BUSHFIRE THREAT ASSESSMENT

FOR
A PROPOSED RESIDENTIAL SUBDIVISION

AT
150 GUNDY ROAD,
SCONE NSW 2337

Prepared by:

Firebird ecoSultants Pty Ltd
ABN – 16 105 985 993

PO Box 354
Newcastle NSW 2300

Mob: 0414 465 990
Ph: 02 4910 3939
Fax: 02 4929 2727
Email: sarah@firebirdeco.com.au

Site Details:	150 Gundy Road, Scone NSW 2337 Lot 2, DP 1169320
Prepared by:	***Sarah Jones B.Env.Sc.,G.Dip.DBPA (Design in Bushfire Prone Areas)*** ***Firebird ecoSultants Pty Ltd*** **A**BN – 16 105 985 993 PO Box 354, Newcastle NSW 2300 M: 0414 465 990 Email: sarah@firebirdeco.com.au T: 02 4910 3939 Fax: 02 4929 2727
Prepared for:	Perception Planning
Reference No.	Scone – Perception Planning – October 2021
Document Status & Date:	26/10/2021

Disclaimer

Not withstanding the precautions adopted within this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.

Executive Summary

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of Perception Planning for a proposed residential subdivision at 150 Gundy Road, Scone. The report forms part of the supporting documentation for a DA to be submitted to Upper Hunter Shire Council (UHS).

The report demonstrates compliance with Planning for Bushfire Protection 2019 (NSW RFS, 2019), and AS3959-2018 Construction of Buildings in Bush Fire Prone Areas.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal. Recommendations are provided with regard to fuel management, access, provision of emergency services, building protection and construction standards to facilitate an acceptable level of bushfire protection.

In summary, the following is recommended to enable the proposal to meet the relevant legislative requirements:

- Assessment in accordance with PBP 2019 has shown that future dwellings within the lots will be able to comply with the required BALs. In any case, future dwellings within the site will be assessed under Section 4.14 of EP&A Act for each individual dwelling upon application.
- APZs are required in accordance with Section 4 of this report.
- Reticulated water is extended into the site. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2017 Fire Hydrant Installations – System design, installation and commissioning (2017).
- The proposed access internal road is to meet either the performance criteria or acceptable solutions as detailed in Section 6 of this report and Section 4.1.3 (1) of PBP.
- Fencing – All new fencing and gates shall be constructed in accordance with the NSW Rural Fire Service Guideline: Fast Fact – Fences or Gates in Bushfire Prone Areas.
- Home owners should prepare a Bush Fire Survival Plan refer to the RFS Website http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf

Sarah Jones
B.Env.Sc., G.Dip.DBPA (Design for Bushfire Prone Areas)
FPA BPAD-A Certified Practitioner (Certification Number BPD-26512)
Ecologist / Bushfire Planner

Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2017	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFSA	Bush Fire Safety Authority
CC	Construction Certificate
EPA Act	*NSW Environmental Planning and Assessment Act 1979*
FFDI	Forest Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2019
PoM	Plan of Management
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
UHS	Upper Hunter Shire Council

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

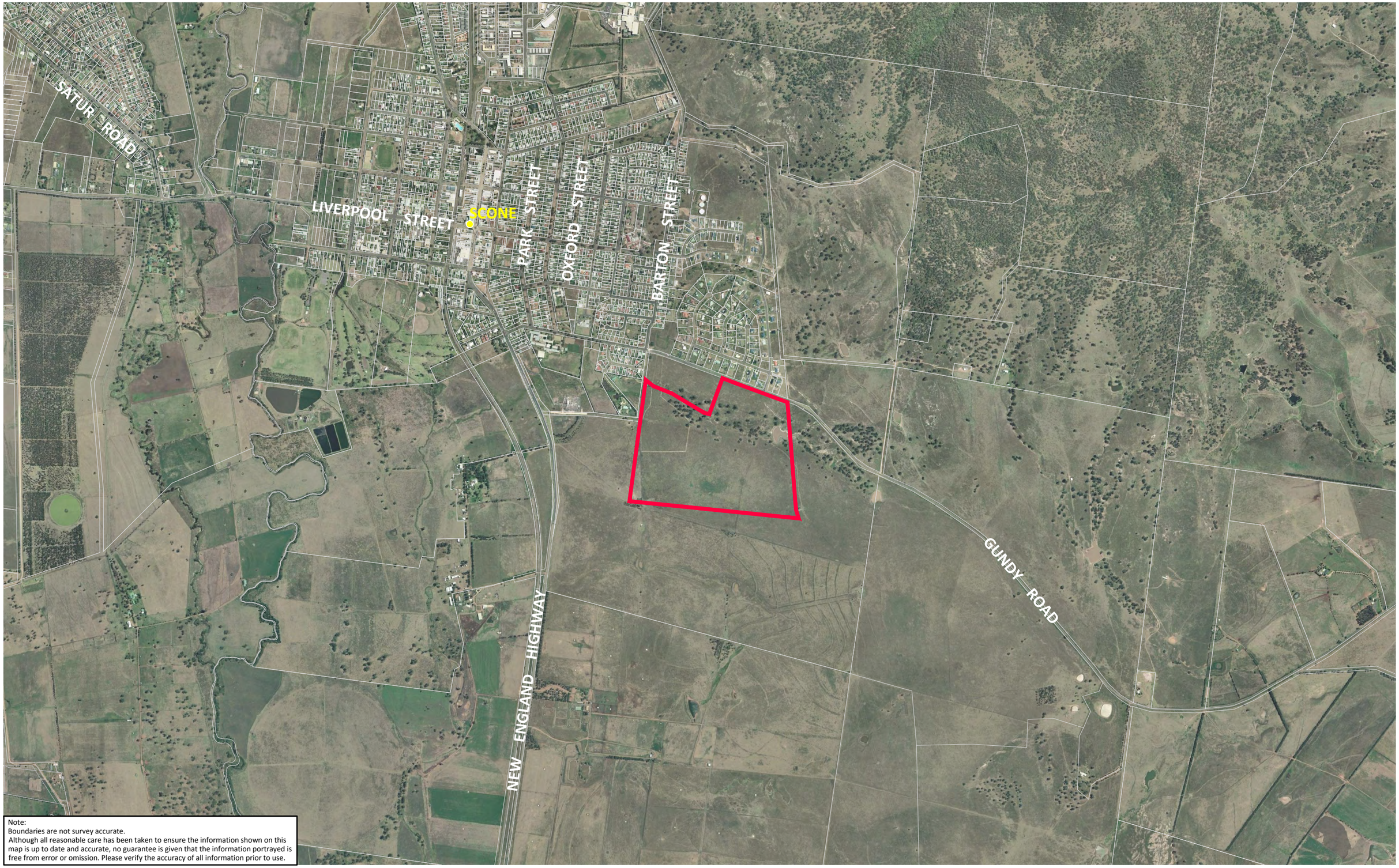
A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of Perception Planning for a proposed residential subdivision at 150 Gundy Road, Scone, hereafter referred to as the "site" (refer to Figure 1-1 for site locality). Refer to Appendix A for Proposed Site Plans.

This BTA is suitable for submission with a Development Application (DA) and provides information on measures that will enable the development to comply with 'Planning for Bushfire Protection' (NSW RFS, 2019), hereafter referred to as PBP (RFS, 2019).

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Environmental Planning and Assessment Amendment (Planning for Bushfire Protection) Regulation 2007 and the Rural Fires Amendment Regulation 2007 (RF Amendment Regulation 2007).

1.1 Site Particulars

Locality:	150 Gundy Road, Scone NSW 2337
LGA:	Upper Hunter Shire Council
Current Land Use:	Vacant lot
Forest Danger Index:	100 FFDI



Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 1-1: SITE LOCALITY MAP

CLIENT	Client
SITE DETAILS	150 Gundy Road Scone
DATE	27 September 2021

Legend
Subject Site

NORTH

0 250 500 1000
SCALE 20 000 @ A3

Ref No 2216

Firebird ecoSultants Pty Ltd
ABN - 16 105 985 993
Level 1, 146 Hunter Street, Newcastle NSW 2300
P O Box 354 Newcastle NSW 2300

1.2 Description of the Proposal

This DA relates to the proposal for a residential subdivision of Lot 2 DP 1169320. The subdivision is divided by a drainage reserve, so for the purposes of the report the subdivision will be referred to as the following:

- Northern part of the Subdivision (North of the drainage reserve); and
- Southern part of the Subdivision (South of the drainage reserve).

Refer to Appendix A for proposed plans.

1.3 Legislative Requirements

The Site has been mapped as Bush Fire Prone Land Map (BFPLM) by UHS.

This report forms part of the supporting documentation for a Development Application (DA) to be submitted to UHS.

This BTA has been prepared using current legislative requirements and associated guidelines for assessment of bushfire protection, these being:

- PBP (RRS, 2019); and
- AS3959-2018 Construction of Buildings in Bushfire Prone Area.

1.4 Objectives of Assessment

This report has been prepared to address the requirements of Clause 44 of the Rural Fires Regulation. This BTA also addresses the six key Bush Fire Protection Measures (BFRMs) in a development assessment context being:

- The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their components being Inner Protection Areas (IPA's) and Outer Protection Areas (OPA's);
- Sitting and design of the proposal;
- Construction standards;
- Appropriate access standards for residents, fire-fighters, emergency workers and those involved in evacuation;
- Adequate water supply and pressure, and utility services; and
- Suitable landscaping, to limit fire spreading to a building.

2 METHODOLOGY

2.1 Vegetation Assessment

Vegetation surveys and vegetation mapping carried out on the site has been undertaken as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent
- Confirmation of the vegetation assemblage typology present.

2.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 2m.

3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2019).

3.1 Vegetation & Slope Assessment

In accordance with PBP (RFS 2019), an assessment of the vegetation over a distance of 140m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the site. This assessment is depicted in Table 3-1 and Figure 3-1.

