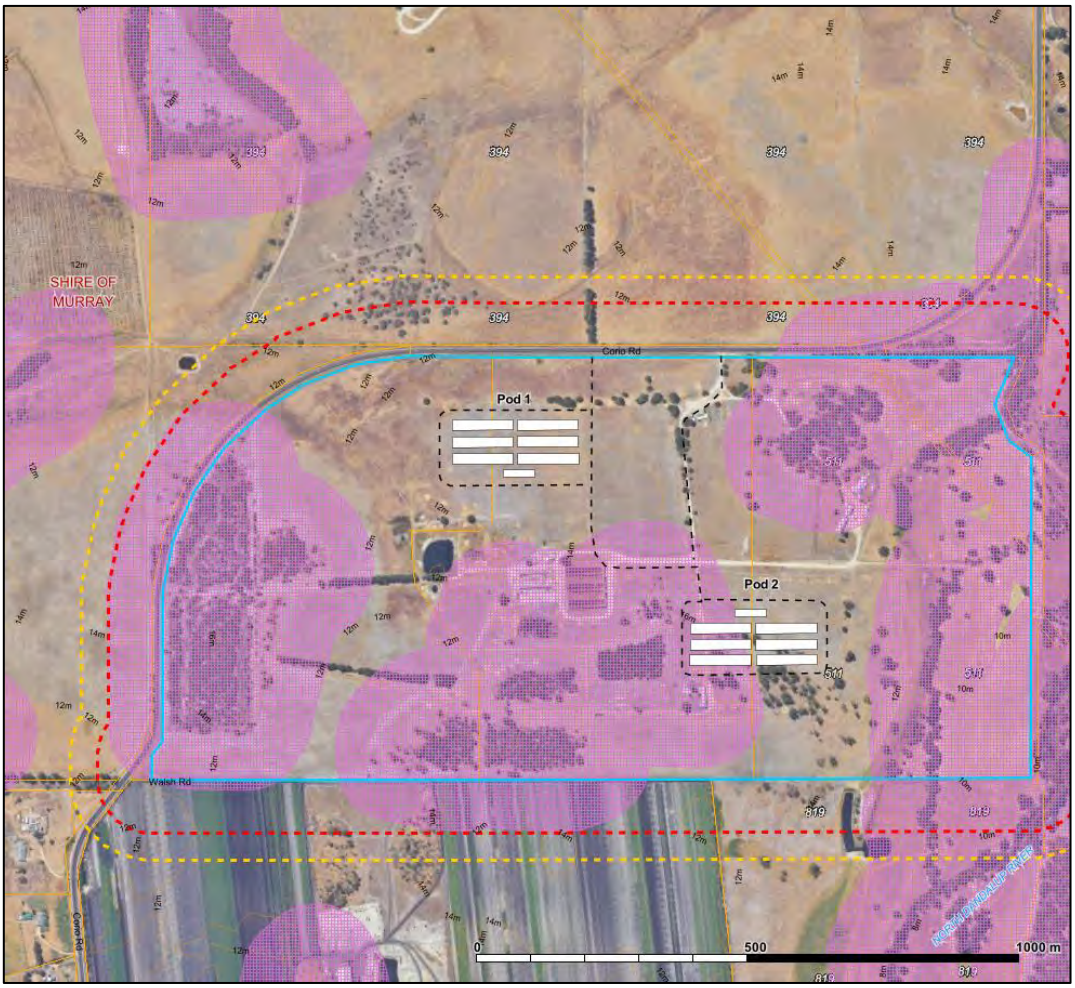

Plate 1: Site boundary, bushfire prone area (OBRM 2019) (pink)

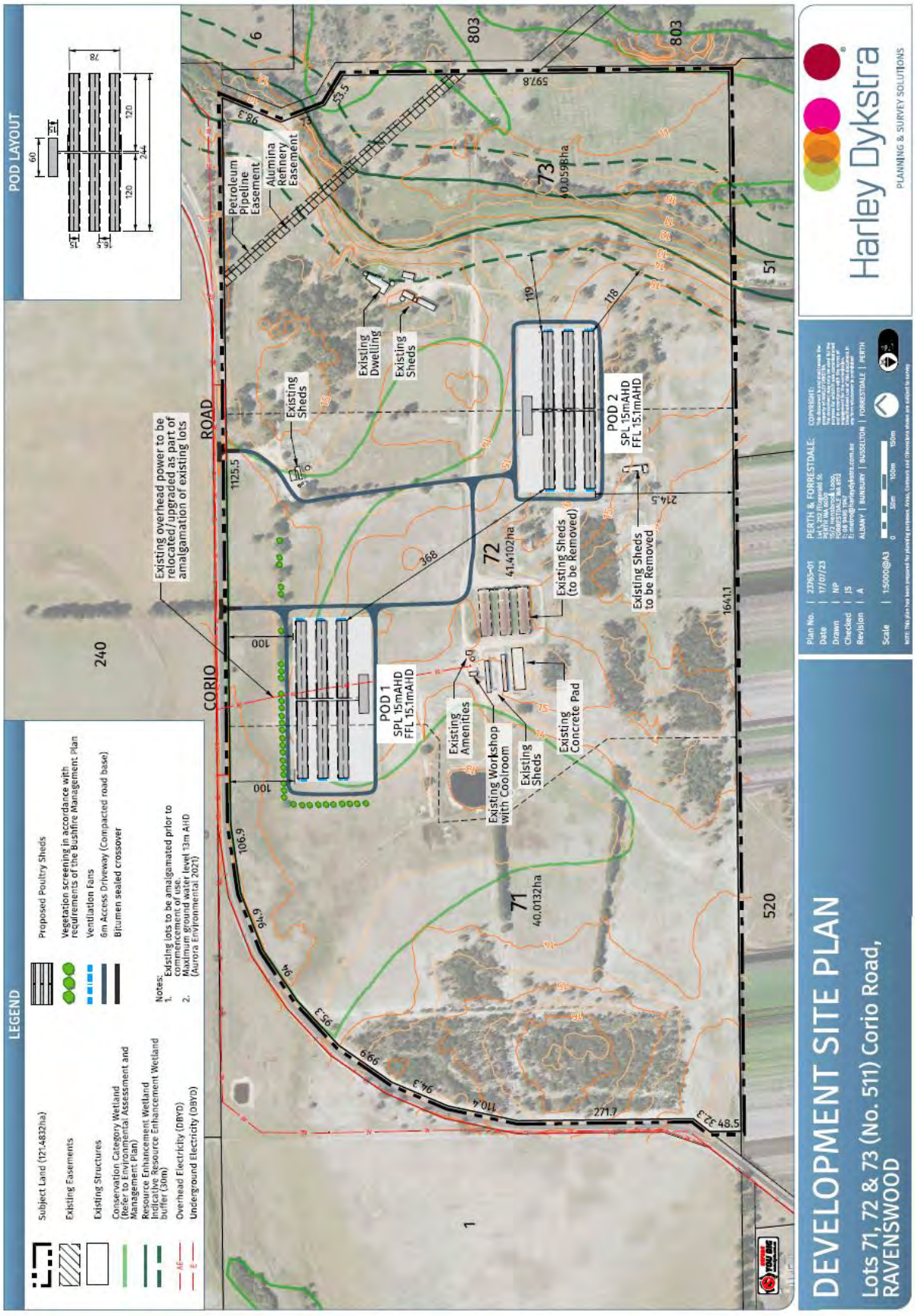

Plate 2: Proposed development locations, the green shade is the Geomorphic wetland extent.

2. ENVIRONMENTAL CONSIDERATIONS

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

2.1 Affecting Native Vegetation

Generally, the clearing of native vegetation is permitted by the exemption under the *Environment Protection Act 1986,* if associated with another authorisation.

The 'exemptions' are described below. The site is not within an Environmentally Sensitive Area, but it is uncertain whether an APZ is included in the exemption "as necessary to construct an approved building".

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offense to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions include:

Environment Protection Act 1986

- **Clearing required by local government Section 33 Bushfire Act 1954.**
- Clearing in accordance with the terms of a subdivision approval.
- Clearing in accordance with a permit under the Bushfires Act 1954 (prescribed burning) and clearing by a bushfire control officer.

Environmental Protection (clearing native vegetation) Regulation 2004 (exemptions do not apply in Environmentally Sensitive Areas, and clearing > than 5ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

- Clearing to the extent necessary to construct an approved building.
- Clearing that is for fire hazard reduction burning.
- Clearing to maintain an area cleared in the last ten years.

(WA) Biodiversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for fauna conservation (in turn its habitats) and lists species, threatened ecological communities (TECs), key threatening processes, and critical habitats. It introduces criteria for listing species 'endangered', 'critically endangered' or 'vulnerable,' to align with the Environment Conservation and Biodiversity Conservation Act 1999 (Cth).

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

In accordance with the Department of Planning Lands and Heritage template (Bushfire Management Plan template to support a BAL Contour Assessment) a review of the listed databases has been undertaken as part of this assessment to identify whether restrictions or other specific considerations may apply that would affect the implementation of any bushfire protection initiatives that may otherwise be identified.

2.2 Native Vegetation – Modification and Clearing

Is the land affected by:	**Yes/No**	**Comment**	
Conservation Wetland or buffer (DBCA-019 DBCA-017)	Yes	The site is occupied by a Conservation Category Geomorphic Wetland affecting 60% of Pod 1.	
RAMSAR Wetland (DBCA-010)	No	Not identified	
Threatened and Priority Flora (DBCA-036)	No	Not identified	
Threatened and Priority Fauna (DBCA-037)	No	Not identified	
Threatened Ecological Communities (DBCA-038)	No	Not identified	
Bush Forever (COP-071)	No	The site is not affected nor is one identified within the area.	
Environmentally Sensitive Area (DWER-046)	No	Not applicable	
Regionally Significant Natural Areas (DWER-070)	No	Not applicable	
Aboriginal Heritage	No	Not applicable	
Conservation Covenant (DPIRD-023)	No	Not applicable	
Does the proposal require the removal of restricted vegetation?		**~~Yes~~**	**No**

Pod 1 is located outside of the bushfire prone map, and therefore not affected by the requirements of SP 3.7, or the National Construction Code, as it relates to bushfire. The *Bush Fires Act 1954* applies to the whole site, notwithstanding the map of bushfire prone areas. The *Bush Fires Act 1954* seeks to control the ignition and spread of bushfire from the site that could damage a neighbour. This is addressed annually in the Shire Firebreak Notice, which includes maintaining a cleared area of 20 m around a building. In the instance of Pod 1 this involves maintaining grass at less than 50 mm and avoiding the establishment of trees within 20 m to the buildings.

Pod 1 will affect upon the affect conservation category geomorphic wetland. Approval from the Department of Water and Environmental Regulation (DWER) will be required for the buildings, the associated site works and the Asset Protection Zone.

Pod 2 is located within an isolated Woodland area on the site (trees over grass). The area is not identified as ecologically significant (threatened faun or flora). It is partially within the Bushfire Prone Area map and affected by the State Planning policy 3.7. The building is not a class 1-3, and therefore is not required to comply with a construction standard but is required to have an Asset Protection Zone equivalent to BAL 29. In this instance a 21 m APZ is required to ensure there is sufficient distance, to maintain BAL 29 at the building, in case revegetation should occur outside of the APZ. It enables future planting outside the APZ to be unrestricted.

Important note: *The requirements for regulated vegetation, under State and National legislation, as required in the DPLH template, do not include the consideration of local vegetation retention policies by local by-laws or Local Planning Scheme requirements.*

It is the responsibility of the landowner to obtain the necessary authorisations for the modification of native vegetation identified as an asset protection zone or as a further bushfire risk reduction measure.

This BMP provides a reason for affecting regulated vegetation, but it does not impose any precedence over the assessment to modify vegetation that is taken under other legislation.

2.1 Re-vegetation/Landscape Plans

Re-vegetation/landscape plans are not included.

The Asset Protection Zone for Pod 1 should be established in accordance with the Shire fire break notice.

The Asset Protection Zone around Pod 2 should follow Element 4 Schedule 1 in the Guidelines v1.4 (default landscape plan)

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015 the State Government introduced, a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

Part 10A Schedule 2 of the Planning and Development (Local Planning Scheme) Regulations 2015 – (LPS 2015)

Part 10A establishes the exemptions from the application of SPP 3.7 for certain development types that are located within an area that is Mapped as Bushfire Prone area (OBRM 2019).

In this instance the poultry sheds are considered to meet the definition of a habitable building (in LPS 2015) because the building is enclosed and it is used for the purpose of work, although it is unlikely to be occupied by more than two people at any one time (contemporary poultry practice).

As a habitable building the considerations of SPP 3.7 apply, but because the building is not a class 1-3 and 10a, the bushfire construction requirements do not apply, only the siting requirement not to exceed BAL 29.

The Building Act 2011

The Building Act 2011, and Building Regulations 2012, applies the construction standards of the Building Code of Australia (National Construction Code) where it relates to an 'applicable' building.

The Bushfire Construction requirements in the National Construction Code NCC (Vol 2, s.3.10.5) address only class 1-3, and class 10 buildings.

NCC has introduced (Part H3) certain concessions for Class 7 and Class 8 buildings used for farming because these buildings pose a lower risk to occupants than buildings of the same class that are not used for farming.

The size of the building and level of occupancy are the two criteria that differentiate between a 'farm building' and a 'farm shed'. This differentiation allows further concessions to be applied to 'farm sheds', which present less hazard than 'farm buildings'.

Part H3 of the NCC 2019 addresses the building (fire) requirements for a 'farm building' and a 'farm shed'. The main features to be addressed include *(note H3 should be referred to for the full list of requirements).*

A farm shed need not comply with the building fire provisions of Parts C, if it is separated from any other building or allotment boundary by a distance of not less than 6 m, it is required to be provided with a fire extinguisher for every 500 m^2 of floor space.

Whilst the proposed sheds are likely to comply with the total number of persons accommodated at any time not exceeding two (farm shed), the buildings are larger than 2000 m^2 and therefore farm buildings.

A farm building is to have fire hydrants and water supplies comprising a minimum total capacity of 144 000 litres, located within 60 m of the building, positioned to enables emergency services vehicles access to within 4 m 'and fitted with small bore suction connection' and 'large bore suction connection' to the specifications in AS 2419.1

These are structural fire requirements that exceed and are additional to the capacity required for bushfire.

Bush Fires Act 1954

Section 33 of the *Bush Fires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. Local government at any time, may give notice in writing to an owner or occupier of land within the district of the local government.

The *Bush Fires Act 1954* applies at large. Its operation is not restricted to the bushfire prone area and is applicable to all landowners.

The Notice may specify works to be undertaken including the management of grasses on the property usually to be maintained at less than 10 cm during the fire season.

It also provides that the identified works can be undertaken as a separate operation or in coordination with the neighbouring land.

***Bush Fire Risk Treatment Standards* 2020 (Regulation)**

The Bush Fire Risk Treatment Standards 2020, provides the opportunity for a landowner to create a 20 m (10 m inner and 10 m outer Risk Treatment Area, unless expressly restricted by other conservation type legislation of would affect an adjoining property.

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The following assessment has applied the methodologies described in AS3959:2018, the Guidelines, and has used the Fire Protection Association Australia accredited practitioner methodology for the preparation of Bushfire Attack Level (BAL) assessments. All vegetation within 150 m (context) of the proposed building has been classified following Clause 2.2.3 (AS 3959:2018) to determine the Bushfire Hazard Level at the locality. The BAL Contour Plan, however, is measured within 100 m of the site boundary following the requirement for a BAL assessment, which is 100 m.

AS 3959:2018 prescribes six categories of Bushfire Attack Level (BAL): BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, and BAL-FZ. In addition, BAL-FZ describes only performance solutions where the separation from classified vegetation (on completion) is less than 10 m. The BAL level is used for determining the siting of development (to be less than BAL-40) and in turn the construction standard that is equivalent to the BAL at the proposed building location.

The BAL rating has been determined through site inspection and assessment of the following parameters:

- Fire Danger Index (FDI) rating; assumed to be FDI - 80 for Western Australia;
- A separation distance between the building and the classified vegetation source(s) within 100 m (for BAL impact) the separation distance is measured from the wall face (receiver) to the unmanaged understory rather than the canopy edge (dripline) *see below*; and
- Slope of the land under the classified vegetation.

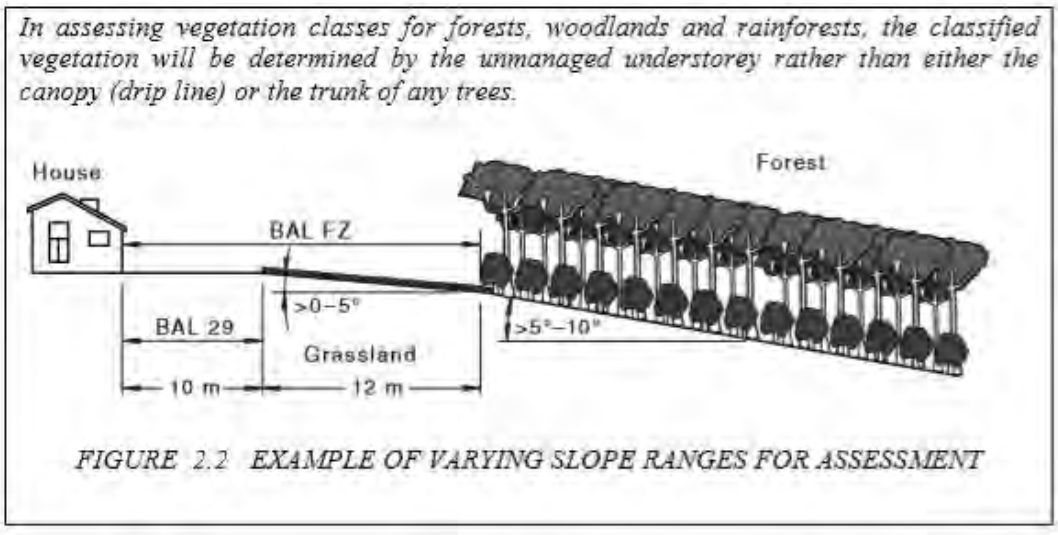

FIGURE 2.2 EXAMPLE OF VARYING SLOPE RANGES FOR ASSESSMENT

INPUT FIGURES

Figure 1 Topographic features and vegetation and slope

Figure 2a Identification of the present site vegetation.

All vegetation within 150m of the site classified in accordance with Clause 2.2.3 of AS 3959:2018 from a site inspection undertaken on 01 September 2023.

The inspection followed the Fire Protection Association Australia accredited practitioner methodology (Template) for the preparation of Bushfire Attack Level (BAL) assessments, including photo verification.

Figure 2b Identification of the post development site vegetation.

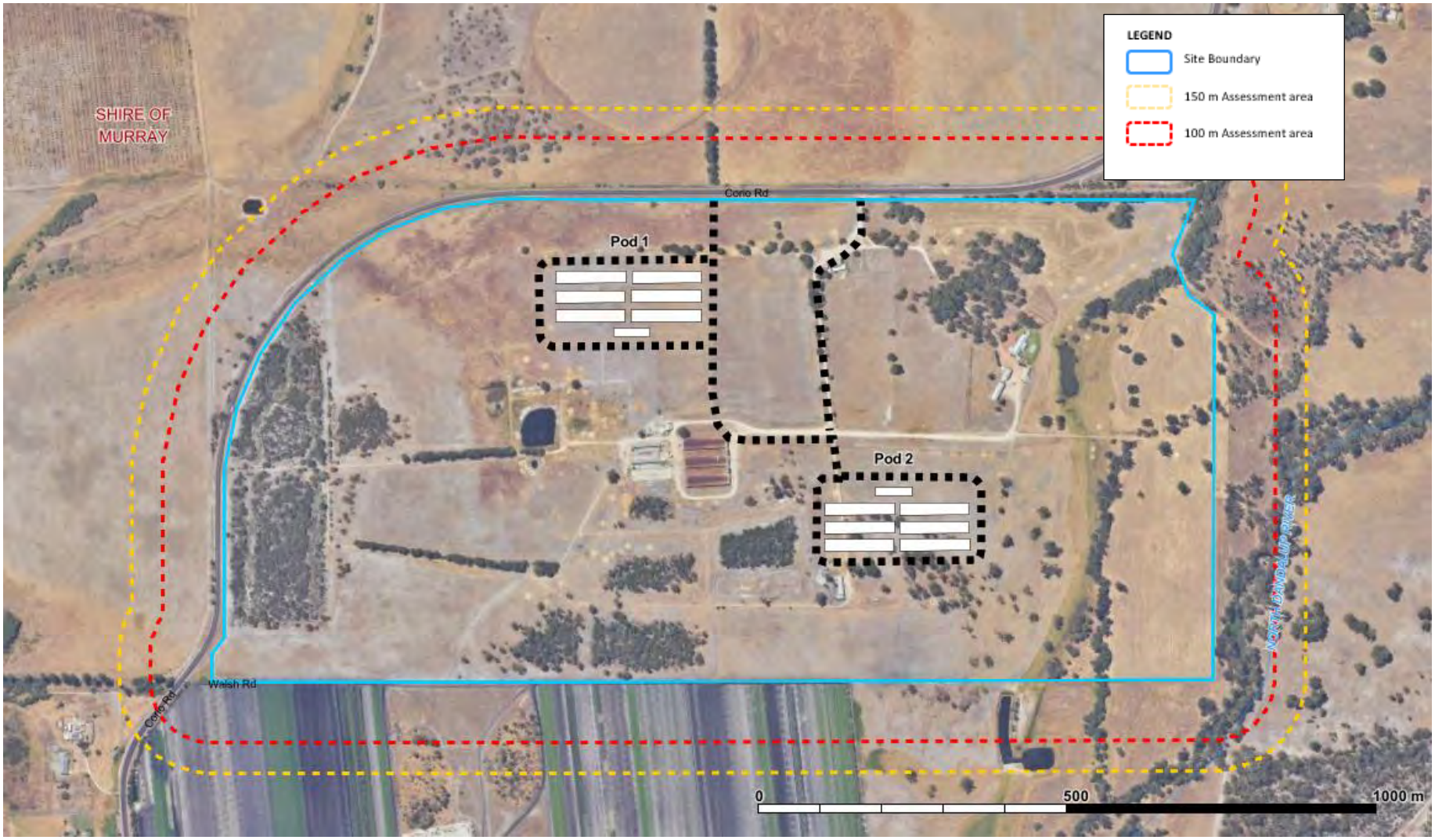

Figure 1: Location

N

Assessment Date: 01/09/2023
Prepared: Anthony Rowe I Accreditation Level: BPAD L3
Accreditation Number: 36690 Accreditation I Expiry: Dec 2023
FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50

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envision bushfire protection

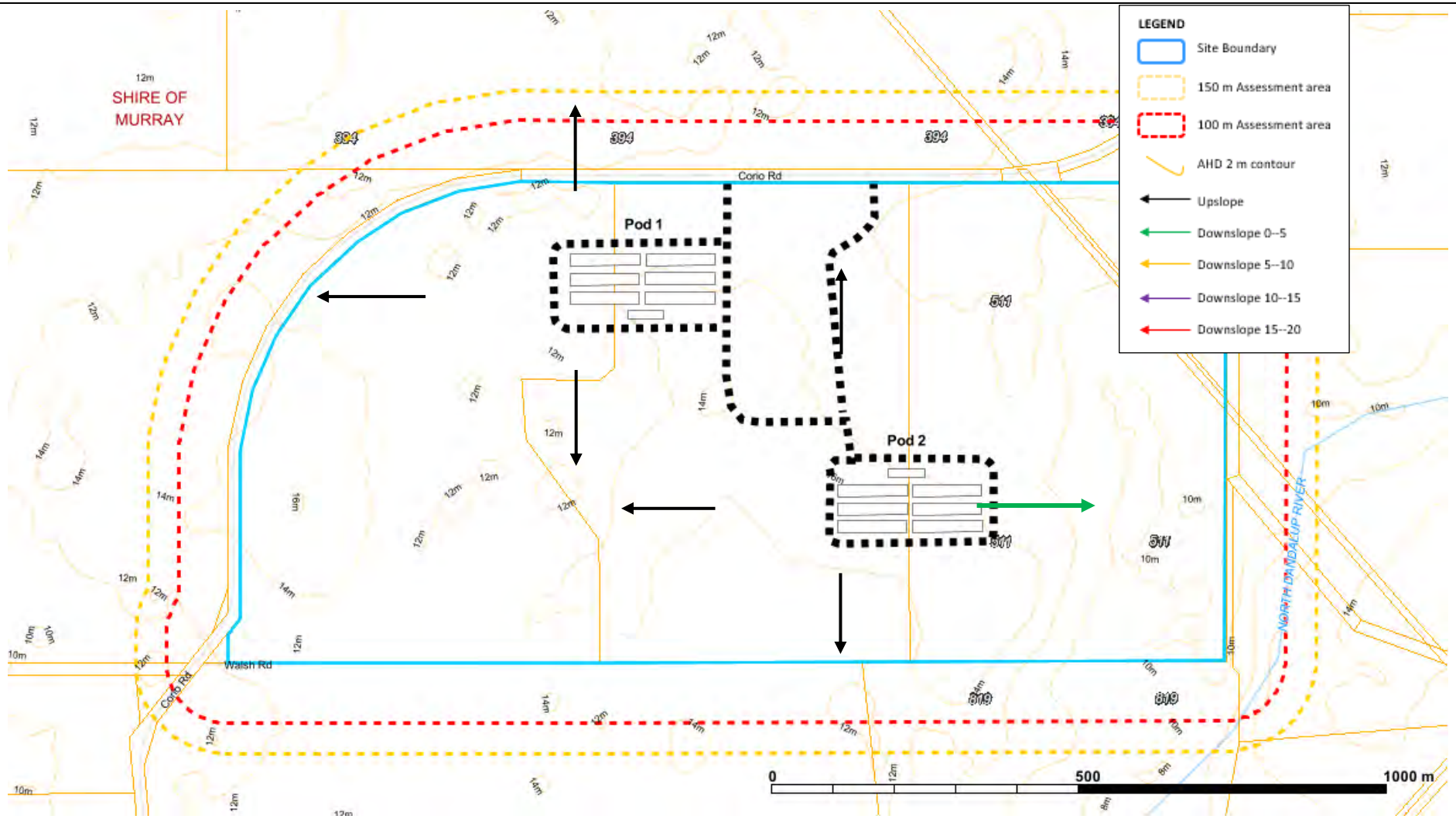

Figure 2: Topography

N

Assessment Date: 01/09/2023
Prepared: Anthony Rowe I Accreditation Level: BPAD L3
Accreditation Number: 36690 Accreditation I Expiry: Dec 2023
FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50

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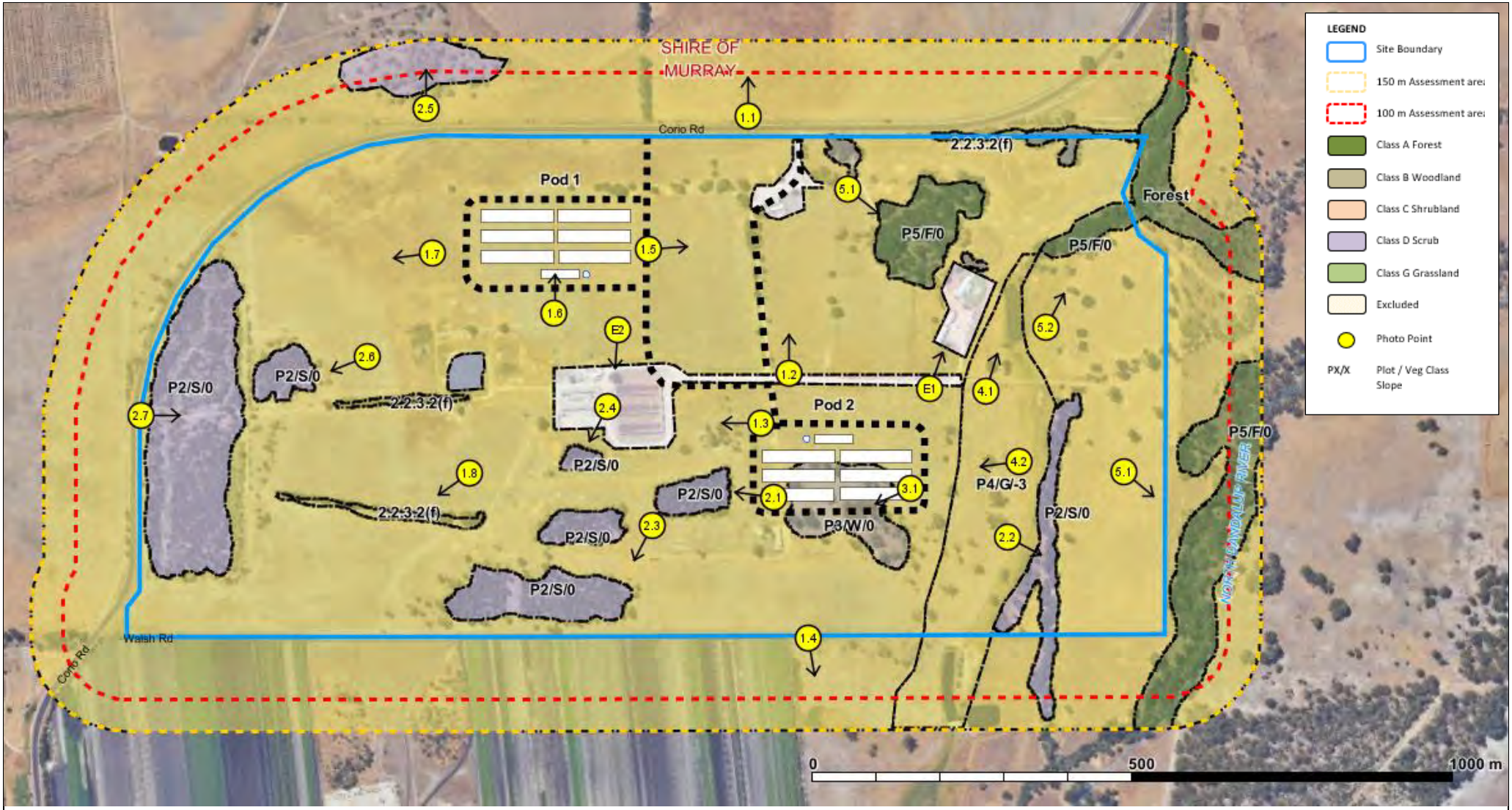

Figure 3: Vegetation Classification and photo locations

N

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Vegetation Classification

All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

<table>
<tr><th colspan="3">PLOT: Excluded</th></tr>
<tr><td rowspan="4">Vegetation Classification
Excludable - 2.2.3.2(e) Non Vegetated Areas
Slope
Flat
Description (AS3959)
2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas
e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

Post development
To be retained</td><td>PHOTO ID: E1</td><td>PHOTO ID: E2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Existing residence</td><td>Comment: Existing poultry sheds and outbuildings</td></tr>
<tr><td colspan="2"></td></tr>
</table>

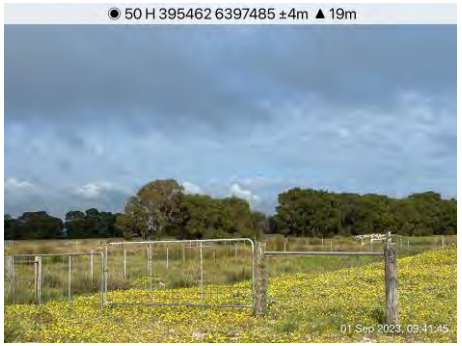
<table>
<tr><th colspan="3">PLOT: 1</th></tr>
<tr><td rowspan="6">Vegetation Classification
Class G Grassland – Sown pasture G-26
Slope
Flat
Description (AS3959)
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.
NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.
Post development
To be retained</td><td>PHOTO ID: 1.1</td><td>PHOTO ID: 1.2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: pasture grasses north of site</td><td>Comment: Pasture grass, view north from centre of the site</td></tr>
<tr><td>PHOTO ID: 1.3</td><td>PHOTO ID: 1.4</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses west fore ground to Scrub west of Pod 2</td><td>Comment: Pasture grasses south of site and pod 2</td></tr>
</table>

<table>
<tr><th colspan="3">Plot 1</th></tr>
<tr><td rowspan="4">Vegetation Classification
Class G Grassland – Sown pasture G-26
Slope
Flat
Description (AS3959)
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.
NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Post development
Unchanged (views are looking to grass outward from Pod 1. The buildings and Risk Treatment Area will displace grass</td><td>PHOTO ID: 1.5</td><td>PHOTO ID: 1.6</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses east of Pod 1</td><td>Comment: Pasture grasses north of Pod 1 and site</td></tr>
<tr><td>PHOTO ID: 1.7</td><td>PHOTO ID: 1.8</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses west of Pod 2</td><td>Comment: Pasture and example of a single windrow. The example is west of existing poultry shed</td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 2</th></tr>
<tr><td rowspan="6">Vegetation Classification
Class D Scrub - Closed scrub D-13
Slope
Flat
Description (AS3959)
Found in wet areas and/or areas affected by poor soil fertility or shallow soils; >30% foliage cover. Dry heaths occur in rocky or sandy areas. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 m in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres

Post development
Unchanged</td><td>PHOTO ID: 2.1</td><td>PHOTO ID: 2.2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Scrub, west of pod 2</td><td>Comment: Scrub, east of Pod 2, wetland plain</td></tr>
<tr><td>PHOTO ID: 2.3</td><td>PHOTO ID: 2.4</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: View to Scrub south west of Pod 2</td><td>Comment: Scrub, south of existing poultry shed</td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 2</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 2.5</td><td>PHOTO ID: 2.6</td></tr>
<tr><td>Class A Forest - Low open forest A-04</td><td rowspan="2">
</td><td rowspan="2"> 
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Scrub, northwest of Pod 1 and the site.</td><td>Comment: Scrub, west of pod 1</td></tr>
<tr><td>Description (AS3959)</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Found in wet areas and/or areas affected by poor soil fertility or shallow soils; >30% foliage cover. Dry heaths occur in rocky or sandy areas. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 m in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres</td></tr>
<tr><td>Post development</td><td>Comment: Scrub, at west boundary of the site.</td><td></td></tr>
<tr><td>Unchanged</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 3</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 3.1</td><td></td></tr>
<tr><td>Class B Woodland - Woodland B-05</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Woodland within proposed Pod 2 – to be cleared for development</td><td></td></tr>
<tr><td>Description (AS3959)</td><td></td><td></td></tr>
<tr><td>Trees 10 m - 30 m high; 10% - 30% foliage cover dominated by eucalypts and/or callistris with a prominent grassy understorey. May contain isolated shrubs.</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Post development</td></tr>
<tr><td>To be built upon and excluded as a bushfire threat.</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 4</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 4.1</td><td></td></tr>
<tr><td>Class G Grassland – Sown pasture G-26</td><td rowspan="3">
</td><td rowspan="3">
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Downslope 0-5</td></tr>
<tr><td>Description (AS3959)</td><td>Comment: Grass onto floodplain</td><td>Comment: Grass up to Woodland and Pd 2 sit</td></tr>
<tr><td>All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.

NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.</td><td></td><td></td></tr>
<tr><td>Post development</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Unchanged</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 5</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 5.1</td><td>PHOTO ID: 5.2</td></tr>
<tr><td>Class A Forest - Low open forest A-04</td><td rowspan="2">
</td><td rowspan="2">
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Forest north of existing residence</td><td>Comment: Forest east of existing residence, on flood plain.</td></tr>
<tr><td>Description (AS3959)</td><td></td><td></td></tr>
<tr><td>Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Post development</td></tr>
<tr><td>Unchanged</td><td>Comment: Forest east of site and Pod 2</td><td></td></tr>
</table>

Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index			
FDI 40 ☐	FDI 50 ☐	FDI 80 ☒	FDI 100 ☐
Table 2.7	*Table 2.6*	*Table 2.5*	*Table 2.4*

Potential Bushfire Impacts

The potential bushfire impact from each of the identified vegetation plots identified in Figure 2 are identified below. These are taken from table 2.5 AS3959:2018 with the relevant plot assigned. The BAL - 29 for the proximity of the proposed building locations has been used to establish the Asset Protection Zone distances.

Plot	Vegetation classification	Effective slope	Separation Distance (AS 3959:2018 Table 2.5)	BAL
Plot 1	Grassland	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 2	Scrub	Flat/upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Plot 3	Woodland	Flat/upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 4	Grassland	0-5	< 7 m	BAL-FZ
			7 - < 9 m	BAL-40
			9 - < 14 m	BAL-29
			14- < 20 m	BAL-19
			20- < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 5	Forest	Flat/upslope	< 16 m	BAL-FZ
			16- < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Potential Bushfire Impacts - FDI 80

The potential bushfire impact to each pod from the identified vegetation plots within 100 m are identified below.

Pod 1	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	0	BAL – FZ

Table 1: BAL Analysis

Note Pod 1 is not within the Bushfire Prone Area map – the BAL is for information.

Pod 2	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	0	BAL – FZ
2	Class D Scrub	Flat	52	BAL – 12.5
3	Class B Woodland	Flat	0	BAL – FZ
4	Class G Grassland	0-5	60	BAL Low
5	Class A Forest	Flat	260	BAL Low

Determined Bushfire Attack **Level (BAL)**

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2018 using the above analysis.

Determined Bushfire Attack Level - Pod 1 (the BAL is for information).	**BAL – FZ**
Determined Bushfire Attack Level - Pod 2	**BAL – FZ**

Indicative BAL (with APZ against present vegetation).

Pod 1	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	20	BAL – 12.5

Note Pod 1 is not within the Bushfire Prone Area map – the BAL is for information.

Pod 2	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	21 -27	BAL – 12.5
2	Class D Scrub	Flat	52	BAL – 12.5
3	Class B Woodland	Flat	21 -27	BAL – 19
4	Class A forest	Flat	260	BAL Low
5	Class A Forest	0-5	440	BAL Low

Note: If Forest is revegetated up to the APZ for Pod 2, the BAL at the building will be BAL 29

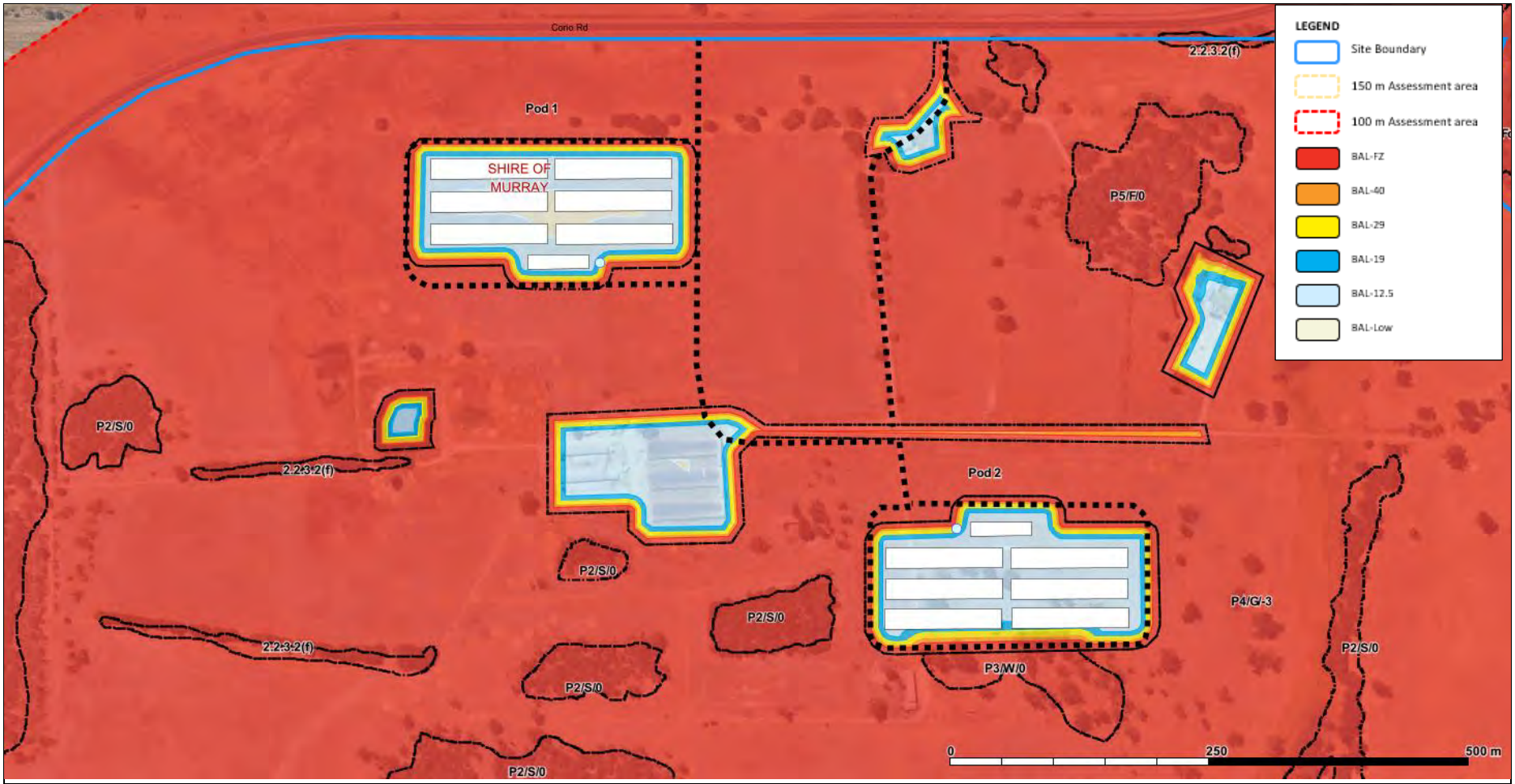


Figure 4: BAL Contour	N	Assessment Date: 23/02/2023 Prepared: Anthony Rowe I Accreditation Level: BPAD L3 Accreditation Number: 36690 Accreditation I Expiry: Dec 2023 FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50	© 2023 Any conclusions drawn, or recommendations made in this report are made in good faith. No responsibility is taken for how this information and the report are used subsequently by others.	envision bushfire protection

3.2 Determined Bushfire Attack Level (Outputs)

Figure 3 Bushfire Attack Level Contour Map Attainable BAL – Post Development.

The BAL Contour map has been volunteered for the development application to be applied to the immediate development site. Each band represents a georeferenced distance following the technical specification for slope from vegetation class used in AS3959:2018 table 2.5.

A method 1 BAL assessment of the vegetation, the slope under vegetation, and the applied FDI, identified the applicable habitable setbacks that will apply within the site.

Determined BAL rating

Pod 1:

No separation from grassland = BAL FZ (SPP 3.7 is however not applicable to development sites outside the Bushfire Prone Area map. The *Bush Fires Act 1954*, and the *Bush Fire Risk Treatment Standards 2020* (Regulation), provide for a 20 m *Risk Treatment Area* to be established around the buildings.

Pod 2:

No separation from grassland, or woodland = BAL FZ.

Indicative BAL rating

Pod 1:

A 20 m *Risk Treatment Area* 20 m from grassland would equate to BAL 12.5 (for information only)

Pod 2:

An Asset Protection Zone 21 m is recommended and is equal to BAL 29, for forest, to provide future land use flexibility.

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Factors affecting bushfire behaviour depend upon the fuel (size, quantity, type, moisture, and its distribution), weather conditions (temperature, humidity, wind speed, and atmospheric stability) and the topography (slope aspect and interaction with wind). These factors affect the speed of the fire, the flame height, the spotting behaviour (burning embers) and the intensity. Fires travel faster, and the flame length is closer to the ground traveling uphill. The speed of a fire doubles for every 10 degree upslope increase.

The prevailing summer winds (February) afternoon winds suggests a propensity for winds from the south, southwest. Major fires in the region are therefore expected to arrive at the site from the south, southwest.

The context of the site is a location within a bushfire threat from multiple aspects, predominantly through grassland. The site is 7 km west from the foot of the Darling Range, and extensive and contiguous forest that extends east. Forest fire can eject embers up to 5 km, and fires in the Darling Ranges typically travel east under easterly winds. The site at seven km distance is unlikely to be affected.

Fires in pastural lands are often stared by machinery failures, sparks from slashing, or hot works.

Grass fires are fast moving but light weight fuels of a short but intense duration. They do not generate heavy embers and require the ignition progressively heavier fuels.

After the passage of the fire front tenable conditions quickly establish to enable heavier fuels at the commencement of their ignition to be addressed and extinguished.

Appropriate facilities should be provided to enable suppression after the fire front's passing. The site has two arrival routes and is an open landscape that can assist the attendance of firefighters, but in a landscape fire competing priority means their attendance cannot be relied upon.

5. BUSHFIRE PROTECTION CRITERIA ASSESSMENT

This BMP provides an outline of the mitigation strategies. For each of the elements listed within Appendix 4 of the Guidelines for Planning in bushfire-prone areas, the 'intent' must be achieved either by the proposal meeting the applicable acceptable solution, as one solution; or where the acceptable solutions cannot be met, then by a performance principle-based solution that can achieve the 'Intent.'

5.1 Compliance Criteria

Table 2: Bushfire Protection Criteria assessment.

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 1: location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.			
P1 The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL–29 or below, and the risk can be managed. For unavoidable development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the decision-maker.	**A1.1 Development location** The strategic planning proposal, subdivision, and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	✓		The site is within an area classed as predominantly grassland and therefore is a moderate Bushfire Hazard Level.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 2: Siting and Design	To ensure that the siting and design of development minimises the level of bushfire impact.			
P2 The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. The proposal incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones.' (see Schedule 1).	✓		The Acceptable solution A2.1 requires that the development site can achieve on completion a BAL not exceeding BAL-29, by an APZ within the boundaries of the lot. Pod 1 is not within the Bushfire Prone Area and therefore not affected by the Guideline requirement. The requirement for a 20 m clear space, *Risk Treatment Area* following the *Bush Fires Act 1954 (Shire Firebreak Notice)*, and the *Bush Fire Risk Treatment Standards* 2020 apply. An Asset Protection Zone of 21 m is proposed around Pod 2, it will provide a BAL < BAL 29 at the building. The distance of 21 m provides flexibility for the future use of the site, including regenerations of forest plantation.

<table>
<tr><th>Bushfire Protection Criteria</th><th>Method of Compliance</th><th>AS</th><th>PP</th><th>Proposed Bushfire Management Strategies</th></tr>
<tr><td>Element 3: Vehicular Access</td><td colspan="4">To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.
Table 6: Vehicular access technical requirements
<table>
<tr><th>TECHNICAL REQUIREMENTS</th><th>1
Public roads</th><th>2
Emergency access way[1]</th><th>3
Fire service access route[1]</th><th>4
Battle-axe and private driveways[2]</th></tr>
<tr><td>Minimum trafficable surface (metres)</td><td>In accordance with A3.1</td><td>6</td><td>6</td><td>4</td></tr>
<tr><td>Minimum horizontal clearance (metres)</td><td>N/A</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td>Minimum vertical clearance (metres)</td><td colspan="4">4.5</td></tr>
<tr><td>Minimum weight capacity (tonnes)</td><td colspan="4">15</td></tr>
<tr><td>Maximum grade unsealed road[3]</td><td rowspan="4">As outlined in the IPWEA Subdivision Guidelines</td><td colspan="3">1:10 (10%)</td></tr>
<tr><td>Maximum grade sealed road[3]</td><td colspan="3">1:7 (14.3%)</td></tr>
<tr><td>Maximum average grade sealed road</td><td colspan="3">1:10 (10%)</td></tr>
<tr><td>Minimum inner radius of road curves (metres)</td><td colspan="3">8.5</td></tr>
</table></td></tr>
<tr><td>P3i
The design and capacity of vehicular access and egress is to provide for the community to evacuate to a suitable destination before a bushfire arrives at the site, allowing emergency services personnel to attend the site and/or hazard vegetation.</td><td>A3.1 Public roads
Public roads are to meet the minimum technical requirements in Table 6, Column 1.
The trafficable (carriageway/pavement) width is to be in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional
Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.</td><td></td><td></td><td></td></tr>
</table>

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.2a Multiple access routes Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access).	✓		Corio Road is a through road and is compliant with A 3.1
	A3.2b Emergency access way *Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution.*	N/A		Applicable to a subdivision
	A3.3 Through-roads • All public roads should be through-roads.	N/A		Applicable to a subdivision
	A3.4a Perimeter roads A perimeter road is a public road and should be provided for greenfield or infill • development where 10 or more lots are being proposed	N/A		Applicable to a subdivision
	A3.4b Fire service access route *Where proposed lots adjoin classified vegetation under AS3959, and a perimeter road is not required in accordance with A3.4a,*	N/A		Applicable to a subdivision

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.5 Battle-axe access legs *Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.* There are no battle-axe technical requirements where the point the battle-axe access leg joins the effective area of the lot, is less than 50 metres from a public road in a reticulated area. In circumstances where the above condition is not met, or the battle-axe is in a non reticulated water area, the battle-axe is to meet all the following requirements: • requirements in Table 6, Column 4; and • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres).	N/A		Applicable to a subdivision

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.6 Private driveways There are no private driveway technical requirements where the private driveway is: • within a lot serviced by reticulated water; • no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and • accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following require: • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • turn-around area as shown in Figure 28 and within 30 metres of the habitable building.	✓		The site is large requiring driveways exceeding 570 m in length. A turnaround is provided at the existing dwelling and care takers residence which is located adjacent to the domestic tanks. The existing poultry sheds in addition to a turnaround also have a perimeter road immediate to the buildings. The same arrangement of a perimeter road immediate to the buildings is expected to be applied to Pod 1 (subject to conservation category geomorphic wetland approval) and Pod 2 The sheds are considered to constitute farm buildings, Compliance with PART H3 – NCC 2019, will be required because each pod is separated. A water supply equivalent to 144 000 litres, to be located within 60 m of the building, and positioned to enable emergency service vehicles access within 4 m of the driveway.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 4: Water	To ensure that water is available to enable people, property and infrastructure to be defended from bushfire.			
P4 Provide a permanent water supply that is: – sufficient and available for firefighting purposes; – constructed from non-combustible Materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and – accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles.	**A4.1 Identification of future water supply** Evidence that a reticulated or sufficient non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2. Where the provision of a strategic water tank(s) is required a suitable area within a road reserve or a dedicated lot the location should be identified, should be identified on the structure plan, to the satisfaction of the local government.	N/A		Applicable to a Structure Plan

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A4.2 Provision of water for firefighting purposes Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority. Where these specifications cannot be met, then the following applies: • The provision of a water tank(s), in accordance with the requirements of Schedule 2; and • Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: – land to be ceded free of cost to the local government for the placement of the tank(s); – the lot or road reserve where the tank is to be located is identified on the plan of subdivision; – tank capacity, construction, and fittings, provided in accordance with the requirements of Schedule 2; and – a strategic water tank is to be located no more than 10 minutes from the subject site (at legal road speeds). Where a subdivision includes an existing habitable building(s) that is to be retained, a water supply should be provided to this existing habitable building(s) in accordance with the requirements listed above.			The site does not have access to a reticulated water supply. The dwelling and caretakers' residence have potable water supplied in a domestic tank. A filter treatment system from the ground water supply is stored in a 110,000 L tank supplies water to the sheds. On site firefighting equipment presently includes a slip-on fire unit, and "irrigation pump" that runs roof sprinklers and ground sprinklers from the dam. A 50 000 L water tank is to be provided at each Pod in addition to any structural fire suppression requirements. It is to be provided at Pod 2 in compliance with the Acceptable Solution, Schedule 2 Element 4, and volunteered (applicants discretion) at Pod 1.

5.2 Spatial representation of the bushfire management strategies

The *Spatial representation of the bushfire management strategi*es is provided in Figure EX1 in the Executive Summary.

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The owner responsibilities have been identified to affirm compliance with the Bushfire Protection Criteria identified in section 5.1 of this BMP.

These responsibilities have been listed in the Executive Summary together with the *Spatial representation of the proposed risk management strategies* Figure EX1.

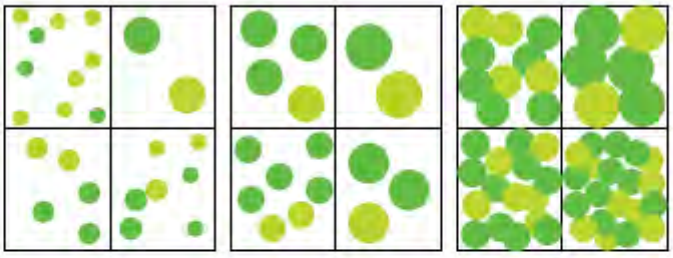
LANDOWNER/OCCUPIER – ONGOING	
No.	**Compliance action**
1.	Pod 2: The establishment of an Asset Protection Zone (APZ) in accordance with the Standards for Asset Protection Zones (Schedule 1 Guidelines for Planning in Bushfire Prone Areas V1.4).
2.	Private driveway access is to be provided in accordance with the Technical requirements provided in the Guidelines at Element 3 Table 6 column 4 Guidelines for Planning in Bushfire Prone Areas V1.4).
3.	The provision of a centrally located 50 000 L water tank at Pod 2 in accordance with Element 4 Schedule 2 (Guidelines for Planning in Bushfire Prone Areas V1.4) and Shire specifications. (Water tank to be volunteered at Pod1)
Advisory Actions	
1.	In accordance with the Shires requirements under the *Bush Fires Act 1954*, establish a 20 m Risk Treatment Area round the buildings at Pod 1.
2.	At the applicant's discretion, the provision of a centrally located 50 000 L water tank at Pod 1 in accordance with Element 4 Schedule 2 (Guidelines for Planning in Bushfire Prone Areas V1.4) and Shire specifications.
LOCAL GOVERNMENT – ONGOING MANAGEMENT	
No.	Management action
1.	Maintaining public road reserves under their management to appropriate standards, where required/applicable.
2.	Administer the requirement of the Bushfires Act 1954, s.33(1) to ensure private land is maintained to likely to be conducive to the outbreak of bushfire or the spread or extension of a bushfire.

ATTACHMENT 1 - APZ Guidelines

Element 2 – Siting and Design (Guidelines for Planning in Bushfire Prone Areas v1.4)

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

ATTACHMENT 2 - Vehicular Access Requirements

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

ATTACHMENT 3 - References

GENERAL REFERENCES

SA Department of Environment and Natural Resources, Government of South Australia, 2012 *Overall Fuel Hazard Guide for South Australia*

WA Department of Planning 2016*, Visual Guide for bushfire risk assessment in Western Australia*

Standards Australia 2018, *AS 3959-2018 Construction of buildings in bushfire-prone areas*, Sydney

Standards Australian and Standards New Zealand 2009, *Australian Standard / New Zealand Standard ISO 31000:2009 Risk management – principles and guidelines*

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth, Perth

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3*, Western Australia.

Online references

Office of Bushfire Risk management (OBRM), Map of Bush Fire Prone Areas, <https://maps.slip.wa.gov.au/landgate/bushfireprone/>

Office of Bushfire Risk Management (OBRM), Bushfire Risk Management (BRM) Plan Guidelines,

APPENDIX F | TRANSPORT IMPACT STATEMENT

TRANSPORT IMPACT STATEMENT – PROPOSED POULTRY FARM, CORIO ROAD, RAVENSWOOD

Lot 71, 72 & 73 (No. 511) Corio Road, Ravenswood – Proposed Poultry Farm – REV C

November 7, 2023

Prepared for:

Metrowest Technical Projects

Prepared by:

Stantec Australia Pty Ltd

Revision	Description	Date	Author	Quality Check	Independent Review
A	For Issue	04/03/2021	DR	RJC	RJC
B	Minor Update	23/08/2023	LL	DH	RJC
C	Minor Update	07/11/2023	LL	DH	RJC

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1.0 INTRODUCTION

1.1 BACKGROUND

Stantec has been commissioned by Metrowest Technical Projects (the Client) to prepare a Transport Impact Statement (TIS) for a proposed poultry farm expansion located at No. 511 (Lots 71, 72 & 73) Corio Road, Ravenswood ('Site'), within the Shire of Murray

This TIS has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016)* and the checklist is included in **Appendix A**.

2.0 EXISTING SITUAION

2.1 SITE LOCATION AND CONTEXT

The Site is located at No. 511 (Lots 71, 72 & 73) Corio Road, Ravenswood. **Figure 2-1** illustrates the Site location and local surroundings.

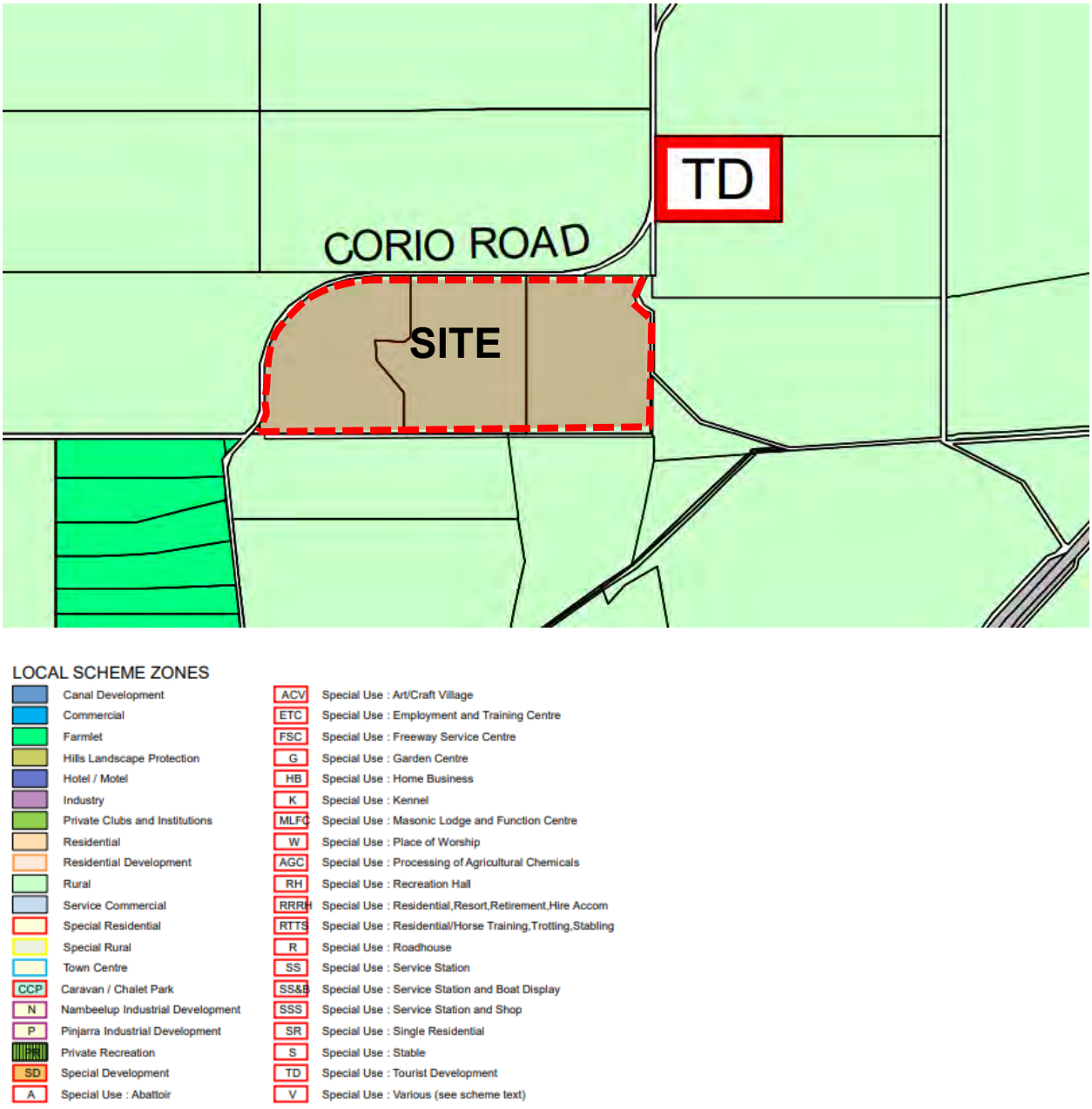
Figure 2-1 Aerial Image of the Site

Source: Metromap

2.2 ZONING

Pursuant to the *Shire of Murray Local Planning Scheme No. 4* (LPS4), the Site is zoned *'Rural'* as shown in **Figure 2-2.** The Site is wholly surrounded by other rural land uses.

Figure 2-2 Shire of Murray Zoning



Source: Shire of Murray Town Planning Scheme No. 4

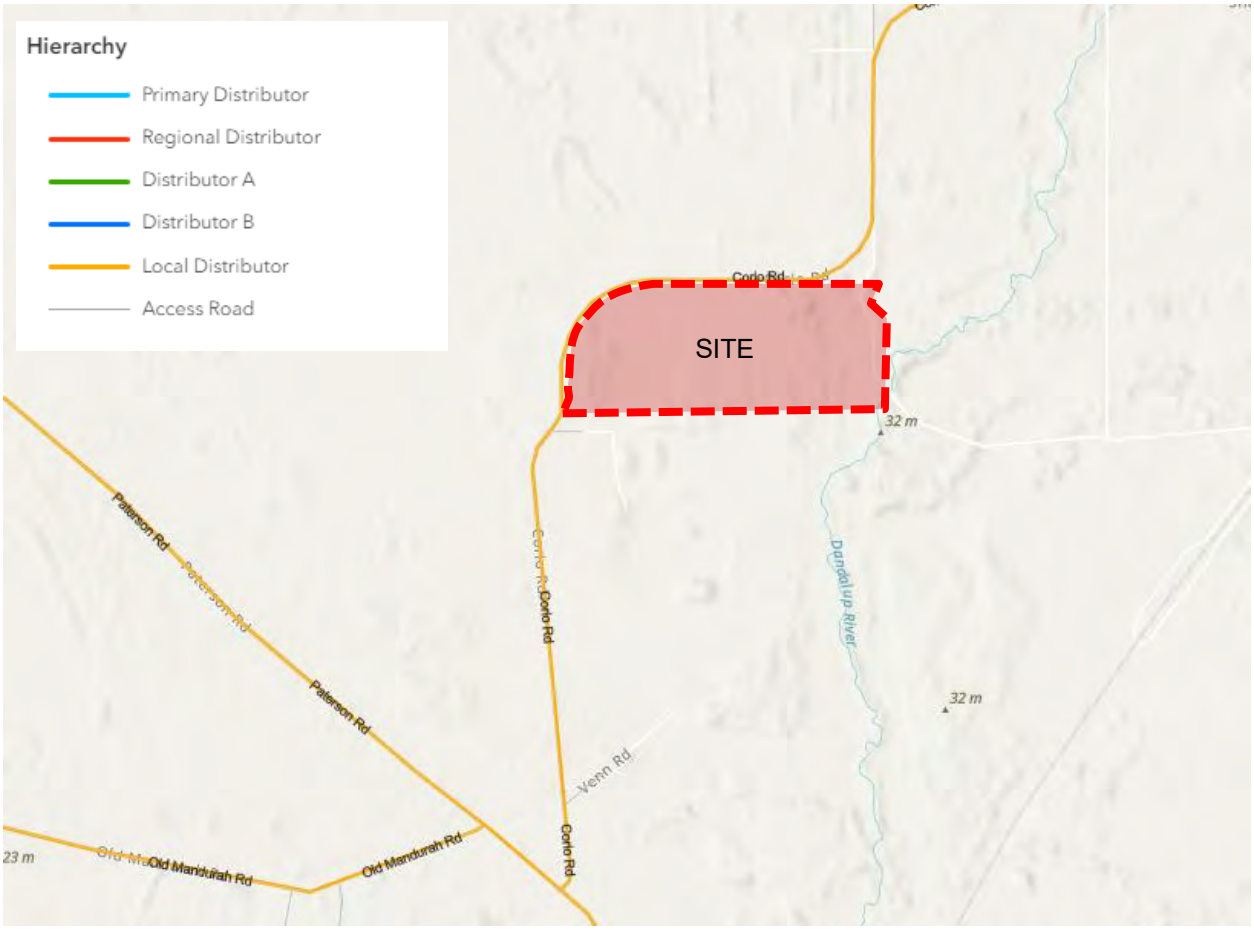
2.3 EXISTING ROAD NETWORK

Road Classifications are defined in the Main Roads Functional Hierarchy as follows:

- **Primary Distributors (light blue):** Form the regional and inter-regional grid of Main Roads WA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes and all are National or State roads. They are managed by Main Roads.
- **Regional Distributors (red):** Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- **District Distributor A (green):** These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- **District Distributor B (dark blue):** Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside the adjoining property. These are often older roads with traffic demand in excess of what was originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- **Local Distributors (orange):** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local government.
- **Access Roads (grey):** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian-friendly. They are managed by Local government.

The surrounding road network is further described in **Table 2-1** and **Figure 2-3** shows the hierarchy as per the Main Roads WA Road Information Mapping System.

Figure 2-3 Road Hierarchy



Source: Road Information Mapping System

Table 2-1 Road Network Classification

Road Name	Road Hierarchy		Road Characteristics			
	Road Hierarchy	Road Jurisdiction	No. of Lanes	No. of Footpaths	Width (m)	Posted Speed (km/h)
Corio Road	Local Distributor	Local Government	2	0	8	80

2.4 EXISTING TRAFFIC VOLUMES

Stantec contacted the Shire of Murray to request the most recent traffic count volumes which are included in **Table 2-2.**

Table 2-2 Daily Traffic Volumes

Road Name	Date	Source	Average Two-way Daily Traffic Volume	HV %
Corio Road (Approx. 510m from Paterson Road)	2019	Shire of Murray	657	-

2.5 CRASH ASSESSMENT

A crash assessment for the surrounding road network of the Site has been completed using the Main Roads WA Reporting Centre. The assessment covers all the recorded accidents between 1 January 2018 and 31 December 2022 and the results are summarised in **Table 2-3** to **Table 2-5**. **Figure 2-4** illustrates the crash locations and their severity.

Table 2-3 Total Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Sideswipe Same Direction	-	-	-	1	-	**1**
Right Angle	-	-	-	1	-	**1**
Non Collision	1	-	-	1	-	**2**
Total	**1**	**-**	**-**	**3**	**-**	**4**

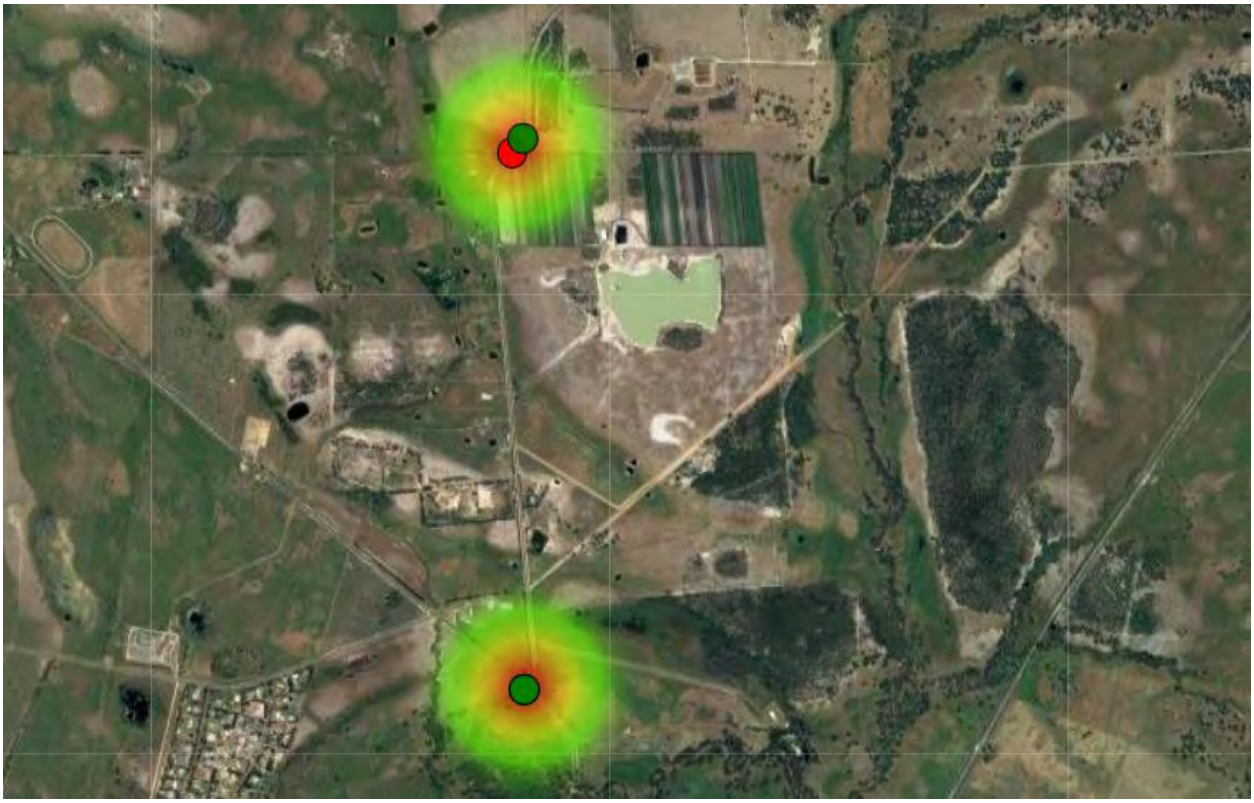
Table 2-4 Midblock Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Corio Rd	1	-	-	1	-	**2**
Total	**1**	**-**	**-**	**1**	**-**	**2**

Table 2-5 Intersection Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Corio Rd - Paterson Rd	-	-	-	2	-	**2**
Total	**-**	**-**	**-**	**2**	**-**	**2**

Figure 2-4 Crash Locations



Source:Maps.co

The crashes recorded are summarised below:

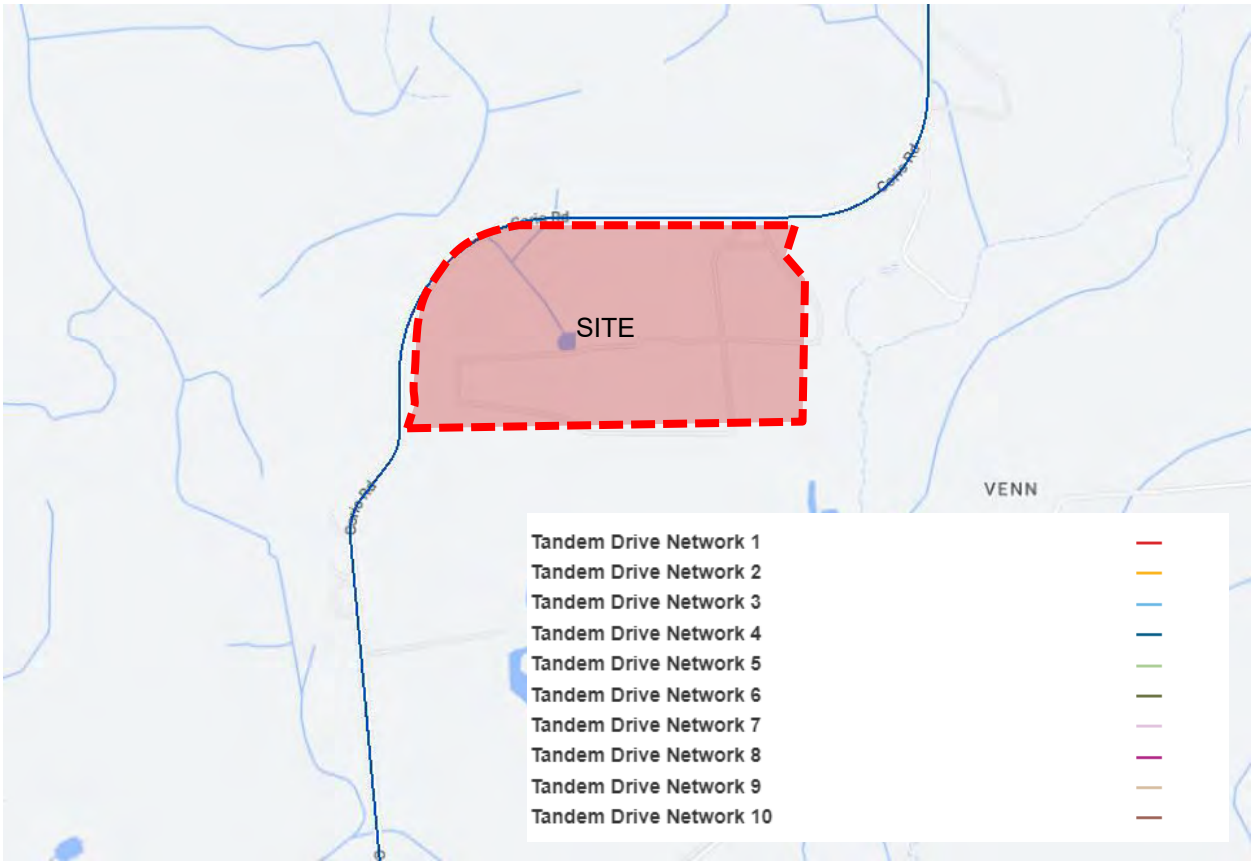
- A total of 4 crashes was recorded in the proximity to the subject Site.
- 3 crashes resulted in major property damage;
- 1 fatality was recorded as a result of a motorcycle running off the road.

It is very unlikely that this development would have any material impact on road safety in the area.

2.6 RESTRICTED ACCESS VEHICLES (RAV) NETWORK

Restricted Access Vehicle (RAV) Network routes are designated for access by large heavy vehicle combinations, which is managed by Main Roads WA. The RAV 4 Network classification permits a variety of prime mover and trailer combinations, up to a maximum length of 27.5m, to use the road network in the proximity of the Site. **Figure 2-5** shows the RAV4 network surrounding the subject Site.

Figure 2-5 RAV Network



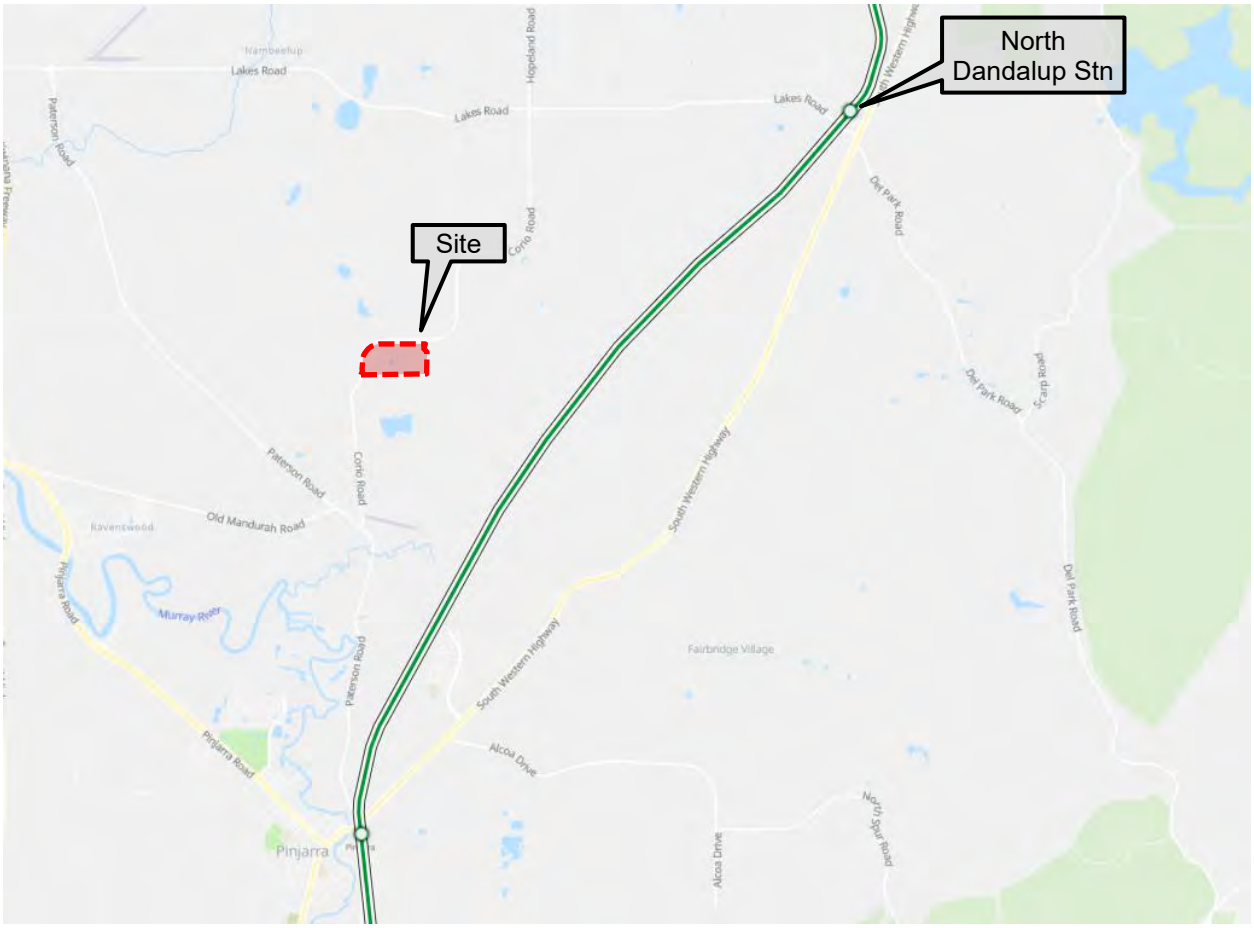
Source: HVS Network

3.0 PUBLIC TRANSPORT FACILITIES

3.1 EXISTING PUBLIC TRANSPORT FACILITIES

The nearest train station (North Dandalup) to the Site is located approximately 9.9km away as shown in **Figure 3-1.** The Australind Train route is serviced from this station along Railway Avenue and the train stops between the Perth and Bunbury Train Stations are shown in **Figure 3-2.** The current closure of the Armadale line impacts the Australind Rail Service which will be replaced by Transwa coaches operating between Bunbury and East Perth until mid 2025.

Figure 3-1 Nearest Train Stops



Source: Trans WA

Figure 3-2 Existing Time Tables

Perth to Bunbury — **Australind**

From Perth		B03	B55
		Daily AM	Daily **PM**
Perth Station	Dep	9:30	**5:55**
Armadale Station	Dep	9:56	**6:25**
Byford*	Dep	10:07	**6:36**
Mundijong*	Dep	10:14	**6:43**
Serpentine*	Dep	10:21	**6:50**
North Dandalup*	Dep	10:32	**7:01**
Pinjarra*	Dep	10:42	**7:11**
Waroona*	Dep	11:00	**7:29**
Yarloop*	Dep	11:11	**7:40**
Cookernup*	Dep	11:15	**7:44**
Harvey*	Dep	11:21	**7:50**
Brunswick Junction*	Dep	11:36	**8:05**
Bunbury Passenger Terminal	Arr	11:55	**8:25**

From Bunbury		B02	B56
		Daily AM	Daily **PM**
Bunbury Passenger Terminal	Dep	6:00	**2:45**
Brunswick Junction*	Dep	6:15	**3:02**
Harvey*	Dep	6:31	**3:17**
Cookernup*	Dep	6:39	**3:24**
Yarloop*	Dep	6:44	**3:29**
Waroona*	Dep	6:54	**3:38**
Pinjarra*	Dep	7:10	**3:55**
North Dandalup*	Dep	7:22	**4:07**
Serpentine*	Dep	7:34	**4:18**
Mundijong*	Dep	7:40	**4:24**
Byford*	Dep	7:46	**4:32**
Armadale Station	Arr	7:52	**4:39**
Perth Station	Arr	8:30	**5:15**

*** Trains only stop at intermediate stations if advance bookings are made**

Wheelchair accessible toilet facilities available Road coach connection

Source: TransWA (2022)

3.2 FUTURE PUBLIC TRANSPORT FACILITIES

Stantec contacted the Public Transport Authority and were advised that there is no short, medium or long term plans for this area.

4.0 PEDESTRIAN/CYCLE NETWORKS AND FACILITIES

4.1 EXISTING PEDESTRIAN/CYCLE NETWORK FACILITIES

There is no pedestrian or cycling infrastructure along Corio Road, with the nearest pedestrian footpaths being located 9.9km away in North Dandalup.

4.2 FUTURE PEDESTRIAN/CYCLE NETWORK FACILITIES

Stantec contacted the Shire of Murray and were advised that there are no proposed changes to the network.

5.0 PROPOSED DEVELOPMENT

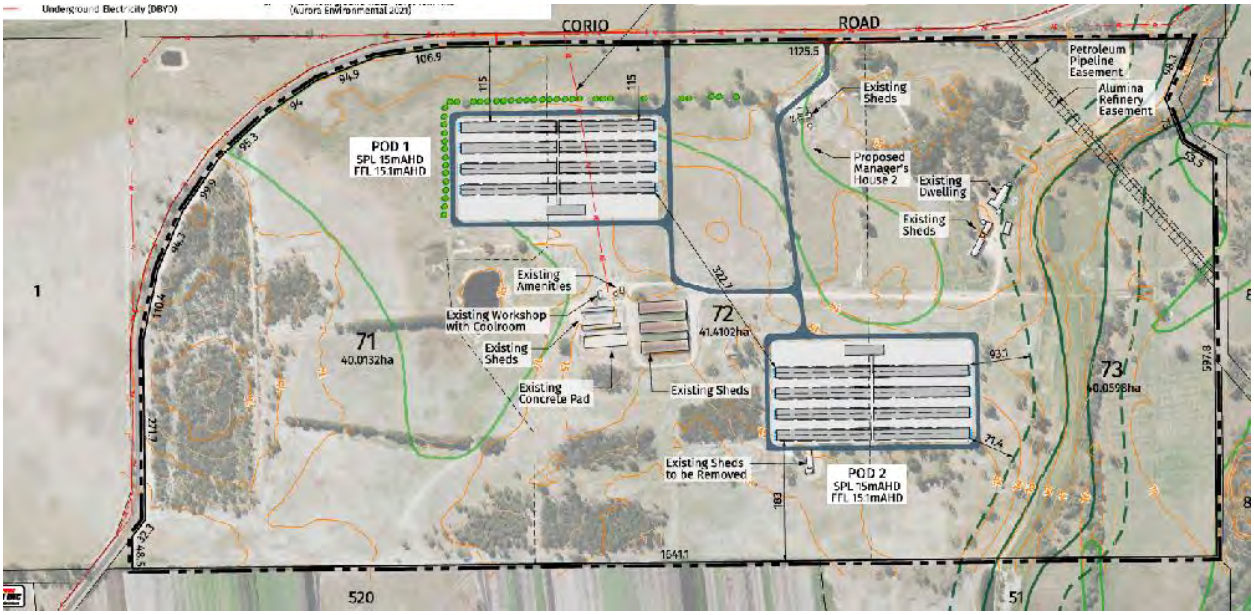
5.1 PROPOSED LAND USE

The proposed development consists of the following components:

- Poultry pods comprising of 8 sheds in each (total of 2 pods)
- 12 Staff

The layout of the proposed poultry shed at the Site is shown in **Figure 5-1**. This layout will result in the breeding of about 293,760 birds per annum. A larger version is included in Appendix B.

Figure 5-1 Site Plan



Source: Harley Dykstra

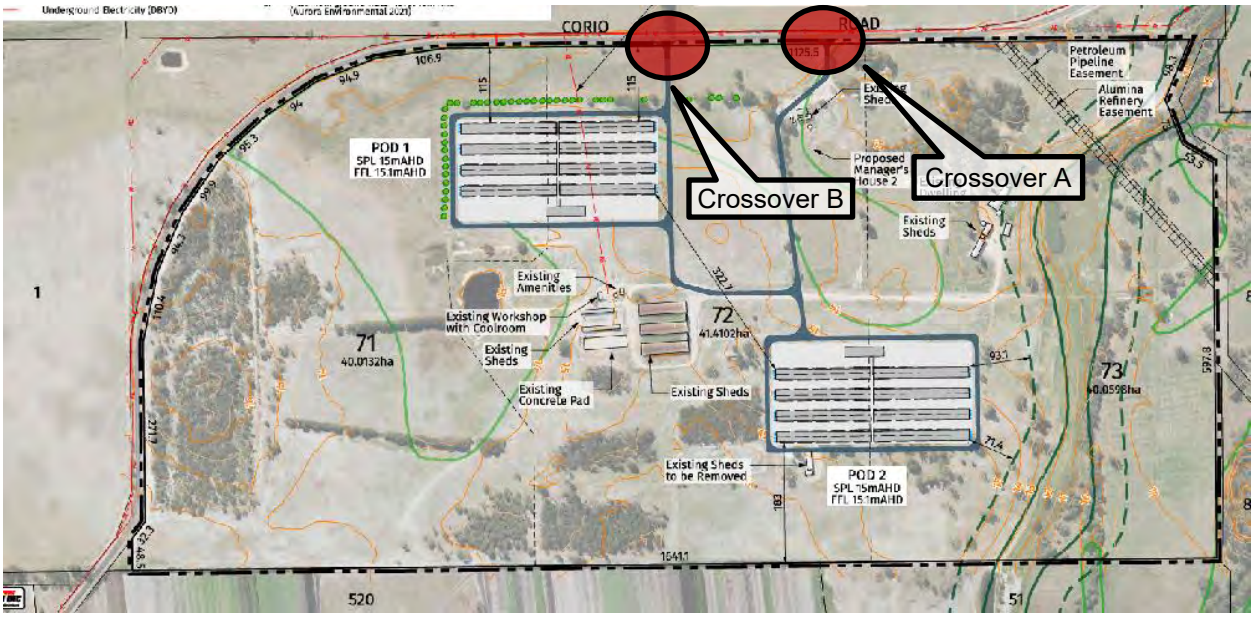
5.2 OPERATING HOURS

The poultry farm operates 24 hour a day (7) day per week operation. During normal operations, up to 12 staff (including 2 onsite managers) will attend the site during the day, between the hours of 7am to 5pm, 7 days per week. The 2 onsite managers will remain in attendance after hours and will reside in the existing dwelling provided on the site.

5.3 ACCESS ARRANGEMENTS

The Site is proposed to be accessed from two crossovers along Corio Road as illustrated in **Figure 5-2.** Both crossovers are anticipted to be able to facilitiate entry and exit into the Site for large heavy rigid vehicles.

Figure 5-2 Access Arrangements



5.4 SIGHT LINES

To ensure sufficient distance is provided between the proposed crossover (B) and the existing crossover (A) to allow drivers to safely react to vehicles slowing down to turn into the Site, a desirable Sight Stopping Distance (SSD) is required to be met. An extract from *Austroads Guide to Road Design Part 3: Geometric Design* as shown in **Table 5-1***,* indicates that the desirable minimum SSD is 151m for a road with a design speed of 90km/h (posted speed + 10km/hr) and a minimum reaction time of 2.5 seconds (desirable) in accordance with the *Main Roads WA Supplement to Austroads Guide to Road Design – Part 4A*.

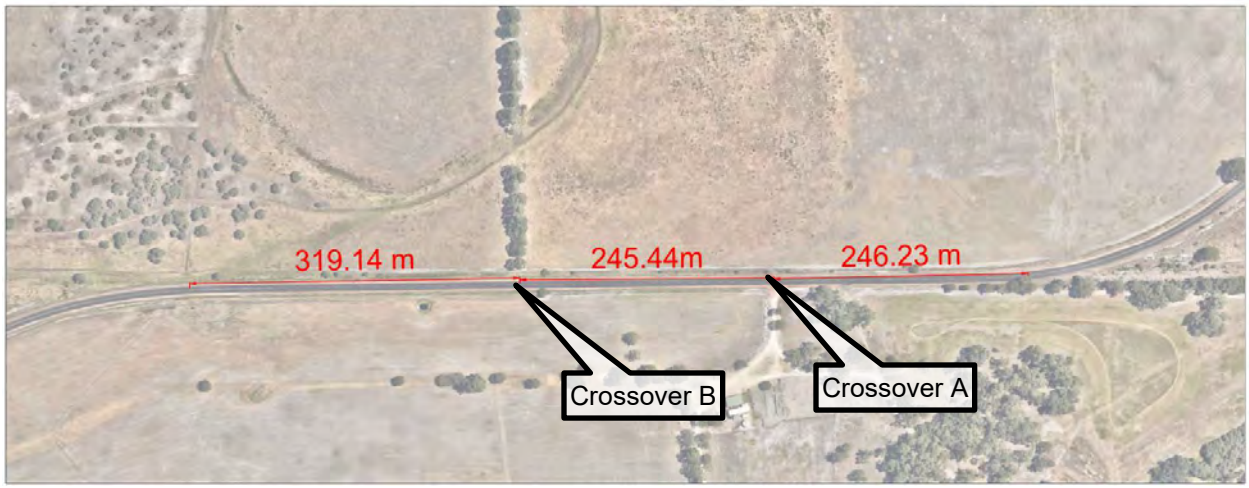
Table 5-1 Sight Stopping Distance (SSD) Requirements

Design speed (km/h)	Absolute minimum values Only for specific road types and situations[1] based on $d = 0.46$[2],[3]			Desirable minimum values for all road types based on $d = 0.36$			Values for major highways and freeways in flat terrain[7] based on $d = 0.26$	
	$R_T = 1.5$ s[4]	$R_T = 2.0$ s[4]	$R_T = 2.5$ s	$R_T = 1.5$ s[4]	$R_T = 2.0$ s[4]	$R_T = 2.5$ s	$R_T = 2.0$ s	$R_T = 2.5$ s
40	30	36	–	34	40	45	–	–
50	42	49	–	48	55	62	–	–
60	56	64	–	64	73	81	–	–
70	71	81	–	83	92	102	113	123
80	88	99	–	103	114	126	141	152
90	107	119	132	126	139	151	173	185
100	–	141	155	–	165	179	207	221
110	–	165	180	–	193	209	244	260
120	–	190	207	–	224	241	285	301
130	–	217	235	–	257	275	328	346

Source: Austroads (2016)

Figure 5-3 illustrates the proposed and existing crossover locations along Corio Road as well as indicates the distance between the two crossovers is approximately 245m. It should be noted that the sight distance to the west of the proposed new crossover (Crossover B) and the existing crossover to the east exceeds the minimum SSD requirements and is considered adequate.