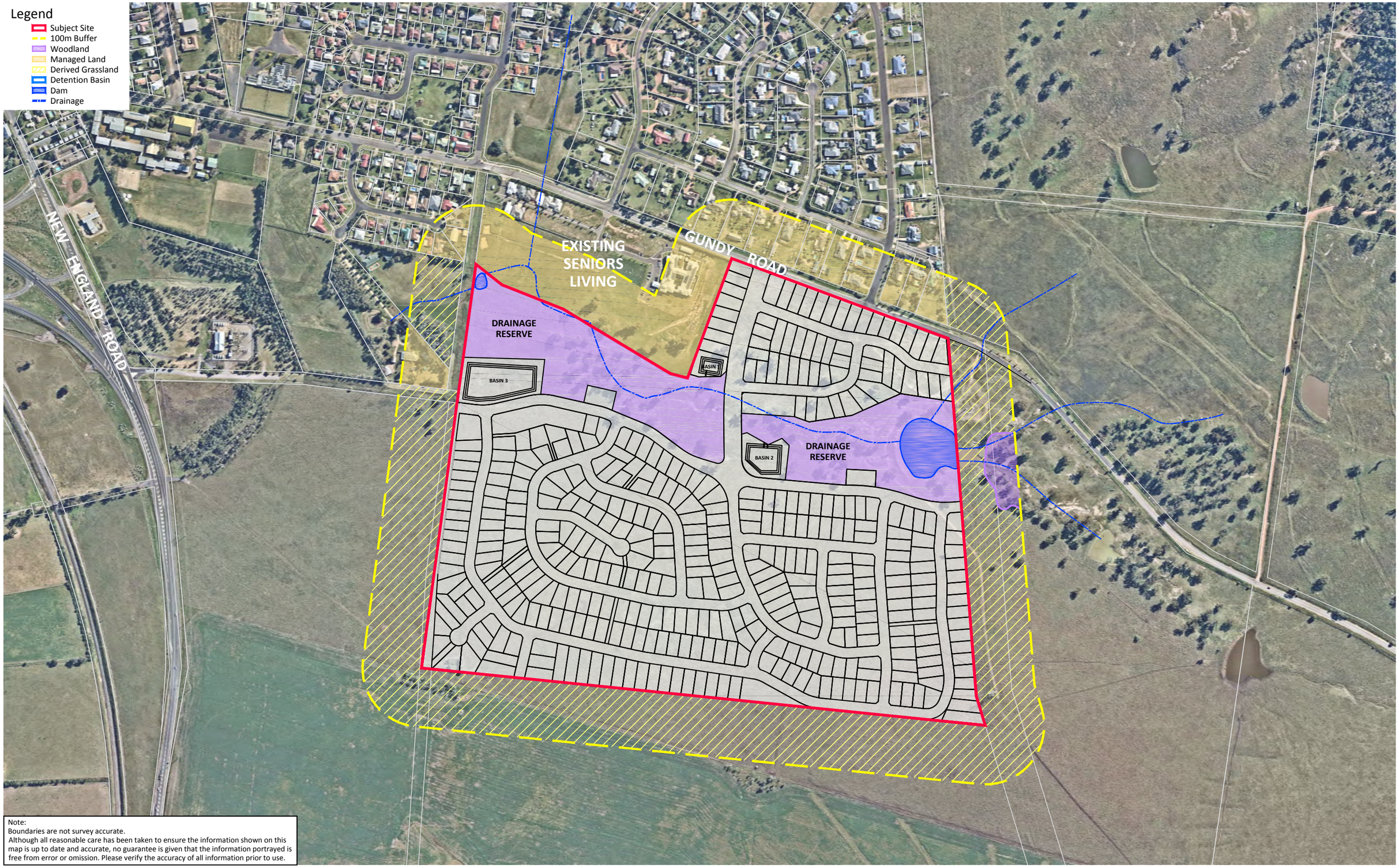
In accordance with PBP (RFS 2019), an assessment of the slope underneath the vegetation considered a bushfire hazard was undertaken and the results are presented in Table 3-1 below.

Table 3-1: Vegetation Classification for the Northern Part of the Subdivision

Direction	Vegetation Type	Slope
North	Managed Land – Residential Development	N/A
East	Grassland	Upslope
South	Woodland – Drainage Reserve	Downslope (0-5°)
West	Grassland and existing Residential Development	Downslope (0-5°)

Table 3-2: Vegetation Classification for the Southern Part of the Subdivision

Direction	Vegetation Type	Slope
North	Woodland – Drainage Reserve	Downslope (0-5°)
East	Grassland	Upslope
South	Grassland	Upslope
West	Grassland	Downslope (0-5°)



Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 3-1: VEGETATION MAP

CLIENT	Client
SITE DETAILS	Lot 2 Gundy Road Scone
DATE	26 October 2021

NORTH

0 100 200 300

SCALE 6000 @ A3

PIXELDRAFTING

Firebird ecoSultants Pty Ltd
ABN - 16 105 985 993
Level 1, 146 Hunter Street, Newcastle NSW 2300
P O Box 354 Newcastle NSW 2300

Ref No 2223 D

4 BUSHFIRE PROTECTION ASSESSMENT

4.1 Asset Protection Zones (APZ)

The PBP (RFS, 2019) guidelines has been used to determine the widths of the APZs required for habitable buildings within the site using the vegetation and slope data identified in Section 3-1 of this report.

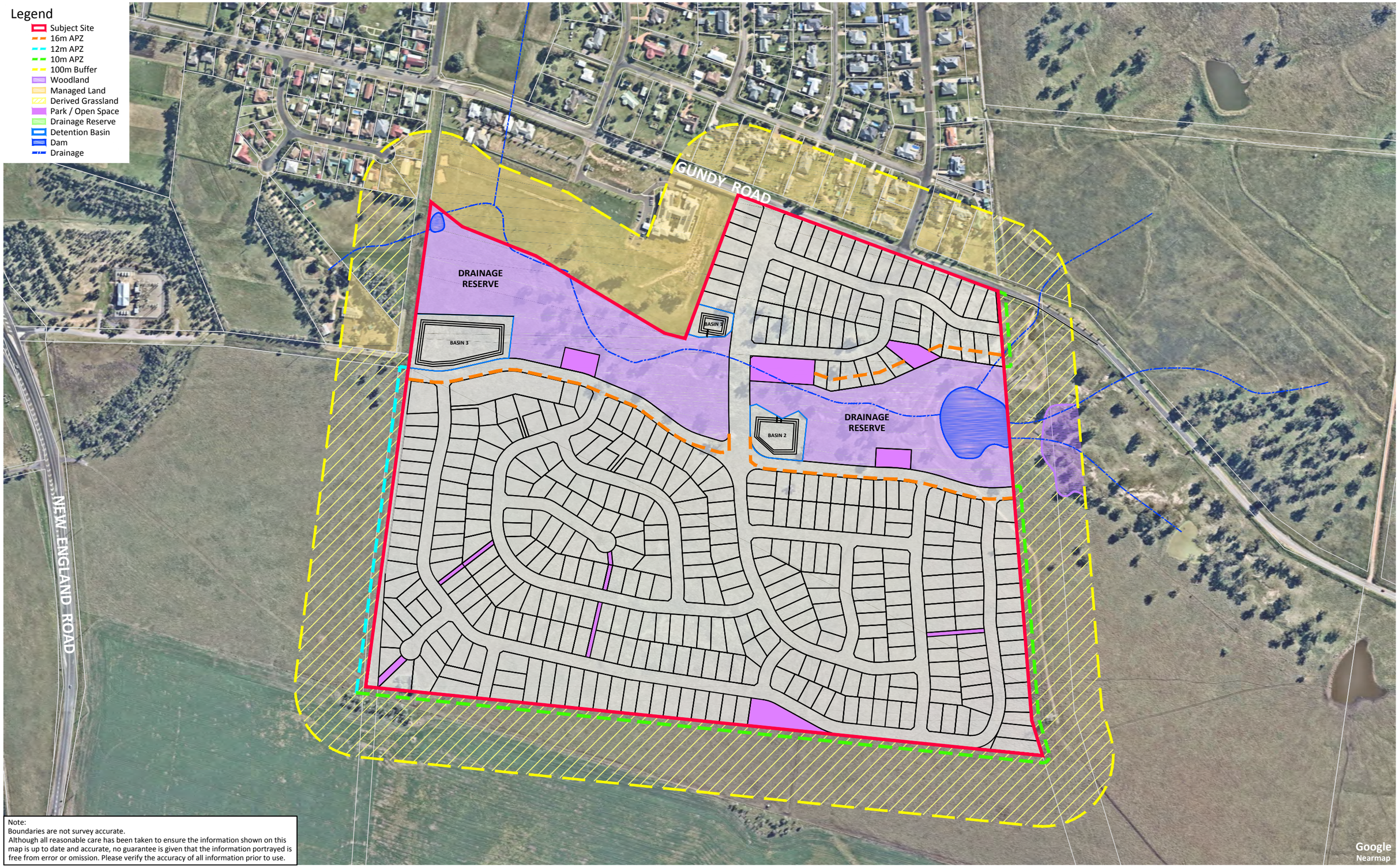
The site lies within Upper Hunter Local Government Area and therefore is assessed under an FDI rating of 100. Using the results from the Site Assessment (section 3-1 of this report) the deemed to satisfy APZ requirements for the proposed buildings within the site was determined using Table A1.12.2 in PBP (RFS, 2019). Refer to Table 4-1, Table 4-2 and Figure 4-1 for required APZs for future habitable buildings.

Table 4-1: Recommended APZs for future dwellings for the Northern Part of the Subdivision

Direction from Building Envelope	Vegetation Classification within 140m	Effective Slope (within 100m)	APZ to be Provided	Width of allowable OPA	Comment
North	Managed Land – Residential Development	N/A	N/A	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
East	Grassland	Upslope	An APZ of >10m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
South	Woodland – Drainage Reserve	Downslope (0-5°)	An APZ of >16m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
West	Grassland and Existing Residential Development	Downslope (0-5°)	An APZ of >12m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)

Table 4-2: Recommended APZs for future dwellings for the Southern Part of the Subdivision

Direction from Building Envelope	Vegetation Classification within 140m	Effective Slope (within 100m)	APZ to be Provided	Width of allowable OPA	Comment
North	Woodland – Drainage Reserve	Downslope (0-5°)	An APZ of >16m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
East	Grassland	Upslope	An APZ of >10m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
South	Grassland	Upslope	An APZ of >10m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)
West	Grassland	Downslope (0-5°)	An APZ of >12m will be established and maintained within the site.	N/A	Acceptable solution in accordance with PBP (RFS, 2019)



Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 4-1: ASSET PROTECTION ZONES MAP

Ref No 2223 D

CLIENT	Client
SITE DETAILS	Lot 2 Gundy Road Scone
DATE	29 September 2021

NORTH

0 100 200 300

SCALE 6000 @ A3

Firebird ecoSultants Pty Ltd
ABN - 16 105 985 993
Level 1, 146 Hunter Street, Newcastle NSW 2300
P O Box 354 Newcastle NSW 2300

5 DWELLING DESIGN & CONSTRUCTION

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2018, and accordingly the designer / architect should be made aware of this recommendation. It may be necessary to have dwelling plans checked by the architect involved to ensure that the proposed dwellings meet the relevant Bushfire Attack Level (BAL) as detailed in AS3959-2018.

The determinations of the appropriate BAL are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by assessing the:

- Relevant FFDI = 100
- Flame temperature
- Slope
- Vegetation classification; and
- Building location.

The following BAL, based on heat flux exposure thresholds, are used in the standard:

(a) **BAL – LOW** The risk is considered to be **VERY LOW**

There is insufficient risk to warrant any specific construction requirements but there are still some risks.

(b) **BAL – 12.5** The risk is considered to be **LOW**

There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 k/m2.

(c) **BAL – 19** The risk is considered to be **MODERATE**

There is a risk of ember attack and burning debris ignited by wind borne embers and a likelihood of exposure to radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m2.

(d) **BAL-29** The risk is considered to be **HIGH**

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux no greater than 29 kW/m2.

(e) **BAL-40** The risk is considered to be **VERY HIGH**

There is much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux no greater than 40 kW/m^2.

(f) **BAL-FZ** The risk is considered to be **EXTREME**

There is an extremely high risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux greater than 40 kW/m^2.