Figure 5-3 Sight Distance Measurement



Source: Nearmap

5.5 TRAFFIC GENERATION

As this development comprises of a unique land use, trip generation data is not readily available for this land use and therefore, a first principles approach was undertaken to determine the trip generation. The methodology used is detailed below:

Given the cyclical nature of the poultry farm business, the daily traffic movements depend on the production cycle on the site. As such, there are some site operations that only take place over a short period of approximately 4 weeks, occurring twice per year. Operations will be staged so that one shed is operating at a time, with the cycles approximately 6 months apart. The following offers a brief description of the different traffic movements anticipated for the site.

- **Bedding:**

Delivery of bedding materials will only take place once per year per farm, occurring when the sheds are set up for the birds. A number of semi or B- double trucks will deliver the bedding material within a one-week window for each farm.

- **Bird Transfer:**

Delivery of young hens and rosters will take place over a couple of days per shed, occurring twice per year. They will be delivered by a number of semi-trucks.

- **Feed Delivery:**

A B-double truck will deliver feed a couple of times per week. This will only take place when live birds are onsite.

- **Dead Bird Collection:**

Any mortalities are collected daily and stored in a refrigerated space. They will then be collected by a heavy rigid truck on a weekly basis.

- **Egg Collection:**

The site will be producing eggs for breeding purposes. The production of eggs will take place continuously throughout the year, with a dip in production for 4 weeks while one of the 2 farms on the site are being cleaned and repopulated. A heavy rigid truck will pick up eggs on a weekly basis.

- **Live Bird Collection:**

Approximately every 6 months one of the farms will be emptied of birds for cleaning and repopulation. Over a period of a couple of days a number of semi-trucks will pick up the live birds from the 8 sheds.

- **Litter Removal:**

Spent litter will be removed from the sheds once the birds have been taken off site. Over the course of a few days to a week, a number of semi-trucks will remove the litter from the site. This process occurs approximately every 6 months when one of the sheds are being cleaned and repopulated.

- **Clean out:**

A contracting crew of approximately 4 people will be employed to undertake the cleaning of sheds over a period of one week, occurring every 6 months. They will travel to and from site in light vehicles during that one-week period.

- **Staff:**

12 staff members will travel to and from site in their personal cars (light vehicles) on a daily basis with reduced numbers of staff on weekends and holidays.

- **Waste Collection:**

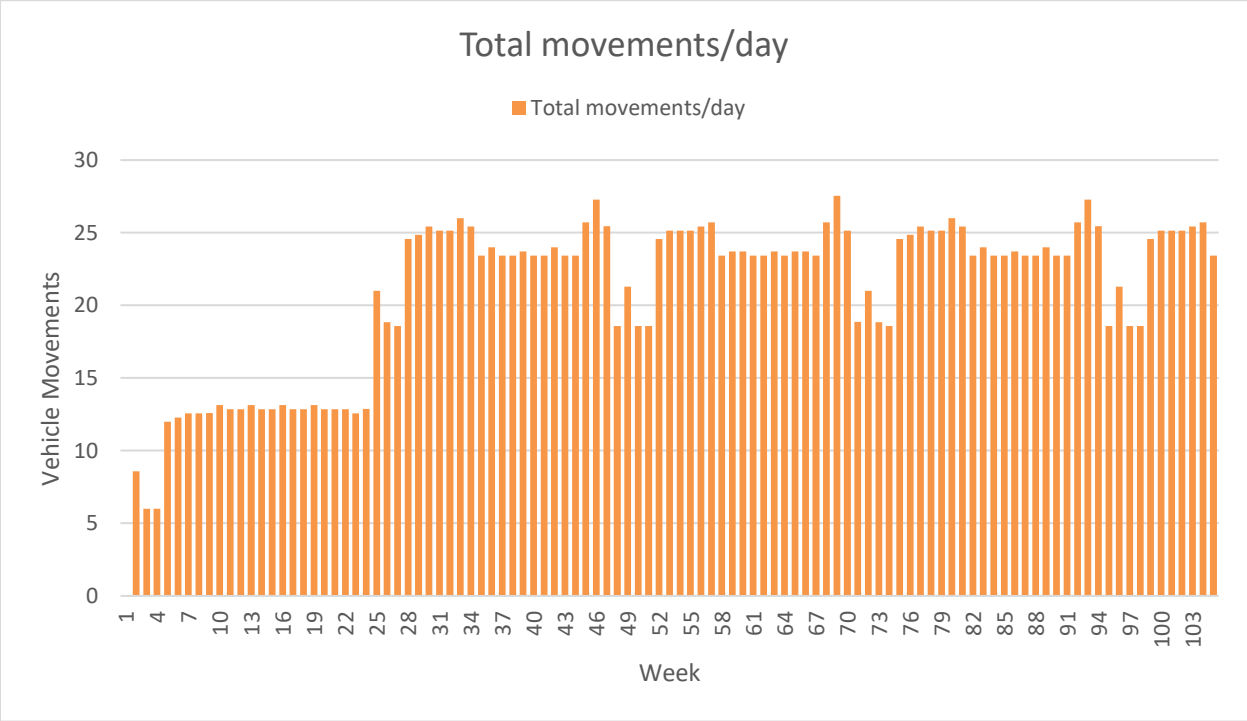
The site will have rubbish collected by a standard rubbish truck on a weekly basis.

Information on the anticipated vehicle movements for the development and the summary of the truck movements collected for the first two years has been graphically represented in **Figure 5-4.**

- A maximum of 96 truck movements are expected in a week during the peak period;
- A maximum of 27 vehicles is anticipated to access the site in a day equating to 54 two-way trips per day.

As the Site operates 24 hours per day, there is no definitive peak period for the Site as there will be vehicles arriving or leaving at any time throughout the day.

Figure 5-4 Summary of Truck movements (2-year period)



Corio Road is classified as Local Distributor Road under the Main Roads Functional Road Hierarchy which can accommodate desirable traffic volumes of up to 6,000 vehicles per day. The estimated trips generated by the Site results in traffic flows that are well within the maximum desirable traffic volumes and is consistent with the intended function and amenity of a Local Distributor Road.

Based on the estimated trips to be generated, the proposed development is anticipated to have no material impact of the surrounding road network.

5.6 SERVICING

The largest vehicle anticipated to enter and exit the Site is a 27.5m B double.

Swept path analysis for this size vehicle are shown in **Figure 5-5** to **Figure 5-9.** Larger swept path drawings are attached in Appendix C. The analysis show that the Site is able to accommodate the 27.5m design vehicle. There is an existing power dome located adjacent to the existing crossover and the 27.5m vehicle will be required to encroach onto the opposite lane to make the left turning movement as shown in **Figure 5-7.** Given that Corio Road is not expected to carry high volumes of traffic and the low number of B-double vehicles expected to exit the site daily, it is considered acceptable to encroach into the opposing lane on exiting the site which is also permitted by the road traffic regulations.

Figure 5-5 Swept Path – 27.5m (Access In Movements)

Figure 5-6 Swept Path – 27.5m (Right Out)

Figure 5-7 Swept Path – 27.5m (Left Out)

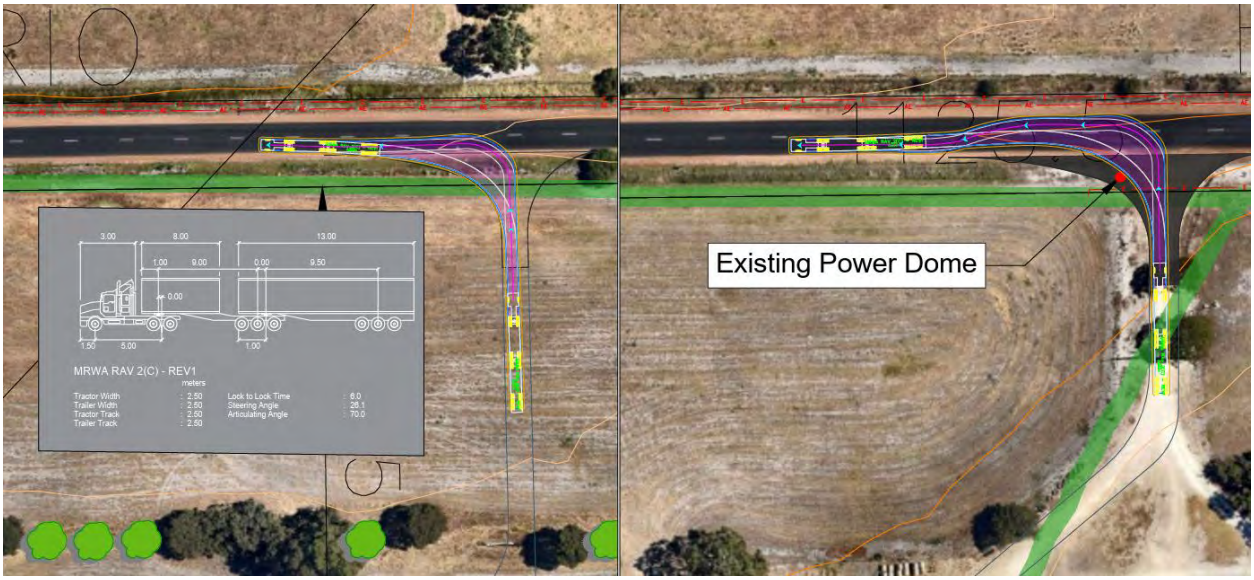


Figure 5-8 Swept Paths Internal to the Site (Pod 1)

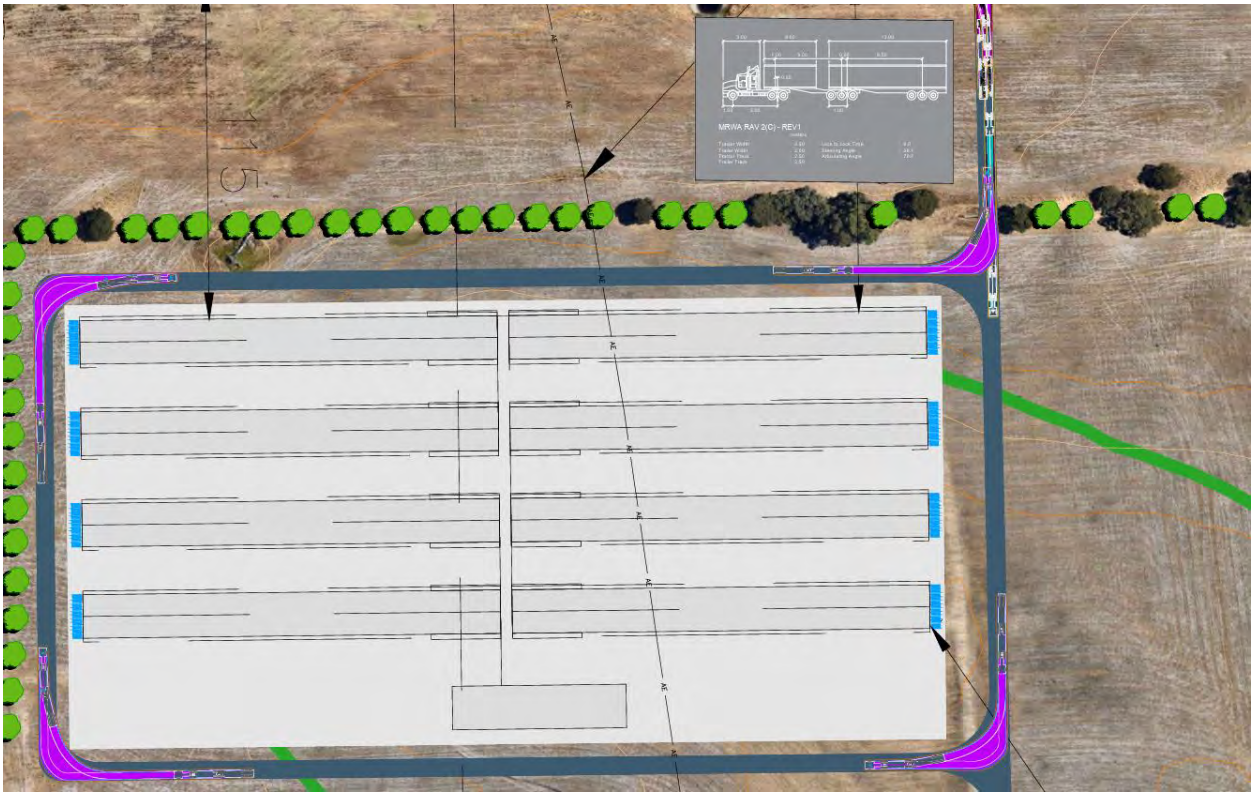


Figure 5-9 Swept Paths Internal to the Site (Pod 2)

6.0 PARKING SUPPLY

6.1 PARKING REQUIREMENTS

The statutory parking requirements, in accordance with the Shire of Murray No. 4 (LPS 4), have been considered in the context of the proposed expansion to this development.

Table II in the Shire's LPS4 – Non-Residential Development Standards states:

'Where a use is permitted in a Zone other than that stated in this Table, the Council may apply the standards to that Zone within which the use is proposed as is appropriate'.

Given no car parking standard is specified for Intensive Agriculture, Staff parking will be accommodated in the vicinity of the existing amenities building. Given the large area of suitable parking space available on the site, formal construction and line-marking of parking bays is not considered necessary except where it is required to comply with any legislative requirements.

The provision of on-site parking will be sufficient and adequate to accommodate the requirements of the proposed poultry farm addition.

6.2 BICYCLE PARKING REQUIREMENTS

Under the Shire of Murray Local Planning Scheme No. 4, no bicycle parking is required for a Light, General and Service Industry or Stables.

6.3 STAFF PARKING ARRANGEMENTS

Given the large area of suitable parking space available on the site, staff parking is expected to be adequately accommodated in the vicinity of the existing amenities building.

7.0 SUMMARY

This Transport Impact Statement outlines the transport aspects of the proposed development focusing on traffic operations, access and provision of car parking. Included are discussions regarding pedestrian, cycle and public transport considerations.

This statement has been prepared in accordance with the *WAPC Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016*).

The following conclusions are evident about the proposal:

- The proposal is for an expansion of an existing Poultry Farm Site comprising 2 Pods each comprising 8 sheds (16 sheds in total);
- An estimated total of 54 vehicle trips per day are anticipated for the Site for the worst-case scenario. As the Site operates 24 hours per day, there is no definitive peak period for the Site as there will be vehicles arriving or leaving at any time throughout the day. Additionally, traffic volumes generated by the Site will also depend on the operational requirements during the batch cycle.
- The largest vehicle anticipated to access the site will be a 27.5m B-Double vehicle.
- Overall, the Site is anticipated to have no material impact on the surrounding road network and no material impact on the residential amenity of the wider area.

APPENDICES

Appendix A WAPC CHECKLIST

Item	Status	Comments/Proposals
Proposed development		
proposed land use	Section 5	
existing land uses	Section 2	
context with surrounds	Section 2	
Vehicular access and parking		
access arrangements	Section 5	
public, private, disabled parking set down / pick up	N/A	
Service vehicles (non-residential)		
access arrangements	N/A	
on/off-site loading facilities	N/A	
Service vehicles	Section 5	
Rubbish collection and emergency vehicle access	Section 5	
Hours of operation (non-residential only)	Section 5	
Traffic volumes		
daily or peak traffic volumes	Section 2	
type of vehicles (e.g. cars, trucks)	N/A	
Traffic management on frontage streets	N/A	
Public transport access		
nearest bus/train routes	Section 3	
nearest bus stops/train stations	Section 3	
pedestrian/cycle links to bus stops/train station	Section 3	
Pedestrian access/facilities		
existing pedestrian facilities within the development (if any)	Section 4	
proposed pedestrian facilities within development	Section 4	
existing pedestrian facilities on surrounding roads	Section 4	
proposals to improve pedestrian access	Section 4	
Cycle access/facilities		
existing cycle facilities within the development (if any)	Section 4	
proposed cycle facilities within the development	Section 4	
existing cycle facilities on surrounding roads	Section 4	
proposals to improve cycle access	Section 4	

Site specific issues	N/A	
Safety issues		
identify issues	N/A	
remedial measures	N/A	

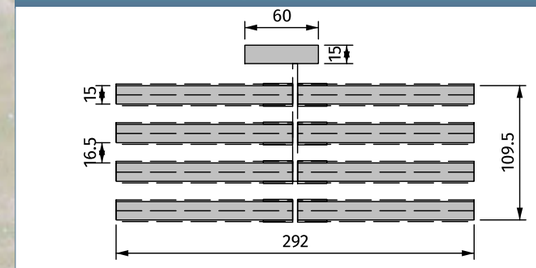
Appendix B SITE PLANS

LEGEND

- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)

POD LAYOUT



CORIO ROAD

Existing overhead power to be relocated/upgraded as part of amalgamation of existing lots

POD 1
SPL 15mAHD
FFL 15.1mAHD

POD 2
SPL 15mAHD
FFL 15.1mAHD

Existing Sheds

Proposed Manager's House 2

Existing Dwelling

Existing Sheds

Petroleum Pipeline Easement

Alumina Refinery Easement

Existing Amenities

Existing Workshop with Coolroom

Existing Sheds

Existing Concrete Pad

Existing Sheds

Existing Sheds to be Removed

240

1

71
40.0132ha

72
41.4102ha

73
40.0598ha

6

803

803

520

51

1125.5

1641.1

322.7

183

93.1

71.4

597.8

98.3

53.5

106.9

94.9

94

95.3

99.9

94.3

110.4

27.1

32.3

48.5

115

115

DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road,
RAVENSWOOD

Plan No.	23765-01	
Date	23/10/23	
Drawn	BdR	
Checked	JS	
Revision	E	
Scale	1:5000@A3	0 50m 100m 150m

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
T: 08 9495 1947
E: metro@harleydykstra.com.au

ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

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NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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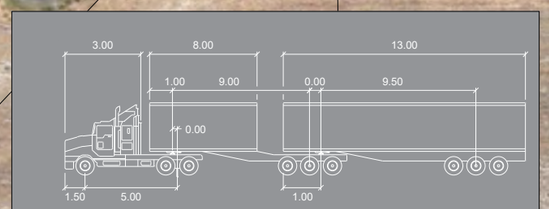
Appendix C SWEPT PATHS

Crossover B



MRWA RAV 2(C) - REV1

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 26.1
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

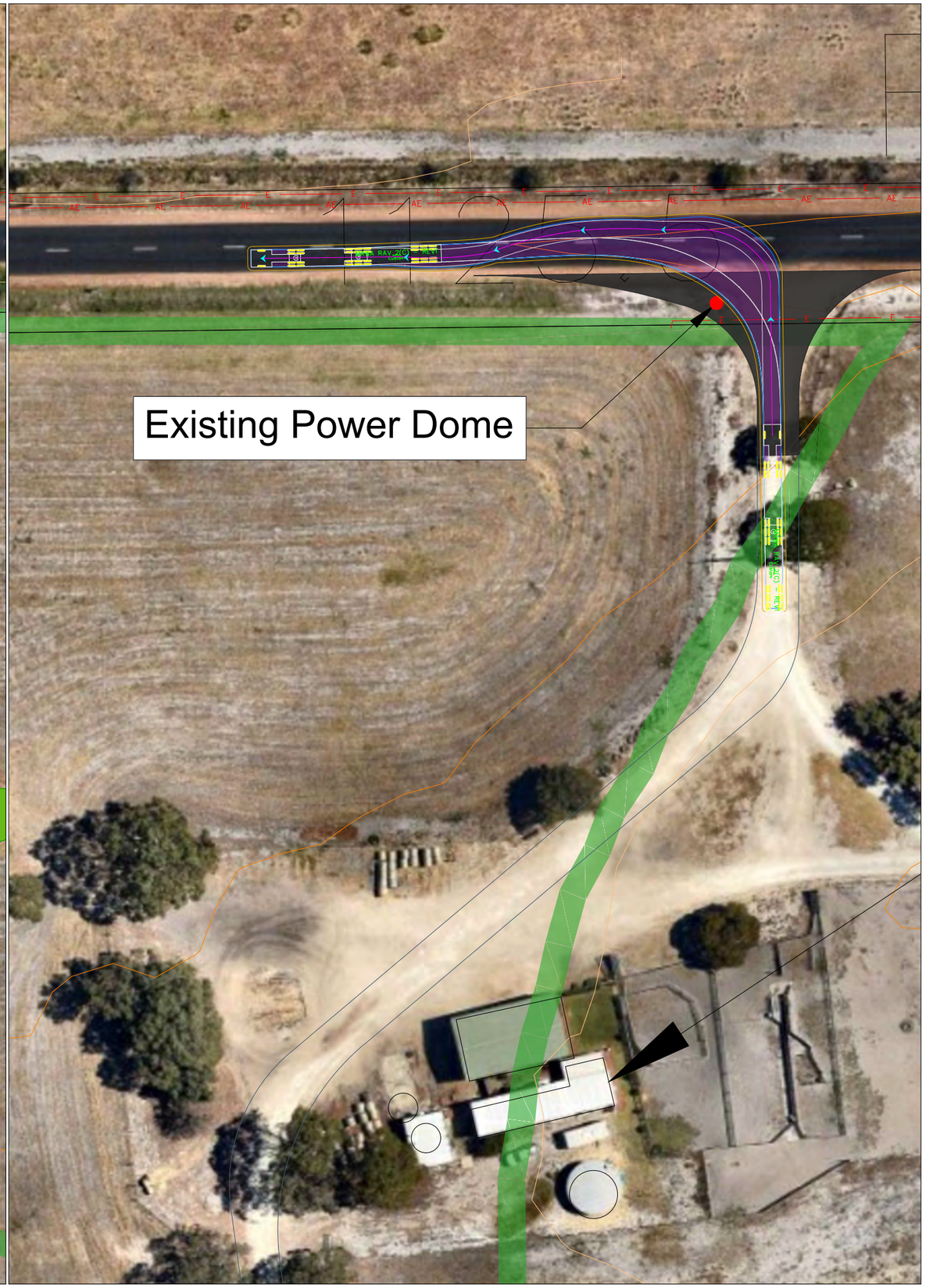
Crossover A

Existing Power Dome

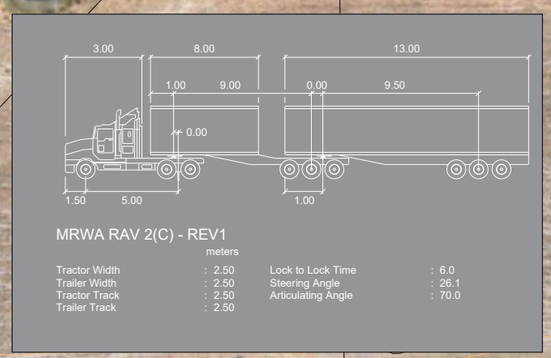
Exis
She

15

3.00
8.00
13.00
1.00
9.00
0.00
9.50
0.00
1.50
5.00
1.00
MRWA RAV 2(C) - REV1
meters
Tractor Width : 2.50
Trailer Width : 2.50
Tractor Track : 2.50
Trailer Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 26.1
Articulating Angle : 70.0


Existing Power Dome

Crossover B



MRWA RAV 2(C) - REV1

meters

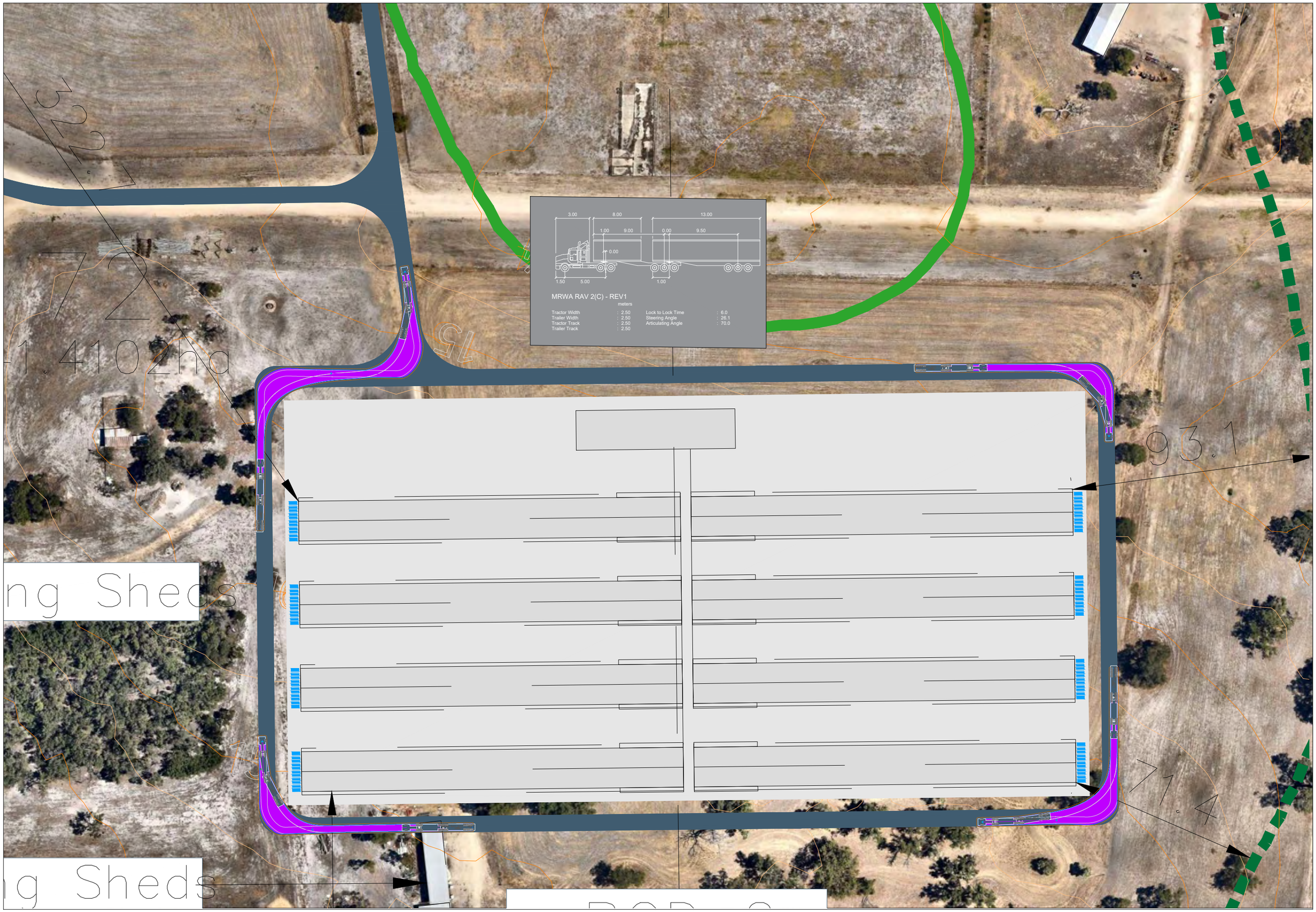
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 26.1
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

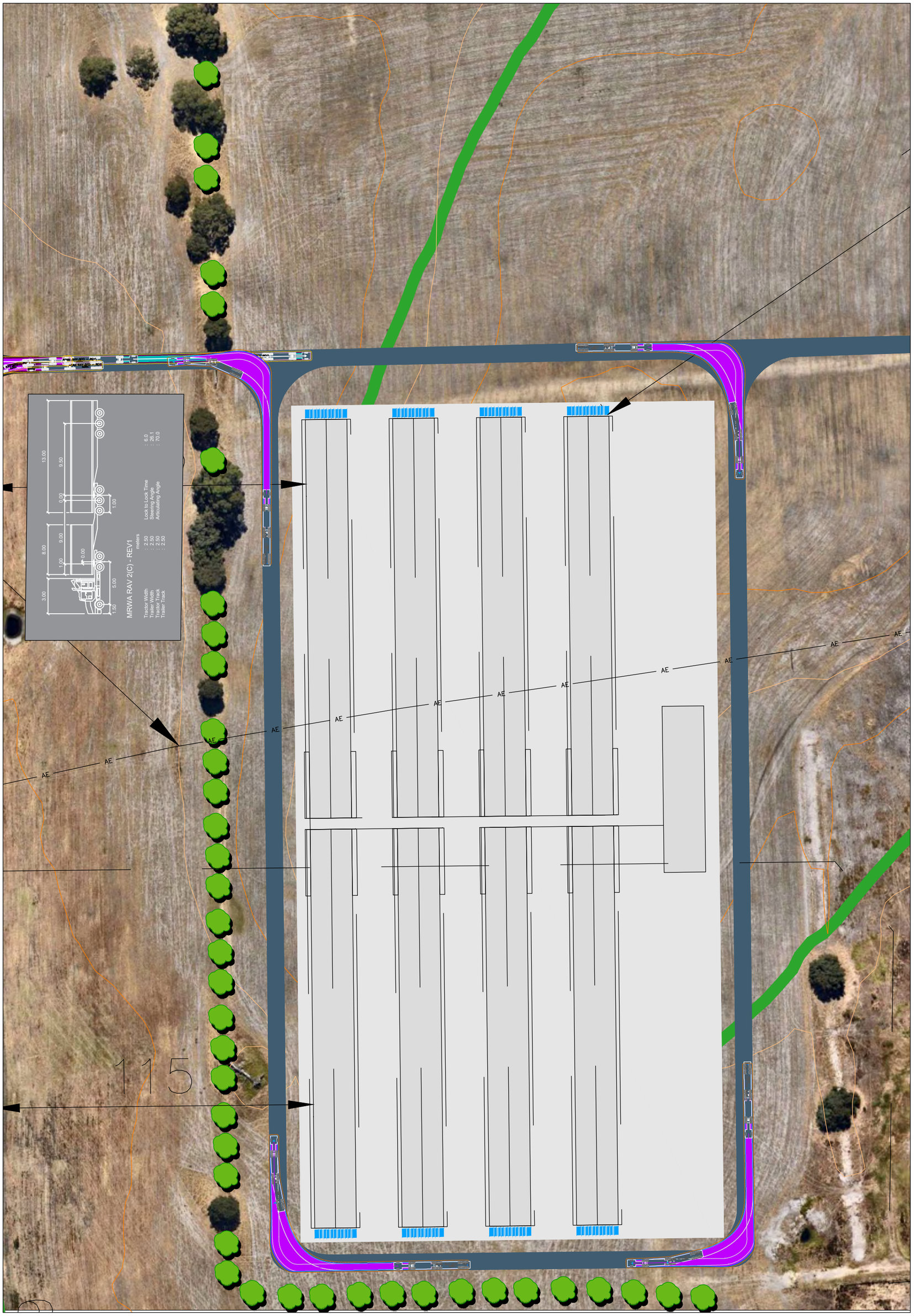
Crossover A

Existing Power Dome

Exis
She

DATE PLOTTED: 27 October 2023 12:09 PM BY: VEMULA, SAI
XREFs: 22533-01C DA
CAD File: \\au2011-ntap01_cifs02\shared_projects\300305037\technical\transportation\CAD\23102730039\5037 - Swept Paths 27.5m V2.dwg



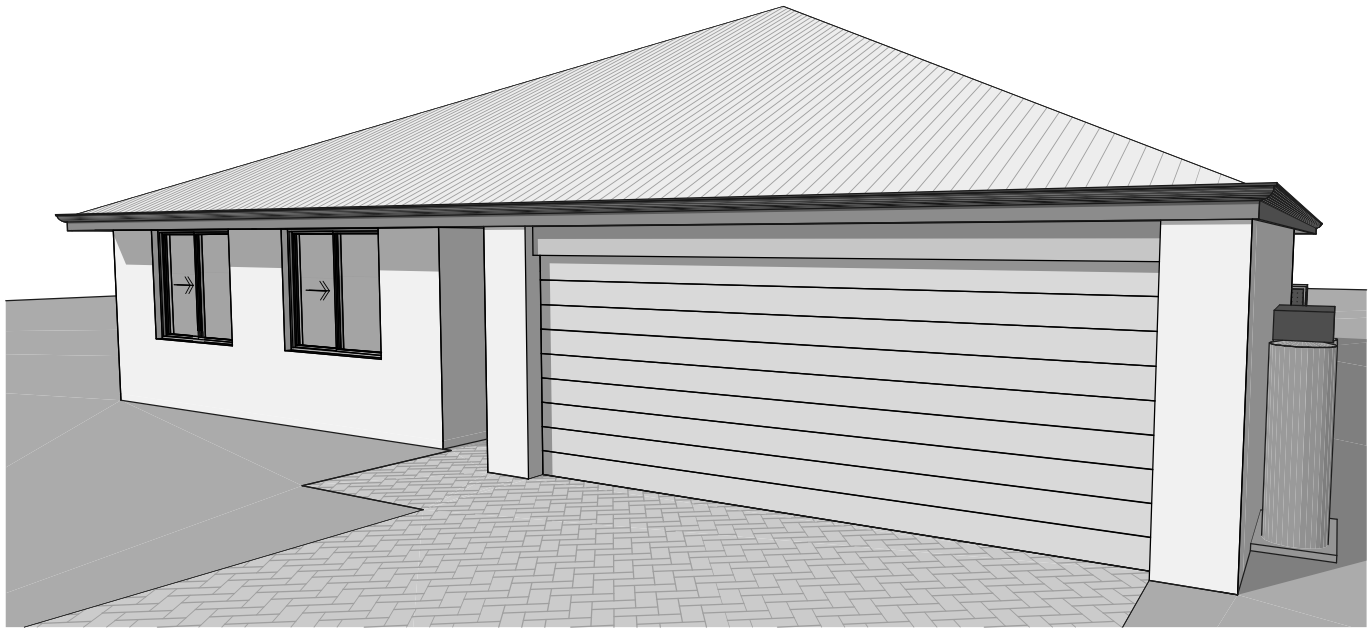


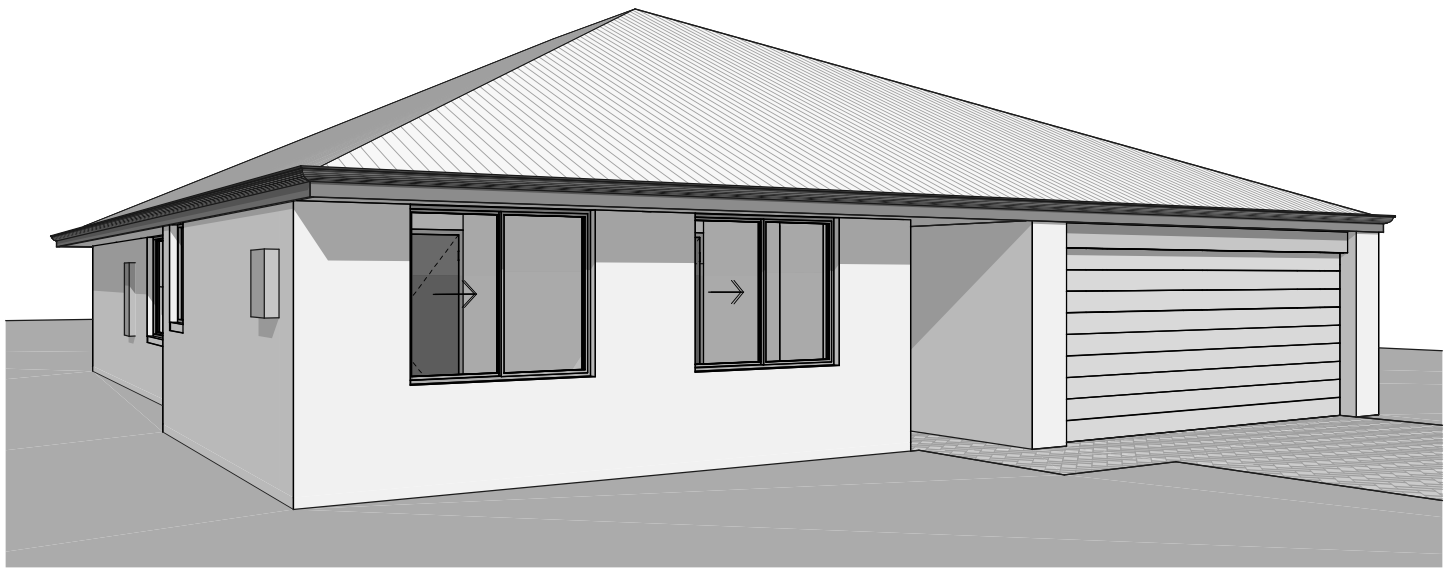
XREFs: 22533-01C DA

CAD File: \\au201-1-tlsb01_cifs02\tarad_projects\300305037\technical\transportation\CAD\23102730030503Z - Swept Paths 27.5m V2.dwg

DATE PLOTTED: 27 October 2023 11:33 AM BY : VEMULA, SAI

RECEIVED
17/1/24





ARTIST IMPRESSION ONLY

ALL DIMENSIONS SHALL BE TAKEN BETWEEN BRICKWORK OR STRUCTURAL FRAMING AND DO NOT INCLUDE PLASTER OR GYPROCK MARGIN. ALL DIMENSIONS TO TAKE PREFERENCE OVER SCALING

redink HOMES
BUILDERS REGISTRATION N° 12049
16 FROBISHER STREET
OSBORNE PARK WA 6017
Phone (08) 9208 1111 Fax (08) 9208 1122
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THIS IS ONE OF THE DRAWINGS REFERRED TO IN THE CONTRACT :

OWNER.....DATE.....

OWNER.....DATE.....

BUILDER .....DATE.....

STANDARD UPDATE = 170321 CS

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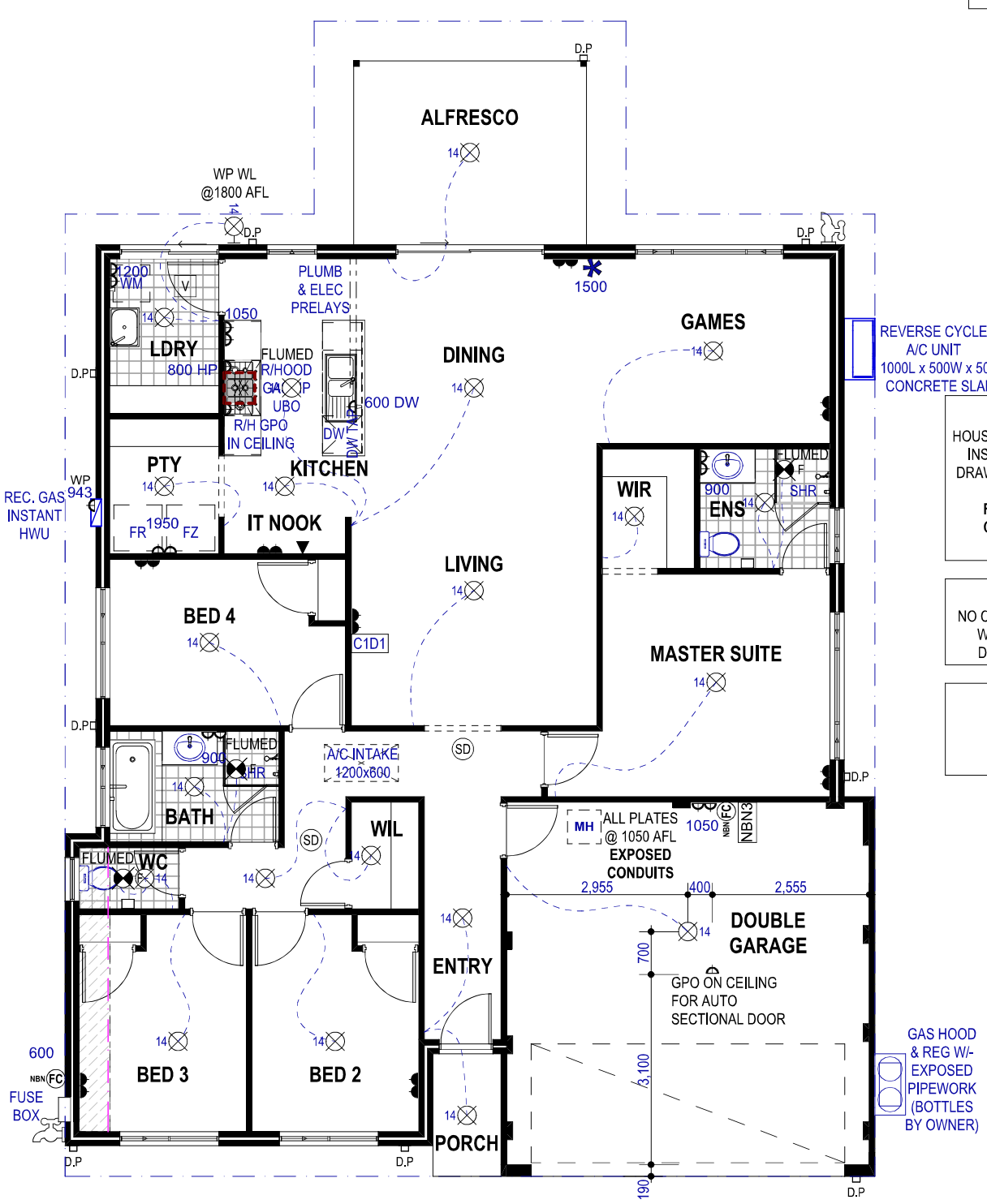
17/1/24

ELECTRICAL LEGEND		
NUM	Text for legend	Symb
21	14w STD Light	14
1	14w STD WALL LIGHT	14
1	3 Point Patch Plate	NBN3
1	AC Control Panel	*
1	Ceiling Vent	V
1	Coaxial x1 Data x1 Plate	C1D1
8	Double GPO - FL + 300	
6	Double GPO - Noted Ht AFL	
3	Exhaust Fan Flumed	F
2	NBN Fibre Comm Conduit DW	NBN FC
1	Phone Point	
4	Single GPO - Noted Ht AFL	
2	Smoke Detector	SD
1	Water Proof	WP



NOTE:
HOUSE FITTED WITH MINIMUM REQUIREMENTS FOR NBN INSTALLATION. FACE PLATES FOR NBN CONDUIT w/- DRAW WIRE **(FC)** & 3 POINT CONNECTION PLATE **(NBN3)** TO BE LOCATED @ 1050 AFL.
FIBRE COMMUNICATION CONDUIT (FC) TO RUN CONTINUOUSLY FROM ASSUMED FUTURE PCD LOCATION TO INTERNAL FC PLATE.

CHASING NOTE:
NO CHASING OF SERVICES TO A 500mm WIDE AREA ON WALL CENTRED TO RANGEHOOD TO ALLOW FOR DRILLING AND FIXING OF RANGEHOOD TO WALL.

ELECTRICAL NOTE:
ALL LIGHT SWITCHES ARE TO BE @ 1250 AFL TO CENTRE OF SWITCH PLATE AS STANDARD UNLESS NOTED OTHERWISE

ALL DIMENSIONS SHALL BE TAKEN BETWEEN BRICKWORK OR STRUCTURAL FRAMING AND DO NOT INCLUDE PLASTER OR GYPROCK MARGIN. ALL DIMENSIONS TO TAKE PREFERENCE OVER SCALING

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OWNER.....DATE.....

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STANDARD UPDATE = 170321 CS

Government of **Western Australia**
Department of **Health**

Your Ref: N/A
Our Ref: F-AA-90497-1 / D-AA-23/440566
Contact: Vic Andrich/ Yashvee Manrakhan-Field 9222 2000

Mr Dean Unsworth
Chief Executive Officer
Shire of Murray
1915 Pinjarra Road
PINJARRA WA 6208

Attention: Cherryll Oldham
Via email: mailbag@murray.wa.gov.au; CherryllO@murray.wa.gov.au

Dear Mr Unsworth

PROPOSED JDAP APPLICATION - AMENDMENT TO POULTRY FARM APPROVAL - LOTS 71, 72 & 73 CORIO ROAD, NAMBEELUP

Thank you for your email dated 29 November 2023, requesting comment from the Department of Health (DoH) on the above proposal.

The DoH provides the following comment:

1. **Food Safety Requirements**

The proponent must ensure that they comply with the Food Standards Code (Standard 4.2.2 - Primary production and processing standards for poultry meat).

It is also the responsibility of the Shire of Murray as the enforcement agency under the Food Act to continue to provide regulatory oversight of the premises as a food business under the above standard.

2. **Wastewater Management**

The proposal is required to comply with the requirements of *the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations,* 1974 (the Regulations).
The DoH has no objection to the proposal subject to ensuring the following are undertaken during development stage. In particular:

- The proposal made little reference to the type of staff amenities and the specifications or size of the onsite wastewater treatment system and disposal area/s. As this is a significant upgrade with 12 staff on site and being a 24-hour operation the onsite wastewater treatment systems and disposal areas needs to be upgraded. This does not need to apply for the existing dwelling nor sheds that may be used for accommodation unless requested by Local Government.

- The wastewater treatment systems for staff and the new dwelling/s for the site manager/s will require secondary treatment systems. These are

systems as approved or certified for use by the DoH. As the proposal is located within a sewage sensitive area, a secondary treatment system will be required, and the disposal location will be required to meet all minimum buffer distances including minimum vertical separation distances from the highest winter water tables as per Government Sewerage Policy requirements. They will also require an adequate ongoing maintenance program.

- A site-specific Site and Soil Evaluation (SSE) is to be undertaken by a qualified consultant during the wettest seasonal time of the year (mid-July/August) as per AS/NZS 1547:2012.

- Detailed plans showing the proposed building envelopes, existing wastewater systems, proposed wastewater systems, all trafficable areas, parking bays and land application area/s including setback distances, exclusion zones and measurements.

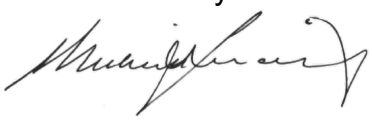
- In accordance with the Regulations an 'Application to Construct or Install an Apparatus for the Treatment of Sewage' is required to be submitted to the Local Government for each wastewater treatment system. Where proposals are viewed as commercial, the applications are required to be forwarded to the DoH for assessment and approval.

3. **Drinking Water Management**
   - All drinking water provided on site must meet the health-related requirements and risk management framework set out in version 3.7 of the Australian Drinking Water Quality Guidelines 2011. These are highlighted in principle in the following link: Reticulated drinking water scheme providers (health.wa.gov.au)

   - Any non-drinking water (i.e., water that is not intended or suitable for drinking) must be managed to ensure it cannot be confused with or contaminate the drinking water supply. This requires satisfactory labelling of non-drinking water taps and, depending on system configuration and suitable backflow prevention arrangements.

Should you have any queries or require further information please contact Vic Andrich or Yashvee Manrakhan-Field on 9222 2000 or eh.eSubmissions@health.wa.gov.au.

Yours sincerely



Dr Michael Lindsay
EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

11 January 2024

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

PARKS AND WILDLIFE SERVICE

Your ref:
Our ref: PRS51511
Enquiries: Lyndon Mutter
Phone: 9442 0342
Email: lyndon.mutter@dbca.wa.gov.au

Ms Cherryll Oldham
Shire of Murray
PO Box 21
PINJARRA WA 6208

JDAP Application - Amendment to Poultry Farm Approval - Lots 71, 72 & 73 Corio Road, Nambeelup

In reference to your correspondence dated 29 November 2023, the Parks and Wildlife Service of the Department of Biodiversity, Conservation and Attractions (DBCA) provides the following comments.

A portion of the property is currently mapped as a Conservation category wetland (CCW) on the Geomorphic Wetlands (Swan Coastal Plain) dataset, however this area no longer supports wetland values commensurate with a CCW, and it is commensurate with a Multiple Use wetland.

It is the DBCA's expectation that any clearing of native vegetation associated with the development will be undertaken in accordance with the Environmental Protection Act 1986 (EP Act) and Environmental Protection (Clearing of Native Vegetation) Regulations 2004 and discussed with the Department of Water and Environmental Regulation.

It is DBCA's expectation that the Shire of Murray will consider any environmental issues associated with the proposal.

Thank you for the opportunity to provide comment. Should you have any queries regarding the above comments, please contact Lyndon Mutter on 9442 0342

Yours sincerely

Benson Todd
REGIONAL MANAGER

11 January 2024

Swan Region
Cnr Australia II Drive and Hackett Drive, Crawley WA 6009
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
Phone: (08) 9442 0300 Email: [lyndon.mutter@dbca.wa.gov.au

2017020

APT Parmelia Pty Ltd ACN 078 902 397
Eastpoint Plaza, Level 5 233 Adelaide Terrace, Perth WA 6000
P: +61 8 6189 4300 | F: +61 8 6189 4349
APA Group | apa.com.au

11 January 2024

APA Reference: 503121
Your Reference: DAP/21/01966

Attn: Chief Executive Officer
Shire of Murray
PO Box 21,
Pinjarra, WA 6208

EMAIL OUT: mailbag@murray.wa.gov.au

Dear Sir / Madam,

RE: Proposed amendment to Poultry Farm at Lot No 71, 72, & 73 Corio Road, Nambeelup

Thank you for your referral request received on 29 November 2023 in relation to the proposed amendment to poultry farm at the above mentioned site – Ref: DAP/21/01966.

APA Group (APA) is Australia's largest natural gas infrastructure business and has direct management and operational control over its assets and investments. APA's gas transmission pipelines span across Australia, delivering approximately half of the nation's gas usage. APA owns and operates over 15,000km's of high pressure gas transmission pipelines across Australia. APA is the Pipeline Licensee for the Parmelia Gas Pipeline, which traverses the north-eastern part of the subject site.

Section 3.1 of *Planning Bulletin 87: High Pressure Gas Transmission* (PB87) identifies the following type of development is exempt from PB87 requirements:

> *Small-scale infill land uses, subdivisions or development which completes or rounds-off existing land use, subdivision or development that is already at a lesser setback distance than defined in table one other than sensitive developments as defined in Part 5 of Appendix 1.*

Given the nature and scale of development it is considered exempt from PB87 requirements. On this basis, and the separation between the pipeline and proposed development, APA has no objection to the proposal and no technical commentary to make.

For any further enquiries in relation to this correspondence, please contact myself on 03 8626 8523 or APA's Infrastructure, Planning & Approvals team by email at PlanningWA@apa.com.au.

Yours faithfully,

Darshil Parikh
Urban Planning & Projects Approvals
Infrastructure Planning & Approvals
APA Group

APA Group comprises two registered investment schemes, Australian Pipeline Trust (ARSN 091 678 778) and APT Investment Trust (ARSN 115 585 441), the securities in which are stapled together. Australian Pipeline Limited (ACN 091 344 704) is the responsible entity of those trusts. The registered office is HSBC building, Level 19, 580 George Street, Sydney NSW 2000.

energy. connected.

Department of
Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

Your reference:
Our reference: LUP 1747
Enquiries: Leon van Wyk

Cherryll Oldham
Senior Planning Officer
PO Box 21
Pinjarra WA 6208
mailbag@murray.wa.gov.au

13 December 2023

Dear Cherryll

COMMENT: JDAP application - Amendment to Poultry Farm - Lots 71, 72 & 73 Corio Road Ravenswood

Thank you for the opportunity to comment on the proposed amendment to the previously approved Poultry Farm at Lots 71, 72 & 73 Corio Road, Ravenswood.

The Department of Primary Industries and Regional Development (DPIRD) does not object to the proposed amendment to change the approved broiler (meat bird) poultry farm to a fertile egg production facility and would like to provide the following comments:

- The poultry farm aligns with the following requirements in the *Environmental Code of Practice for Poultry Farms in Western Australia 2004:*
    - 500m to existing or future residential zone – nearest residence is 3km to the southwest.
    - 300m to existing or future rural residential zone – Farmlet zone is 700m to the southwest.
    - 100m from farm boundary – all sheds are at least 100m from the boundary.
    - 50m to wetlands, waterways and floodways (from edge of wetland buffer) – sheds are 165m away from the creek line that runs into the North Dandalup River.
- EPA Guidance Statement 3 requires a separation distance of 300 - 1000m from sensitive premises depending on the size of the facility. The proposed poultry farm does have a 1000m separation from sensitive premises.

- The poultry farm is designed to be a closed loop system that will minimise the risk of nutrient export. Each shed will be cleaned once a year when the laying hens are replaced, and all manure and bedding will be removed from the property by covered trucks and delivered to a composting facility.
- Dead birds will be collected daily and refrigerated to be removed on a weekly base by a rendering facility.
- On page 14 of the Environmental Assessment and Management Plan the following statement is made:

  'Approximately 30% of proposed Pod 1 and 80% of Pod 2 meet the 2m separation required at 15m AHD. It is proposed to use sand fill to achieve a minimum separation of 1m to maximum groundwater level (approximately 14mAHD) for the areas that do not meet the 2m separation. Although this is less than the guidance for 2m separation for part of the Pod areas, the 1m separation above the highest groundwater table is considered sufficient to reduce the risk of inundation as the operation is a closed system which will prevent discharge of nutrients to the environment.' - At locations where a 2m separation to groundwater cannot be achieved, DPIRD expects that a double liner will be installed to double the protection afforded to groundwater. The plastic liner must be installed in accordance with relevant sections of the Water Quality Protection Note 26.

If you have any queries regarding the comments, please contact Leon van Wyk at (08) 9780 6171 or leon.vanwyk@dpird.wa.gov.au.

Yours sincerely

Tim Overheu
Acting Director Agriculture Resource Management Assessment
Sustainability and Biosecurity

Government of Western Australia
Department of Water and Environmental Regulation

Your ref:
Our ref: PA60376, RF9821
Enquiries: Mark Hingston, Ph 9550 4209

Shire of Murray
PO Box 21
Pinjarra WA 6208

Attention: Cherryll Oldham

Dear Cherryll

RE: LOT 71, 72 AND 73 CORIO ROAD, RAVENSWOOD – APPLICATION FOR EXPANSION OF POULTRY FARM

Thank you for providing the application for the expansion of a poultry farm at Lots 71, 72 and 73 Corio Road, Ravenswood received on 29 November 2023 for the Department of Water and Environmental Regulation (the Department) to consider.

The Department has identified that the expansion of a poultry farm at Lots 71, 72 and 73 Corio Road, Ravenswood has the potential for impacts on environment and water resource management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue
Peel Harvey Coastal Plain Catchment

Advice
The proponent is to be advised that the proposal is located within the Peel-Harvey coastal plain catchment and the provision of the *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992*, the *State Planning Policy No 2.1, Peel-Harvey Coastal Plain Catchment* (SPP 2.1) and the Draft *State Planning Policy 2.9 Planning for Water* (SPP 2.9) shall apply.

Consistent with SPP 2.1, it is recommended the Department of Primary Industries and Regional Development is consulted regarding this proposal, and any advice regarding animal and land management measures are to be adhered to.

Kwinana Peel Region
107 Breakwater Parade Mandurah Ocean Marina Mandurah Western Australia 6210
PO Box 332 Mandurah Western Australia 6210
Telephone: 08 9550 4222 Facsimile: 08 9581 4560
www.dwer.wa.gov.au

Issue
Native Vegetation Regulation

Advice
Under section 51C of the *Environmental Protection Act 1986* (EP Act), clearing of native vegetation is an offence unless:

- it is undertaken under the authority of a clearing permit
- it is done after the person has received notice under Section 51DA(5) that a clearing permit is not required
- the clearing is subject to an exemption

Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (the Clearing Regulations).

Based on the information provided, the proposed clearing is not exempt and a clearing permit is required.

The department has not received a clearing permit application for this proposal. Application forms are available from https://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms

Additional information on how to apply for a clearing permit is available from Clearing permit forms | Western Australian Government (www.wa.gov.au).

Information regarding clearing permit fees can be found here: Clearing fees – frequently asked questions | Western Australian Government (www.wa.gov.au)

If further clarification is required, please contact the Department's Native Vegetation Regulation section by email (admin.nvp@dwer.wa.gov.au) or by telephone (6364 7098).

Issue
Stormwater Management

Advice
The Department recommends the proponent prepare a Stormwater Management Plan (SMP) as part of the development approval process. The SMP should include, but not be limited to,

- volume of stormwater runoff from proposed impervious surface areas for each rainfall event and how this is to be managed Stormwater runoff should be fully contained onsite for small and minor storm events (first 15mm and 20% AEP respectively).
- permitted outflow of stormwater runoff from the site
- stormwater quality management objectives and proposed treatment train for stormwater runoff from road surfaces, carparks and hardstands.

Stormwater runoff should be managed in accordance with the *Stormwater Management Manual for Western Australia* (DWER, 2022) and *Decision Process for Stormwater Management in Western Australia* (DWER, 2017).

Issue
Sewerage Sensitive Area

Advice
In accordance with the *Government Sewerage Policy* (Government of Western Australia, 2019), the subject land is located within a sewage sensitive area. As this land is not connected to the reticulated sewerage infrastructure, future development on the proposed lot (proposed amenities buildings and new dwelling) must adhere to the Policy including the requirement for a secondary treatment system with nutrient removal and the required separation distance to the maximum groundwater level for the on-site sewage system discharge area.

Issue
Disposal of manure and litter

Advice
Details of where used litter and manure is to be removed to and treated should be included in the Nutrient Management section of the Application for Amended Development Approval.

Issue
Groundwater Licence

Advice
The subject area is located in the Murray groundwater area (Nambeelup subarea) as proclaimed under the Rights in Water and Irrigation Act 1914. Any groundwater abstraction in this proclaimed area for purposes other than domestic use and/or non-intensive stock watering taken from the superficial aquifer, is subject to licensing by the Department.

The landowner currently holds a Groundwater Licence for 258,500 kilolitres per annum. If it is proposed to abstract water under this licence for the poultry farm expansion, then the licensee should make an application to amend the licence accordingly. Please contact the water licensing section on 9550 4222 for further advice.

Where the Department has a statutory role, planning applications should be considered prior to the Department issuing any relevant permits, licenses and/or approvals.

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

Should you require any further information on the comments please contact Mark Hingston on 9550 4209.

Yours sincerely

Jane Sturgess
Acting Program Manager – Planning Advice
Kwinana Peel Region
22 / 12 / 2023

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LOTS 71, 72 AND 73 (NO. 511) CORIO ROAD, RAVENSWOOD – CHANGE OF USE FROM BROILER FARM (MEAT PRODUCTION) TO FERTILE EGG PRODUCTION AND EXTRA SHEDS

Form 2 – Responsible Authority Report
(Regulation 17)

DAP Name:	Metro Outer Joint Development Assessment Panel	
Local Government Area:	Shire of Murray	
Proposed Amendments:	Form 2.1 - Change of use from broiler farm (meat production) to fertile egg production and extra sheds	
Applicant:	Harley Dykstra Pty Ltd	
Owner:	Sprock Group Pty Ltd	
Value of Amendment:	$11 million ☒ Mandatory (Regulation 5) ☐ Opt In (Regulation 6)	
Responsible Authority:	Western Australian Planning Commission	
Authorising Officer:	Planning Director, Land Use Planning	
WAPC Reference:	616-245-1	
DAP File No:	DAP/21/01966	
Date of Original DAP decision:	29 July 2021	
Application Received Date:	12 December 2023	
Application Statutory Process Timeframe:	60 Days	
Attachment(s):	1. Lodged Development Plans 2. DAP Form 1 Determination Notice and Approved Plans 3. Aerial Plan 4. Application Context Plan 5. Peel Region Scheme Zoning Plan 6. LPS 4 Zoning Plan 7. Wetland Mapping 8. Vegetation Mapping 9. Bushfire Management Plan, Envision Bushfire Protection, September 2023	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☐ Yes ☒ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer JDAP resolves to:

1. **Accept** that the DAP Application reference DAP/21/01966 as detailed on the DAP Form 2 dated 29 November 2023 is appropriate for consideration in

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accordance with regulation 17 of the *Planning and Development (Development Assessment Panels) Regulations 2011*;

2. **Approve** DAP Application reference DAP/21/01966 and accompanying modified plans date stamped **29 November 2023** by the Department of Planning, Lands and Heritage (Plan No.23765-01 Rev E; Drawing No. PR003-DRG-10-04 Rev C. Drawing No: PR0003-DRG-10-05 REV C; PRO003-DRG-10-06 REV C; PRO003-DRG-10-01 REV C; PRO003-DRG-10-02 REV C; PRO003-DRG-10-03 REV C) in accordance with the provisions of Clause 21 of the Peel Region Scheme; and

3. Amend Condition 3 of the DAP Form 1 Part B - Peel Region Scheme approval, dated 29 July 2021 as follows:

   Amended Condition

   3. Prior to applying for a Building Permit, the Bushfire Management Plan prepared by Envision Bushfire Protection dated September 2023 is to be amended to include the rural worker's dwelling and demonstrate compliance with the Guidelines for Planning in Bushfire Prone Areas to the specification of the Shire of Murray and to the satisfaction of the Western Australian Planning Commission.

      Prior to the occupation of the development, the owner responsibilities identified in section 5.1 of the Bushfire Management Plan prepared by Envision Bushfire Protection dated September 2023 (as amended by this condition) are to be implemented to the satisfaction of the Local Government. Compliance with the requirements of this Bushfire Management Plan are required for the duration of the development.

All other conditions and requirements detailed on the previous approval dated 29 July 2021 shall remain unless altered by this application.

Details: outline of development application

Region Scheme	Peel Region Scheme
Region Scheme Zone/Reserve	Rural
Local Planning Scheme	Shire of Murray Local Planning Scheme No.4
Local Planning Scheme Zone/Reserve	Rural
Use Class (proposed) and permissibility:	Intensive Agriculture (AA in Rural Zone)
Lot Size:	Lot 71 - 40.013ha Lot 72 - 41.410ha Lot 73 - 40.056ha **121.482ha total**
Net Lettable Area (NLA):	N/A
Number of Dwellings:	1 additional
Existing Land Use:	Poultry Farm, Sheds and Residence
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List

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	☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

This Form 2 application seeks approval to amend an existing development approval for poultry farm extension at Lots 71, 72 and 73 Corio Road, Ravenswood. The amendments include:

- a change of use from broiler farm (meat production) to eggs production;
- replacing the existing sheds with sixteen poultry sheds (four additional sheds) and two egg packing/staff amenities buildings connected via enclosed 4-metre wide passageways;
- retention of three existing free range sheds (previously identified for demolition) for storage purposes; and
- construction of a single 4-bedroom dwelling, to be located 1 kilometre from the sheds.

The egg sheds measure 120 metres by 15 metres each will be grouped into two pods of eight and spaced 16.5 metres apart. Each shed will house 16,000 birds at any one time. Another key change from the previous approval was the introduction of roosters, with a stocking rate of one rooster for every 10 hens. It is estimated that 33.6 million eggs will be produced on-site each year.

The operation will employ 12 full time staff, and two on-site farm managers who will reside within the existing and proposed caretaker dwellings (**Attachment 1 – Lodged Development Plans**).

Supporting Technical Documents

The application is supported by the following technical assessment documents:

- Bushfire Management Plan, prepared by Envision Bushfire Protection (dated 6 September 2023, version 3);
- Environmental Assessment and Management Plan, prepared by Aurora Environmental (dated 17 March 2021, version 3; ref: AA2021/042); and
- Transport Impact Statement, prepared by Cardno (dated 6 November 2023, Rev C; ref: CW300305037).

Background:

Site Context

The site is currently operating as a free-range poultry farm, containing three existing sheds, a caretaker residence and smaller outbuildings. The site is located on Corio Road which has direct connections to Lakes Road to the north and Paterson Road to

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the south. The subject land comprises an area of 121.5 hectares, and is surrounded by broadacre and rural smallholding properties (**Attachment 3 – Aerial View; Attachment 4 – Application Context Plan**).

Planning Context

The land is zoned Rural under the Peel Region Scheme (PRS) and the Shire of Murray Local Planning Scheme No. 4 (LPS 4). Surrounding properties to the southwest (Lots 101-111 Corio Road) are zoned Farmlet under LPS 4. Lot 5 Corio Road to the northwest of the property is zoned Special Use - Tourist Development (notwithstanding the zoning the site is being used as an equestrian facility). Other surrounding properties are zoned Rural under the PRS and LPS 4 (**Attachment 5 – Peel Region Scheme Zoning Plan; Attachment 6 – Local Planning Scheme No.4 Zoning Plan**). The proposal use falls under the land use definition of Intensive Agriculture, which is a discretionary land use within the Rural zone of LPS 4.

The Western Australian Planning Commission resolution 2014/02 under Clause 21 of the PRS, Schedule 1, Clause 7 specifies that any development for a new poultry farm, or extension or addition in excess of 100m^2 to improvements of an existing farm requires the WAPC determination. This Responsible Authority Report (RAR) deals with the application submitted under PRS Form 1.

Previous Approval

On 29 July 2021, the Metro Outer Joint Assessment Development Panel (JDAP) approved an application to develop a substantial broiler farm for meat birds production on the subject land. The approval provides for the construction of twelve (12) new poultry sheds. The approved facility has the capacity to produce up to 3.3 million meat birds per annum (**Attachment 2 - DAP Form 1 Determination Notice and Approved Plans**).

Regulation 17(1) of the *Planning and Development (Development Assessment Panel) Regulations 2011* provides the following:

> *"An owner of land in respect of which a development approval has been granted by a DAP pursuant to a DAP application may apply for the DAP to do the following -*
>
> *(c) to amend an aspect of the development approved which, if amended, would not substantially change the development if approved."*

As noted, this Form 2 application seeks to convert the approved broiler farm into an eggs farm. These amendments do not substantially alter the existing approval, and therefore acceptable for determination under Regulation 17(1) approval pathway.

Legislation and Policy:

Legislation

- *Planning and Development Act 2005*
- *Peel Region Scheme, Part 6*
- *Planning and Development (Development Assessment Panels) Regulations 2011*

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State Government Policies

State Planning Policy 2.1 - Peel-Harvey Coastal Plain Catchment
State Planning Policy 2.5 - Rural Planning
State Planning Policy 3.7 - Planning in Bushfire Prone Areas
EPA *Guidance Statement 3 - Separation Distances between Industrial and Sensitive Land Uses*

Oher relevant policies/documents

WAPC Fact Sheet - Poultry Farm
Environmental Code of Practice for Poultry Farms in Western Australia

Consultation:

Department of Water and Environmental Regulation (DWER)

DWER raised no objections, but has identified the following issues requiring resolution prior to approval:

- Consideration of the proposal against the Government Sewerage Policy and other relevant environmental policies relating to Peel Harvey Coastal Plain Catchments, particularly given the site's location within a sewage sensitive area;
- DWER clearing permit should be sought for any clearance of native vegetation (noting exemption under Section 51C and Schedule 6 of *the Environmental Protection Act 1986* does not apply in this instance);
- Stormwater management shall be addressed as part of a Stormwater Management Plan;
- Additional details shall be provided regarding where used litter and manure is to be removed and treated; and
- Any modifications to existing groundwater licence.

The above matters have been adequately addressed through existing conditions of approval, and will be addressed in the Shire of Murray's RAR.

Department of Primary Industries and Regional Development (DPIRD)

DPIRD advised that the proposal meets the *EPA Guidance Statement 3* and *Environmental Code of Practice for Poultry Farm in Western Australia (2004)* requirements for separation distances between industrial and sensitive land uses.

Department of Health

The Department of Health raised no objections pending further details on wastewater and drinking water management as per the relevant policies, standards and guidelines. It is considered that these matters are adequately covered through existing Environmental Management Plan (see discussion below).

APA Group

APA Group raised no objections. Existing advice notes imposed on LPS 4 determination adequately addressed this issue.

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Planning Assessment:

The proposed poultry farm expansion has been assessed against the relevant legislative requirements of the Peel Region Scheme, State and Local Planning Policies. The matters requiring detailed consideration are:

- Environmental Management
- Impacts on Wetlands and Groundwater Hydrology
- Bushfire Risks Mitigation

These matters are outlined and discussed below.

Peel Region Scheme (PRS)

Clause 34 of the PRS requires the decision-maker to have regard to a range of matters in the determination of applications for development approval. These are set out in subclauses (a)-(zc). Compliance with the PRS have been demonstrated as follows:

- The proposal is consistent with the objectives of the Rural zone which provides for the sustainable use of land for agriculture, including poultry farm.
- The proposal is situated within a predominantly rural area and maintains the rural character of the locality.
- The proposal maintains a level of amenity through the provision of adequate separations to nearest sensitive land uses. Additional screen planting is provided to screen the development from Corio Road.
- The development does not result in a substantial increase in heavy vehicle traffic.

Environmental Management

Aurora Environmental was engaged to prepare an updated Environmental Assessment and Management Plan Report (EAMP), dated 16 November 2023, which addressed, amongst other matters, consideration of potential odour, noise, dust, nutrients and waste management.

The farm will operate as a closed system intensive animal production, meaning all waste are captured and managed in such a way that it does not enter the environment. In regard to waste, the EAMP states that the volume and frequency of litter removal from eggs production would be significantly less compared to a birds meat production facility. Litter removal is proposed to take place once a year (per shed), and it will be done in accordance with best environmental management practice. Recommendations in the EAMP report will be implemented to ensure appropriate ongoing management of poultry farm operations, whilst mitigating any potential off-site impacts. This can be addressed via the concurrent JDAP approval under LPS 4 processed by the Shire of Murray.

Impact on Wetlands and Groundwater Hydrology

The site is located within the catchment of the Peel-Harvey Estuary. The North Dardalup River, located to the east of the site flows directly into the estuary. The proposal has been assessed against *State Planning Policy 2.1 - Peel-Harvey Coastal Plain Catchment* which aims to minimise the potential ecological impact on the Peel-Harvey estuarine system, and prevent uses that are likely to result in excessive nutrient export into the drainage system.

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The site features a shallow aquifer. Geomorphic wetland mapping reveals the northern portion of the site contains a floodplain conservation category wetland. This notwithstanding, DWER advised the existing wetlands could be reclassified to 'multiple-use' category given its current degraded state and lack of significant environmental attributes (**Attachment 7 – Wetlands Mapping; Attachment 8 – Vegetation Mapping**).

The EAMP suggests that overall the proposed farming operation is unlikely to negatively affect groundwater hydrology. Additionally, the planned caretaker's dwelling and sheds are not expected to cause any significant impacts on the existing mapped wetland areas. Notwithstanding, Section 2.8 of the EAMP Report indicates that only 30% of Pod 1 is able to meet the 2 meter minimum vertical clearance from the maximum groundwater table (13m AHD). Where a 2 metre groundwater clearance is not feasible, DPIRD recommends the use of plastic liners (synthetic membranes) to contain pollutants in accordance with the DWER Water Quality Protection Note 26.

The Shire supports a condition requiring finished floor level of each poultry shed to be at least two metres higher above the ground water table. A double liner can reduce the required height to 1 metre. It is anticipated that this matter will be addressed the JDAP's determination under LPS 4.

Bushfire Risks

The land is located within a Bushfire Prone Area and requires an assessment against *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (SPP 3.7) and the associated Guidelines for Planning in Bushfire Prone Areas. An updated Bushfire Management Plan has been submitted to demonstrate compliance with these policy documents (refer **Attachment 9 – Bushfire Management Plan, Envision Bushfire Protection, September 2023**).

Compliance with Bushfire Protection Criteria and relevant acceptable solutions have been demonstrated via the BMP. Specific implementation measures in the BMP include the provision of Asset Protection Zones (APZ), constructing driveway with sufficient fire appliance access and provision of water tanks/hydrants.

Notwithstanding the above, the BMP is required to be further modified to identify an APZ around the new caretaker's dwelling. It is therefore recommended that condition 3 of the existing approval under Part B – Peel Region Scheme be amended to require further amendment to the submitted BMP. This will ensure the APZ is established and maintained in perpetuity by the owner/dwelling occupier.

Conclusion:

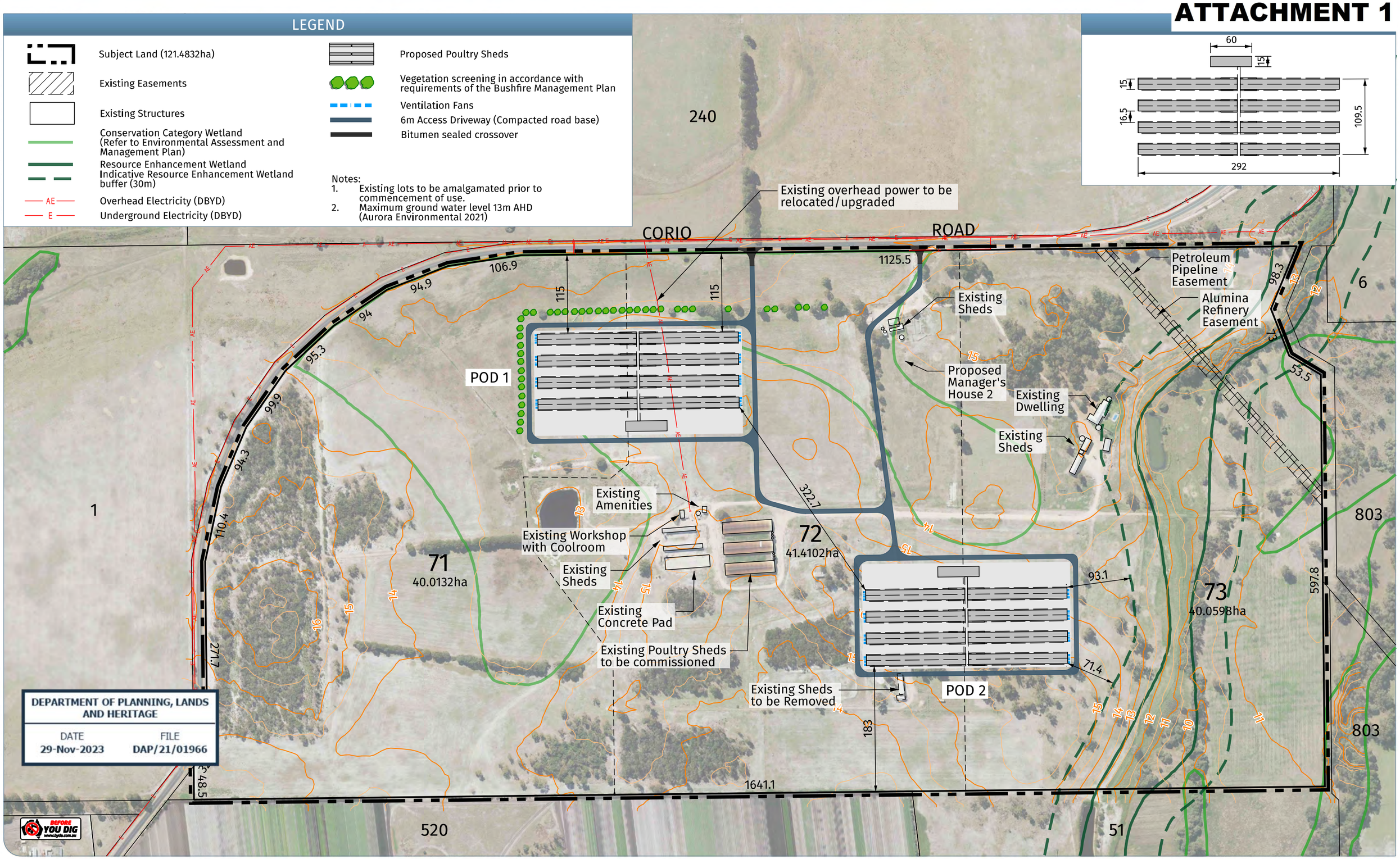
The proposed change of use and amendment to the existing poultry farm approval does not substantially change the nature of the development for a region scheme perspective. Sufficient supporting information has been provided to demonstrate that any amenity impact associated with the operation can be addressed. The proposal is consistent with the proper and orderly planning of the locality. Conditional approval is recommended.

ATTACHMENT 1

LEGEND

- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)



DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE	FILE
29-Nov-2023	DAP/21/01966

DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	23765-01
Date	01/11/23
Drawn	NP
Checked	JS
Revision	E
Scale	1:5000@A3

0 50m 100m 150m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
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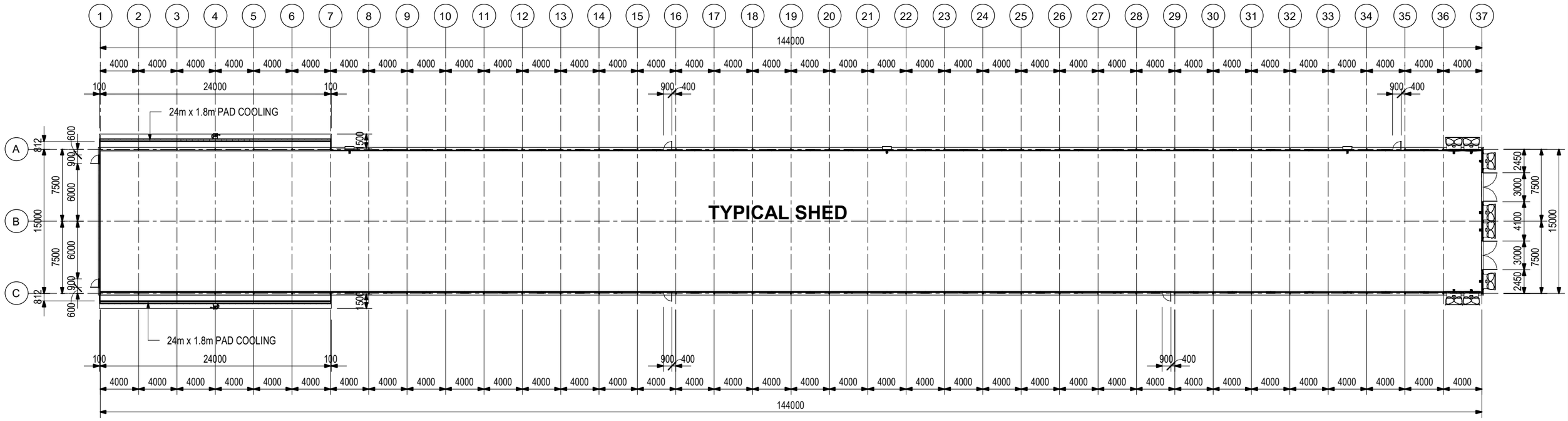
DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE 29-Nov-2023

FILE DAP/21/01966



TYPICAL SHED

1 TYPICAL SHED FLOOR PLAN

1 : 400

metrowest
aspire | commit | create

70 BELMONT AVE BELMONT WA 6103
www.metrowest.com.au

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f: +61 8 9277 4911
e: mtp@metrowest.com.au

REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Typical Shed Floor Plan

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

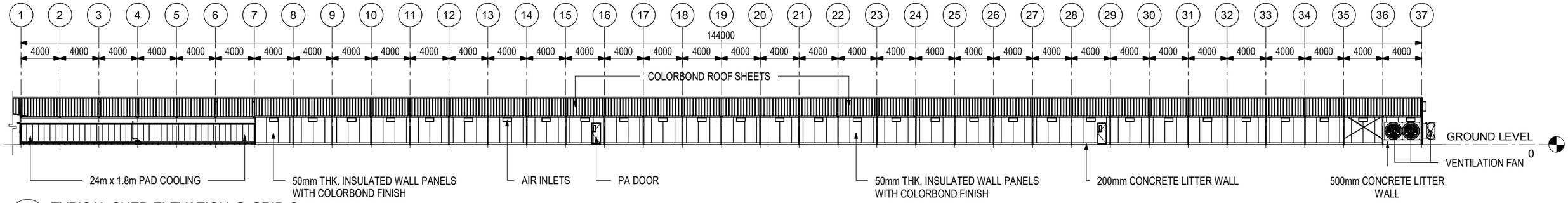
SCALE: 1 : 400

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-01

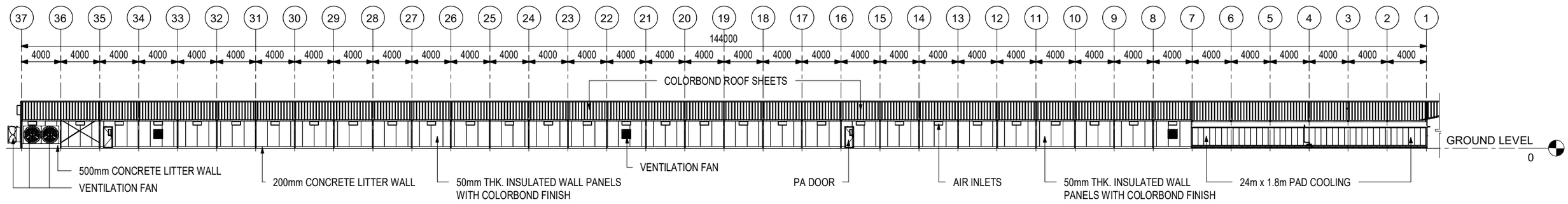
SHEET NO.

REV: C



1 TYPICAL SHED ELEVATION @ GRID C

1 : 400



2 TYPICAL SHED ELEVATION @ GRID A

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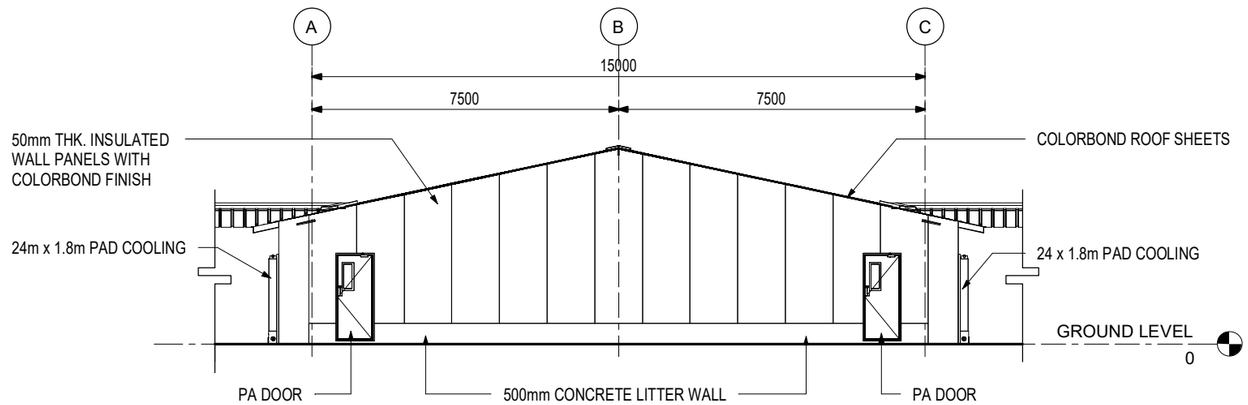

3 TYPICAL SHED ELEVATION @ GRID 1

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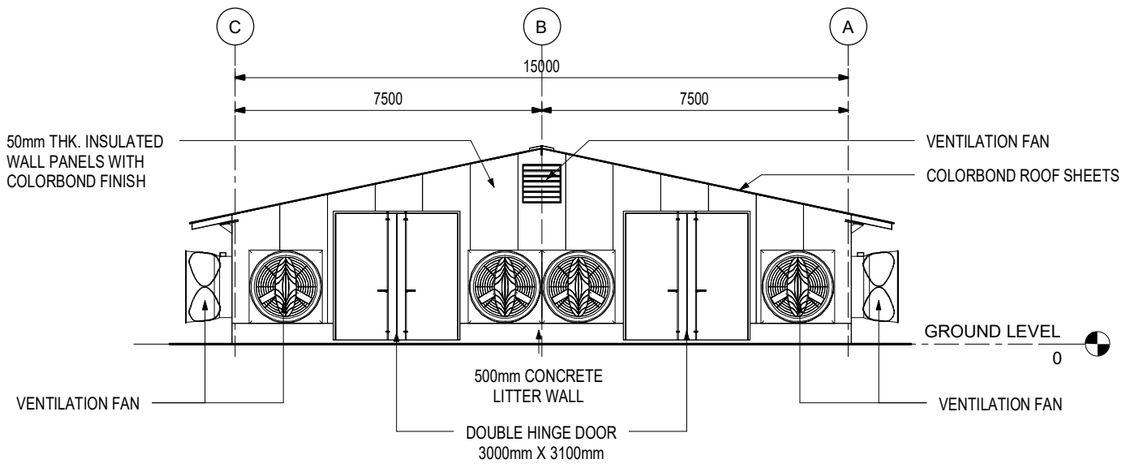

4 TYPICAL SHED ELEVATION @ GRID 37

1 : 150

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REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

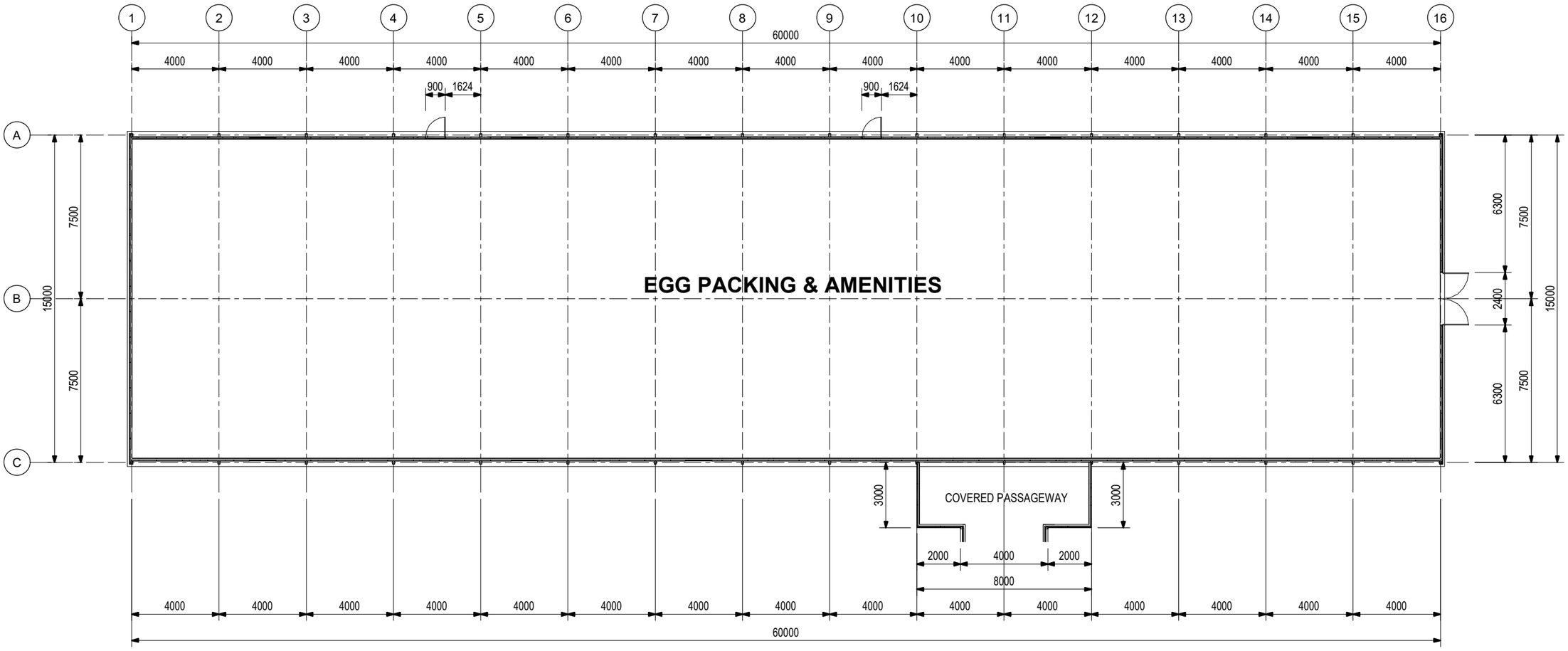
DEPARTMENT OF PLANNING, LANDS AND HERITAGE
DATE 29-Nov-2023 FILE DAP/21/01966

CLIENT: METROWEST

ENGINEER:
DRAWN BY:
CHECKED BY:
DATE:

PROJECT: Breeder Farm
DRAWING TITLE: A_Typical Shed Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N
SCALE:
PROJECT NO. PR0003
DRAWING NO. PR0003-DRG-10-02
SHEET NO.
REV: C



1 EGG PACKING & AMENITIES FLOOR PLAN

1 : 200

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE 29-Nov-2023

FILE DAP/21/01966

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e: mtp@metrowest.com.au

REF DRAWING NO.	REFERENCE DESCRIPTION	REV	DATE	DRN	CHK	APPD	AMENDMENT DESCRIPTION
		A	08/23/23				
		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT
Breeder Farm

DRAWING TITLE
A_Egg Packing & Amenities Floor Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N

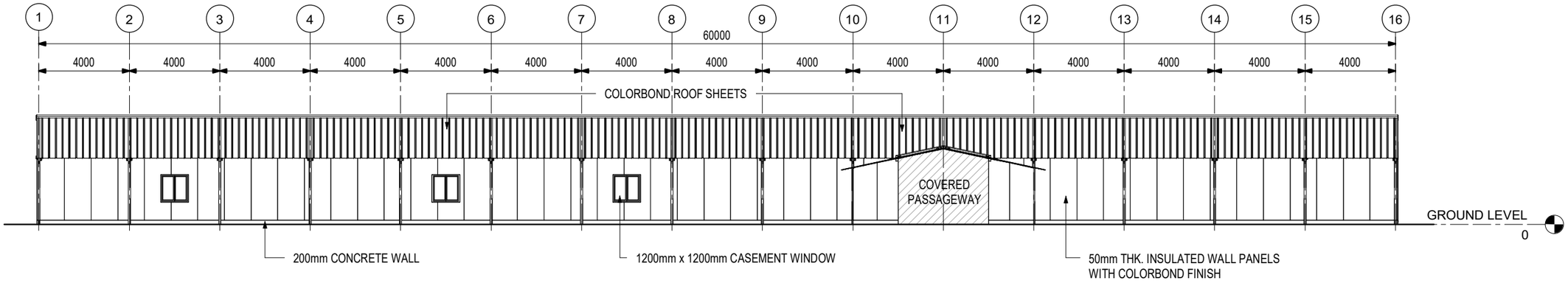
SCALE: 1 : 200

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-03

SHEET NO.