5.1 Determination of Bushfire Attack Levels

As the site lies within an LGA designated an FFDI of 100, the information relating to vegetation and slope was applied to Table A1.12.5 of PBP 2019 to determine the appropriate BAL ratings. The results from this bush fire risk assessment are detailed below in Table 5-1, Table 5-2, and Figure 5-1.

Table 5-1: Determination of BALs for Future Dwellings within the Northern Part of the Subdivision

Vegetation Type & Direction	Separation Distance from vegetation	Bushfire Attack Level (BAL)	Construction Section
Managed Land to the North	N/A	BAL-LOW	No construction requirements
Grassland to the East	10-<15m	BAL-29	Sect 3 & 7 of AS3959
	15-<22m	BAL-19	Sect 3 & 6 of AS3959
	22-<50	BAL-12.5	Sect 3 & 5 of AS3959

Vegetation Type & Direction	Separation Distance from vegetation	Bushfire Attack Level (BAL)	Construction Section
	>50m	BAL-LOW	No construction requirements
Woodland to the South	16-<23m	BAL-29	Sect 3 & 7 of AS3959
	23-<32m	BAL-19	Sect 3 & 6 of AS3959
	32-<100	BAL-12.5	Sect 3 & 5 of AS3959
	>100m	BAL-LOW	No construction requirements
Grassland to the West	12-<17m	BAL-29	Sect 3 & 7 of AS3959
	17-<25m	BAL-19	Sect 3 & 6 of AS3959
	25-<50	BAL-12.5	Sect 3 & 5 of AS3959
	>50m	BAL-LOW	No construction requirements

Table 5-2: Determination of BALs for Future Dwellings within the Southern Part of the Subdivision

Vegetation Type & Direction	Separation Distance from vegetation	Bushfire Attack Level (BAL)	Construction Section
Woodland to the North	16-<23m	BAL-29	Sect 3 & 7 of AS3959
	23-<32m	BAL-19	Sect 3 & 6 of AS3959
	32-<100	BAL-12.5	Sect 3 & 5 of AS3959
	>100m	BAL-LOW	No construction requirements
Grassland to the East	10-<15m	BAL-29	Sect 3 & 7 of AS3959
	15-<22m	BAL-19	Sect 3 & 6 of AS3959
	22-<50	BAL-12.5	Sect 3 & 5 of AS3959
	>50m	BAL-LOW	No construction requirements
Grassland to the South	10-<15m	BAL-29	Sect 3 & 7 of AS3959
	15-<22m	BAL-19	Sect 3 & 6 of AS3959
	22-<50	BAL-12.5	Sect 3 & 5 of AS3959
	>50m	BAL-LOW	No construction requirements
Grassland to the West	12-<17m	BAL-29	Sect 3 & 7 of AS3959
	17-<25m	BAL-19	Sect 3 & 6 of AS3959

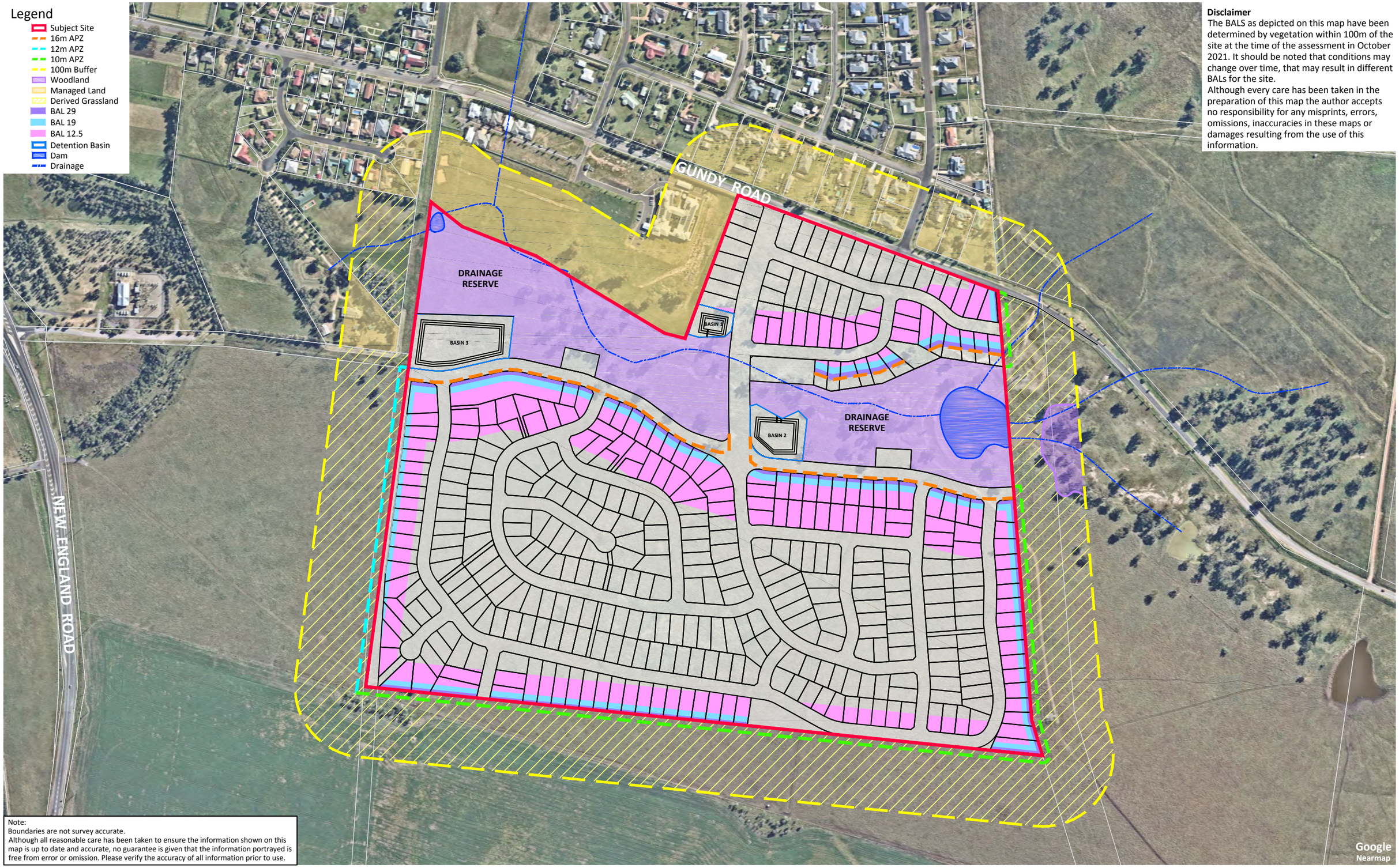
Vegetation Type & Direction	Separation Distance from vegetation	Bushfire Attack Level (BAL)	Construction Section
	25-<50	BAL-12.5	Sect 3 & 5 of AS3959
	>50m	BAL-LOW	No construction requirements

Given the information in Table 5-1 and Table 5-2 above, any future dwellings within the lots will be able to comply with AS3959-2018. In any case, future dwellings within the site will be assessed under Section 4.14 of EP&A Act for each individual dwelling upon application.

Legend

- Subject Site
- 16m APZ
- 12m APZ
- 10m APZ
- 100m Buffer
- Woodland
- Managed Land
- Derived Grassland
- BAL 29
- BAL 19
- BAL 12.5
- Detention Basin
- Dam
- Drainage

Disclaimer
The BALS as depicted on this map have been determined by vegetation within 100m of the site at the time of the assessment in October 2021. It should be noted that conditions may change over time, that may result in different BALs for the site.
Although every care has been taken in the preparation of this map the author accepts no responsibility for any misprints, errors, omissions, inaccuracies in these maps or damages resulting from the use of this information.



Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 5-1: BUSHFIRE ATTACK LEVELS

Ref No 2223 D

CLIENT	Client
SITE DETAILS	Lot 2 Gundy Road Scone
DATE	22 October 2021

NORTH

0 100 200 300

SCALE 6000 @ A3

Firebird ecoSultants Pty Ltd
ABN - 16 105 985 993
Level 1, 146 Hunter Street, Newcastle NSW 2300
P O Box 354 Newcastle NSW 2300

6 COMPLIANCE

The proposal is for a residential subdivision and therefore development standards apply. Table 6-1 details the proposed compliance with Development Standards for Residential and Rural Residential Subdivisions.

Table 6-1: Proposed Dwelling Compliance with Development Standards

Acceptable Solutions	Performance Criteria	Compliance
Asset Protection Zones		
〉 APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot.	**Complies with Acceptable Solution –** APZs are provided in accordance with Table A1.12.2 of PBP 2019.
〉 APZs are managed in accordance with the requirements of Appendix 4.	APZs are managed and maintained to prevent the spread of a fire towards the building.	**Complies with Acceptable Solution –** APZs on site are to be managed in accordance with Appendix 4 of PBP 2019.
〉 APZs are wholly within the boundaries of the development site	the APZs is provided in perpetuity	**Complies with Performance Criteria –** While APZs occur on adjoining lots, these lots are owned by the same landowner that is submitting this development proposal.
〉 APZs are located on lands with a slope less than 18 degrees.	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	**Complies with Acceptable Solution –** APZs on site do not occur on slope less than 18 degrees.
Landscaping		
〉 landscaping is in accordance with Appendix 4; and fencing is constructed in accordance with section 7.6.	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	**Complies with Acceptable Solution –** All landscaping within the site will meet the requirements of the acceptable solution.

Access (General Requirements)		
〉 property access roads are two-wheel drive, all -weather roads; 〉 perimeter roads are provided for residential subdivisions of three or more allotments; 〉 subdivisions of three or more allotments have more than one access in and out of the development; 〉 traffic management devices are constructed to not prohibit access by emergency services vehicles; 〉 maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; 〉 all roads are through roads; 〉 dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; 〉 where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; 〉 where access/egress can only be achieved through forest, woodland and heath	Firefighting vehicles are provided with safe, all-weather access to structures.	**Complies with Performance Criteria –** All roads within the site are designed to meet the requirements of the acceptable solution, with the exception of alternative access and a perimeter road. However, an emergency exit is provided to the west of the development and the access road is located to provide direct egress away from the potential bushfire allowing safe and quick egress from the site in the event of a bushfire.

vegetation, secondary access shall be provided to an alternate point on the existing public road system; and one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.		
〉 the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/ causeways are to clearly indicate load rating.	the capacity of access roads is adequate for firefighting vehicles.	**Complies with Acceptable Solution –** All roads within the site are designed to meet the requirements of the acceptable solution.
〉 hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; 〉 hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017 - Fire hydrant installations System design, installation and commissioning; and there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	there is appropriate access to water supply.	**Complies with Acceptable Solution –** Hydrants are to be positioned appropriately across the site.

Perimeter Roads		
〉 are two-way sealed roads; 〉 minimum 8m carriageway width kerb to kerb; 〉 parking is provided outside of the carriageway width; 〉 hydrants are located clear of parking areas; 〉 are through roads, and these are linked to the internal road system at an interval of no greater than 500m; 〉 curves of roads have a minimum inner radius of 6m; 〉 the maximum grade road is 15 degrees and average grade of not more than 10 degrees; 〉 the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	**Complies with Performance Criteria –** a perimeter road is not provided; however, the site is surrounded by grassland which provides access/egress for firefighting vehicles.
Non-Perimeter Roads		
〉 minimum 5.5m carriageway width kerb to kerb; 〉 parking is provided outside of the carriageway width; 〉 hydrants are located clear of parking areas;	access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	**Complies with Acceptable Solution –** this being: 〉 minimum 5.5m carriageway width kerb to kerb; 〉 parking is provided outside of the carriageway width;

〉 roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; 〉 curves of roads have a minimum inner radius of 6m; 〉 the road crossfall does not exceed 3 degrees; and 〉 a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.		〉 hydrants are located clear of parking areas; 〉 roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; 〉 curves of roads have a minimum inner radius of 6m; 〉 the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.
Property Access		
〉 There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles. **In circumstances where this cannot occur, the following requirements apply:** 〉 minimum 4m carriageway width;	firefighting vehicles can access the dwelling and exit the property safely.	**Complies with Acceptable Solution –** All future lots are to be connected to a public road by a driveway <70m

〉 in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; 〉 a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; 〉 provide a suitable turning area in accordance with Appendix 3; 〉 curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; 〉 the minimum distance between inner and outer curves is 6m; 〉 the crossfall is not more than 10 degrees; 〉 maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and 〉 a development comprising more than three dwellings has access by dedication of a road and not by right of way. **Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also**		

apply to community style development property access roads in addition to the above.		
Water Supplies		
〉 reticulated water is to be provided to the development where available; 〉 a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and static water supplies shall comply with Table 5.3d.	adequate water supplies are provided for firefighting purposes.	**Complies with Acceptable Solution –** All lots are to be connected to reticulated water.
〉 fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2017; 〉 hydrants are not located within any road carriageway; and 〉 reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations.	**Can Comply with Acceptable Solution –** Hydrants are to be positioned appropriately across the site.
〉 fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2017.	flows and pressure are appropriate.	**Complies with Acceptable Solution –** Flows and pressure assumed.

〉 all above-ground water service pipes are metal, including and up to any taps; and above-ground water storage tanks shall be of concrete or metal.	the integrity of the water supply is maintained.	**Complies with Acceptable Solution –** All above ground water service pipes will meet the requirements.
Electricity Services		
〉 where practicable, electrical transmission lines are underground; 〉 where overhead, electrical transmission 〉 lines are proposed as follows: lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	**Complies with Acceptable Solution –** All future dwellings are able to meet the requires for electricity services.
Gas Services		
〉 reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - The storage and handling of LP Gas, the requirements of relevant authorities, and metal piping is used;	location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	**Can Complies with Acceptable Solution –** All future dwellings are able to meet the requires for gas service

〉 all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; 〉 connections to and from gas cylinders are metal; 〉 polymer-sheathed flexible gas supply lines are not used; and 〉 above-ground gas service pipes are metal, including and up to any outlets.		

7 CONCLUSION & RECOMMENDATIONS

In summary, a Bushfire Risk Assessment has been undertaken for a proposed residential subdivision at 150 Gundy Road, Scone. The report forms part of the supporting documentation for a Development Application (DA) to be submitted to UHS.

If the recommendations contained within this report are duly considered and incorporated, it is considered that the fire hazard present is containable to a level necessary to provide an adequate level of protection to life and property on the subdivision. In summary, the following is recommended to enable the proposal to meet the relevant legislative requirements:

- Assessment in accordance with PBP 2019 has shown that future dwellings within the lots will be able to comply with the required BALs. In any case, future dwellings within the site will be assessed under Section 4.14 of EP&A Act for each individual dwelling upon application.
- APZs are required in accordance with Section 4 of this report.
- Reticulated water is extended into the site. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2017 Fire Hydrant Installations – System design, installation and commissioning (2017).
- The proposed access internal road is to meet either the performance criteria or acceptable solutions as detailed in Section 6 of this report and Section 4.1.3 (1) of PBP.
- Fencing – All new fencing and gates shall be constructed in accordance with the NSW Rural Fire Service Guideline: Fast Fact – Fences or Gates in Bushfire Prone Areas.
- Home owners should prepare a Bush Fire Survival Plan refer to the RFS Website http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf

8 BIBLIOGRAPHY

Department of Bush Fire Services (undated). *Bush Fire Readiness Checklist.*

NSWFB (1988). *Hazard Reduction for the Protection of Buildings in Bushland Areas.* New South Wales Fire Brigades.

NSW Rural Fire Service (1997). *Bush Fire Protection for New and Existing Rural Properties.* September 1997, NSW Government.

NSW Rural Fire Service (2006). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Rural Fire Service (2019). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.

NSW Rural Fire Service (2002). *Circular 16/2002: Amendments to the Rural Fires Act 1997 – hazard reduction and planning requirements.*

Planning NSW & NSW Rural Fire Service (2001). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice.* CSIRO and Standards Australia.

Rural Fires and Environmental Assessment Legislation Amendment Act 2002.

Standards Australia (2018). *AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.*

APPENDIX A PROPOSED SITE PLANS

GUNDY ROAD, SCONE

PROPOSED SUBDIVISION

SHEET INDEX

COVER_001	COVER AND SHEET INDEX
DETAIL_001	DETAIL SURVEY
STAGE_001	STAGING PLAN
STAGE_002	STAGING PLAN - STAGE 1-3
STAGE_003	STAGING PLAN - STAGE 4
STAGE_004	STAGING PLAN - STAGE 5
STAGE_005	STAGING PLAN - STAGE 6
STAGE_006	STAGING PLAN - STAGE 7
STAGE_007	STAGING PLAN - STAGE 8
STAGE_008	STAGING PLAN - STAGE 9
STAGE_009	STAGING PLAN - STAGE 10
STAGE_010	STAGING PLAN - STAGE 11
STAGE_011	STAGING PLAN - STAGE 12
STAGE_012	STAGING PLAN - STAGE 13
STAGE_013	STAGING PLAN - STAGE 14
STAGE_014	STAGING PLAN - STAGE 15
STAGE_015	STAGING PLAN - STAGE 16
PATHWAY_001	FOOTPATH / CYCLEWAY PLAN
DUPLEX_001	DUPLEX LOTS PLAN
BUSROUTE_001	BUS ROUTE PLAN
WATER_001	WATER SERVICING STRATEGY
SEW_001	SEWER DRAINAGE STRATEGY
SEW_002	CATCHMENT 1
SEW_003	CATCHMENT 2
SEW_004	CATCHMENT 3
EMERG_001	EMERGENCY ACCESS PLAN

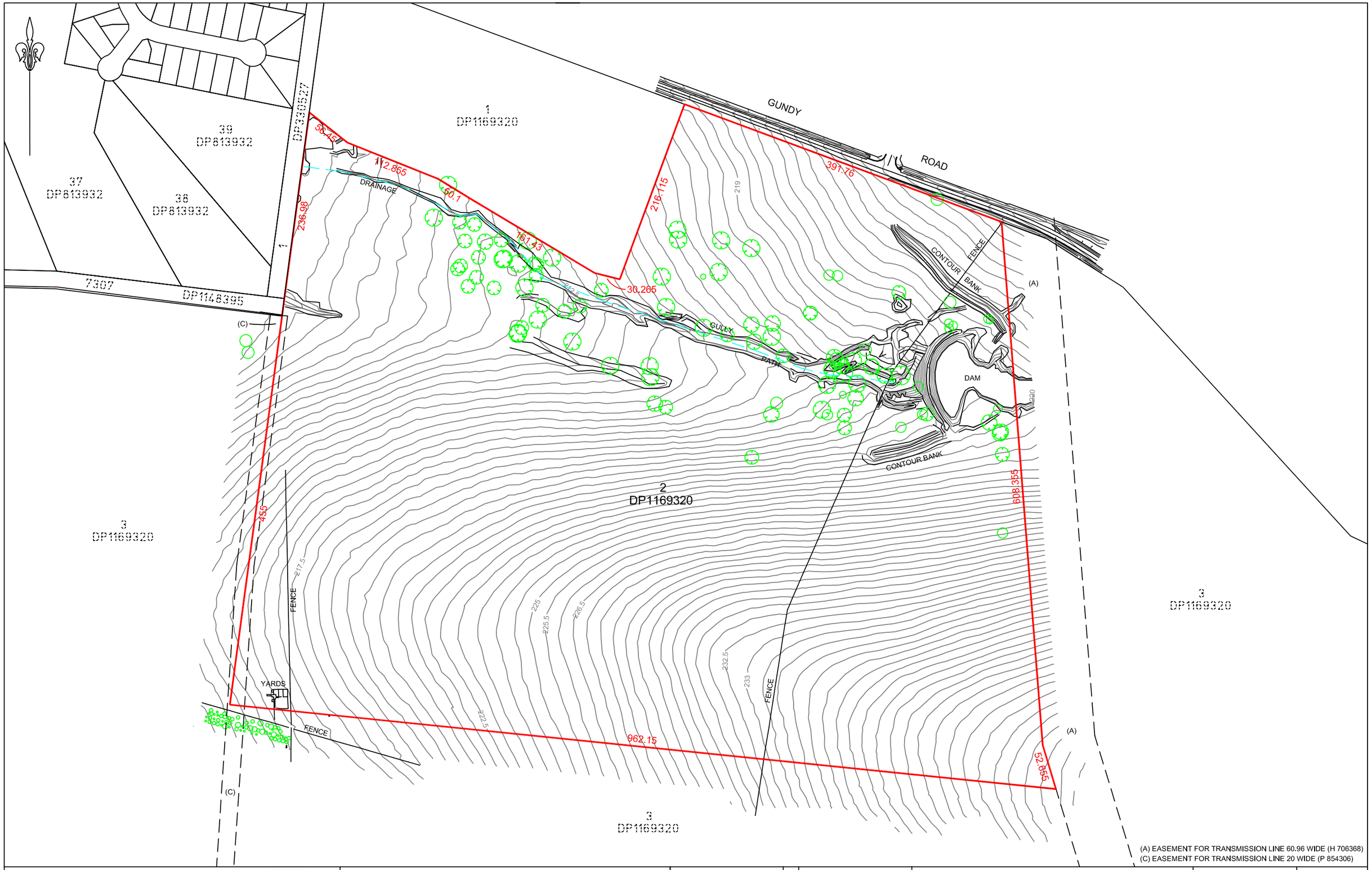
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE:	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: COVER_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



(A) EASEMENT FOR TRANSMISSION LINE 60.96 WIDE (H 706368)
(C) EASEMENT FOR TRANSMISSION LINE 20 WIDE (P 854306)