REV: C



1 EGG PACKING & AMENITIES ELEVATION @ GRID C

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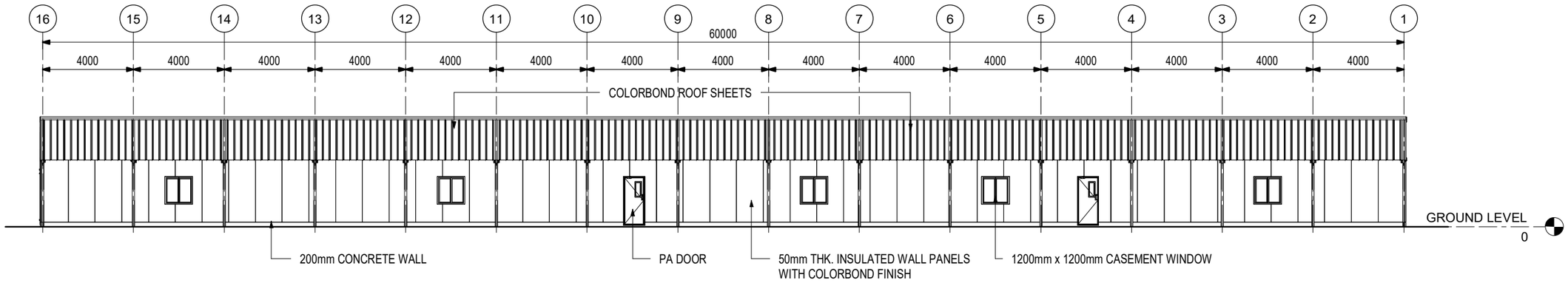

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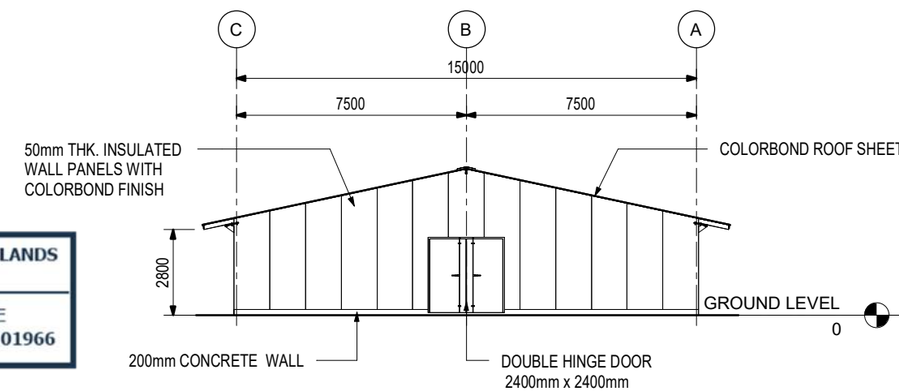

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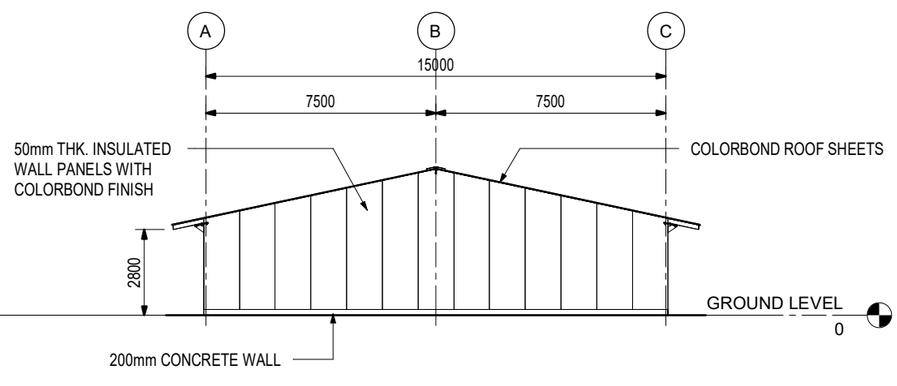
1 : 200



4 EGG PACKING & AMENITIES ELEVATION @ GRID 1

1 : 200

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE 29-Nov-2023 FILE DAP/21/01966

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		B	09/25/23				
		C	10/20/23				

CLIENT: METROWEST

ENGINEER:

DRAWN BY:

CHECKED BY:

DATE:

PROJECT: Breeder Farm

DRAWING TITLE: A_Egg Packing & Amenities Elevation

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 200

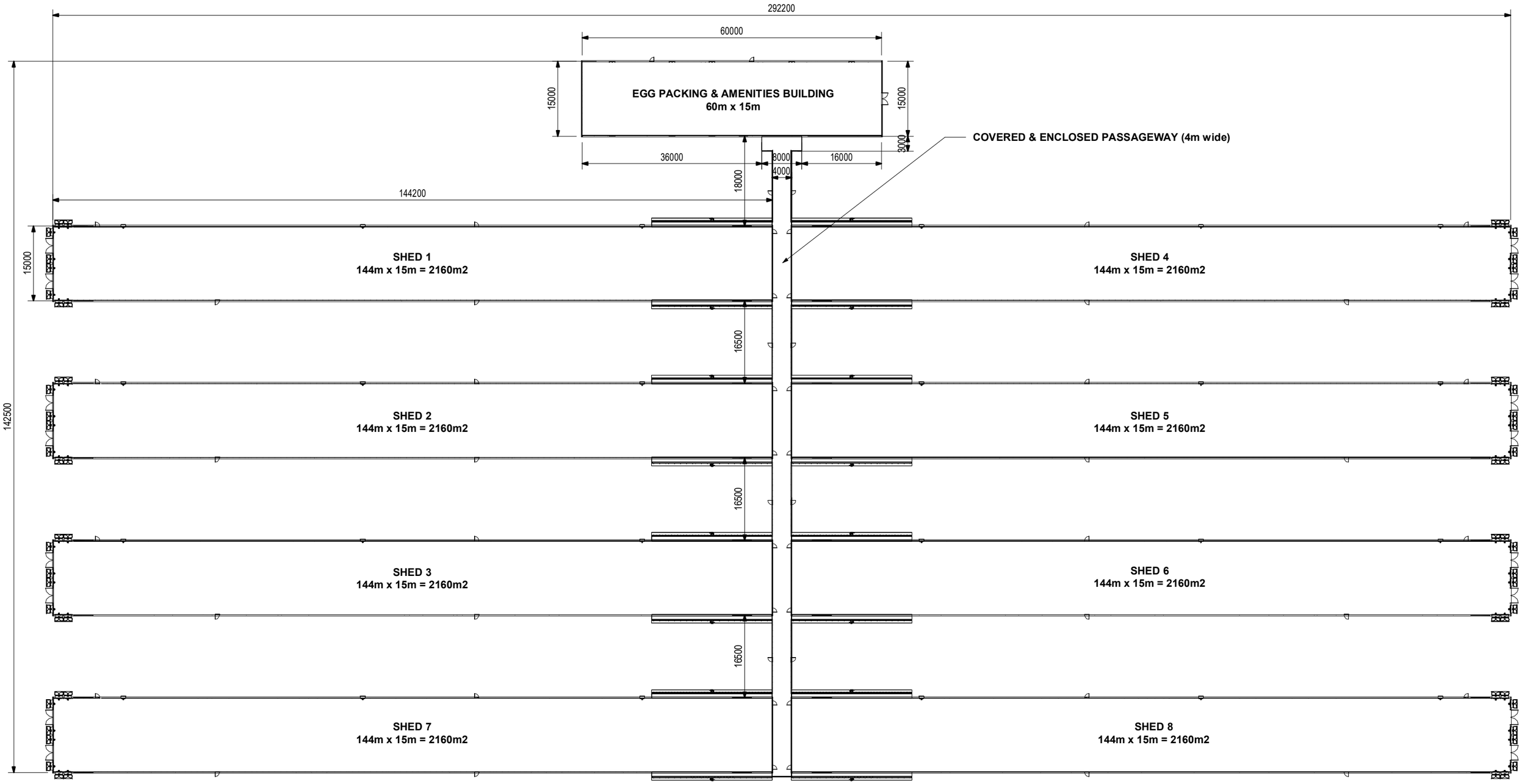
PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-04

SHEET NO.

REV: C

Breeder Farm Layout concept – 8 sheds



1 OVERALL SITE PLAN
1 : 750

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		B	09/25/23				
		C	10/20/23				

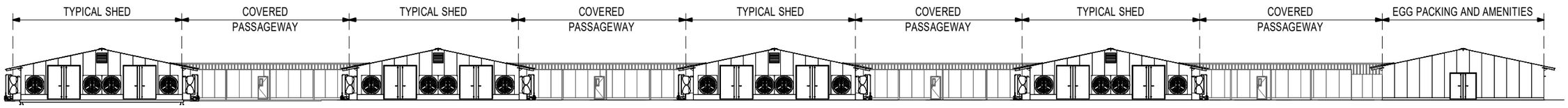
DEPARTMENT OF PLANNING, LANDS AND HERITAGE
DATE 29-Nov-2023 FILE DAP/21/01966

CLIENT: METROWEST

ENGINEER:
DRAWN BY:
CHECKED BY:
DATE:

PROJECT: Breeder Farm
DRAWING TITLE: A_Overall Site Plan

ALL DIMENSIONS IN MILLIMETRES U.O.N
SCALE: 1 : 750
PROJECT NO. PR0003
DRAWING NO. PR0003-DRG-10-05
SHEET NO.
REV: C



1 EAST ELEVATION

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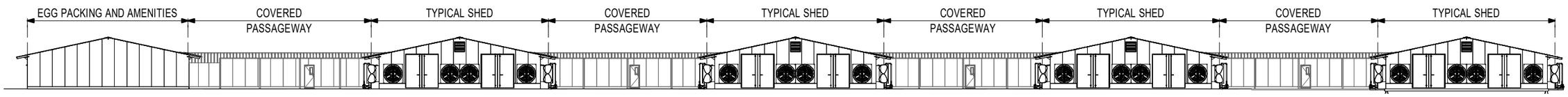

2 WEST ELEVATION

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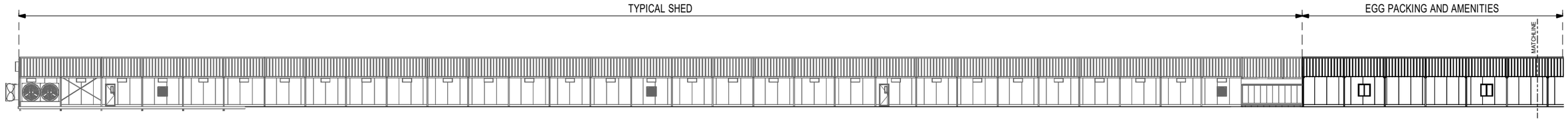

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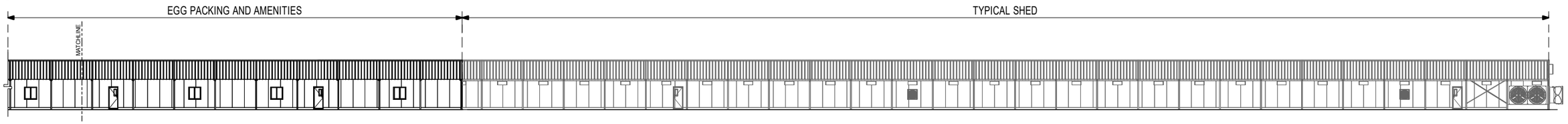

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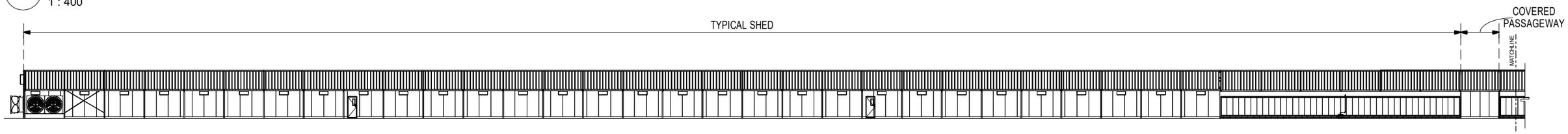

5 SOUTH ELEVATION (1 OF 2)

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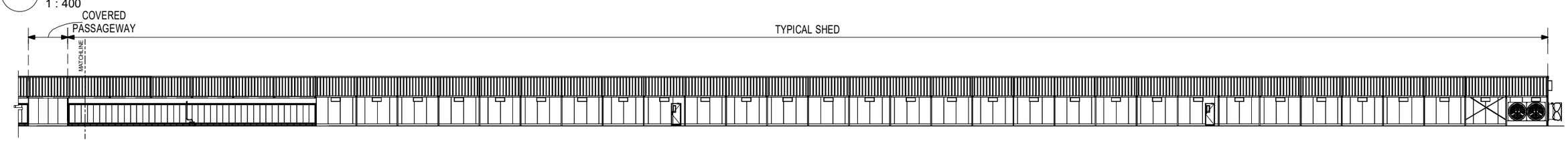

6 SOUTH ELEVATION (2 OF 2)

1 : 400

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		B	09/25/23				
		C	10/20/23				

DEPARTMENT OF PLANNING, LANDS AND HERITAGE
DATE 29-Nov-2023 FILE DAP/21/01966

CLIENT: METROWEST

ENGINEER:

PROJECT: Breeder Farm

DRAWN BY:

DRAWING TITLE: A_Overall Site Elevation

CHECKED BY:

DATE:

ALL DIMENSIONS IN MILLIMETRES U.O.N

SCALE: 1 : 400

PROJECT NO. PR0003

DRAWING NO. PR0003-DRG-10-06

SHEET NO.

REV: C

Government of **Western Australia**
Development Assessment Panels

LG Ref: PO47/2021
DAP Ref: DAP/21/01966
WAPC Ref: 616-245-1
Enquiries: (08) 6551 9919

Mr David Maiorana
Harley Dykstra Pty Ltd
PO Box 316, Kelmscott 6991

Dear Mr Maiorana

METRO OUTER JDAP - SHIRE OF MURRAY AND WESTERN AUSTRALIAN PLANNING COMMISSION (WAPC) - DAP APPLICATION - PO47/2021 - DETERMINATION

Property Location:	Lots 71, 72, 73 Corio Road, Ravenswood
Application Details:	Proposed Intensive Agriculture (Poultry farm)

Thank you for your Form 1 Development Assessment Panel (DAP) application and plans submitted to the Shire of Murray on 24 March 2021 for the above-mentioned development.

This application was considered by the Metro Outer JDAP at its meeting held on 29 July 2021, where in accordance with the provisions of the Shire of Murray Local Planning Scheme No.4 and the Metropolitan Region Scheme, it was resolved to **approve** the application as per the attached notice of determination.

Should the applicant not be satisfied by this decision, an application may be made to amend or cancel this planning approval in accordance with regulation 17 and 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

Please also be advised that there is a right of review by the State Administrative Tribunal in accordance with Part 14 of the *Planning and Development Act 2005*. Such an application must be made within 28 days of the determination, in accordance with the *State Administrative Tribunal Act 2004*.

Should you have any queries with respect to the conditions of approval, please contact Mr Greg Delahunty on behalf of the Shire of Murray on 9531 7642
or Mr Arran Sutherland on behalf of the WAPC on 6551 9730.

Yours sincerely,

DAP Secretariat

4 August 2021

Encl. DAP Determination Notice
Approved Plans

Cc: Mr Arran Sutherland and PSO Admin - Western Australian Planning Commission (WAPC)

Mr Greg Delahunty - Shire of Murray

Government of **Western Australia**
Development Assessment Panels

Planning and Development Act 2005

Shire of Murray Local Planning Scheme No.4 & Metropolitan Region Scheme

Metro Outer Joint Development Assessment Panel

Determination on Development Assessment Panel Application for Planning Approval

Property Location: Lots 71, 72, 73 Corio Road, Ravenswood
Application Details: Proposed Intensive Agriculture (Poultry farm)

In accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, the above application for planning approval was **granted** on 29 July 2021, subject to the following:

PART A – SHIRE OF MURRAY LOCAL PLANNING SCHEME NO.4

Approve DAP Application reference DAP/21/01966 and accompanying plans:

- Development Site Plan, 22533-01, 17 June 2021
- Section Plan, 22533-04, 15 June 2021
- Fill Requirements Pod 1, 22533-05, 17 June 2021
- Fill Requirements Pod 2, 22533-06, 17 June 2021
- Planview and Elevations, Sheet 1/9, 2 February 2021
- Elevation and Schedule and Detail, Sheet 2/9, February 2021
- Section and Detail, Sheet 3/9, February 2021
- Overview, Sheet 4/9, February 2021
- TYP Portal Detail, Sheet 5/9, February 2021
- TYP Post Detail, Sheet 6/9, February 2021
- TYP Beam Detail, Sheet 7/9, February 2021
- TYP Coolcell Beam Detail, Sheet 8/9, February 2021
- Drop Post and General Notes, Sheet 9/9, February 2021

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* and the provisions the Shire of Murray *Local Planning Scheme No. 4*, subject to the following conditions:

Conditions

1. This decision constitutes development approval only and is valid for a period of four (4) years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. Prior to applying for a Building Permit, detailed engineering plans and specifications are to be submitted to and approved by the Local Government for the vehicle access points from Corio Road. The vehicle access points include the crossover, first 20 metres of driveway within the lot and the portion of Corio Road adjacent to the crossover.

   The access points must be constructed in accordance with the approved plans prior to the occupation of the development.

3. Prior to applying for a Building Permit, arrangements must be made to the satisfaction of the Local Government for the amalgamation of lots 71, 72 and 73 Corio Road, Ravenswood into one Certificate of Title.

   The amalgamation must be completed prior to occupation of the development.

4. The finished floor level of each poultry shed is to be at least two metres higher than the maximum ground water level of the site.

5. Prior to applying for a Building Permit, a Landscaping Plan to the satisfaction of the Local Government must be prepared and must include the following detail:

   (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
   (ii) any lawns to be established and areas to be mulched;
   (iii) any natural landscape areas to be retained; and
   (iv) those areas to be reticulated or irrigated.

   The landscaping plan must be implemented in accordance with the approved landscape plan prior to the occupation of the development, and must be maintained at all times to the satisfaction of the Local Government for the duration of the development.

6. Prior to applying for a Building Permit, a Waste Management Plan must be submitted and include the following detail to the satisfaction of the Local Government:

   (i) the location of waste storage areas and waste collection areas;
   (ii) Sealed concrete floor pads to the poultry sheds and wash down water that is directed to a treatment system;
   (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
   (iii) management of the waste storage areas, including cleaning, rotation and moving waste to and from the collection areas;
   (iv) procedures for dealing with dead animals;
   (v) location for off-site waste disposal;
   (iv) contingencies actions in the event of a contamination event; and
   (iv) frequency of waste collection.

   All works must be carried out in accordance with the approved Waste Management Plan and maintained at all times, for the duration of development.

7. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the Local Government for its approval.

   The approved plans must be implemented and all works must be maintained for the duration of the development.

8. The carpark must:
   (i) provide a minimum of seven (7) spaces designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to applying for a Building Permit;
   (ii) include one (1) car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
   (iii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and
   (iv) comply with the above requirements for the duration of the development.

9. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures must be implemented within the time and in the manner directed by the Local Government in the event that sand or dust is blown from the site.

10. Prior to the occupation of the development the owner responsibilities identified in section 5.1 of the Bushfire Management Plan prepared by Envision Bushfire Protection dated February 2021 are to be implemented to the satisfaction of the Local Government. Compliance with the requirements of this Bushfire Management Plan are required for the duration of the development.

11. The Management Strategies contained within the Environmental Assessment and Management Plan - Lots 71, 72 & 73 Corio Road, Ravenswood, prepared by Aurora Environmental dated 17 March 2021, are to be implemented to the satisfaction of the Local Government for the duration of the development.

Advice Notes

1. With regard to the proposed vehicle access points, the Corio Road pavement will be required to be upgraded and sealed to accommodate the turning movements of the proposed service vehicles and the crossover and first 20 metres inside the lot constructed to a sealed standard.

2. The applicant is advised to contact Dial Before You Dig on 1100, or APA directly on APAprotection@apa.com.au prior to undertaking any physical works on property containing or proximate to a pipeline.

3. The applicant is to advised that the proposal is located within the Peel-Harvey coastal plain catchment and the provision of the Environmental Protection (Peel Inlet– Harvey Estuary) Policy 1992 and the Statement of Planning Policy No 2.1, Peel- Harvey Coastal Plain Catchment (SPP 2.1) apply.

4. The proposed activity shall comply with the Environmental Code of Practice for Poultry Farms in Western Australia (Department of Environment, 2004) and Code of Practice for Poultry in Western Australia (Department of Agriculture and Department of Local Government and Regional Development, 2003).

   This includes, but not limited to:
   - shed location, design and construction including sealed concrete pads,
   - management of waste, litter and manure,
   - wash down water directed to treatment system,
   - storage and handling of toxic and hazardous substances, and
   - monitoring and reporting.

5. Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).

   Proposed clearing outside of the ESA for the buildings is likely to be exempt under Regulation 5, Item 1, however should any clearing be required for the buildings located within the mapped ESA, a clearing permit would be required.

6. The subject area is located in the Murray groundwater area (Nambeelup subarea) as proclaimed under the Rights in Water and Irrigation Act 1914. Any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department including water to irrigate paddocks.

7. The applicant is advised to assess and mitigate potential accidental pesticide spray drift from the vegetable farm immediately south of the proposed sheds.

8. The proposal is required to comply with Australian Standard 4465: 2006 – Australian Standard for Construction of Premises and Hygienic Production of Poultry Meat for Human Consumption.

   The proponents are required to: provide a scale drawing of the premises showing all fittings, amenities and surrounds; to be audited by the Department of Health for compliance with AS 4465: 2006; and ensure parties responsible for managing the Food Safety Plan are trained in HACCP procedures.

9. The applicant is advised that the Department of Health is to conduct a building assessment prior to commencement of production.

10. No works within the Parmelia Pipeline easement are to be commenced without an APA Group representative onsite.

11. No stockpiles or storage of material is permitted on the Parmelia Pipeline easement at any time.

12. All plans which include the area of the Parmelia Pipeline easement should have the pipeline easement clearly identified with hatching. The area must also be clearly labelled as 'high pressure gas pipeline right of way – no works to occur without the prior authorisation of the pipeline operator'.

PART B – METROPOLITAN REGION SCHEME

1. **Approve** DAP Application reference DAP/21/01966 and accompanying modified plans date stamped **17 June 2021** by the Department of Planning, Lands and Heritage (22533-02, rev D; 22533-01, rev F; 22533-04, rev B; 22533-03, rev A; 22533-05, rev B and 22533-06, rev A) in accordance the provisions of Clause 21 of the Peel Region Scheme subject to the following conditions:

Conditions

1. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. All stormwater is to be contained and disposed of on-site at all times, to the specification of the Shire of Murray and to the satisfaction of the Western Australian Planning Commission.

3. All recommendations and implementation measures identified in section 6 of the bushfire management plan (version 2, prepared by Envision Bushfire Protection, dated 27 February 2021) shall be satisfactorily implemented prior to the occupation of the development, and for the ongoing duration of the development, to the specification of the Shire of Murray and to the satisfaction of the Western Australian Planning Commission.

Advice Notes

1. This decision constitutes development approval under the Peel Region Scheme only. It is the proponent's responsibility to comply with all other applicable legislation and obtain all required approvals, licences and permits prior to commencement of this development.

2. The Western Australian Planning Commission acknowledges that the development is proposed over multiple lots. In this regard, the landowner/applicant is advised that an application for subdivision approval will be required to be lodged to the Western Australian Planning Commission under Part 10 of the *Planning and Development Act 2005* for approval to amalgamate the subject lots into a single lot prior to the commencement of development.

3. In relation the Parmelia Pipeline easement, APA Group advises the landowner/applicant of the following:
   - no works shall occur on the easement area without prior authorisation and require an APA representative onsite; and
   - no stockpiles or storage of material is to be stored within the easement area.

4. The land is located within the Murray groundwater area (Nambeelup subarea) as proclaimed under the *Rights in Water and Irrigation Act 1914*. The Department of Water and Environmental Regulation advises the landowner/applicant of the following:
   - any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department of Water and Environmental Regulation including water to irrigate paddocks;
   - the groundwater resource is fully allocated. If additional water resources are required, a source may be secured through either a water trade agreement from another groundwater user in the area, or an alternative water source.

   The landowner/applicant is advised to liaise with the Department of Water and Environmental Regulation in this respect.

Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) or local government approval under regulation 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

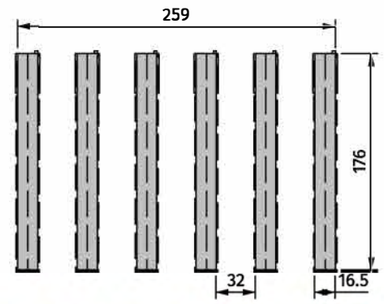
LEGEND

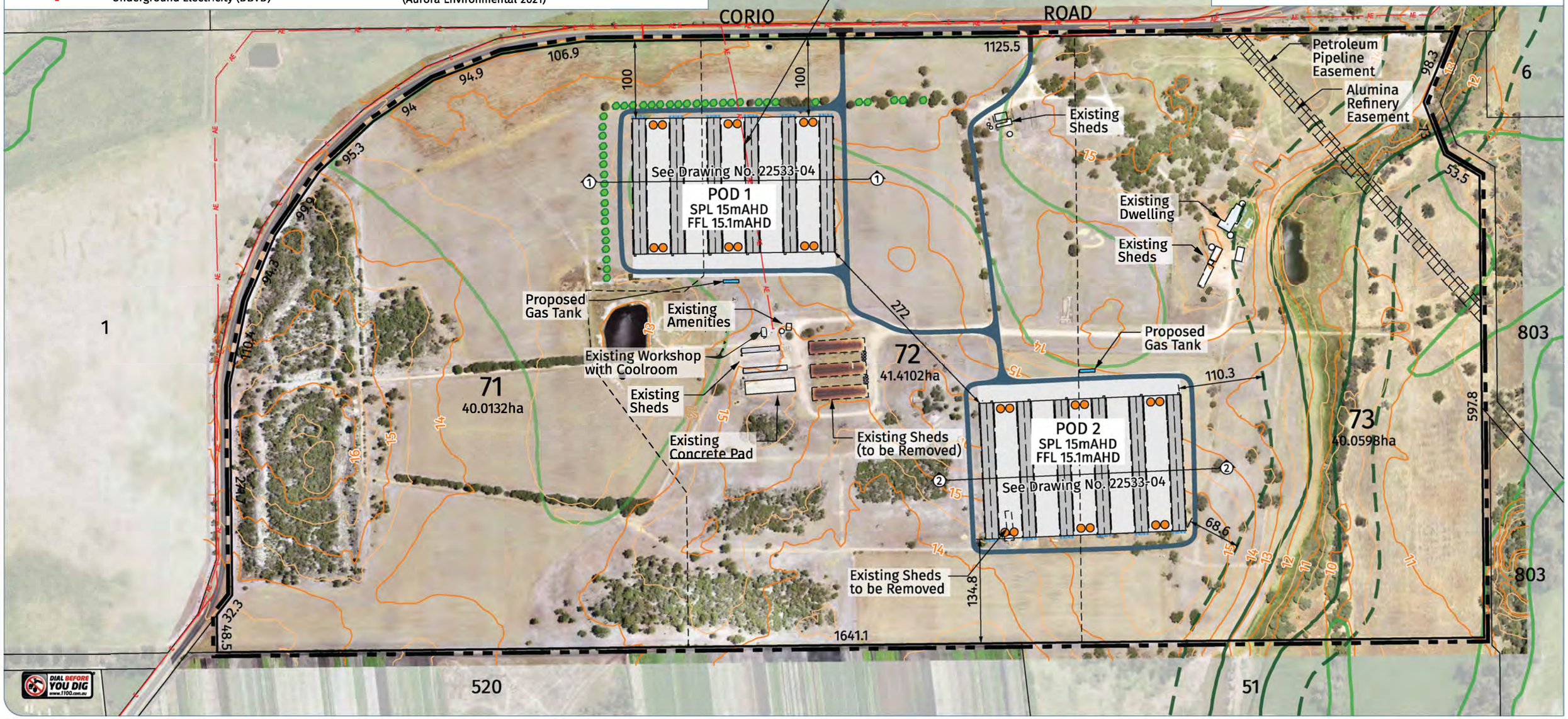
- Subject Land (121.4832ha)
- Existing Easements
- Existing Structures
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland
- Indicative Resource Enhancement Wetland buffer (30m)
- AE — Overhead Electricity (DBYD)
- E — Underground Electricity (DBYD)
- Proposed Poultry Sheds
- Proposed Silos
- Vegetation screening in accordance with requirements of the Bushfire Management Plan
- Ventilation Fans
- 6m Access Driveway (Compacted road base)
- Bitumen sealed crossover

Notes:
1. Existing lots to be amalgamated prior to commencement of use.
2. Maximum ground water level 13m AHD (Aurora Environmental 2021)

DEVELOPMENT ASSESSMENT PANEL
APPROVED
29-Jul-2021

POD LAYOUT





DEVELOPMENT SITE PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-01
Date	17/06/21
Drawn	NP
Checked	BdR
Revision	F
Scale	1:5000@A3

0 50m 100m 150m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

PERTH & FORRESTDALE:
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PERTH WA 6000
15/2 Hensbrook Loop,
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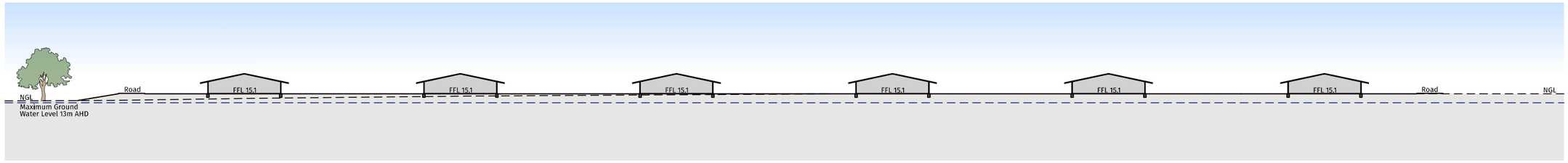
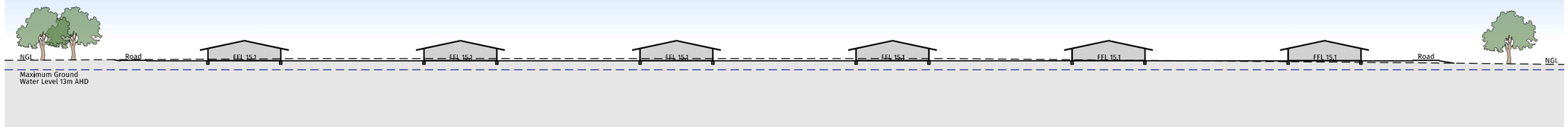
DEVELOPMENT
ASSESSMENT PANEL

APPROVED

29-Jul-2021



SECTION 1: POD 1



SECTION 2: POD 2

SECTION PLAN

Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No. | 22533-04
Date | 15/06/21
Drawn | NP
Checked | DM
Revision | B

Scale | 1:1000@A3

0 10m 20m 30m

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15/2 Hensbrook Loop,
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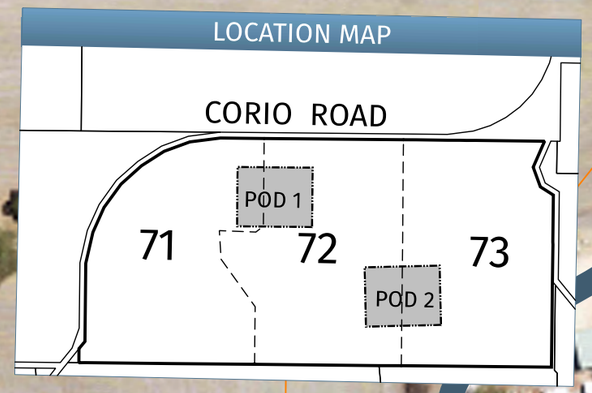
PLANNING & SURVEY SOLUTIONS

DEVELOPMENT
ASSESSMENT PANEL
APPROVED
29-Jul-2021

LOCATION MAP



71
40.0132ha

POD 1
SPL 15mAHD
FFL 15.1mAHD

72
41.4102ha

LEGEND

Cut/Fill Extent
Cut or Fill Required (1.0m AHD):

+1.5m to +2.0m Fill
+1.0m to +1.5m Fill
+0.5m to +1.0m Fill
0 to +0.5m Fill
0 to -0.5m Cut
-0.5m to -1.0m Cut
-1.0m to -1.5m Cut

DEVELOPMENT SITE PLAN
FILL REQUIREMENTS - POD 1
Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-05	
Date	17/06/21	
Drawn	NP	
Checked	DM	
Revision	B	
Scale	1:1500@A3	0 20m 40m

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
T: 08 9495 1947
E: metro@harleydykstra.com.au
ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

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DEVELOPMENT ASSESSMENT PANEL

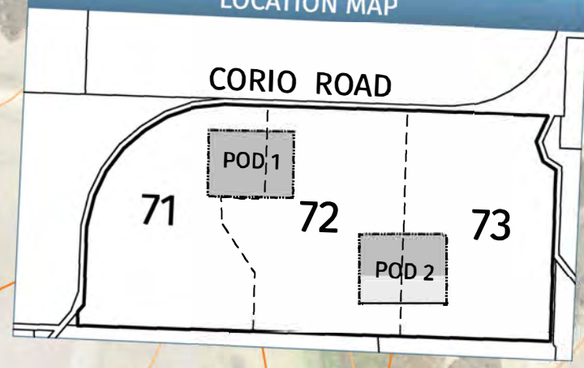
APPROVED

29-Jul-2021

72
41.4102ha

73
40.0598ha

LOCATION MAP



LEGEND

Cut/Fill Extent

Cut or Fill Required (15.0mAHD):

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+1.0m to +1.5m Fill

+0.5m to +1.0m Fill

0 to +0.5m Fill

0 to -0.5m Cut

-0.5m to -1.0m Cut

-1.0m to -1.5m Cut

DEVELOPMENT SITE PLAN
FILL REQUIREMENTS - POD 2
Lots 71, 72 & 73 (No. 511) Corio Road, RAVENSWOOD

Plan No.	22533-06
Date	01/06/21
Drawn	NP
Checked	DM
Revision	A
Scale	1:1500@A3

0 20m 40m

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DEVELOPMENT ASSESSMENT PANEL
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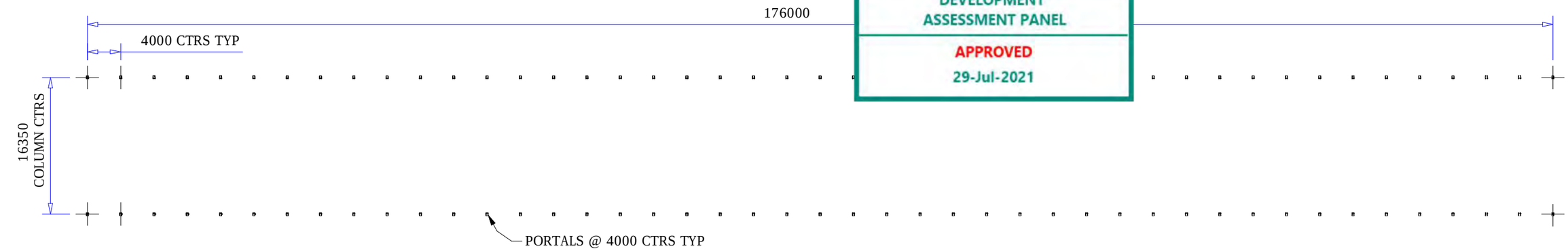
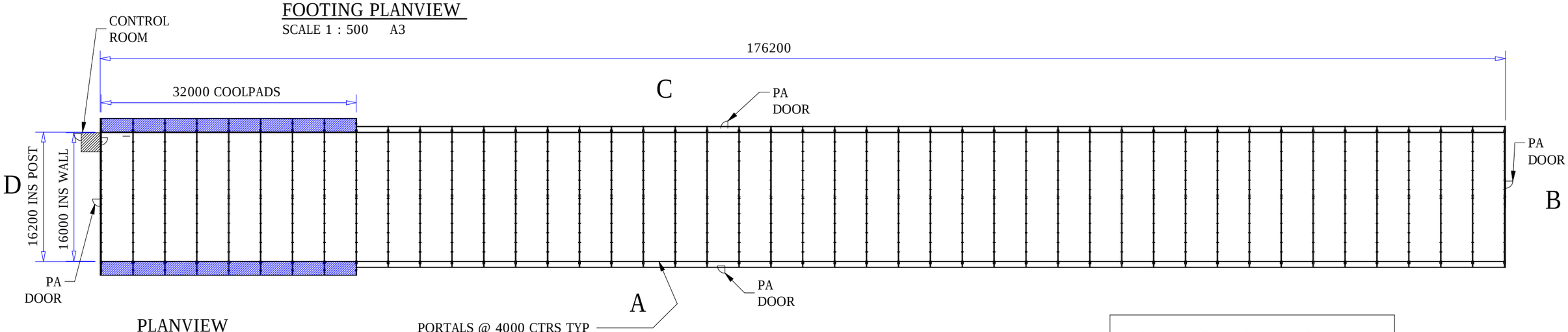
29-Jul-2021

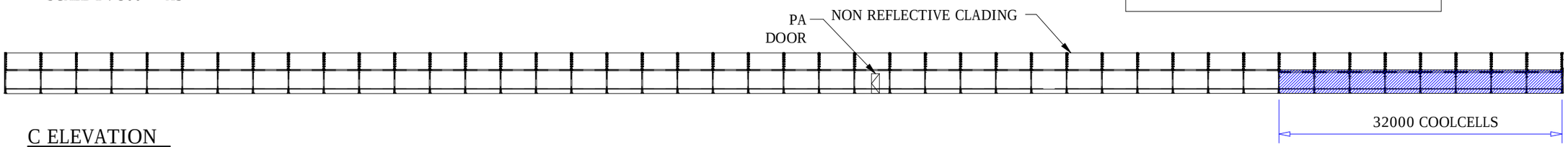


FOOTING PLANVIEW
SCALE 1 : 500 A3

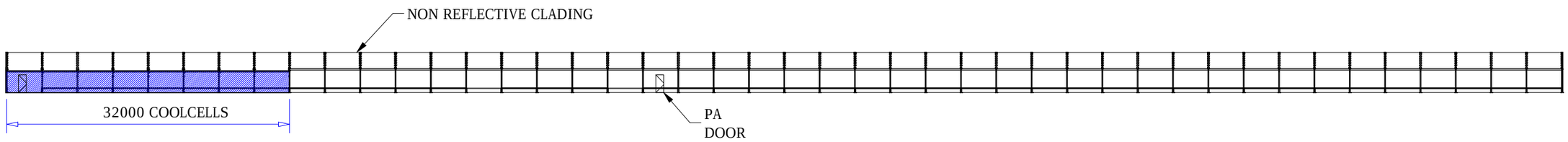


PLANVIEW
SCALE 1 : 500 A3

Walls Are 50mm Sandwich Pannel



C ELEVATION
SCALE 1 : 500 A3



A ELEVATION
SCALE 1 : 500 A3

NOTE :
PA DOORS TO BE OPENED OUTWARD WITH A SINGLE HANDED DOWNWARD LEAVER ACTION
HANDLE TO BE BETWEEN 900 AND 1100 MM ABOVE FFL

DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date	Date	
T Belardo				2/02/2021	AS NOTED A3

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Glenning Valley
NSW 2261
PH 0404 489 573

SITE ADDRESS: [illegible]

PLANVIEW □ ELEVATIONS

Edition

Sheet 1 / 9

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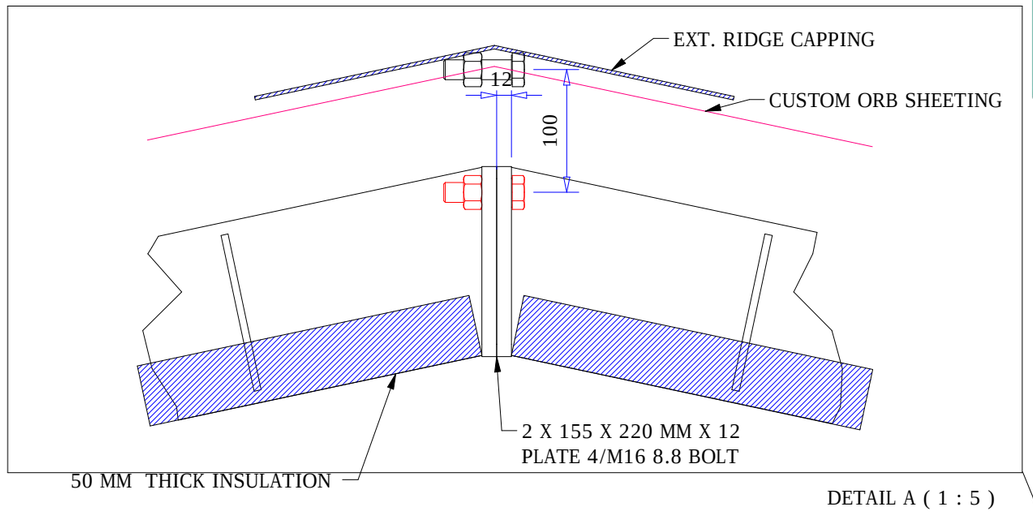
DEVELOPMENT ASSESSMENT PANEL

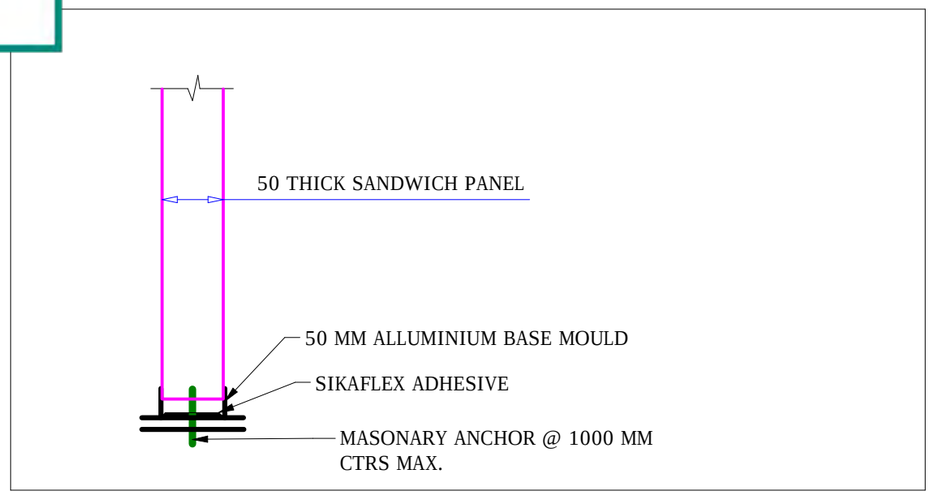
APPROVED

29-Jul-2021



DETAIL A (1 : 5)