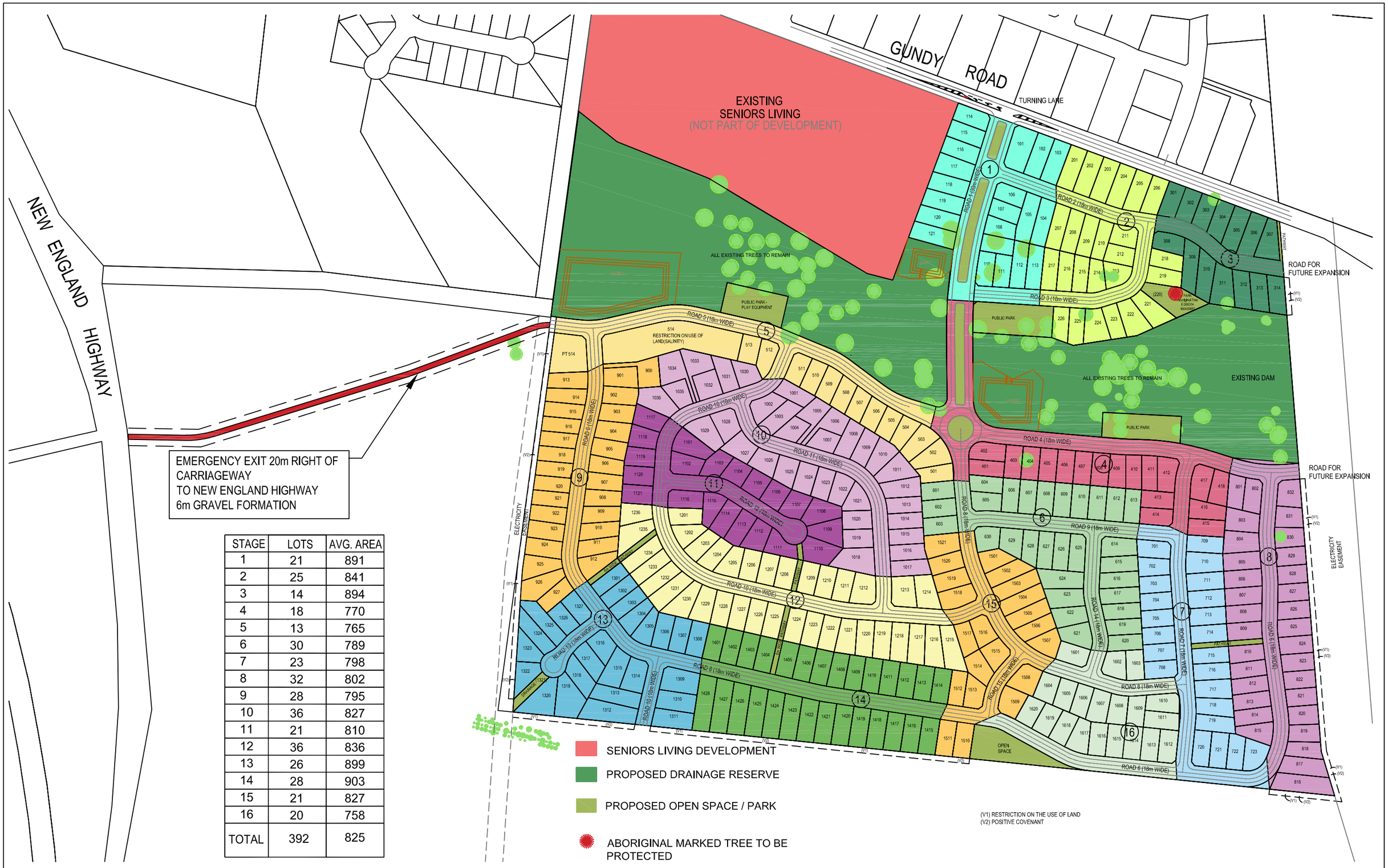
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

DETAIL AND CONTOUR SURVEY FOR PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT: 0.5m	
V.SCALE		DATUM:	
DATE: 21.07.2021		FILE: DETAIL_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



STAGE	LOTS	AVG. AREA
1	21	891
2	25	841
3	14	894
4	18	770
5	13	765
6	30	789
7	23	798
8	32	802
9	28	795
10	36	827
11	21	810
12	36	836
13	26	899
14	28	903
15	21	827
16	20	758
TOTAL	392	825

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
(PO Box 26), MUSWELLBROOK NSW 2333

STAGING PLAN
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

INSTALL LANDSCAPE SCREENING

TURNING LANE

GUNDY ROAD

PROPOSED FOOTPATH 1.2m WIDE

PROPOSED CYCLEWAY 2m WIDE

(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT

ROAD 1 (30m WIDE)

ROAD 2 (18m WIDE)

ROAD 3 (18m WIDE)

PATHWAY

ROAD FOR FUTURE EXPANSION

BASIN 1

PUBLIC PARK

PARK
Aboriginal Tree
E:300314
N:6450857

ALL EXISTING TREES TO REMAIN

EXISTING DAM

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 1 - 3
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_002	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

PROPOSED FOOTPATH 1.2m WIDE

PROPOSED CYCLEWAY 2m WIDE

ALL EXISTING TREES TO REMAIN

EXISTI

BASIN 2

PUBLIC PARK

ROAD 4 (18m WIDE)

ROAD 8 (18m WIDE)

ROAD 9 (18m WIDE)

4

6

402 816m²

403 744m²

404 760m²

405 760m²

406 760m²

407 760m²

408 760m²

409 734m²

410 703m²

411 721m²

412 868m²

401 723m²

604 705m²

605 730m²

606 751m²

607 779m²

608 778m²

609 777m²

610 776m²

611 776m²

612 813m²

613 715m²

413 732m²

414 718m²

630 754m²

629 786m²

614

417 898m²

418 781m²

416 824m²

415 801m²

709

801 715m²

803 940m²

804 963m²

501 732m²

601 764m²

602 779m²

603 793m²

1521

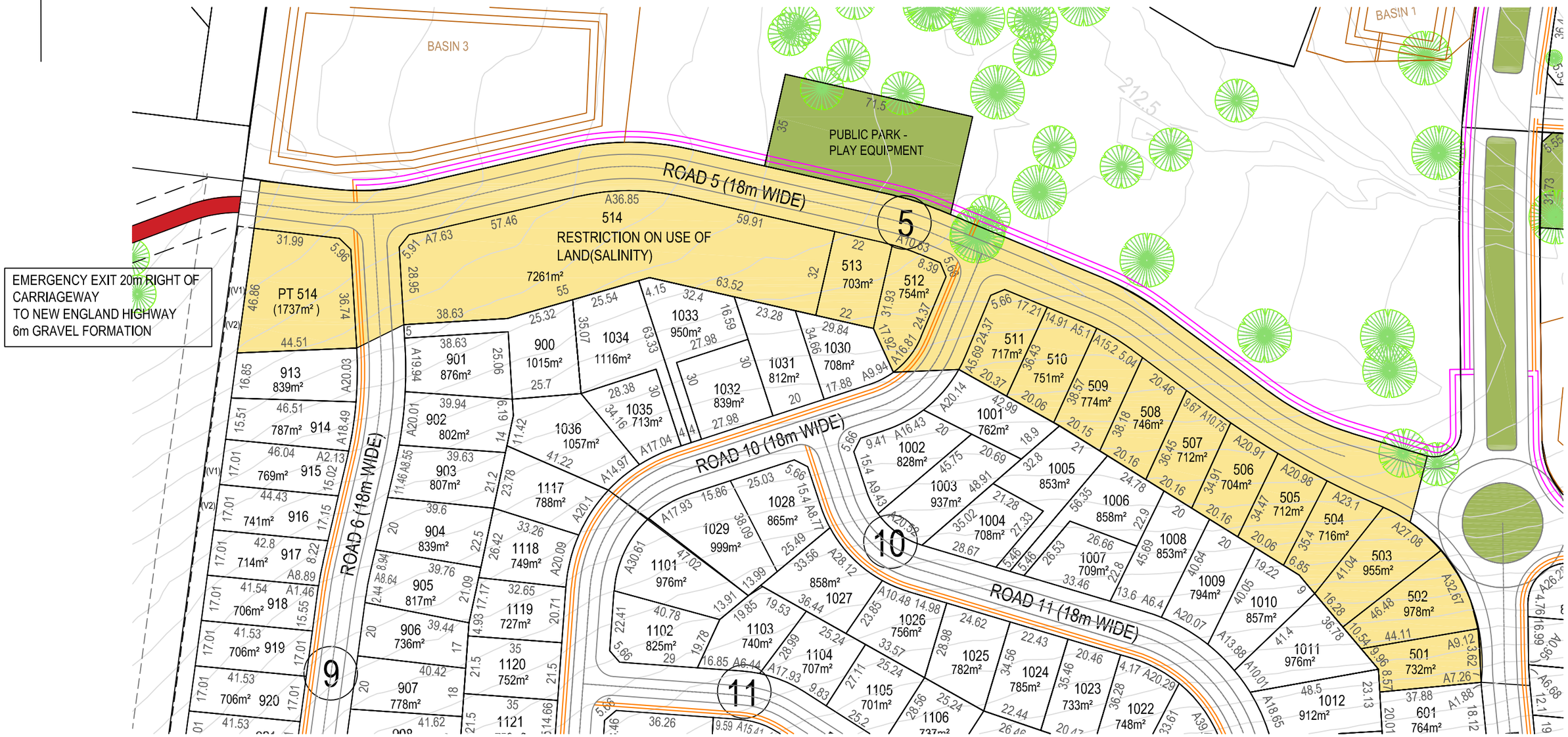
502 878m²

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 4
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1000	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_003	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT