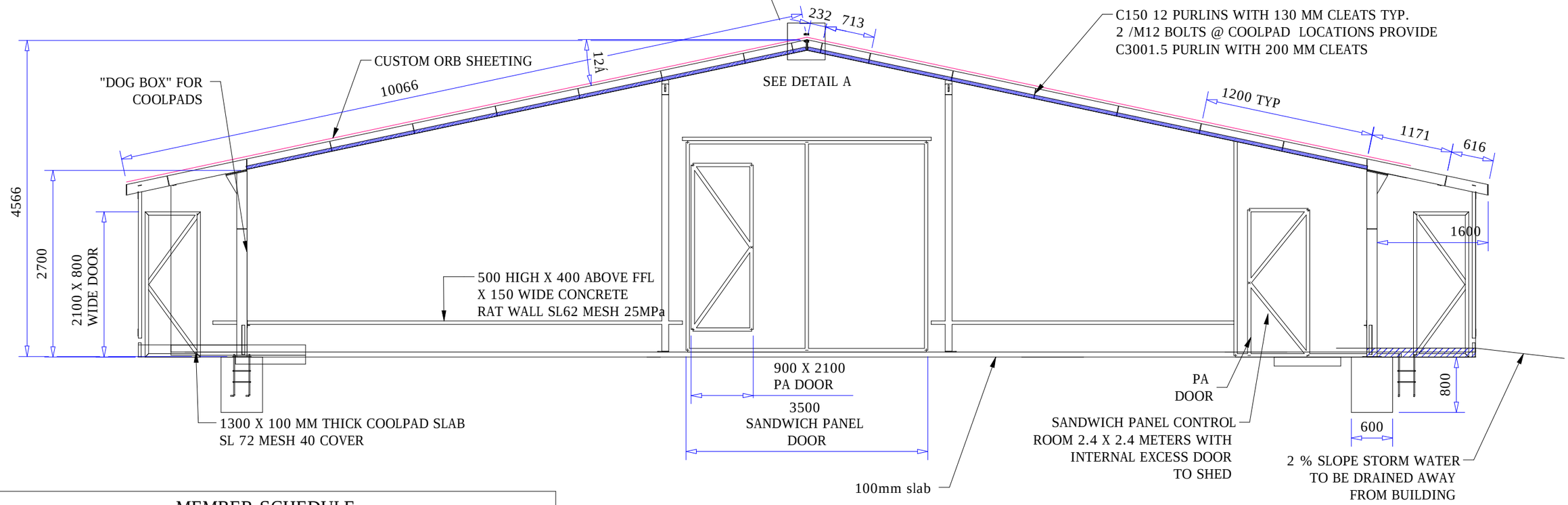
SANDWICH PANEL TO CONCRETE DETAIL



SCALE 1 : 5 A3

D ELEVATION

SCALE 1 : 50 A3



MEMBER SCHEDULE		
MARK	SIZE	REMARKS
COLUMNS	150 X 100 X 4	GRADE 450
RAFTERS	150 X 100 X 4	GRADE450
ROOF PURLINS	C15012	GALVANISED
PURLINS @ EAVES	C20015	GALVANISED
GIRT G1 @ WALL	C15012	GALVANISED
GIRT G2 @ WALL	100 50 X 2 MM RHS	GALVANISED

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ELEVATION □ SCHEDULE □ DETAIL

Edition

Sheet 2 / 9

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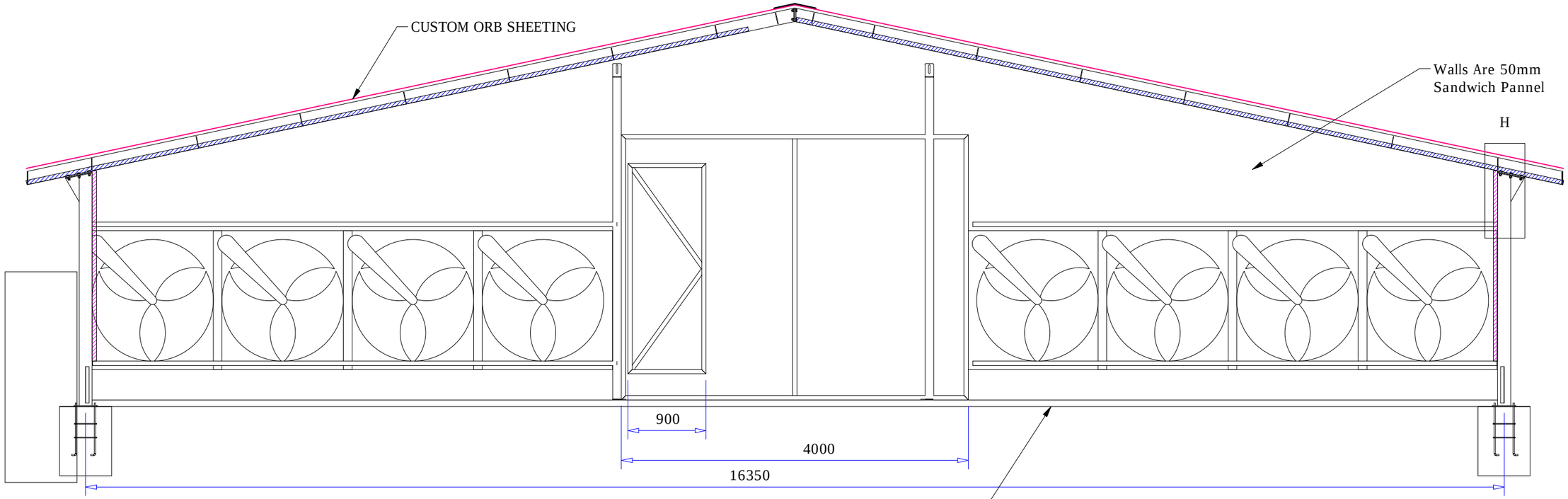
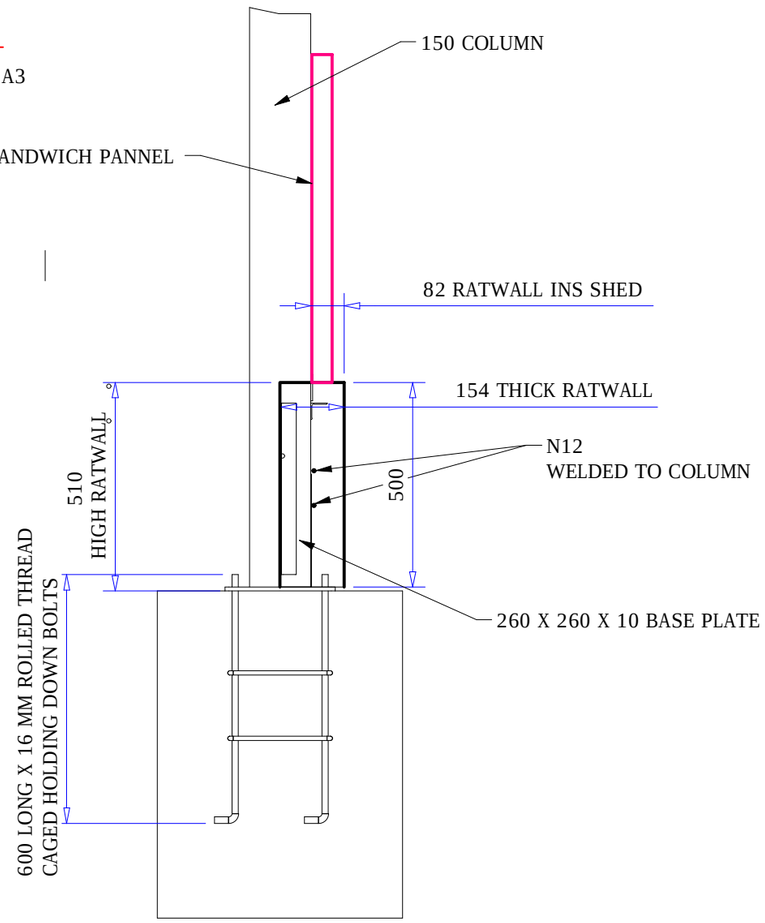
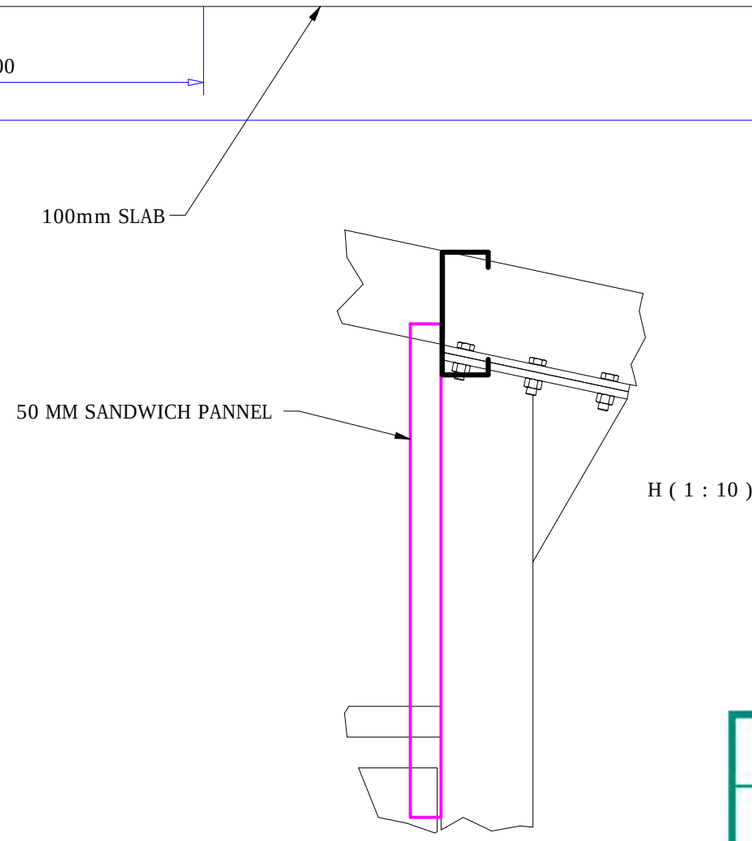


B ELEVATION

SCALE 1: 50 A3



FOOTING DETAIL E (1 : 15) A3



H (1 : 10)

DEVELOPMENT ASSESSMENT PANEL
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29-Jul-2021

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Designed by	Checked by	Approved by	Date		Date	
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Glenning Valley
NSW 2261
PH 0404 489 573

SITE ADDRESS: □□r□□□□□□ □□ □□□□
L□□□□□□ □r□□□d□□ □□□□□□ □□d□ □

SECTION □ DETAIL

Edition

Sheet 3 / 9

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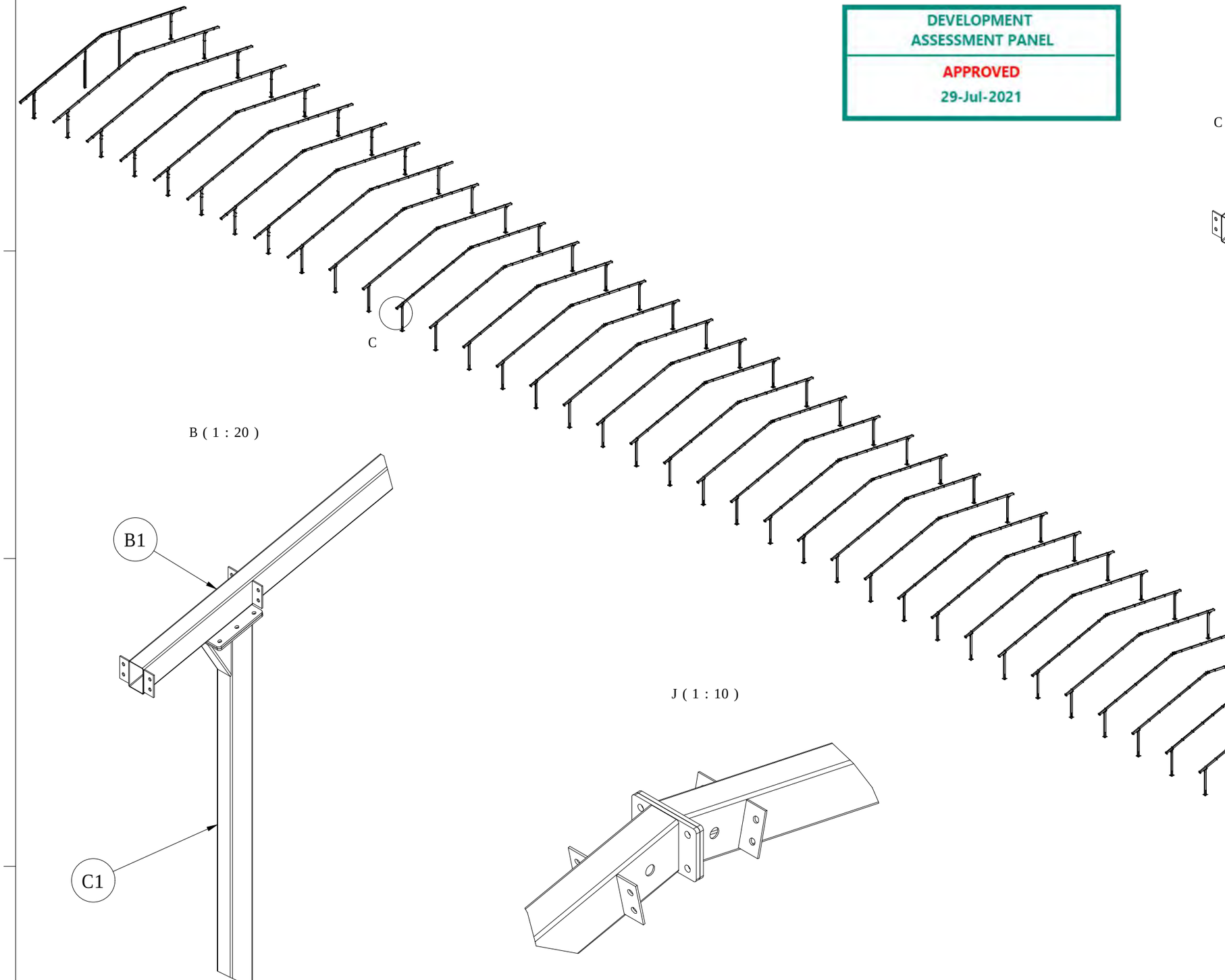
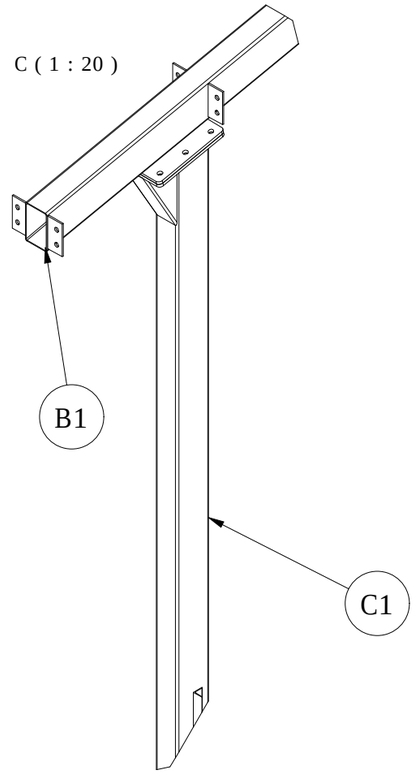
DEVELOPMENT
ASSESSMENT PANEL

APPROVED

29-Jul-2021

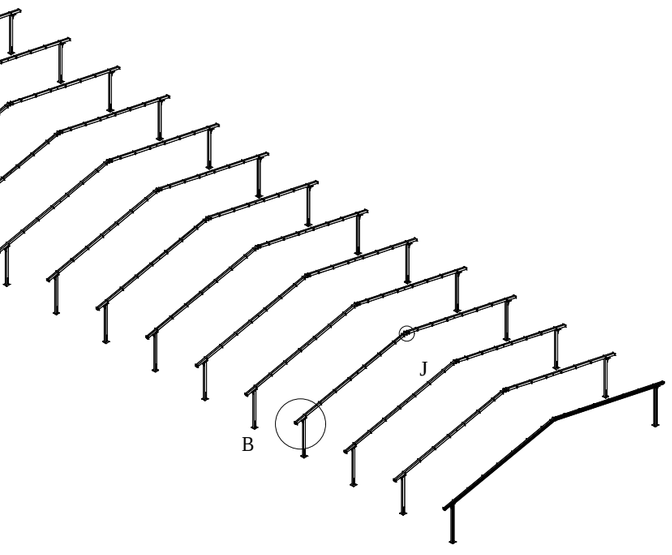


C (1 : 20)



B (1 : 20)

J (1 : 10)



ALL STEELWORK TO BE PAINTED

DO NOT SCALE
ALL DIMENSIONS IN MM

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R&DG SANDAY
40 Glenning Rd
Glenning Valley
NSW 2261
PH 0404 489 573

SITE ADDRESS: □□r□□□□□□ □□ □□□□
L□□□□□□ □r□□□d□□ □□□□□□ □□d□ □

OVERVIEW

Edition

Sheet 4 / 9

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DEVELOPMENT
ASSESSMENT PANEL

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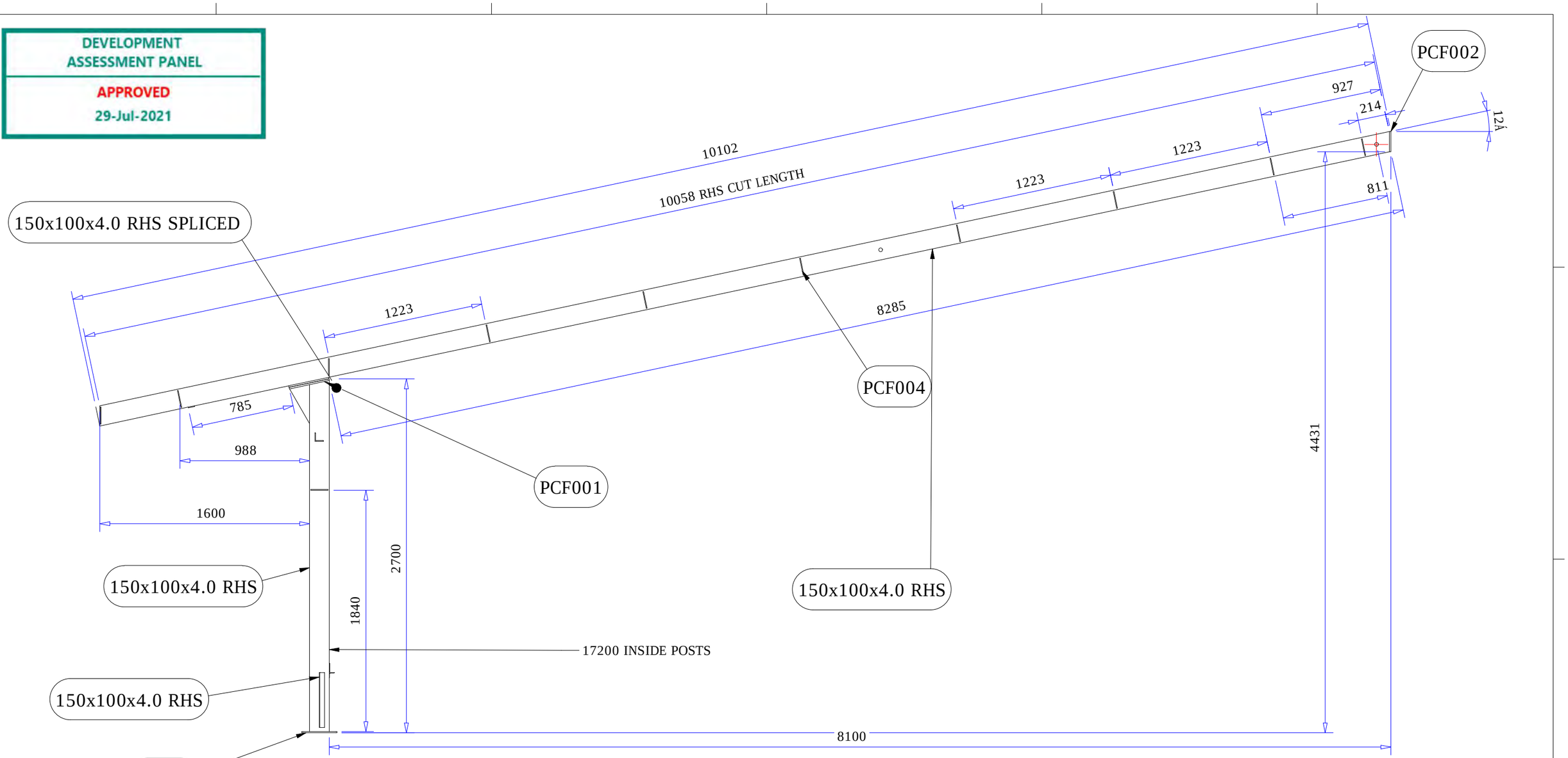
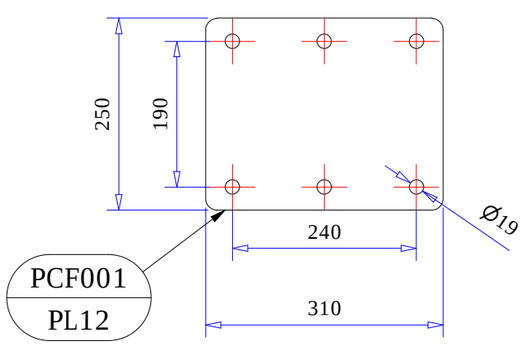
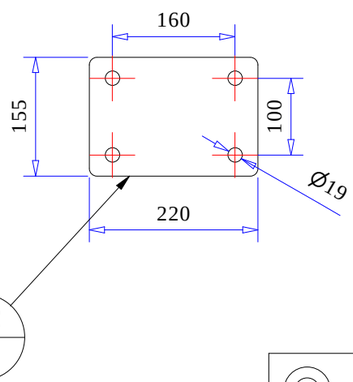
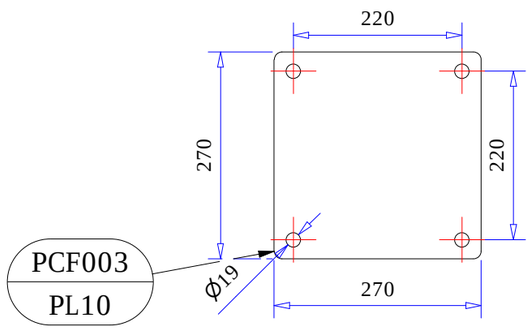
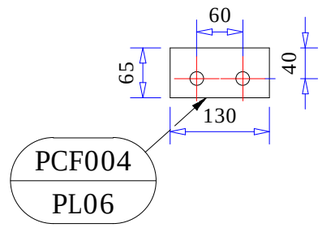
29-Jul-2021

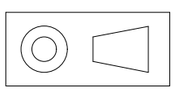












DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date		Date	
T Belardo					2/02/2021	AS NOTED A3

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Glenning Valley
NSW 2261
PH 0404 489 573

SITE ADDRESS: [illegible]

TYP. PORTAL DETAIL

Edition

Sheet 5 / 9

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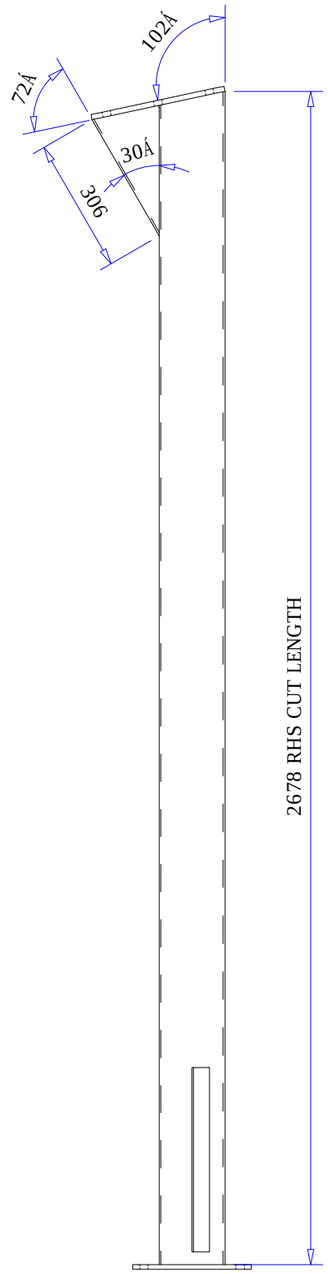

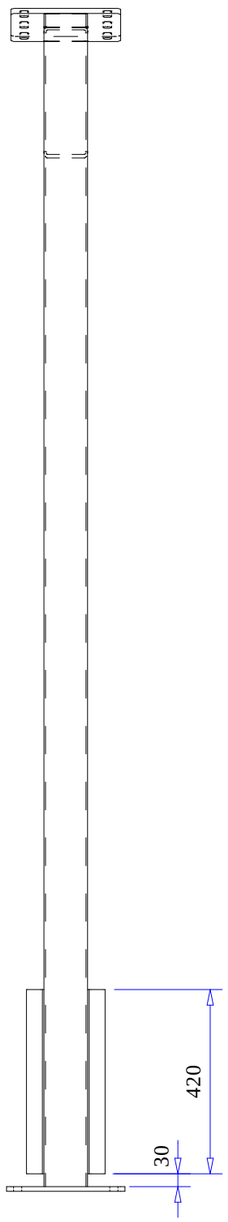

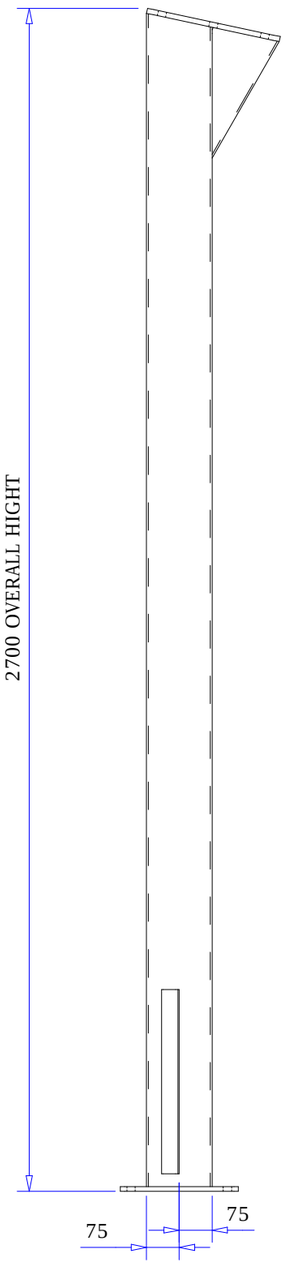

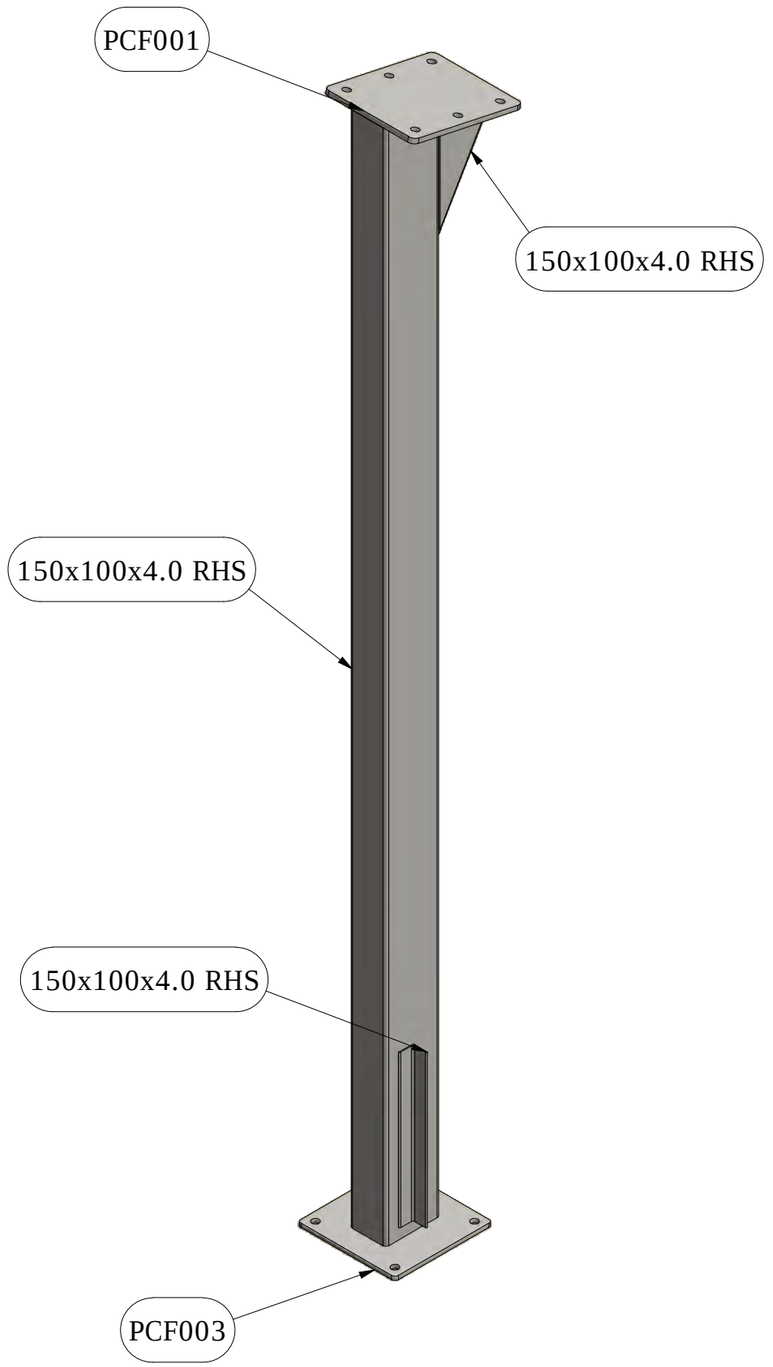

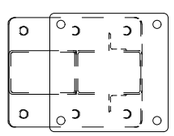

DEVELOPMENT ASSESSMENT PANEL

APPROVED

29-Jul-2021

DO NOT SCALE
ALL DIMENSIONS IN MM

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SITE ADDRESS: [illegible]

TYP POST DETAIL

Edition

Sheet 6 / 9

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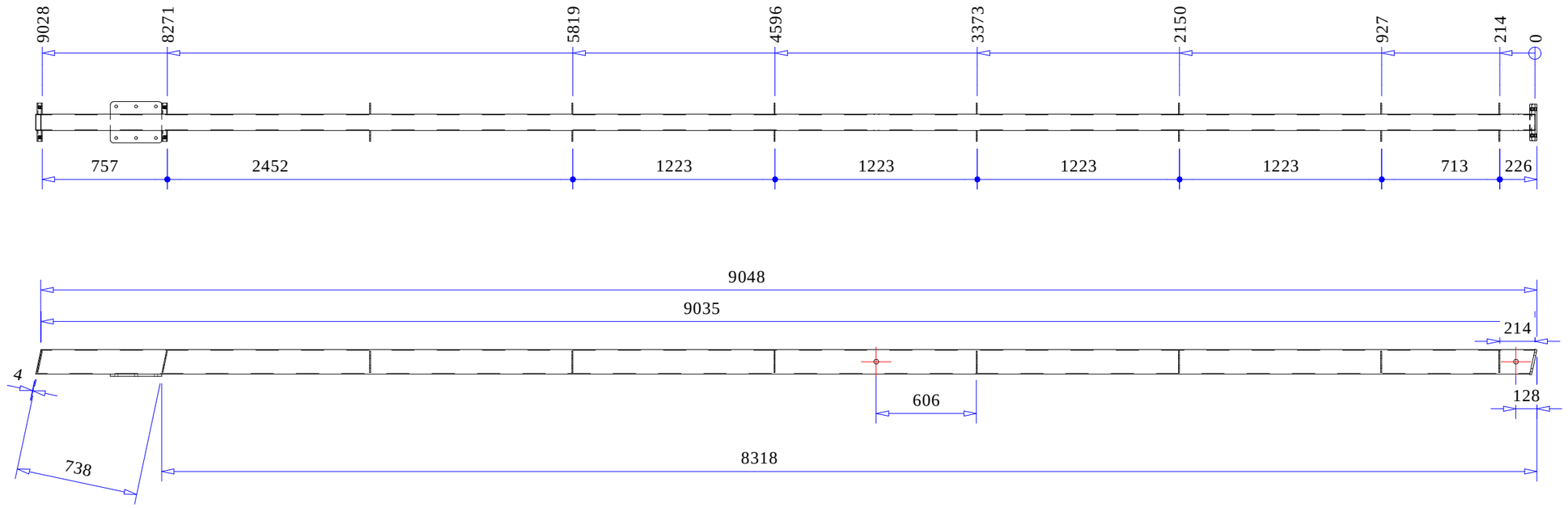

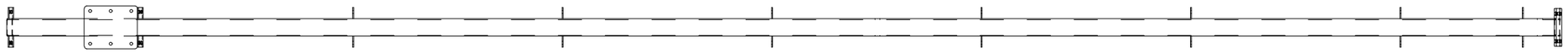

DEVELOPMENT
ASSESSMENT PANEL
APPROVED
29-Jul-2021

DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date		Date	
T Belardo					2/02/2021	AS NOTED A3

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SITE ADDRESS:
[illegible]

TYP BEAM DETAIL

Edition

Sheet 7 / 9

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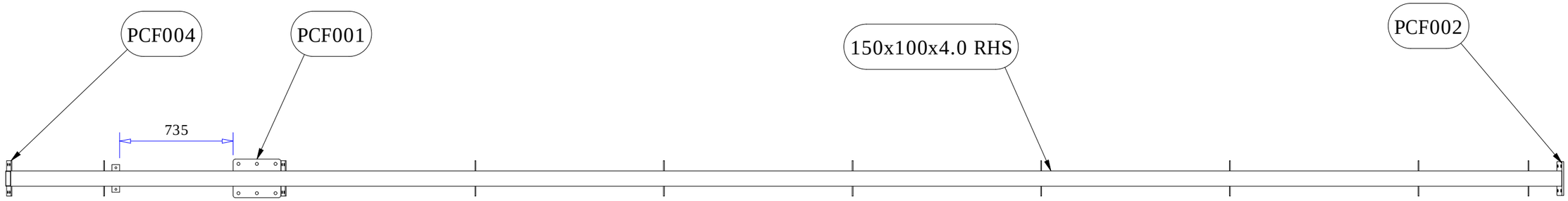
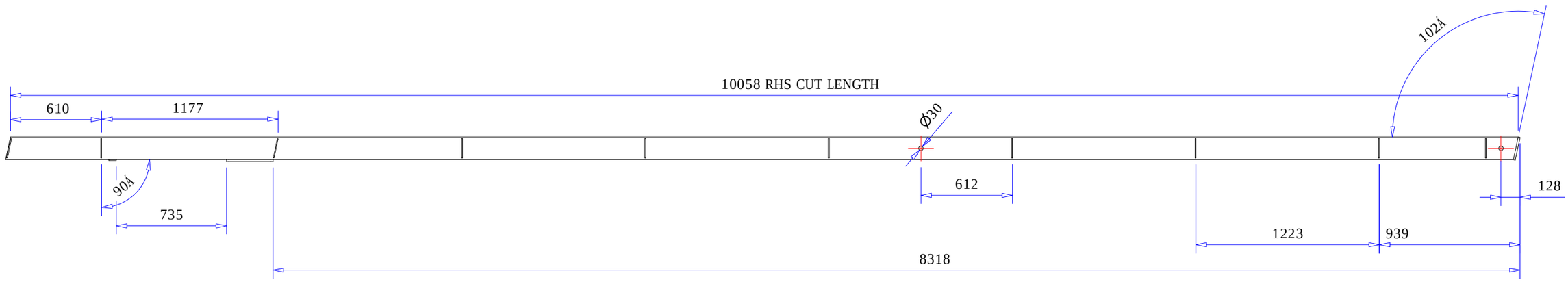
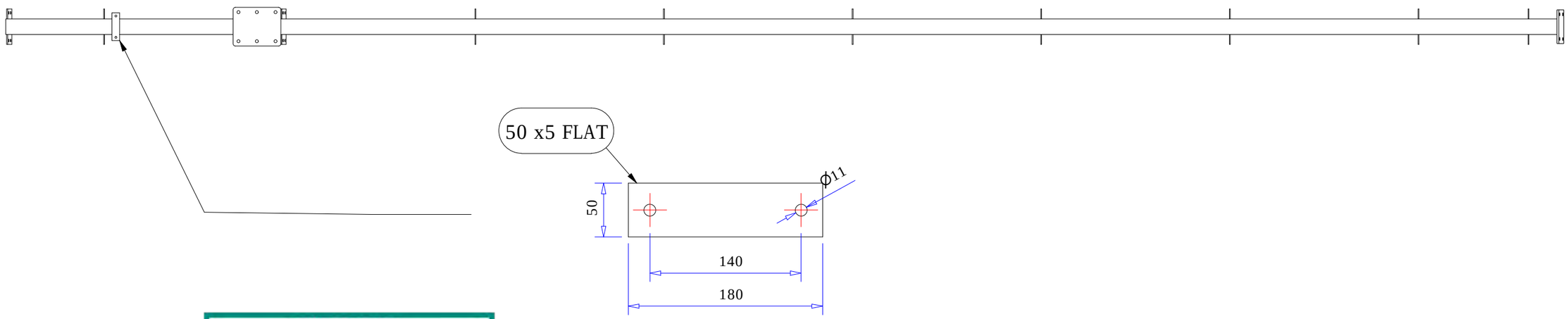
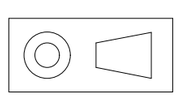






DEVELOPMENT ASSESSMENT PANEL
APPROVED
29-Jul-2021



DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date		Date	
T Belardo					2/02/2021	AS NOTED A3

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SITE ADDRESS: [illegible]

TYP COOLCELL BEAM DETAIL

Edition

Sheet 8 / 9

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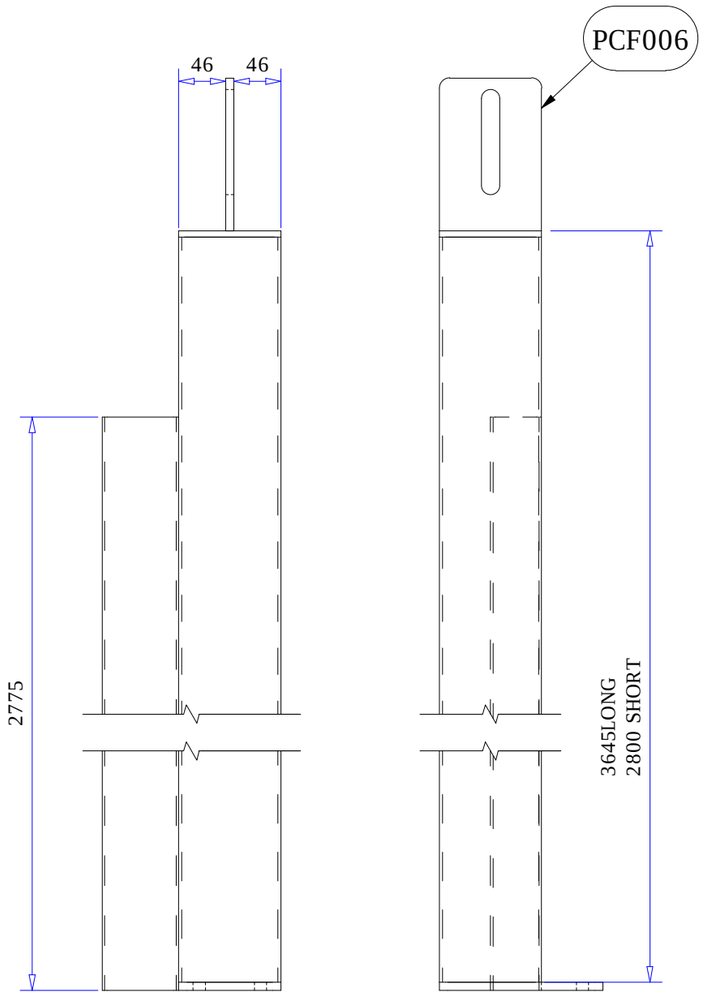
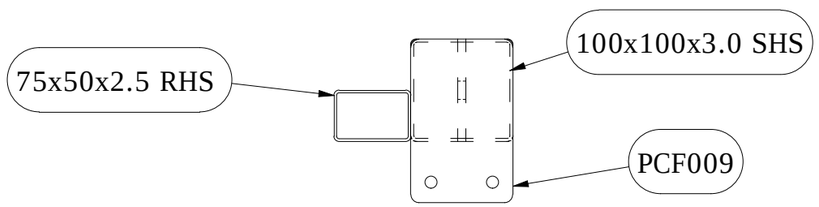
DROP POST DETAIL





Galvanized material to be used were available and cold gal paint to be used on all welds and non galvanized parts

DEVELOPMENT ASSESSMENT PANEL
APPROVED
29-Jul-2021

BRIEF SPECIFICATIONS GENERAL SLAB AND FOOTING REQUIREMENTS:

1. TOP SOIL AND VEGETATION SHALL BE STRIPPED FROM SITE TO A MINIMUM DEPTH OF 100mm.
2. PRIOR TO THE PLACEMENT TO ANY CONTROLLED FILL, THE EXPOSED SUB GRADE SHALL BE COMPACTED TO A MINIMUM 95 % RELATIVE DENSITY.
3. ALL ORGANIC MATTER AND SOFT AREAS SHALL BE REMOVED AND REPLACED WITH GRANULAR MATERIAL. ALL FILLING SHALL BE CLEAR GRANULAR MATERIAL PLACED IN MAXIMUM 150mm COMPACTED LAYERS AND COMPACTED BY WATERING AND USE OF VIBRATING ROLLER OR COMPACTOR TO ACHIEVE CONTROLLED FILL
4. AS PER AS2870. FILL SHALL BE COMPACTED TO MINIMUM AS1289.1.1 (1993), OR WHEN TESTED PASS THE REQUIRED MIN. 100kPa BEARING CAPACITY FOR THE FOOTING.
5. GROUND SURFACES AROUND THE POLTRY SHED TO BE GRADED SO THAT NO WATER PONDS AROUND THE FOOTINGS. PROVIDE 100mm FALL OVER THE FIRST 1000mm FROM THE BUILDINGS. THE BUILDER IS TO DETERMINE THE PRESENCE OF ANY ADDITIONAL FILLED AREAS, WHICH WOULD NECESSITATE THE USE OF MODIFIED FOOTINGS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE TO BE OBTAINED FROM THE ARCHITECTS DRAWINGS OR FROM SITE. ENGINEERS DRAWINGS MUST NOT BE SCALED.
2. THE APPROVAL OF A SUBSTITUTION BY THE ENGINEER IS NOT AN AUTHORIZATION FOR AN EXTRA. ANY EXTRA INVOLVED MUST BE TAKEN UP WITH THE ARCHITECT BEFORE WORK COMMENCES.
3. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.

STRUCTURAL STEEL

1. ALL STEELWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AS4100, SAA STEEL STRUCTURES CODE.
2. WELDS TO BE 6mm CONTINUOUS FILLET LAID DOWN WITH APPROVED COVERED ELECTRODE IN ACCORDANCE WITH AS1554 -WELDING CODE. BOLTS 16 mm DIA, BLACK IN 19 mm CLEARANCE
3. HOLES, GUSSET PLATES 10mm THICK UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS NOMINATED 'HS' TO BE SNUG TIGHTENED ONLY UNLESS NOTED.

DO NOT SCALE
ALL DIMENSIONS IN MM

Designed by	Checked by	Approved by	Date		Date	
T Belardo					2/02/2021	AS NOTED A3

R&DG SANDAY
40 Glenning Rd
Glenning Valley
NSW 2261
PH 0404 489 573

SITE ADDRESS: □□r□□□□□□□ □□ □□□□
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DROP POST □ GENERAL NOTES | Edition | Sheet 9 / 9

C:\Users\Steve\Desktop\Fairglenn\Workspace\R&DG Sanday\16m Fairglenn Manilla\Drawing Files\17m Sheds Plan Drawing Fairglenn Manilla.idw

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Legend

Application Area

Notes:

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* This map is not intended to be used for measurement purposes.

Map was produced using DPLH's InQuiry.