PROPOSED FOOTPATH 1.2m WIDE
PROPOSED CYCLEWAY 2m WIDE

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

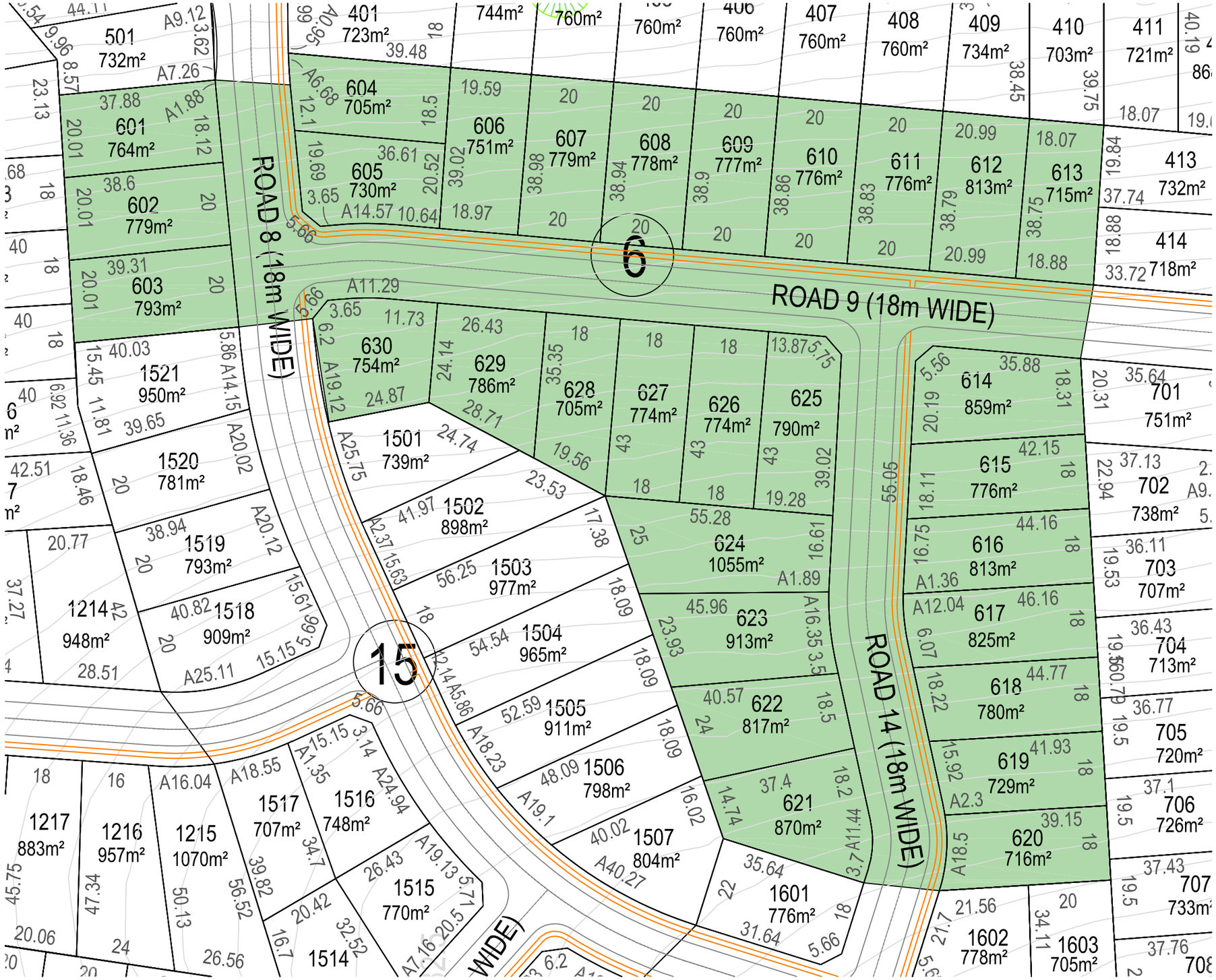
STAGING PLAN - STAGE 5
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_004	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M

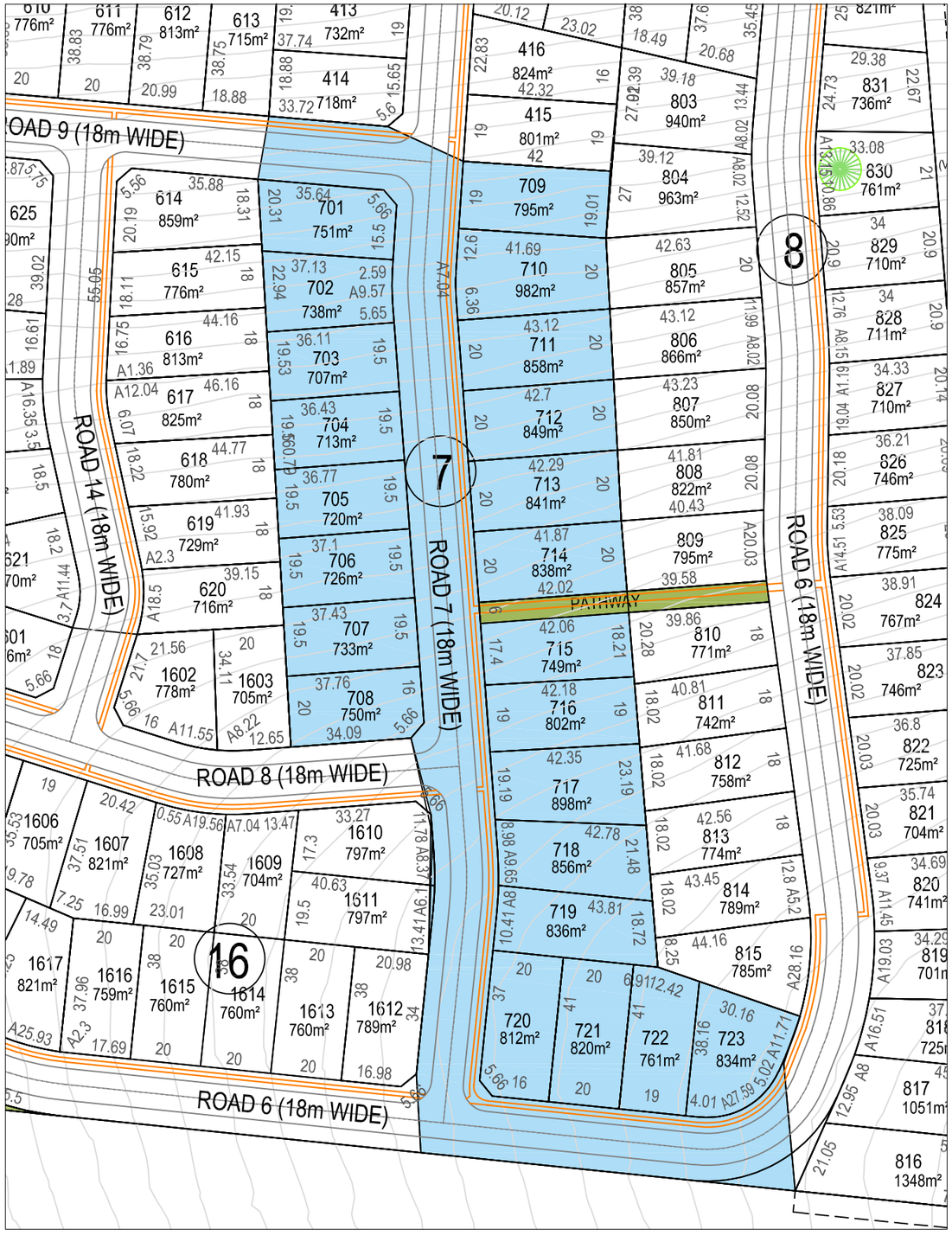


MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 6
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1000	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_005	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



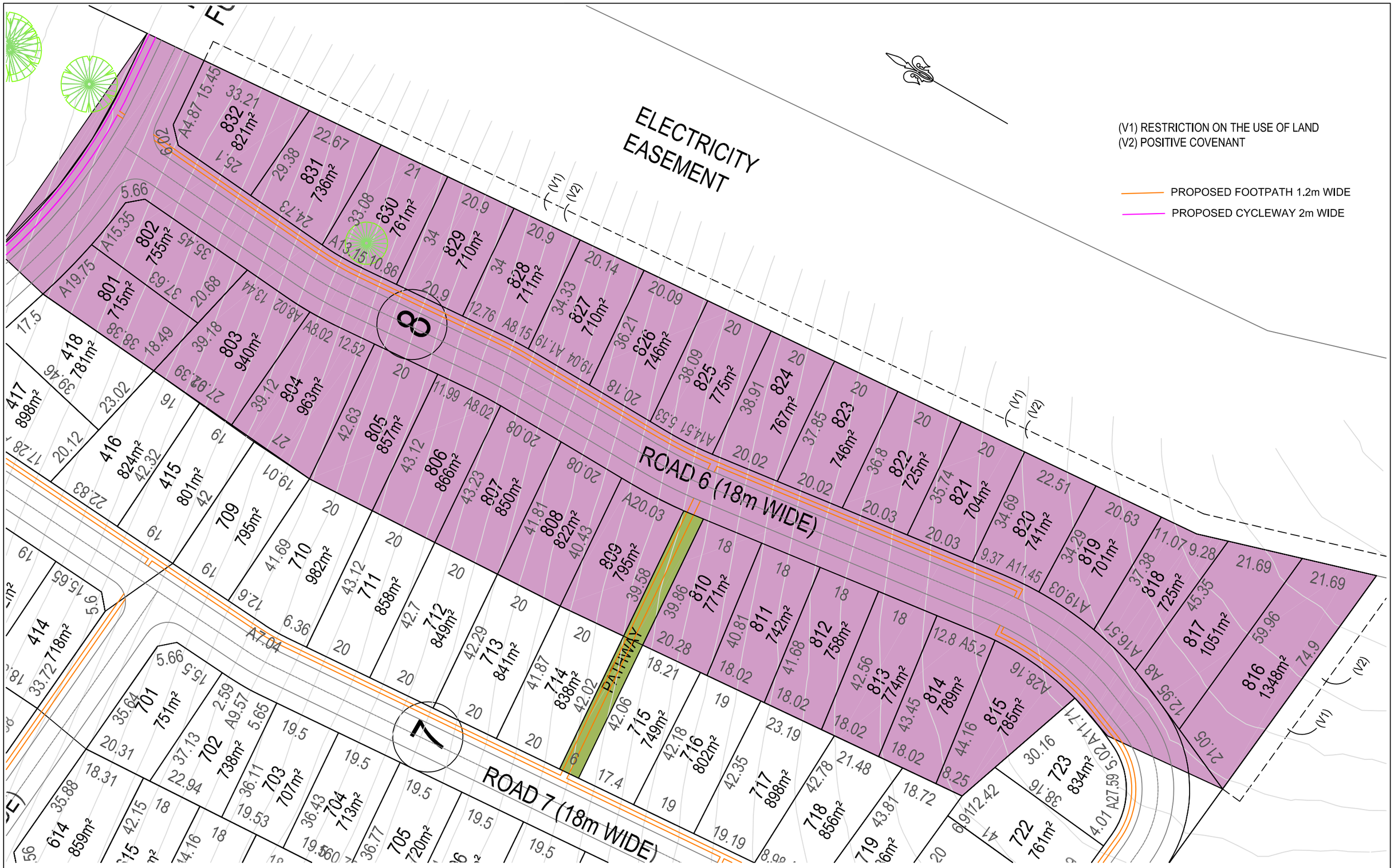
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 7
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_006	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