Attachment 3 - Aerial View, Lots 71, 72 and 73 Corio Road, Ravenswood

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N

0 0.22 0.43 Kilometres

1: 10,000 at A3

Projection: WGS 1984 Web Mercator Auxiliary Sphere

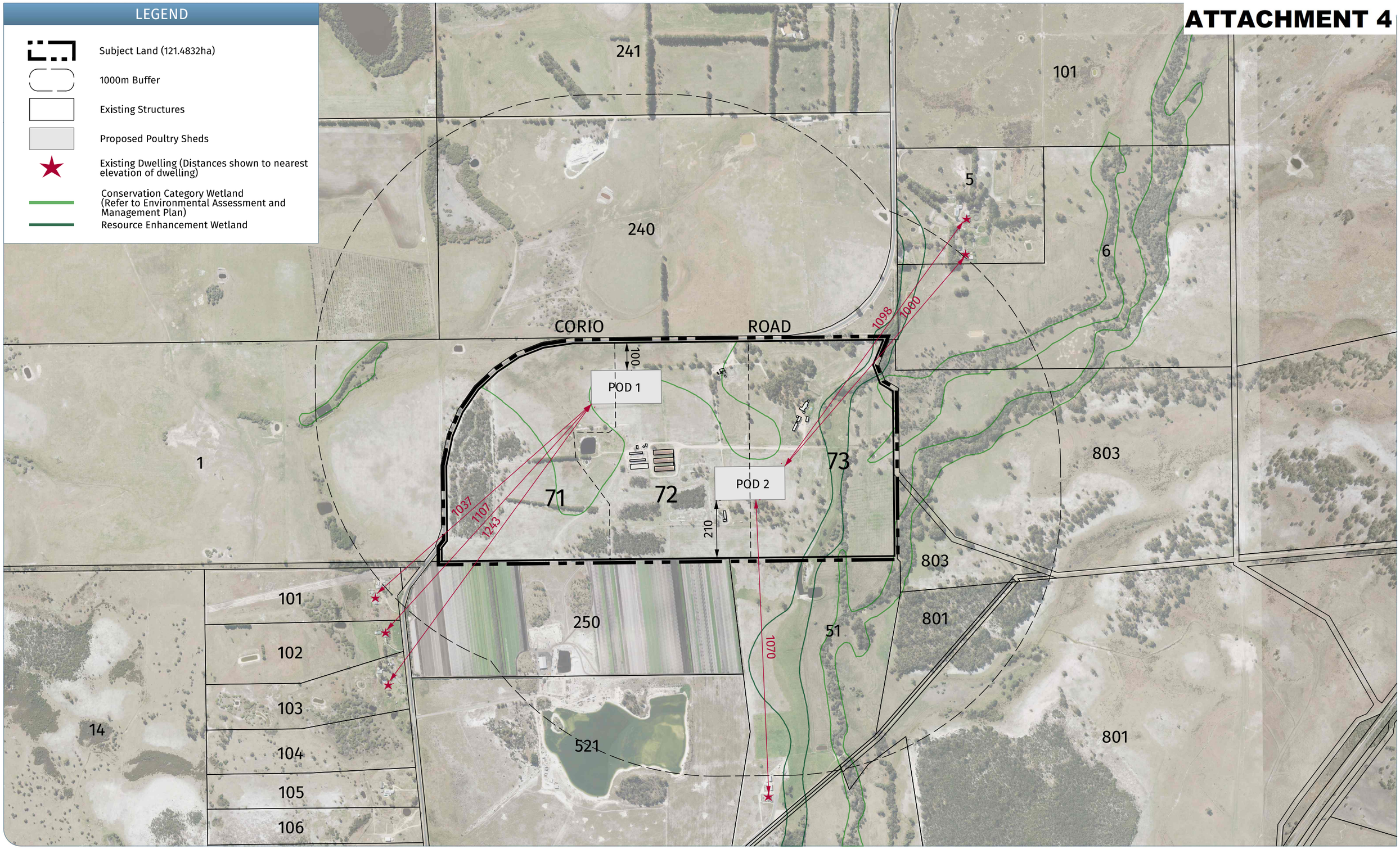
Graticules (if visible): GDA 1994 Latitude/Longitude

Date produced: 06-Feb-2024

ATTACHMENT 4

LEGEND

- Subject Land (121.4832ha)
- 1000m Buffer
- Existing Structures
- Proposed Poultry Sheds
- Existing Dwelling (Distances shown to nearest elevation of dwelling)
- Conservation Category Wetland (Refer to Environmental Assessment and Management Plan)
- Resource Enhancement Wetland



LANDUSE CONTEXT & BUFFER PLAN

Lots 71, 72 & 73 (No. 511) Corio Road,
RAVENSWOOD

Plan No.	22533-02	
Date	07/08/23	
Drawn	NP	
Checked	JS	
Revision	A	
Scale	1:12500@A3	0 100m 200m 300m

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
T: 08 9495 1947
E: metro@harleydykstra.com.au

ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

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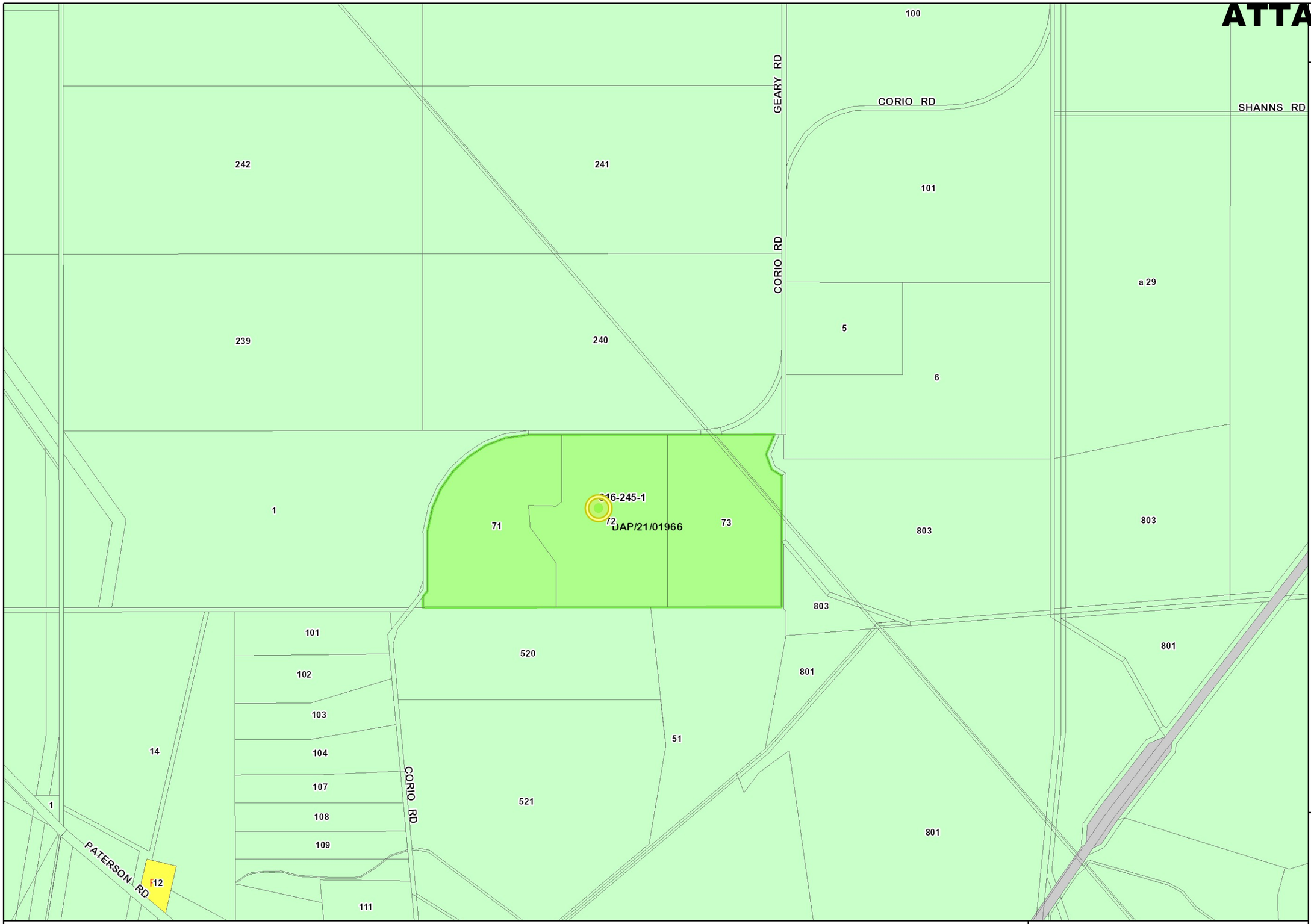
NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

Harley Dykstra®
PLANNING & SURVEY SOLUTIONS

ATTACHMENT 5

Department of Planning, Lands and Heritage

GOVERNMENT OF WESTERN AUSTRALIA



Legend

- Cadastre (View 1)
- DAP Application Boundary
  - Determined
- Development Applications Point
  - Approved
- Region Scheme Boundary
- Region Scheme Zones and Reserves
  - Public purposes - public utilities
  - Railways
  - Rural

Notes:

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* This map is not intended to be used for measurement purposes.

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Attachment 5 - Peel Region Scheme **Zoning** Plan

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N

0 0.43 0.86 Kilometres

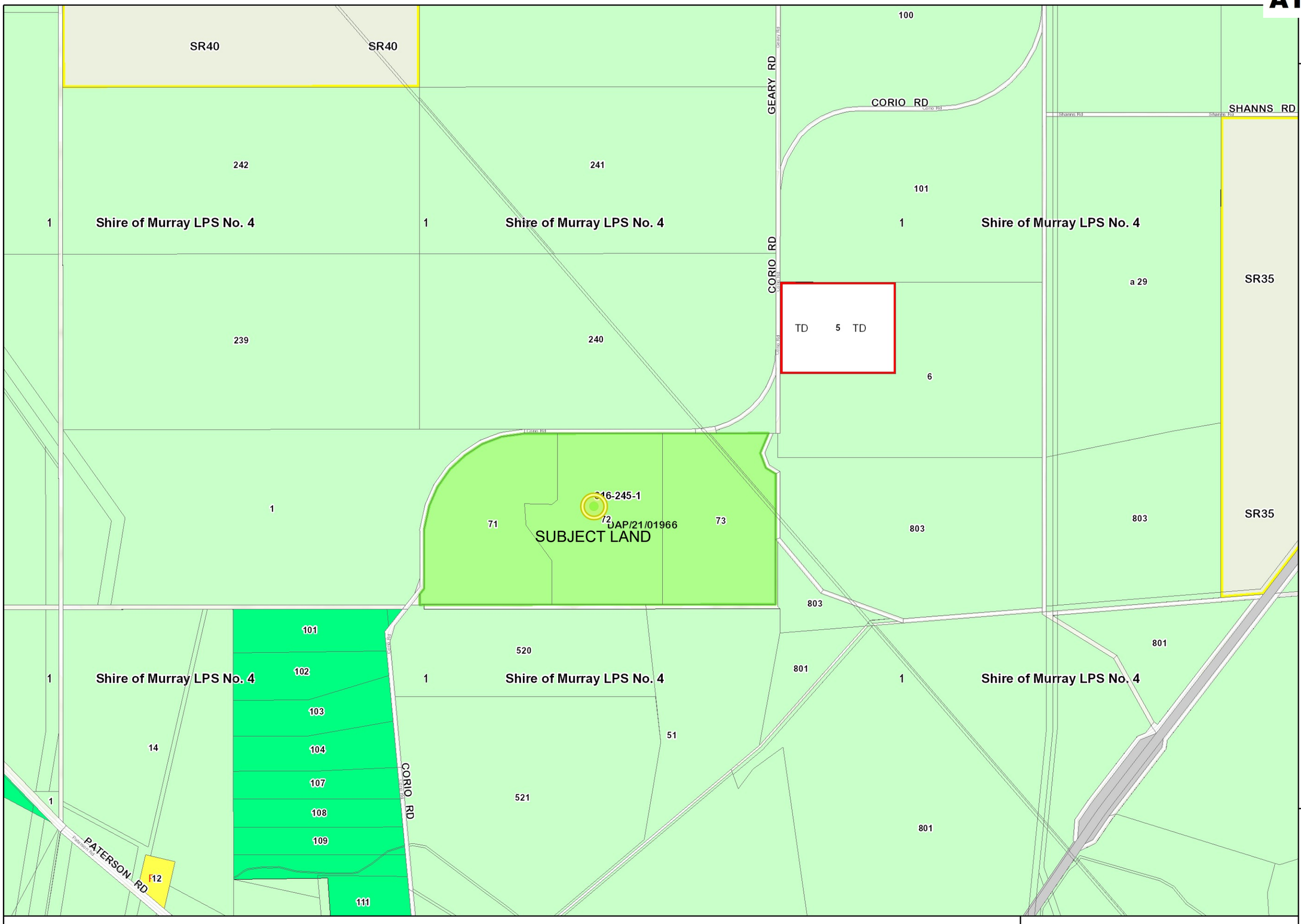
1: 20,000 at A3

Projection: WGS 1984 Web Mercator Auxiliary Sphere

Graticules (if visible): GDA 1994 Latitude/Longitude

Date produced: 09-Feb-2024

ATTACHMENT 6



Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Legend

- Cadastre (View 1)
- DAP Application Boundary
  - Determined
- Development Applications Point
  - Approved
- LPS Boundary
- LPS Other Categories - Areas (SCA, DCA, DA etc)
- Region Scheme Reserves
  - Public purposes - public utilities
  - Railways
- LPS Zones and Reserves
  - Farmlet
  - Rural
  - Special rural
  - Special use

Attachment 6 - LPS 4 Zoning Plan

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N

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1: 20,000 at A3

Projection: WGS 1984 Web Mercator Auxiliary Sphere

Graticules (if visible): GDA 1994 Latitude/Longitude

Notes:

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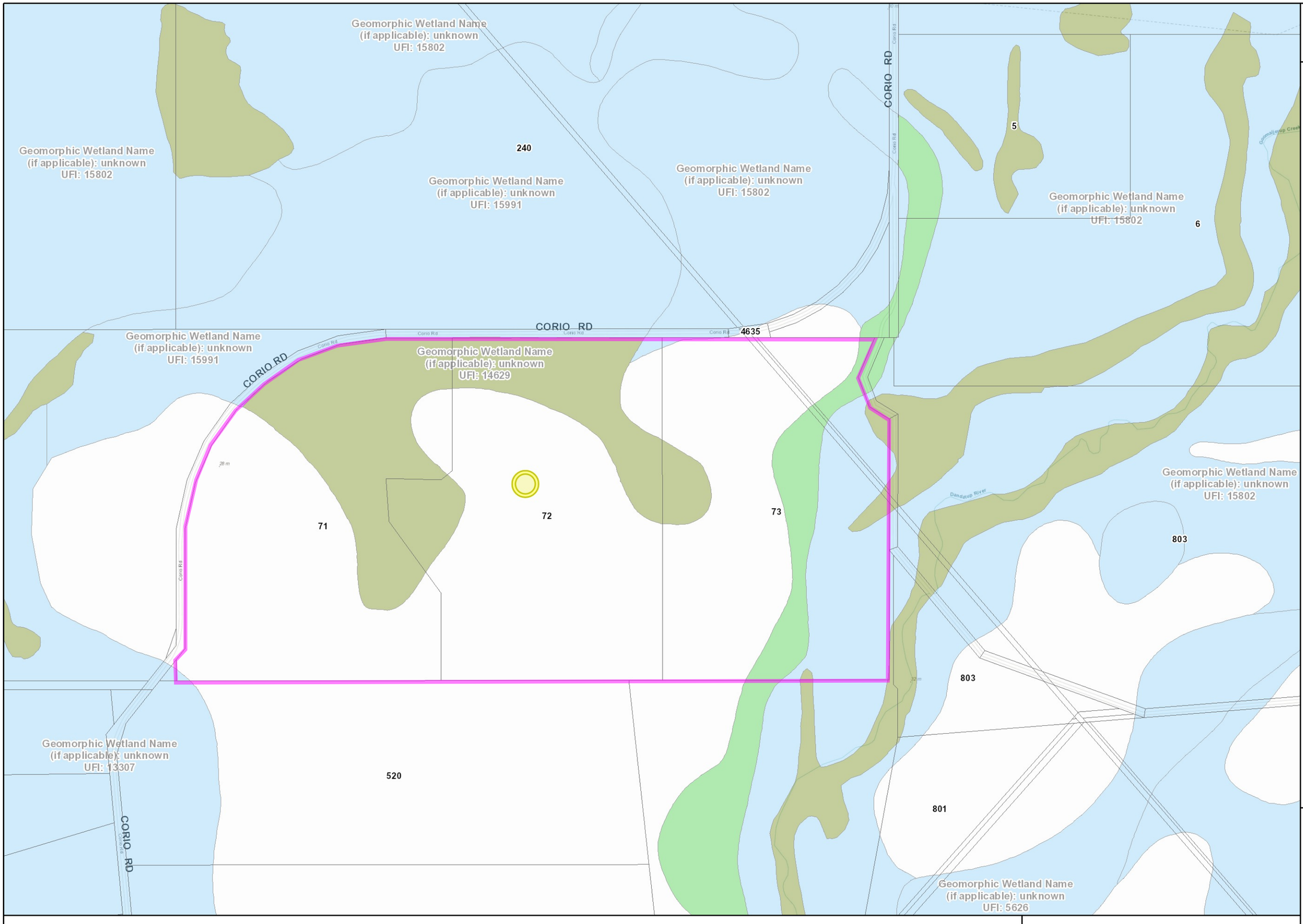
Map was produced using DPLH's InQuiry.

Date produced: 09-Feb-2024



Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Legend

- Cadastre (View 1)
- Geomorphic Wetlands - Swan Coastal Plain
  - Conservation
  - Multiple Use
  - Resource Enhancement
- Subject Land

Notes:

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Map was produced using DPLH's InQuiry.

Attachment 7 - Wetlands Mapping

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N

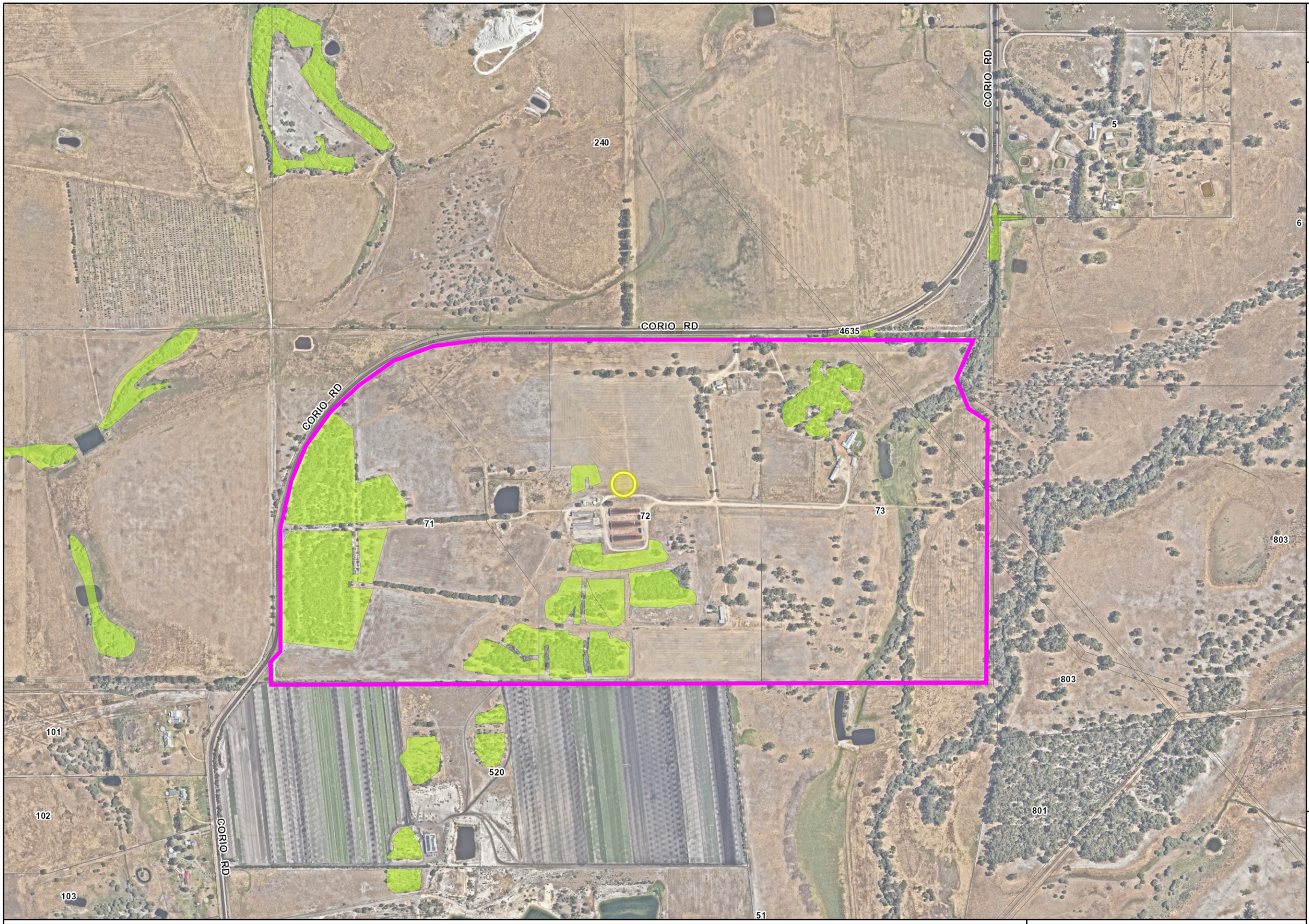
0 0.22 0.43 Kilometres

1: 10,000 at A3

Projection: WGS 1984 Web Mercator Auxiliary Sphere

Graticules (if visible): GDA 1994 Latitude/Longitude

Date produced: 09-Feb-2024



Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Legend

- Cadastre (View 1)
- WA Threatened and Priority Ecological Communities
  - Priority 3
- Subject Land

Attachment 8 - Vegetation Mapping

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N

0 0.22 0.43 Kilometres

1: 10,000 at A3

Projection: WGS 1984 Web Mercator Auxiliary Sphere

Graticules (if visible): GDA 1994 Latitude/Longitude

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* This map is not intended to be used for measurement purposes.

Map was produced using DPLH's InQuiry.

Date produced: 09-Feb-2024

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 100 (No. 1) Kentucky Court, Cockburn Central

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 6 Month December Year 2022

Report author or reviewer: Dylan Wray

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☑ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 44656 Accreditation expiry: Month March Year 2024

Bushfire management plan version number: 2

Bushfire management plan date: Day 19 Month December Year 2023

Client/business name: Harvest Properties (WA) Pty Ltd

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
High risk land-use		✔
Vulnerable land-use		✔

None of the above ☑

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

N/A

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer

Date 19/12/2023

Bushfire Management Plan

Poultry Farm Expansion (Farm Buildings)

Lot 72 Corio Road RAVENSWOOD

Client – metrowest

September 2023

envision
bushfire protection

This Bushfire Management Plan ('BMP') has been prepared to align a proposal to construct Poultry Sheds at Lot 72 Corio Road RAVENSWOOD (the site) with State Planning Policy 3.7. *Planning in Bushfire Prone Areas*.

Envision Bushfire Protection

ABN: 90958370365

PO Box 7209 SHENTON PARK WA 6008

P: 0428 066 147

Email: admin@envisionbp.com.au

Version Control

Lot 72 Corio Road RAVENSWOOD			
Version	**Date**	**Author**	
V1	23/02/2021	Anthony Rowe	Draft
V2	27/02/2021	Anthony Rowe	Revised orientation of Pod 2
V3	04/09/2023	Anthony Rowe	Revised layout, and revision to v1.4

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Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information at the time of writing following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Envision Bushfire Protection accepts no liability for the inaction of the owner to provide or maintain the bushfire protection measures identified in this report. Vegetation is dynamic, building materials may distort, and the accumulation and the location of flammable materials near the building may affect the potential for damage or loss of a building to occur.

Failure to maintain the property and/or building to these standards may compromise an insurance policy if currently covering any of your assets or those of any third party that may be consequentially affected due such failure. If not insured, and if you are seeking insurance, this report may not influence the decision of any insurer not to offer cover.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

Scope of this report

Envision Bushfire Protection has been engaged to provide expert bushfire safety and planning advice.

The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7 and identify appropriate mitigation measures to be considered by the determining authority. This is described in a Bushfire Management Plan and prepared with regard to the Department of Planning Lands and Heritage templates.

The investigations and mitigation measures identified in the BMP, has, in turn, formed the basis for the preparation of a Bushfire Emergency Evacuation Plan.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005

Anthony Rowe Level 3 - BPAD36690

Principal Bushfire Consultant **I** Town Planner

BPAD Accredited Practitioner Level 3 I PIA Registered Practicing Planner

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas v1.4.

SUMMARY

The proposal is to construct additional poultry sheds, at a poultry farm at Lot 72 Corio Road RAVENSWOOD (the site).

The site is located within a Bushfire Prone Area (OBRM September 2019) and requires assessment against State Planning Policy 3.7 Planning in Bushfire Prone Areas and the associated Guidelines for Planning in Bushfire Prone Areas V1.4 (the Guidelines).

Two new locations ('Pods') are proposed on the site with each Pod to accommodate six poultry sheds and an outbuilding. The existing poultry sheds will be demolished.

The pods are in separated locations for biodiversity purposes.

The site has a single dwelling and a separate caretaker's residence.

The site has been predominantly cleared of native trees, and has been used for agriculture production, pasture and intensive animal keeping (poultry).

This BMP has been prepared in accordance with the WAPC template *BMP template for a complex development application.*

Compliance with the Bushfire Protection Criteria

The proposal was assessed for compliance with the bushfire criteria in SPP.3.7 policy measures 6.2, 6.4, and 6.7 and Appendix 4 of the Guidelines.

Element 1 - Location

The Acceptable Solution for Element 1 requires a strategic planning proposal, that will be a moderate or low bushfire hazard level on completion. In a contextual consideration of an 'area' (2 km) the site is located within an area that is flat and predominantly grassland used for pastural purpose. The area is classified as a moderate threat.

Element 2 - Siting and Design

Element 2 requires all buildings regardless of building class, if located within a bushfire prone area as identified by the Map, are to be sited not be exposed to a BAL exceeding BAL-29. This may be achieved by having a separation space (Asset Protection Zone) sufficient to achieve BAL-29.

The site is large, 121 ha, and the proposed sheds, Pods 1 and 2, are inset from the site boundary.

Pod 1 is outside of the bushfire prone area map; there is no mandatory requirement to undertake works to establish an Asset Protection Zone, and no applicable bushfire construction standard. Notwithstanding the buildings are outside of the bushfire prone area map, the requirements of the *Bush Fires Act 1954* and *Bush Fire Risk Treatment Standards* 2020, requires a 20 m Risk Treatment Area, around the building.

Pod 2 is within a bushfire prone area. An Asset Protection Zone of 21 m is proposed around Pod 2 to provide flexibility for the future use of the site without diminishing the BAL – 29.

Element 3 - Vehicle Access

The acceptable solution requires access to a through-road that provides providing alternative destinations for evacuation, and alternative directions from which assistance from emergency services can be received. Corio Road is a public road that traverses predominantly pastural land and is flat. The road has a 5.5 m seal and shoulders exceeding 1 m either side: in turn compliant with the minimum horizontal width of 6 m.

The acceptable solution requires driveways longer than 50 m should comply with the technical requirements for private driveways, width and grade and have provision for a turnaround or to enter and leave in a forward direction. The site is large and open, and the proposed buildings, and existing residence are more than 50 m from a public road.

The Guidelines refer to the provision of internal fire breaks being provided in accordance with the Shire's annual firebreak notice requirement. Arrangements between local government and the practical placement vary, and owners may seek variations to the requirements from the Shire. This matter is best addressed as a condition of approval to the satisfaction of the Local Government before operation.

Element 4 - Water

The site does not have access to a reticulated water supply but has access to a soak and ground water. Potable water is provided at the caretaker's residence and the dwelling in domestic tanks. A filter treatment system from the ground water supply is stored in a 110,000 L tank which supplies water to the sheds.

The proposed poultry sheds each exceed 2000 m^2 and are therefore classed as Farm Buildings requiring fire services (water capacity) in accordance with Part H3 of the National Construction Code 2019.

The tank/hydrant should be centrally located, accessible to the driveway and provided with an Asset Protection Zone to BAL-29.

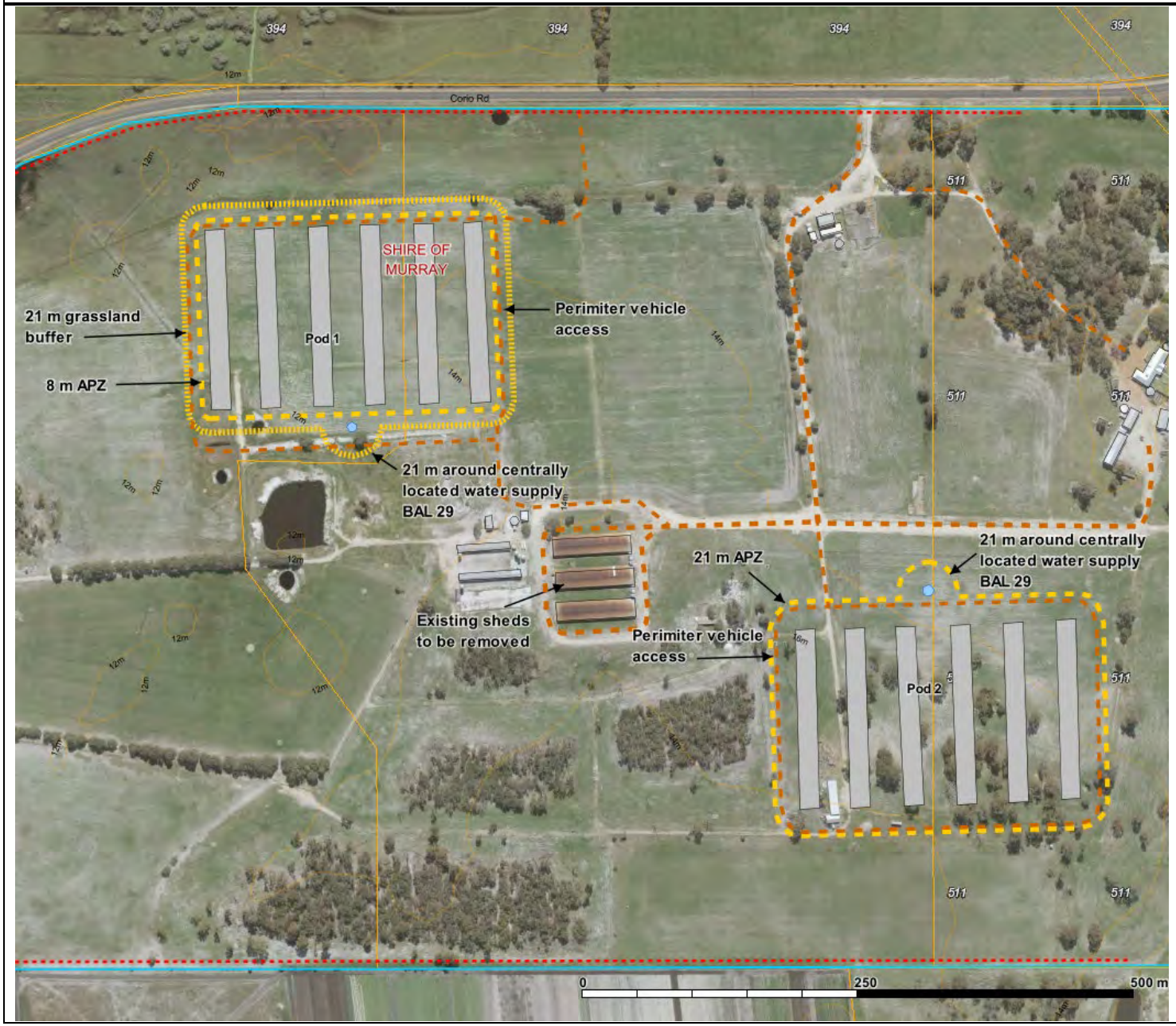
Additional Bushfire Management Strategies

No further 'Additional' management strategies have been identified to those matters addressed in the compliance criteria. It is expected that the owner of the property is aware of the bushfire risk and will respond to the requirement of the Shire Fire Break Notice and DFES publications including the Homeowners Bushfire Survival Manual.

RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The owner responsibilities that will achieve compliance with the Bushfire Protection Criteria is provided in section 6.

Figure EX 1 - Spatial representation of the proposed risk management strategies



Notes

1. Pod 2: The establishment of an Asset Protection Zone (APZ) in accordance with the Standards for Asset Protection Zones (Schedule 1 Guidelines for Planning in Bushfire Prone Areas V1.3).
2. Pod 1: Voluntary Asset Protection Zone (APZ), 8 m to grassland and grassland maintained to 21 m from the buildings. Any 'screening trees' are to be set no closer than 21 m from the buildings.
3. Private driveway access is to be provided in accordance with the Technical requirements provided in the Guidelines at Element 3 Table 6 column 3.
4. Firebreaks are to be maintained inside all boundaries in accordance with the Shire Firebreak notice.
5. The provision of a centrally located water tank/hydrant (Farm building Part H3 NCC: 2019), with 21 m APZ to BAL-29, couplings prescribed (Part H3 NCC: 2019) and Shire specifications.

Note: Pod 1 compliance with SPP 3.7 is volunteered.

LEGEND

- Site Boundary
- Asset Protection Zone
- Accessway
- Water tank for firefighting
- Firebreak-Shire of Murray Firebreak Notice

Property Assessment Details

Prepared by: Anthony Rowe
Accreditation Level: Level 3,
Accreditation no. 36690

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1. PROPOSAL DETAILS

1.1 Introduction

The proposal is to construct 12 additional poultry sheds (2 pods of 6) at Lot 72 Corio Road Ravenswood (the site).

The site is partially located within a Bushfire Prone Area (OBRM September 2019 map) and therefore requires assessment against State Planning Policy 3.7 Planning in Bushfire Prone Areas and the associated Guidelines for Planning in Bushfire Prone Areas V1.3 (the Guidelines).

In accordance with SPP 3.7, the planning authority in determining an application in a declared bushfire prone area must be satisfied the proposal is consistent with the Policy intent, ***to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.***

Two areas (pods) are proposed on the site with each to accommodate six poultry sheds. Each shed is 16.5 m x 176 m, each pod is 259 m x 176 m in dimension. Pod 1 is at the northwest of the site, and outside of the bushfire prone area map, and Pod 2 is to the southeast of the site. The site presently has 3 large poultry sheds in a central area of the site (to be removed). The site also has a single dwelling and a separate caretaker's residence.

The site has been predominantly cleared of native trees (earliest photo is 1979) and has been used for agriculture production, pasture and in 2006 intensive animal keeping (poultry).

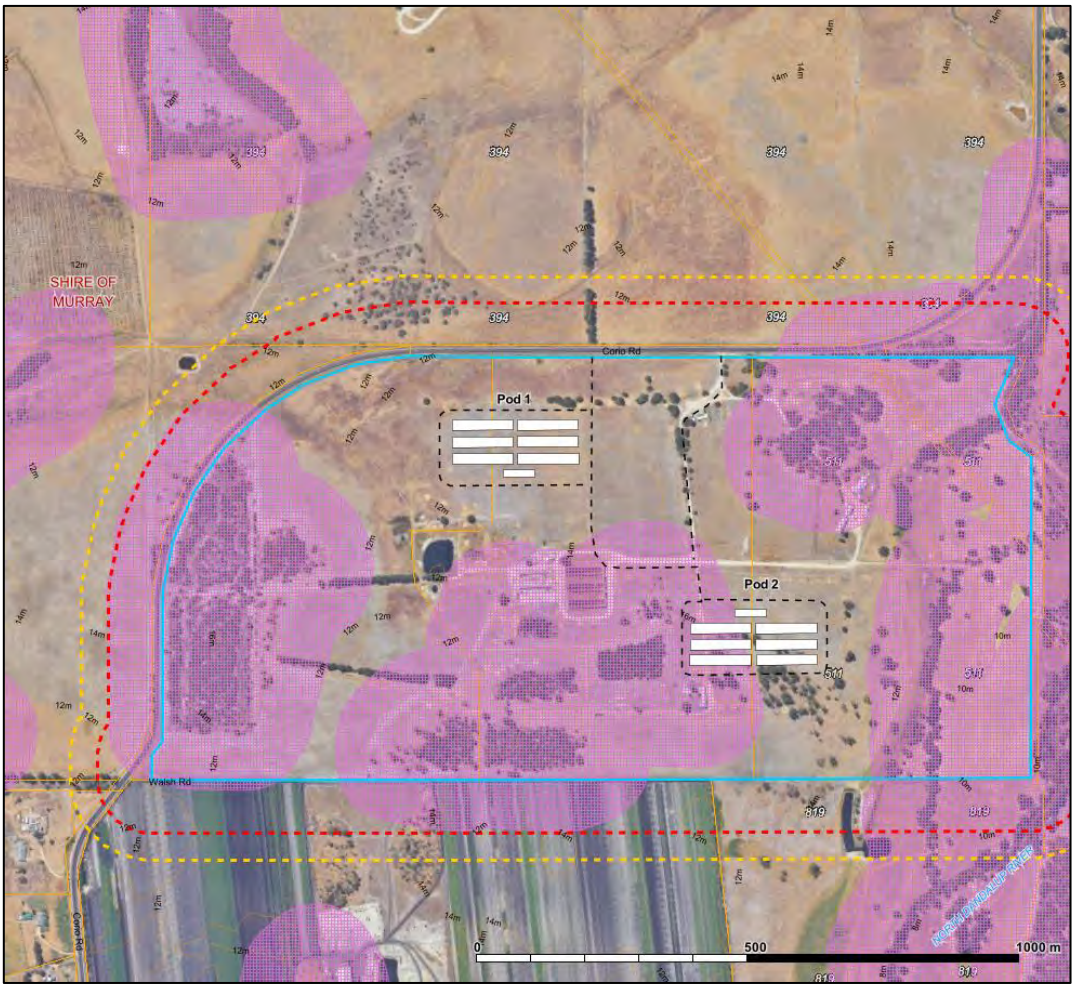

Plate 1: Site boundary, bushfire prone area (OBRM 2019) (pink)

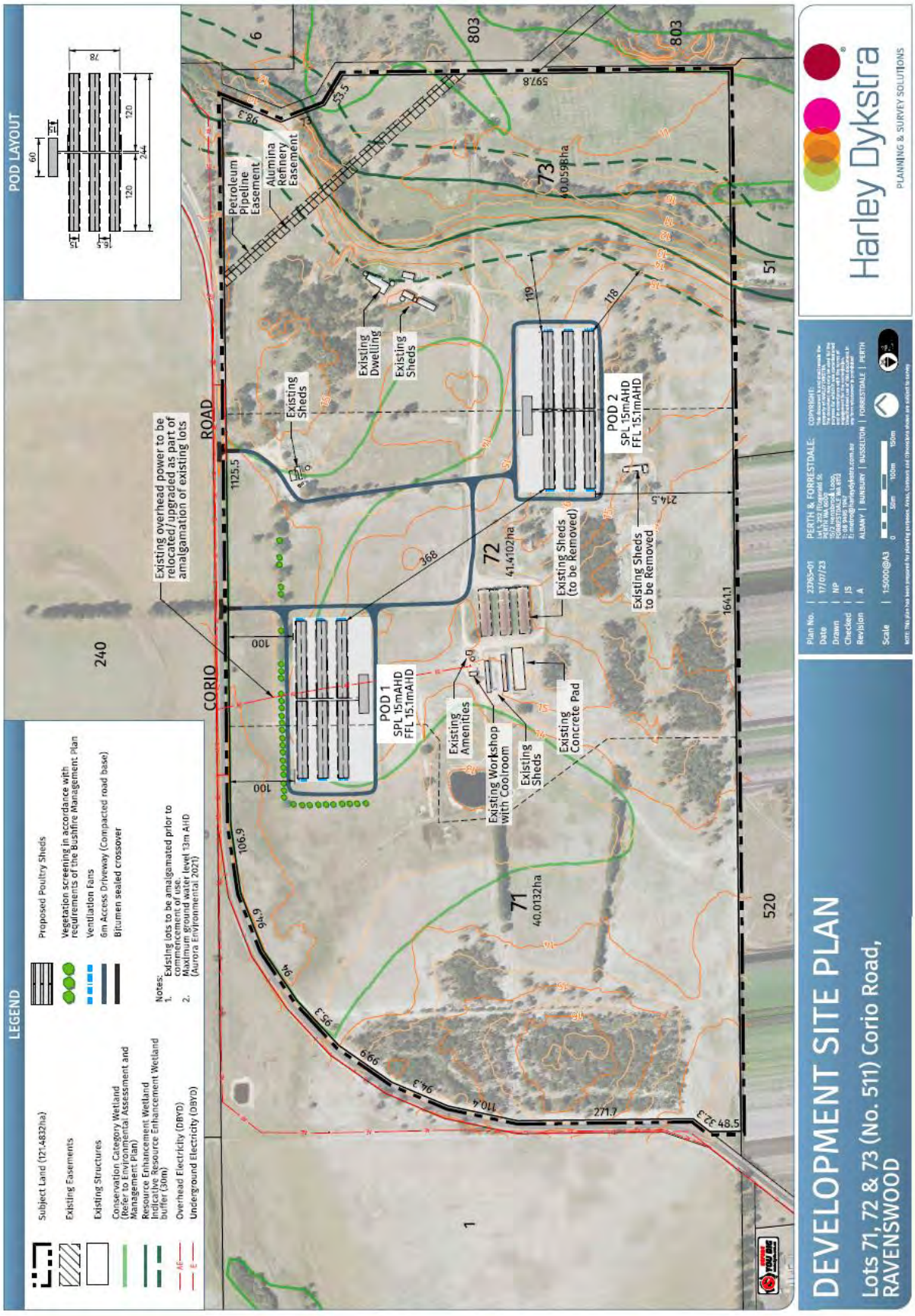

Plate 2: Proposed development locations, the green shade is the Geomorphic wetland extent.

2. ENVIRONMENTAL CONSIDERATIONS

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

2.1 Affecting Native Vegetation

Generally, the clearing of native vegetation is permitted by the exemption under the *Environment Protection Act 1986,* if associated with another authorisation.

The 'exemptions' are described below. The site is not within an Environmentally Sensitive Area, but it is uncertain whether an APZ is included in the exemption "as necessary to construct an approved building".

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offense to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions include:

Environment Protection Act 1986

- **Clearing required by local government Section 33 Bushfire Act 1954.**
- Clearing in accordance with the terms of a subdivision approval.
- Clearing in accordance with a permit under the Bushfires Act 1954 (prescribed burning) and clearing by a bushfire control officer.

Environmental Protection (clearing native vegetation) Regulation 2004 (exemptions do not apply in Environmentally Sensitive Areas, and clearing > than 5ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

- Clearing to the extent necessary to construct an approved building.
- Clearing that is for fire hazard reduction burning.
- Clearing to maintain an area cleared in the last ten years.

(WA) Biodiversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for fauna conservation (in turn its habitats) and lists species, threatened ecological communities (TECs), key threatening processes, and critical habitats. It introduces criteria for listing species 'endangered', 'critically endangered' or 'vulnerable,' to align with the Environment Conservation and Biodiversity Conservation Act 1999 (Cth).

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

In accordance with the Department of Planning Lands and Heritage template (Bushfire Management Plan template to support a BAL Contour Assessment) a review of the listed databases has been undertaken as part of this assessment to identify whether restrictions or other specific considerations may apply that would affect the implementation of any bushfire protection initiatives that may otherwise be identified.

2.2 Native Vegetation – Modification and Clearing

Is the land affected by:	**Yes/No**	**Comment**	
Conservation Wetland or buffer (DBCA-019 DBCA-017)	Yes	The site is occupied by a Conservation Category Geomorphic Wetland affecting 60% of Pod 1.	
RAMSAR Wetland (DBCA-010)	No	Not identified	
Threatened and Priority Flora (DBCA-036)	No	Not identified	
Threatened and Priority Fauna (DBCA-037)	No	Not identified	
Threatened Ecological Communities (DBCA-038)	No	Not identified	
Bush Forever (COP-071)	No	The site is not affected nor is one identified within the area.	
Environmentally Sensitive Area (DWER-046)	No	Not applicable	
Regionally Significant Natural Areas (DWER-070)	No	Not applicable	
Aboriginal Heritage	No	Not applicable	
Conservation Covenant (DPIRD-023)	No	Not applicable	
Does the proposal require the removal of restricted vegetation?		**~~Yes~~**	**No**

Pod 1 is located outside of the bushfire prone map, and therefore not affected by the requirements of SP 3.7, or the National Construction Code, as it relates to bushfire. The *Bush Fires Act 1954* applies to the whole site, notwithstanding the map of bushfire prone areas. The *Bush Fires Act 1954* seeks to control the ignition and spread of bushfire from the site that could damage a neighbour. This is addressed annually in the Shire Firebreak Notice, which includes maintaining a cleared area of 20 m around a building. In the instance of Pod 1 this involves maintaining grass at less than 50 mm and avoiding the establishment of trees within 20 m to the buildings.

Pod 1 will affect upon the affect conservation category geomorphic wetland. Approval from the Department of Water and Environmental Regulation (DWER) will be required for the buildings, the associated site works and the Asset Protection Zone.

Pod 2 is located within an isolated Woodland area on the site (trees over grass). The area is not identified as ecologically significant (threatened faun or flora). It is partially within the Bushfire Prone Area map and affected by the State Planning policy 3.7. The building is not a class 1-3, and therefore is not required to comply with a construction standard but is required to have an Asset Protection Zone equivalent to BAL 29. In this instance a 21 m APZ is required to ensure there is sufficient distance, to maintain BAL 29 at the building, in case revegetation should occur outside of the APZ. It enables future planting outside the APZ to be unrestricted.

Important note: *The requirements for regulated vegetation, under State and National legislation, as required in the DPLH template, do not include the consideration of local vegetation retention policies by local by-laws or Local Planning Scheme requirements.*

It is the responsibility of the landowner to obtain the necessary authorisations for the modification of native vegetation identified as an asset protection zone or as a further bushfire risk reduction measure.

This BMP provides a reason for affecting regulated vegetation, but it does not impose any precedence over the assessment to modify vegetation that is taken under other legislation.

2.1 Re-vegetation/Landscape Plans

Re-vegetation/landscape plans are not included.

The Asset Protection Zone for Pod 1 should be established in accordance with the Shire fire break notice.

The Asset Protection Zone around Pod 2 should follow Element 4 Schedule 1 in the Guidelines v1.4 (default landscape plan)

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015 the State Government introduced, a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

Part 10A Schedule 2 of the Planning and Development (Local Planning Scheme) Regulations 2015 – (LPS 2015)

Part 10A establishes the exemptions from the application of SPP 3.7 for certain development types that are located within an area that is Mapped as Bushfire Prone area (OBRM 2019).

In this instance the poultry sheds are considered to meet the definition of a habitable building (in LPS 2015) because the building is enclosed and it is used for the purpose of work, although it is unlikely to be occupied by more than two people at any one time (contemporary poultry practice).

As a habitable building the considerations of SPP 3.7 apply, but because the building is not a class 1-3 and 10a, the bushfire construction requirements do not apply, only the siting requirement not to exceed BAL 29.

The Building Act 2011

The Building Act 2011, and Building Regulations 2012, applies the construction standards of the Building Code of Australia (National Construction Code) where it relates to an 'applicable' building.

The Bushfire Construction requirements in the National Construction Code NCC (Vol 2, s.3.10.5) address only class 1-3, and class 10 buildings.

NCC has introduced (Part H3) certain concessions for Class 7 and Class 8 buildings used for farming because these buildings pose a lower risk to occupants than buildings of the same class that are not used for farming.

The size of the building and level of occupancy are the two criteria that differentiate between a 'farm building' and a 'farm shed'. This differentiation allows further concessions to be applied to 'farm sheds', which present less hazard than 'farm buildings'.

Part H3 of the NCC 2019 addresses the building (fire) requirements for a 'farm building' and a 'farm shed'. The main features to be addressed include *(note H3 should be referred to for the full list of requirements).*

A farm shed need not comply with the building fire provisions of Parts C, if it is separated from any other building or allotment boundary by a distance of not less than 6 m, it is required to be provided with a fire extinguisher for every 500 m^2 of floor space.

Whilst the proposed sheds are likely to comply with the total number of persons accommodated at any time not exceeding two (farm shed), the buildings are larger than 2000 m^2 and therefore farm buildings.

A farm building is to have fire hydrants and water supplies comprising a minimum total capacity of 144 000 litres, located within 60 m of the building, positioned to enables emergency services vehicles access to within 4 m 'and fitted with small bore suction connection' and 'large bore suction connection' to the specifications in AS 2419.1

These are structural fire requirements that exceed and are additional to the capacity required for bushfire.

Bush Fires Act 1954

Section 33 of the *Bush Fires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. Local government at any time, may give notice in writing to an owner or occupier of land within the district of the local government.

The *Bush Fires Act 1954* applies at large. Its operation is not restricted to the bushfire prone area and is applicable to all landowners.

The Notice may specify works to be undertaken including the management of grasses on the property usually to be maintained at less than 10 cm during the fire season.

It also provides that the identified works can be undertaken as a separate operation or in coordination with the neighbouring land.

Bush Fire Risk Treatment Standards **2020 (Regulation)**

The Bush Fire Risk Treatment Standards 2020, provides the opportunity for a landowner to create a 20 m (10 m inner and 10 m outer Risk Treatment Area, unless expressly restricted by other conservation type legislation of would affect an adjoining property.

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The following assessment has applied the methodologies described in AS3959:2018, the Guidelines, and has used the Fire Protection Association Australia accredited practitioner methodology for the preparation of Bushfire Attack Level (BAL) assessments. All vegetation within 150 m (context) of the proposed building has been classified following Clause 2.2.3 (AS 3959:2018) to determine the Bushfire Hazard Level at the locality. The BAL Contour Plan, however, is measured within 100 m of the site boundary following the requirement for a BAL assessment, which is 100 m.

AS 3959:2018 prescribes six categories of Bushfire Attack Level (BAL): BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, and BAL-FZ. In addition, BAL-FZ describes only performance solutions where the separation from classified vegetation (on completion) is less than 10 m. The BAL level is used for determining the siting of development (to be less than BAL-40) and in turn the construction standard that is equivalent to the BAL at the proposed building location.

The BAL rating has been determined through site inspection and assessment of the following parameters:

- Fire Danger Index (FDI) rating; assumed to be FDI - 80 for Western Australia;
- A separation distance between the building and the classified vegetation source(s) within 100 m (for BAL impact) the separation distance is measured from the wall face (receiver) to the unmanaged understory rather than the canopy edge (dripline) *see below*; and
- Slope of the land under the classified vegetation.

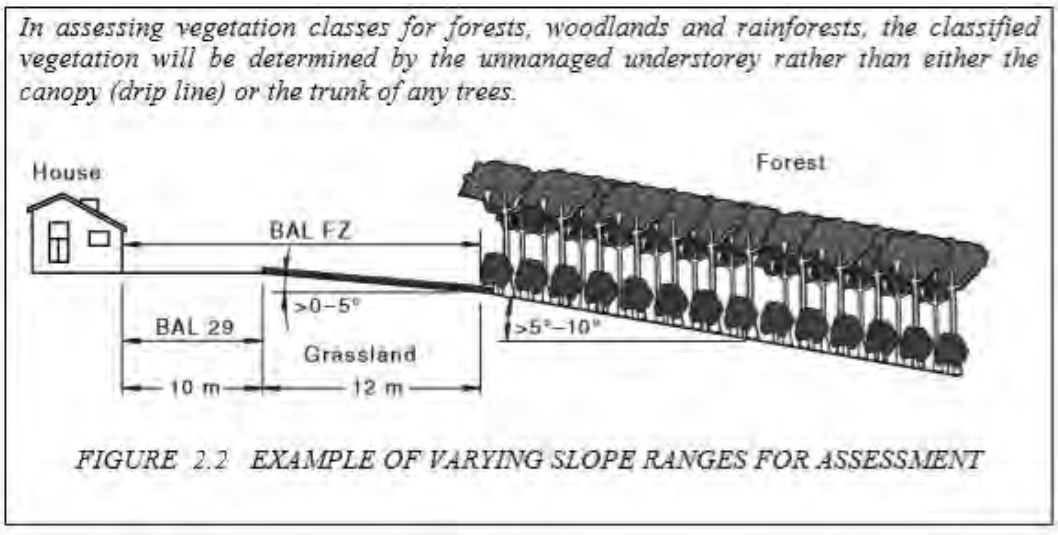

FIGURE 2.2 EXAMPLE OF VARYING SLOPE RANGES FOR ASSESSMENT

INPUT FIGURES

Figure 1 Topographic features and vegetation and slope

Figure 2a Identification of the present site vegetation.

All vegetation within 150m of the site classified in accordance with Clause 2.2.3 of AS 3959:2018 from a site inspection undertaken on 01 September 2023.

The inspection followed the Fire Protection Association Australia accredited practitioner methodology (Template) for the preparation of Bushfire Attack Level (BAL) assessments, including photo verification.

Figure 2b Identification of the post development site vegetation.

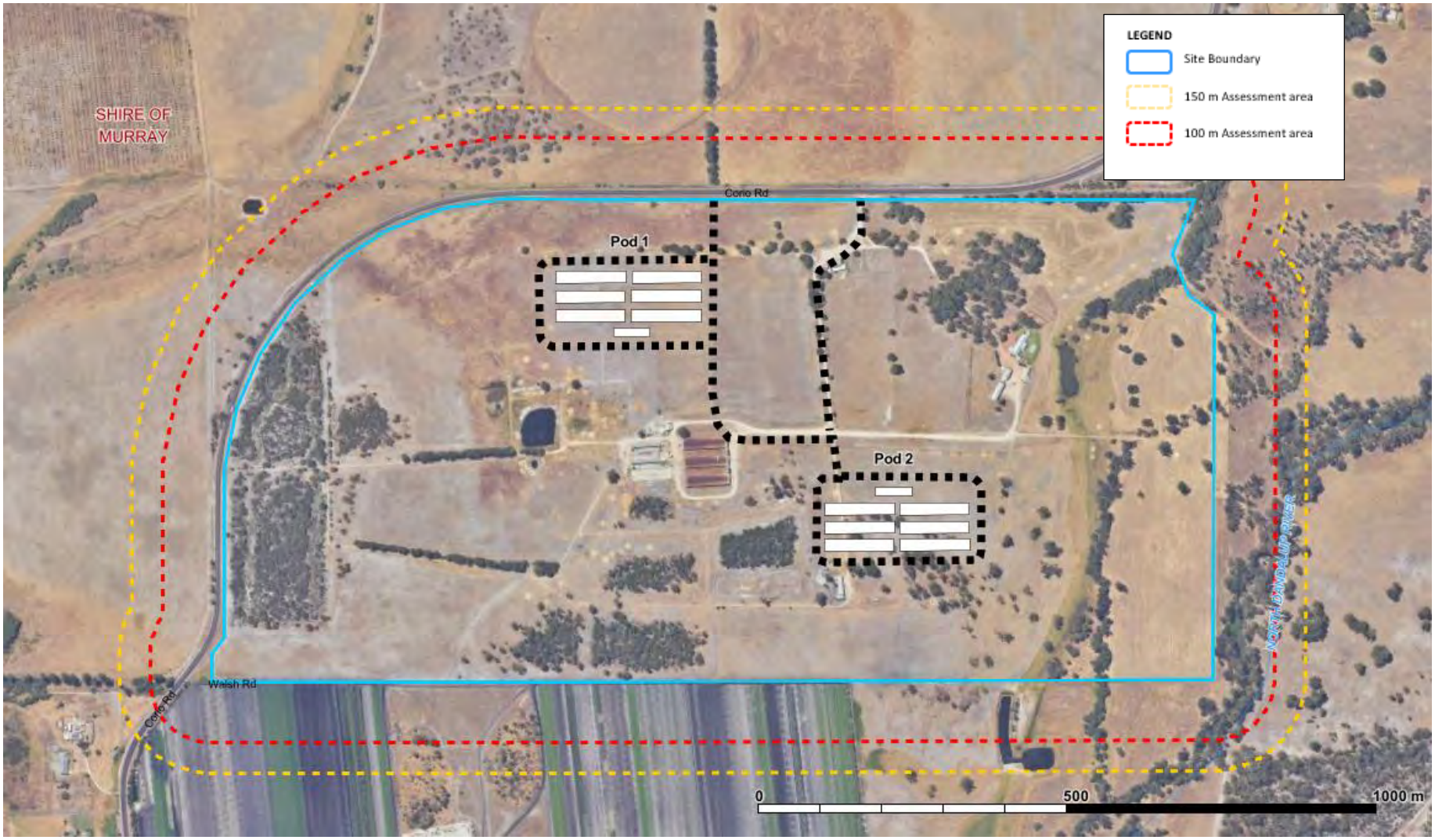

Figure 1: Location

N

Assessment Date: 01/09/2023
Prepared: Anthony Rowe I Accreditation Level: BPAD L3
Accreditation Number: 36690 Accreditation I Expiry: Dec 2023
FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50

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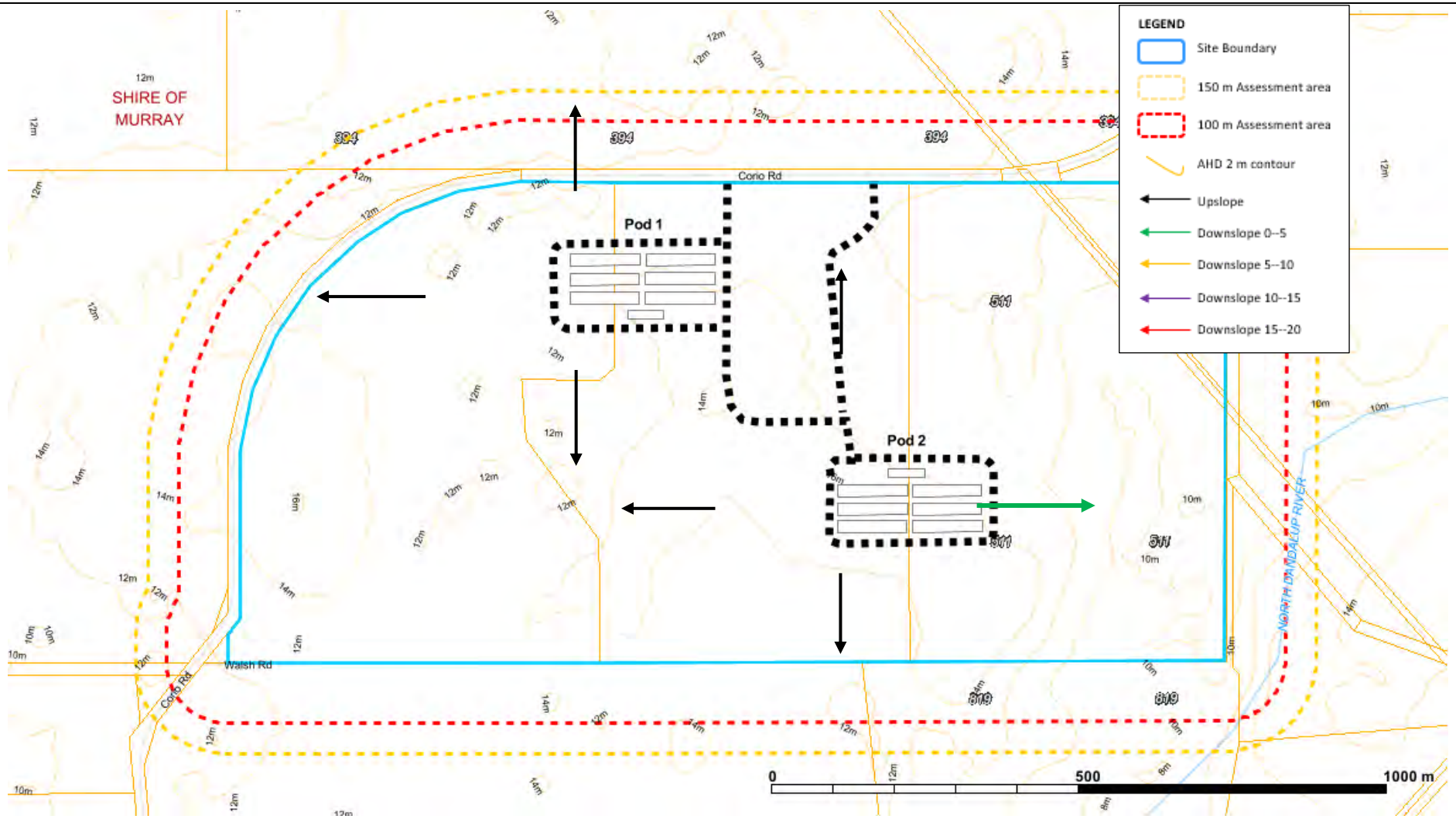

Figure 2: Topography

N

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Accreditation Number: 36690 Accreditation I Expiry: Dec 2023
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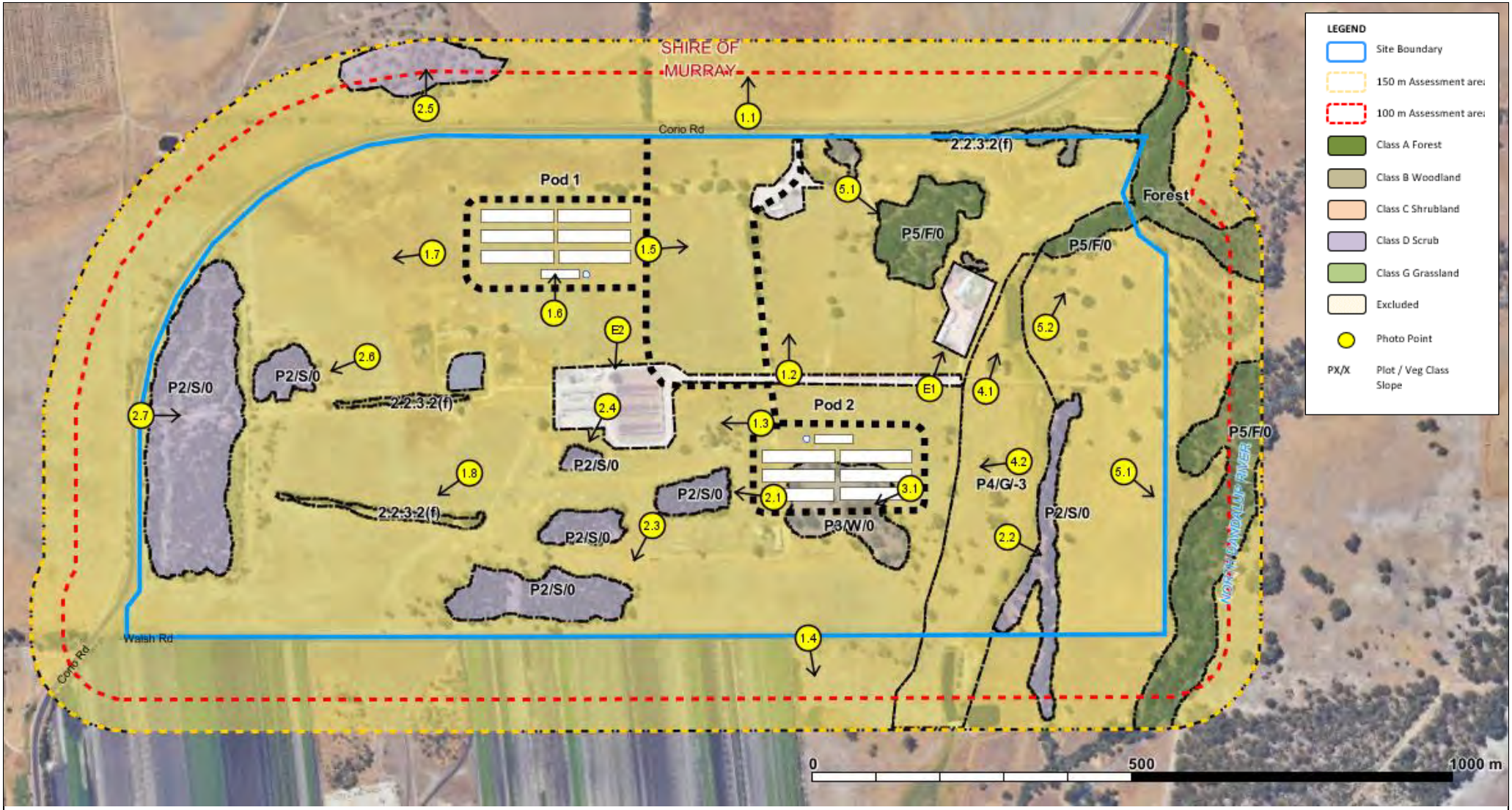

Figure 3: Vegetation Classification and photo locations

N

Assessment Date: 01/09/2023
Prepared: Anthony Rowe I Accreditation Level: BPAD L3
Accreditation Number: 36690 Accreditation I Expiry: Dec 2023
FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50

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Vegetation Classification

All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

<table>
<tr><th colspan="3">PLOT: Excluded</th></tr>
<tr><td rowspan="4">Vegetation Classification
Excludable - 2.2.3.2(e) Non Vegetated Areas
Slope
Flat
Description (AS3959)
2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas
e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

Post development
To be retained</td><td>PHOTO ID: E1</td><td>PHOTO ID: E2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Existing residence</td><td>Comment: Existing poultry sheds and outbuildings</td></tr>
<tr><td colspan="2"></td></tr>
</table>

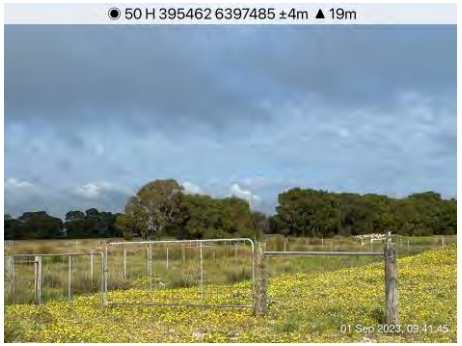
<table>
<tr><th colspan="3">PLOT: 1</th></tr>
<tr><td rowspan="6">Vegetation Classification
Class G Grassland – Sown pasture G-26
Slope
Flat
Description (AS3959)
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.
NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.
Post development
To be retained</td><td>PHOTO ID: 1.1</td><td>PHOTO ID: 1.2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: pasture grasses north of site</td><td>Comment: Pasture grass, view north from centre of the site</td></tr>
<tr><td>PHOTO ID: 1.3</td><td>PHOTO ID: 1.4</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses west fore ground to Scrub west of Pod 2</td><td>Comment: Pasture grasses south of site and pod 2</td></tr>
</table>

<table>
<tr><th colspan="3">Plot 1</th></tr>
<tr><td rowspan="4">Vegetation Classification
Class G Grassland – Sown pasture G-26
Slope
Flat
Description (AS3959)
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.
NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Post development
Unchanged (views are looking to grass outward from Pod 1. The buildings and Risk Treatment Area will displace grass</td><td>PHOTO ID: 1.5</td><td>PHOTO ID: 1.6</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses east of Pod 1</td><td>Comment: Pasture grasses north of Pod 1 and site</td></tr>
<tr><td>PHOTO ID: 1.7</td><td>PHOTO ID: 1.8</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Pasture grasses west of Pod 2</td><td>Comment: Pasture and example of a single windrow. The example is west of existing poultry shed</td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 2</th></tr>
<tr><td rowspan="6">Vegetation Classification
Class D Scrub - Closed scrub D-13
Slope
Flat
Description (AS3959)
Found in wet areas and/or areas affected by poor soil fertility or shallow soils; >30% foliage cover. Dry heaths occur in rocky or sandy areas. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 m in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres

Post development
Unchanged</td><td>PHOTO ID: 2.1</td><td>PHOTO ID: 2.2</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: Scrub, west of pod 2</td><td>Comment: Scrub, east of Pod 2, wetland plain</td></tr>
<tr><td>PHOTO ID: 2.3</td><td>PHOTO ID: 2.4</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Comment: View to Scrub south west of Pod 2</td><td>Comment: Scrub, south of existing poultry shed</td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 2</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 2.5</td><td>PHOTO ID: 2.6</td></tr>
<tr><td>Class A Forest - Low open forest A-04</td><td rowspan="2">
</td><td rowspan="2"> 
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Scrub, northwest of Pod 1 and the site.</td><td>Comment: Scrub, west of pod 1</td></tr>
<tr><td>Description (AS3959)</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Found in wet areas and/or areas affected by poor soil fertility or shallow soils; >30% foliage cover. Dry heaths occur in rocky or sandy areas. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 m in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres</td></tr>
<tr><td>Post development</td><td>Comment: Scrub, at west boundary of the site.</td><td></td></tr>
<tr><td>Unchanged</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 3</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 3.1</td><td></td></tr>
<tr><td>Class B Woodland - Woodland B-05</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Woodland within proposed Pod 2 – to be cleared for development</td><td></td></tr>
<tr><td>Description (AS3959)</td><td></td><td></td></tr>
<tr><td>Trees 10 m - 30 m high; 10% - 30% foliage cover dominated by eucalypts and/or callistris with a prominent grassy understorey. May contain isolated shrubs.</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Post development</td></tr>
<tr><td>To be built upon and excluded as a bushfire threat.</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 4</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 4.1</td><td></td></tr>
<tr><td>Class G Grassland – Sown pasture G-26</td><td rowspan="3">
</td><td rowspan="3">
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Downslope 0-5</td></tr>
<tr><td>Description (AS3959)</td><td>Comment: Grass onto floodplain</td><td>Comment: Grass up to Woodland and Pd 2 sit</td></tr>
<tr><td>All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.

NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.</td><td></td><td></td></tr>
<tr><td>Post development</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Unchanged</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">PLOT: 5</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 5.1</td><td>PHOTO ID: 5.2</td></tr>
<tr><td>Class A Forest - Low open forest A-04</td><td rowspan="2">
</td><td rowspan="2">
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td>Comment: Forest north of existing residence</td><td>Comment: Forest east of existing residence, on flood plain.</td></tr>
<tr><td>Description (AS3959)</td><td></td><td></td></tr>
<tr><td>Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.</td><td rowspan="2">
</td><td rowspan="2"></td></tr>
<tr><td>Post development</td></tr>
<tr><td>Unchanged</td><td>Comment: Forest east of site and Pod 2</td><td></td></tr>
</table>

Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index			
FDI 40 ☐	FDI 50 ☐	FDI 80 ☒	FDI 100 ☐
Table 2.7	*Table 2.6*	*Table 2.5*	*Table 2.4*

Potential Bushfire Impacts

The potential bushfire impact from each of the identified vegetation plots identified in Figure 2 are identified below. These are taken from table 2.5 AS3959:2018 with the relevant plot assigned. The BAL - 29 for the proximity of the proposed building locations has been used to establish the Asset Protection Zone distances.

Plot	Vegetation classification	Effective slope	Separation Distance (AS 3959:2018 Table 2.5)	BAL
Plot 1	Grassland	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 2	Scrub	Flat/upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Plot 3	Woodland	Flat/upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 4	Grassland	0-5	< 7 m	BAL-FZ
			7 - < 9 m	BAL-40
			9 - < 14 m	BAL-29
			14- < 20 m	BAL-19
			20- < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 5	Forest	Flat/upslope	< 16 m	BAL-FZ
			16- < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Potential Bushfire Impacts - FDI 80

The potential bushfire impact to each pod from the identified vegetation plots within 100 m are identified below.

Pod 1	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	0	BAL – FZ

Table 1: BAL Analysis

Note Pod 1 is not within the Bushfire Prone Area map – the BAL is for information.

Pod 2	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	0	BAL – FZ
2	Class D Scrub	Flat	52	BAL – 12.5
3	Class B Woodland	Flat	0	BAL – FZ
4	Class G Grassland	0-5	60	BAL Low
5	Class A Forest	Flat	260	BAL Low

Determined Bushfire Attack **Level (BAL)**

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2018 using the above analysis.

Determined Bushfire Attack Level - Pod 1 (the BAL is for information).	**BAL – FZ**
Determined Bushfire Attack Level - Pod 2	**BAL – FZ**

Indicative BAL (with APZ against present vegetation).

Pod 1	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	20	BAL – 12.5

Note Pod 1 is not within the Bushfire Prone Area map – the BAL is for information.

Pod 2	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class G Grassland	Flat	21 -27	BAL – 12.5
2	Class D Scrub	Flat	52	BAL – 12.5
3	Class B Woodland	Flat	21 -27	BAL – 19
4	Class A forest	Flat	260	BAL Low
5	Class A Forest	0-5	440	BAL Low

Note: If Forest is revegetated up to the APZ for Pod 2, the BAL at the building will be BAL 29

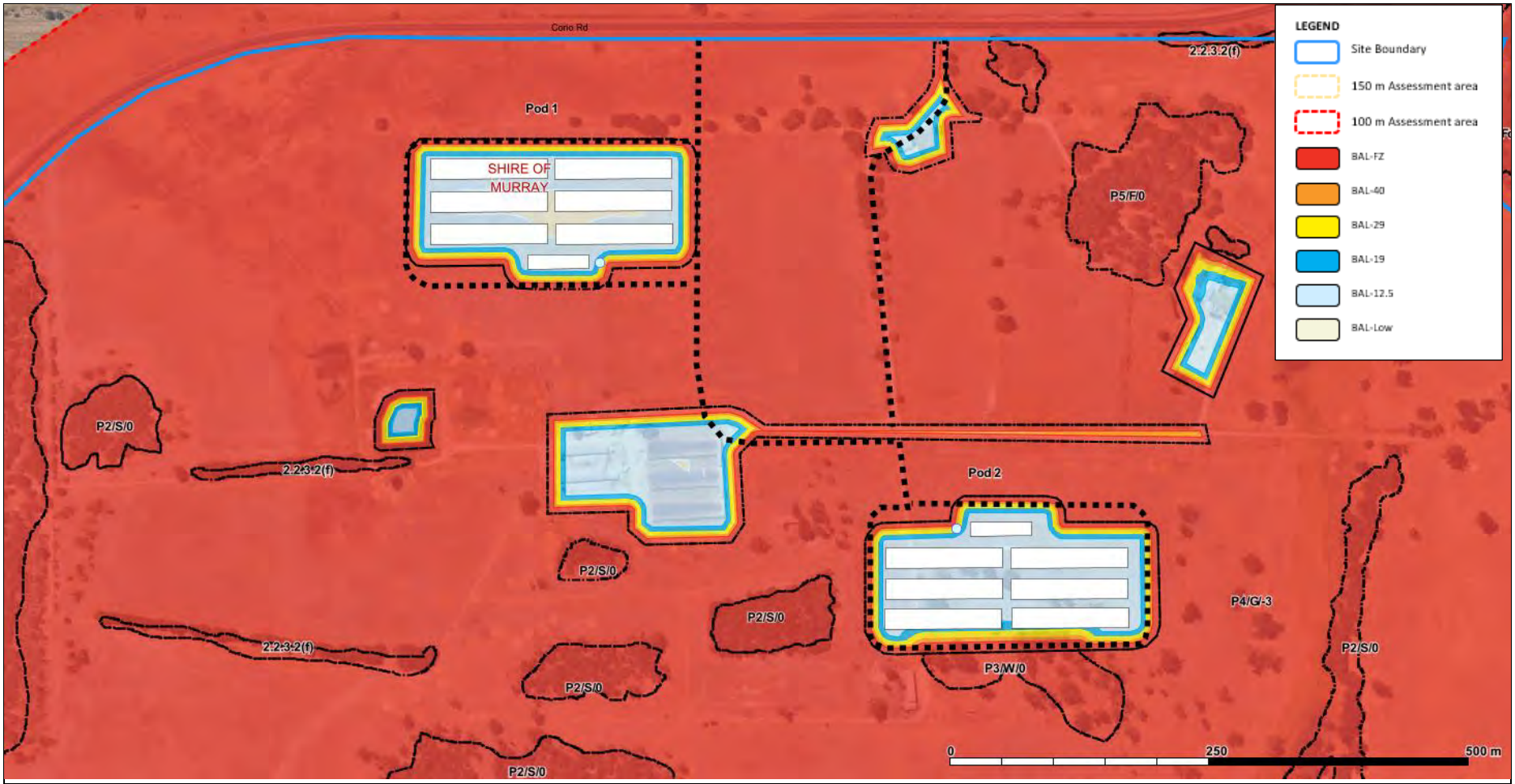


Figure 4: BAL Contour	N	Assessment Date: 23/02/2023 Prepared: Anthony Rowe I Accreditation Level: BPAD L3 Accreditation Number: 36690 Accreditation I Expiry: Dec 2023 FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50	© 2023 Any conclusions drawn, or recommendations made in this report are made in good faith. No responsibility is taken for how this information and the report are used subsequently by others.	envision bushfire protection

3.2 Determined Bushfire Attack Level (Outputs)

Figure 3 Bushfire Attack Level Contour Map Attainable BAL – Post Development.

The BAL Contour map has been volunteered for the development application to be applied to the immediate development site. Each band represents a georeferenced distance following the technical specification for slope from vegetation class used in AS3959:2018 table 2.5.

A method 1 BAL assessment of the vegetation, the slope under vegetation, and the applied FDI, identified the applicable habitable setbacks that will apply within the site.

Determined BAL rating

Pod 1:

No separation from grassland = BAL FZ (SPP 3.7 is however not applicable to development sites outside the Bushfire Prone Area map. The *Bush Fires Act 1954*, and the *Bush Fire Risk Treatment Standards 2020* (Regulation), provide for a 20 m *Risk Treatment Area* to be established around the buildings.

Pod 2:

No separation from grassland, or woodland = BAL FZ.

Indicative BAL rating

Pod 1:

A 20 m *Risk Treatment Area* 20 m from grassland would equate to BAL 12.5 (for information only)

Pod 2:

An Asset Protection Zone 21 m is recommended and is equal to BAL 29, for forest, to provide future land use flexibility.

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Factors affecting bushfire behaviour depend upon the fuel (size, quantity, type, moisture, and its distribution), weather conditions (temperature, humidity, wind speed, and atmospheric stability) and the topography (slope aspect and interaction with wind). These factors affect the speed of the fire, the flame height, the spotting behaviour (burning embers) and the intensity. Fires travel faster, and the flame length is closer to the ground traveling uphill. The speed of a fire doubles for every 10 degree upslope increase.

The prevailing summer winds (February) afternoon winds suggests a propensity for winds from the south, southwest. Major fires in the region are therefore expected to arrive at the site from the south, southwest.

The context of the site is a location within a bushfire threat from multiple aspects, predominantly through grassland. The site is 7 km west from the foot of the Darling Range, and extensive and contiguous forest that extends east. Forest fire can eject embers up to 5 km, and fires in the Darling Ranges typically travel east under easterly winds. The site at seven km distance is unlikely to be affected.

Fires in pastural lands are often stared by machinery failures, sparks from slashing, or hot works.

Grass fires are fast moving but light weight fuels of a short but intense duration. They do not generate heavy embers and require the ignition progressively heavier fuels.

After the passage of the fire front tenable conditions quickly establish to enable heavier fuels at the commencement of their ignition to be addressed and extinguished.

Appropriate facilities should be provided to enable suppression after the fire front's passing. The site has two arrival routes and is an open landscape that can assist the attendance of firefighters, but in a landscape fire competing priority means their attendance cannot be relied upon.

5. BUSHFIRE PROTECTION CRITERIA ASSESSMENT

This BMP provides an outline of the mitigation strategies. For each of the elements listed within Appendix 4 of the Guidelines for Planning in bushfire-prone areas, the 'intent' must be achieved either by the proposal meeting the applicable acceptable solution, as one solution; or where the acceptable solutions cannot be met, then by a performance principle-based solution that can achieve the 'Intent.'

5.1 Compliance Criteria

Table 2: Bushfire Protection Criteria assessment.

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 1: location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.			
P1 The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL–29 or below, and the risk can be managed. For unavoidable development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the decision-maker.	**A1.1 Development location** The strategic planning proposal, subdivision, and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	✓		The site is within an area classed as predominantly grassland and therefore is a moderate Bushfire Hazard Level.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 2: Siting and Design	To ensure that the siting and design of development minimises the level of bushfire impact.			
P2 The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. The proposal incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones.' (see Schedule 1).	✓		The Acceptable solution A2.1 requires that the development site can achieve on completion a BAL not exceeding BAL-29, by an APZ within the boundaries of the lot. Pod 1 is not within the Bushfire Prone Area and therefore not affected by the Guideline requirement. The requirement for a 20 m clear space, *Risk Treatment Area* following the *Bush Fires Act 1954 (Shire Firebreak Notice)*, and the *Bush Fire Risk Treatment Standards* 2020 apply. An Asset Protection Zone of 21 m is proposed around Pod 2, it will provide a BAL < BAL 29 at the building. The distance of 21 m provides flexibility for the future use of the site, including regenerations of forest plantation.

<table>
<tr><th>Bushfire Protection Criteria</th><th>Method of Compliance</th><th>AS</th><th>PP</th><th>Proposed Bushfire Management Strategies</th></tr>
<tr><td>Element 3: Vehicular Access</td><td colspan="4">To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.
Table 6: Vehicular access technical requirements
<table>
<tr><th>TECHNICAL REQUIREMENTS</th><th>1
Public roads</th><th>2
Emergency access way[1]</th><th>3
Fire service access route[1]</th><th>4
Battle-axe and private driveways[2]</th></tr>
<tr><td>Minimum trafficable surface (metres)</td><td>In accordance with A3.1</td><td>6</td><td>6</td><td>4</td></tr>
<tr><td>Minimum horizontal clearance (metres)</td><td>N/A</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td>Minimum vertical clearance (metres)</td><td colspan="4">4.5</td></tr>
<tr><td>Minimum weight capacity (tonnes)</td><td colspan="4">15</td></tr>
<tr><td>Maximum grade unsealed road[3]</td><td rowspan="4">As outlined in the IPWEA Subdivision Guidelines</td><td colspan="3">1:10 (10%)</td></tr>
<tr><td>Maximum grade sealed road[3]</td><td colspan="3">1:7 (14.3%)</td></tr>
<tr><td>Maximum average grade sealed road</td><td colspan="3">1:10 (10%)</td></tr>
<tr><td>Minimum inner radius of road curves (metres)</td><td colspan="3">8.5</td></tr>
</table></td></tr>
<tr><td>P3i
The design and capacity of vehicular access and egress is to provide for the community to evacuate to a suitable destination before a bushfire arrives at the site, allowing emergency services personnel to attend the site and/or hazard vegetation.</td><td>A3.1 Public roads
Public roads are to meet the minimum technical requirements in Table 6, Column 1.
The trafficable (carriageway/pavement) width is to be in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional
Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.</td><td></td><td></td><td></td></tr>
</table>

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.2a Multiple access routes Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access).	✓		Corio Road is a through road and is compliant with A 3.1
	A3.2b Emergency access way *Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution.*	N/A		Applicable to a subdivision
	A3.3 Through-roads • All public roads should be through-roads.	N/A		Applicable to a subdivision
	A3.4a Perimeter roads A perimeter road is a public road and should be provided for greenfield or infill • development where 10 or more lots are being proposed	N/A		Applicable to a subdivision
	A3.4b Fire service access route *Where proposed lots adjoin classified vegetation under AS3959, and a perimeter road is not required in accordance with A3.4a,*	N/A		Applicable to a subdivision

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.5 Battle-axe access legs *Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.* There are no battle-axe technical requirements where the point the battle-axe access leg joins the effective area of the lot, is less than 50 metres from a public road in a reticulated area. In circumstances where the above condition is not met, or the battle-axe is in a non reticulated water area, the battle-axe is to meet all the following requirements: • requirements in Table 6, Column 4; and • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres).	N/A		Applicable to a subdivision

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.6 Private driveways There are no private driveway technical requirements where the private driveway is: • within a lot serviced by reticulated water; • no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and • accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following require: • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • turn-around area as shown in Figure 28 and within 30 metres of the habitable building.	✓		The site is large requiring driveways exceeding 570 m in length. A turnaround is provided at the existing dwelling and care takers residence which is located adjacent to the domestic tanks. The existing poultry sheds in addition to a turnaround also have a perimeter road immediate to the buildings. The same arrangement of a perimeter road immediate to the buildings is expected to be applied to Pod 1 (subject to conservation category geomorphic wetland approval) and Pod 2 The sheds are considered to constitute farm buildings, Compliance with PART H3 – NCC 2019, will be required because each pod is separated. A water supply equivalent to 144 000 litres, to be located within 60 m of the building, and positioned to enable emergency service vehicles access within 4 m of the driveway.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 4: Water	To ensure that water is available to enable people, property and infrastructure to be defended from bushfire.			
P4 Provide a permanent water supply that is: – sufficient and available for firefighting purposes; – constructed from non-combustible Materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and – accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles.	**A4.1 Identification of future water supply** Evidence that a reticulated or sufficient non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2. Where the provision of a strategic water tank(s) is required a suitable area within a road reserve or a dedicated lot the location should be identified, should be identified on the structure plan, to the satisfaction of the local government.	N/A		Applicable to a Structure Plan

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A4.2 Provision of water for firefighting purposes Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority. Where these specifications cannot be met, then the following applies: • The provision of a water tank(s), in accordance with the requirements of Schedule 2; and • Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: – land to be ceded free of cost to the local government for the placement of the tank(s); – the lot or road reserve where the tank is to be located is identified on the plan of subdivision; – tank capacity, construction, and fittings, provided in accordance with the requirements of Schedule 2; and – a strategic water tank is to be located no more than 10 minutes from the subject site (at legal road speeds). Where a subdivision includes an existing habitable building(s) that is to be retained, a water supply should be provided to this existing habitable building(s) in accordance with the requirements listed above.			The site does not have access to a reticulated water supply. The dwelling and caretakers' residence have potable water supplied in a domestic tank. A filter treatment system from the ground water supply is stored in a 110,000 L tank supplies water to the sheds. On site firefighting equipment presently includes a slip-on fire unit, and "irrigation pump" that runs roof sprinklers and ground sprinklers from the dam. A 50 000 L water tank is to be provided at each Pod in addition to any structural fire suppression requirements. It is to be provided at Pod 2 in compliance with the Acceptable Solution, Schedule 2 Element 4, and volunteered (applicants discretion) at Pod 1.

5.2 Spatial representation of the bushfire management strategies

The *Spatial representation of the bushfire management strategi*es is provided in Figure EX1 in the Executive Summary.

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The owner responsibilities have been identified to affirm compliance with the Bushfire Protection Criteria identified in section 5.1 of this BMP.

These responsibilities have been listed in the Executive Summary together with the *Spatial representation of the proposed risk management strategies* Figure EX1.

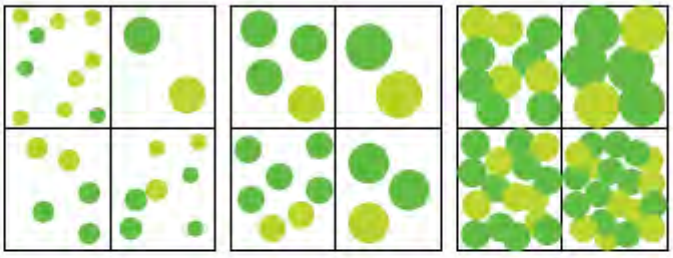
LANDOWNER/OCCUPIER – ONGOING	
No.	**Compliance action**
1.	Pod 2: The establishment of an Asset Protection Zone (APZ) in accordance with the Standards for Asset Protection Zones (Schedule 1 Guidelines for Planning in Bushfire Prone Areas V1.4).
2.	Private driveway access is to be provided in accordance with the Technical requirements provided in the Guidelines at Element 3 Table 6 column 4 Guidelines for Planning in Bushfire Prone Areas V1.4).
3.	The provision of a centrally located 50 000 L water tank at Pod 2 in accordance with Element 4 Schedule 2 (Guidelines for Planning in Bushfire Prone Areas V1.4) and Shire specifications. (Water tank to be volunteered at Pod1)
Advisory Actions	
1.	In accordance with the Shires requirements under the *Bush Fires Act 1954*, establish a 20 m Risk Treatment Area round the buildings at Pod 1.
2.	At the applicant's discretion, the provision of a centrally located 50 000 L water tank at Pod 1 in accordance with Element 4 Schedule 2 (Guidelines for Planning in Bushfire Prone Areas V1.4) and Shire specifications.
LOCAL GOVERNMENT – ONGOING MANAGEMENT	
No.	Management action
1.	Maintaining public road reserves under their management to appropriate standards, where required/applicable.
2.	Administer the requirement of the Bushfires Act 1954, s.33(1) to ensure private land is maintained to likely to be conducive to the outbreak of bushfire or the spread or extension of a bushfire.

ATTACHMENT 1 - APZ Guidelines

Element 2 – Siting and Design (Guidelines for Planning in Bushfire Prone Areas v1.4)

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

ATTACHMENT 2 - Vehicular Access Requirements

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

ATTACHMENT 3 - References

GENERAL REFERENCES

SA Department of Environment and Natural Resources, Government of South Australia, 2012 *Overall Fuel Hazard Guide for South Australia*

WA Department of Planning 2016*, Visual Guide for bushfire risk assessment in Western Australia*

Standards Australia 2018, *AS 3959-2018 Construction of buildings in bushfire-prone areas*, Sydney

Standards Australian and Standards New Zealand 2009, *Australian Standard / New Zealand Standard ISO 31000:2009 Risk management – principles and guidelines*

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth, Perth

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3*, Western Australia.

Online references

Office of Bushfire Risk management (OBRM), Map of Bush Fire Prone Areas, <https://maps.slip.wa.gov.au/landgate/bushfireprone/>

Office of Bushfire Risk Management (OBRM), Bushfire Risk Management (BRM) Plan Guidelines,