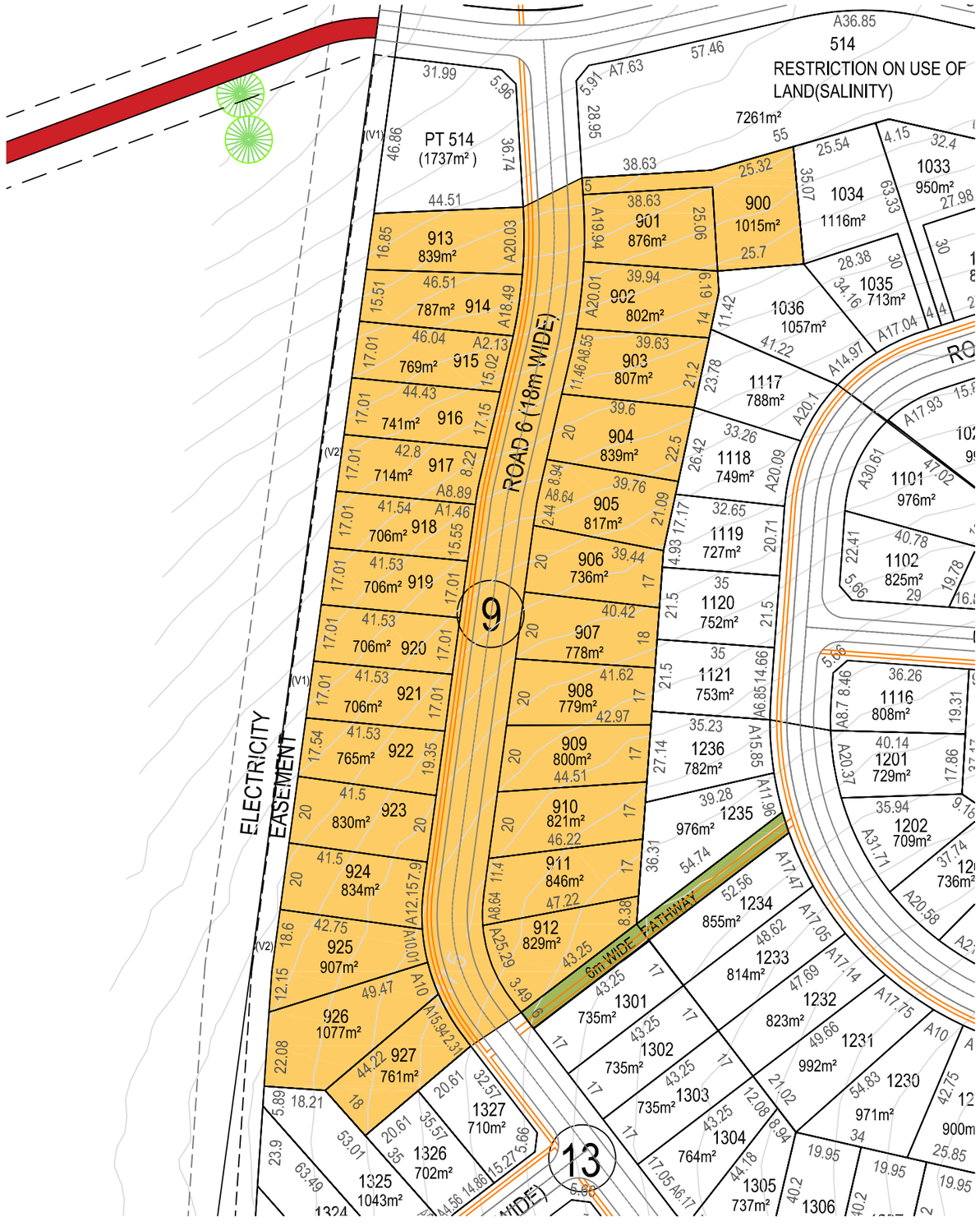
STAGING PLAN - STAGE 8
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_007	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

EMERGENCY EXIT 20m RIGHT OF CARRIAGEWAY
TO NEW ENGLAND HIGHWAY
6m GRAVEL FORMATION



(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT

PROPOSED FOOTPATH 1.2m WIDE

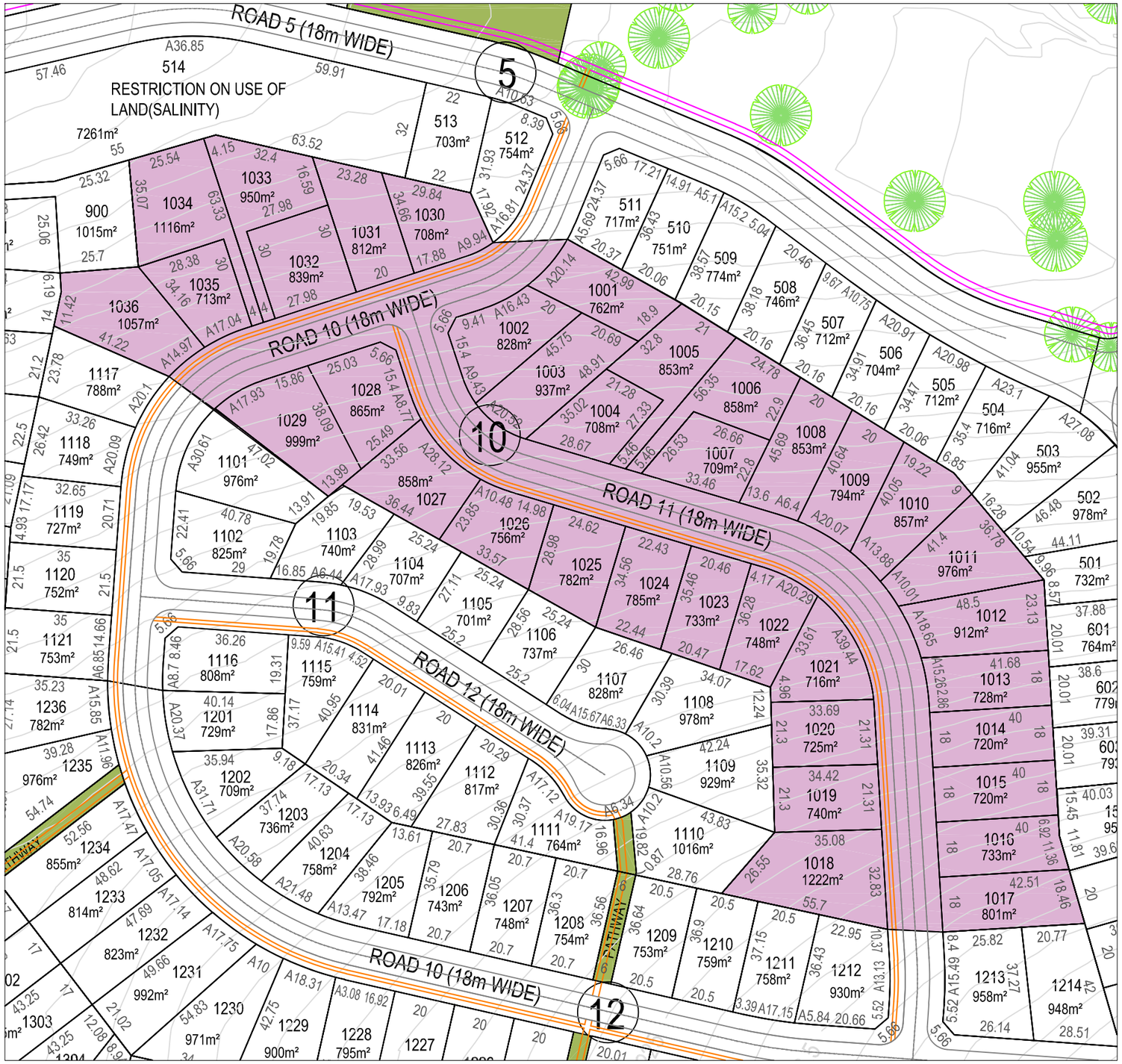
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 9
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_008	

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M



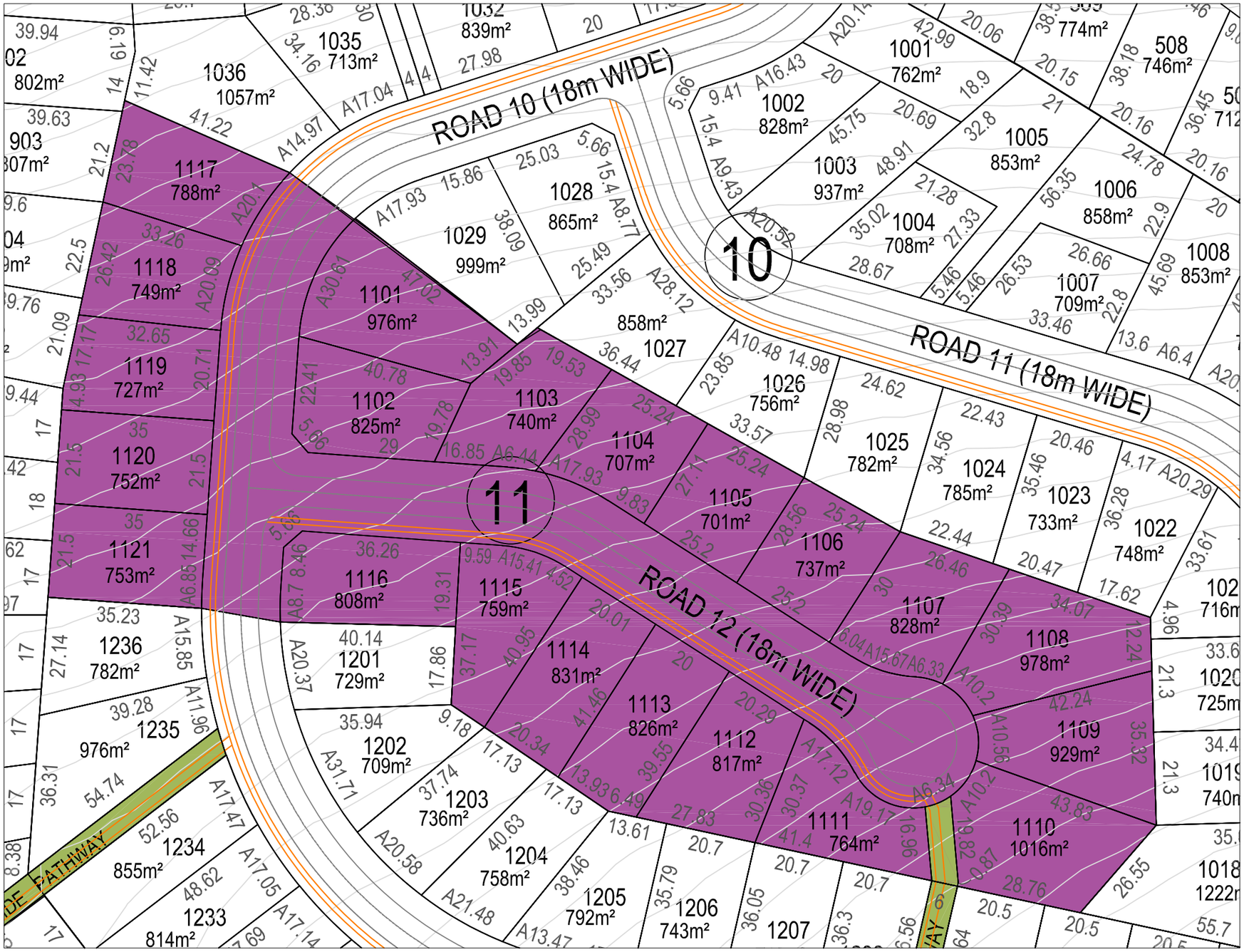
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 10
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_009	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

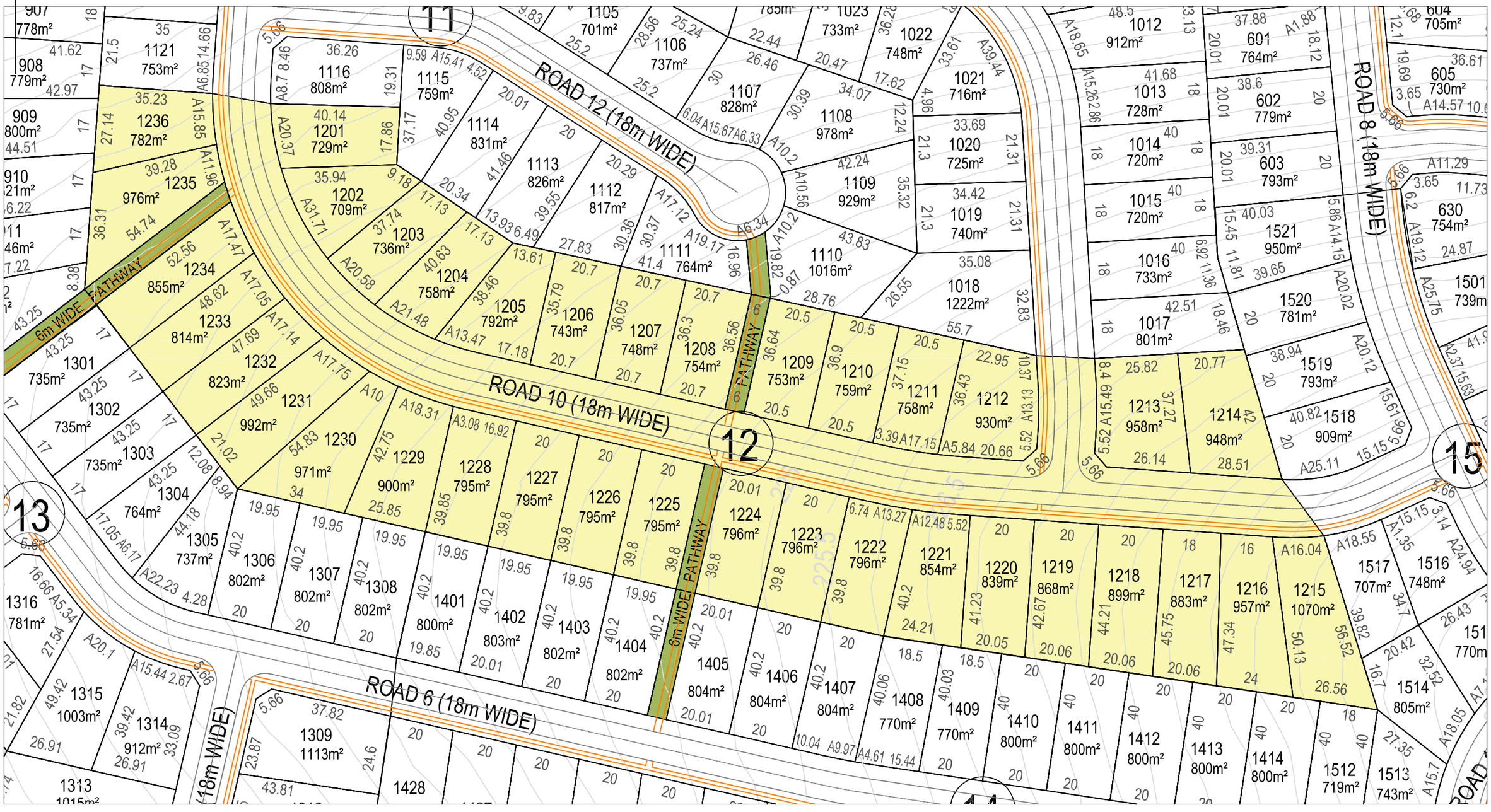
STAGING PLAN - STAGE 11
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_010	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

PROPOSED FOOTPATH 1.2m WIDE



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

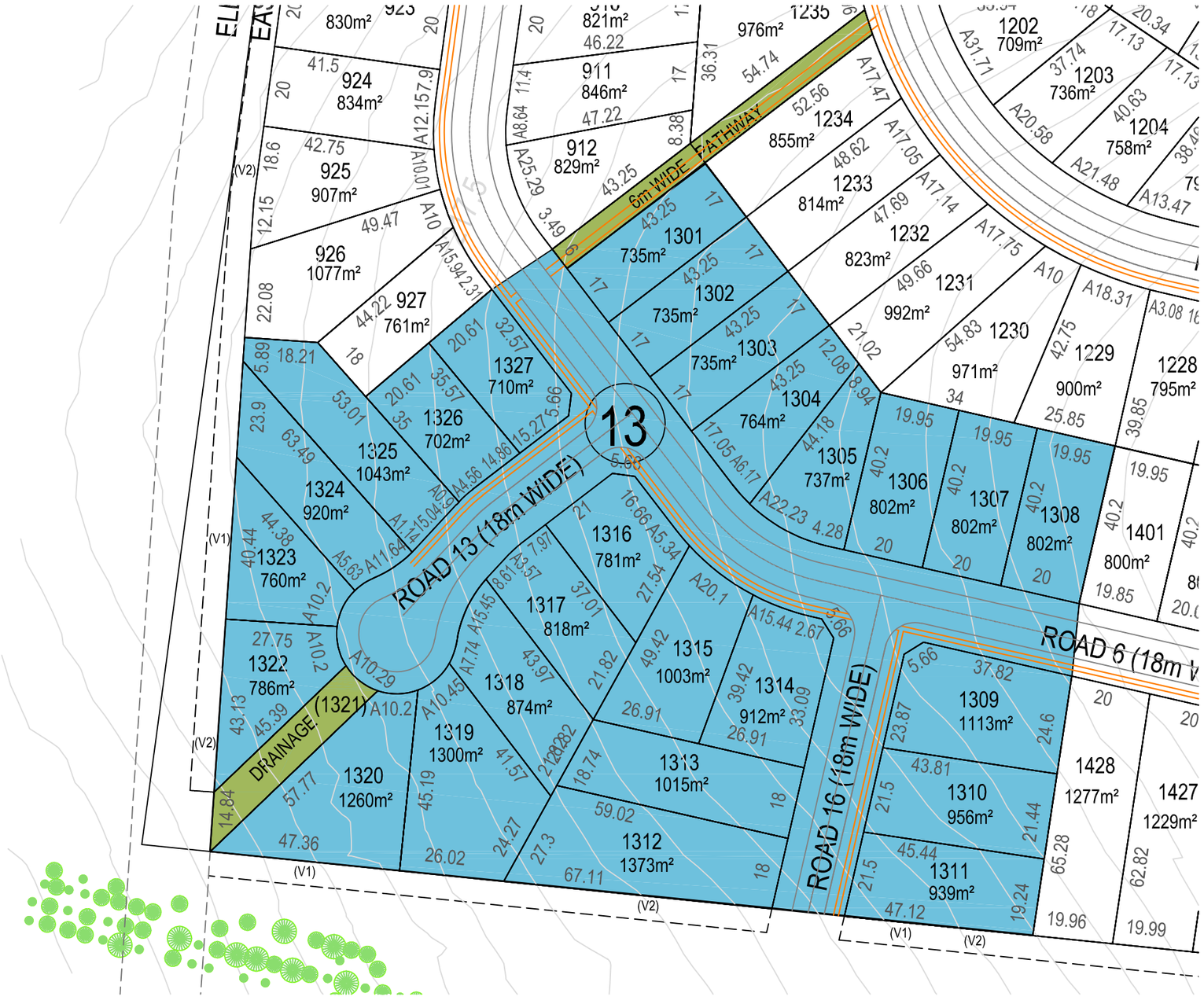
STAGING PLAN - STAGE 12
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_011	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

PROPOSED FOOTPATH 1.2m WIDE

(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

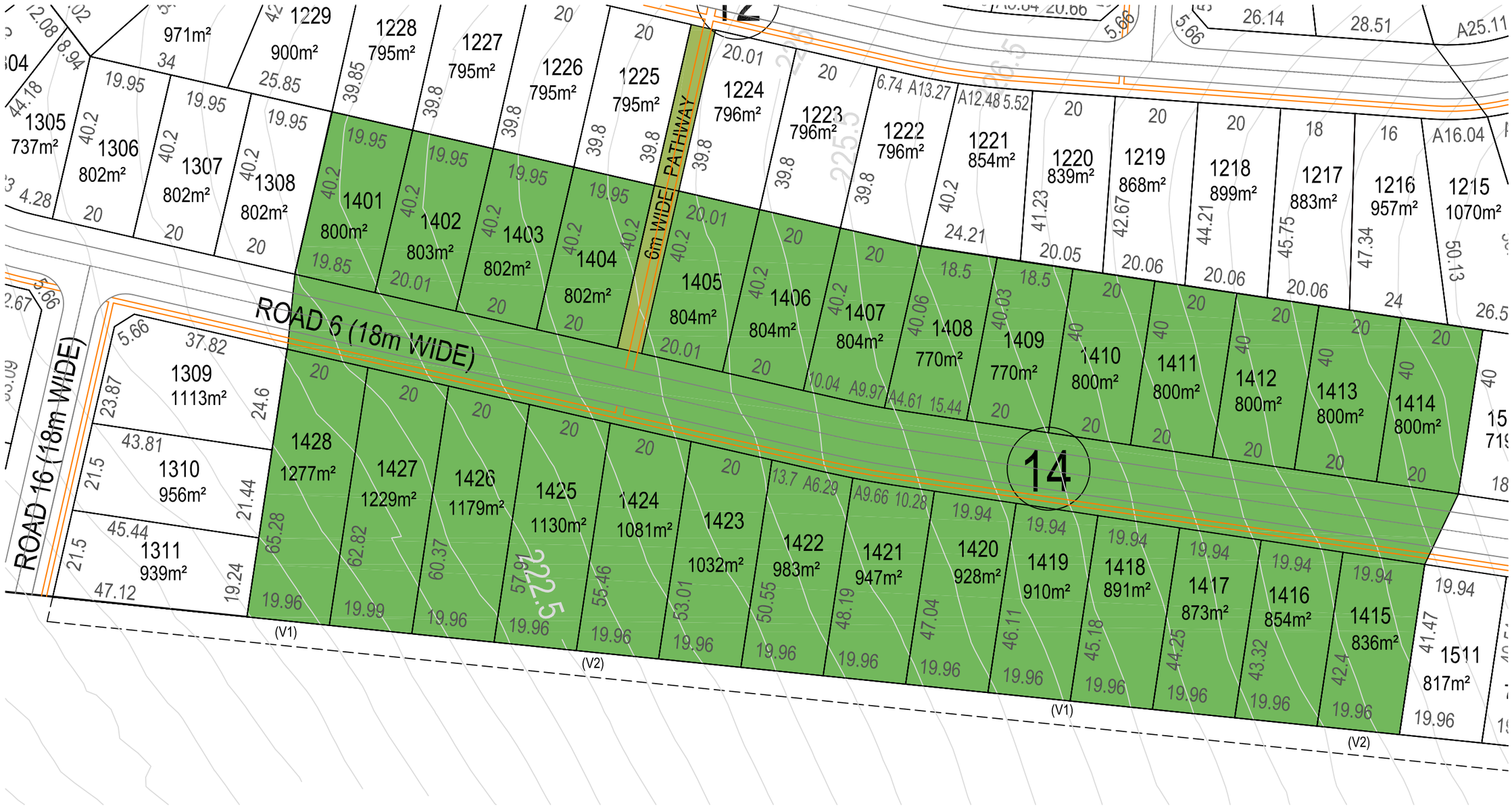
STAGING PLAN - STAGE 13
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_012	

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M

PROPOSED FOOTPATH 1.2m WIDE



(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 14
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_013	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

PROPOSED FOOTPATH 1.2m WIDE

(V1) RESTRICTION ON THE USE OF LAND
(V2) POSITIVE COVENANT

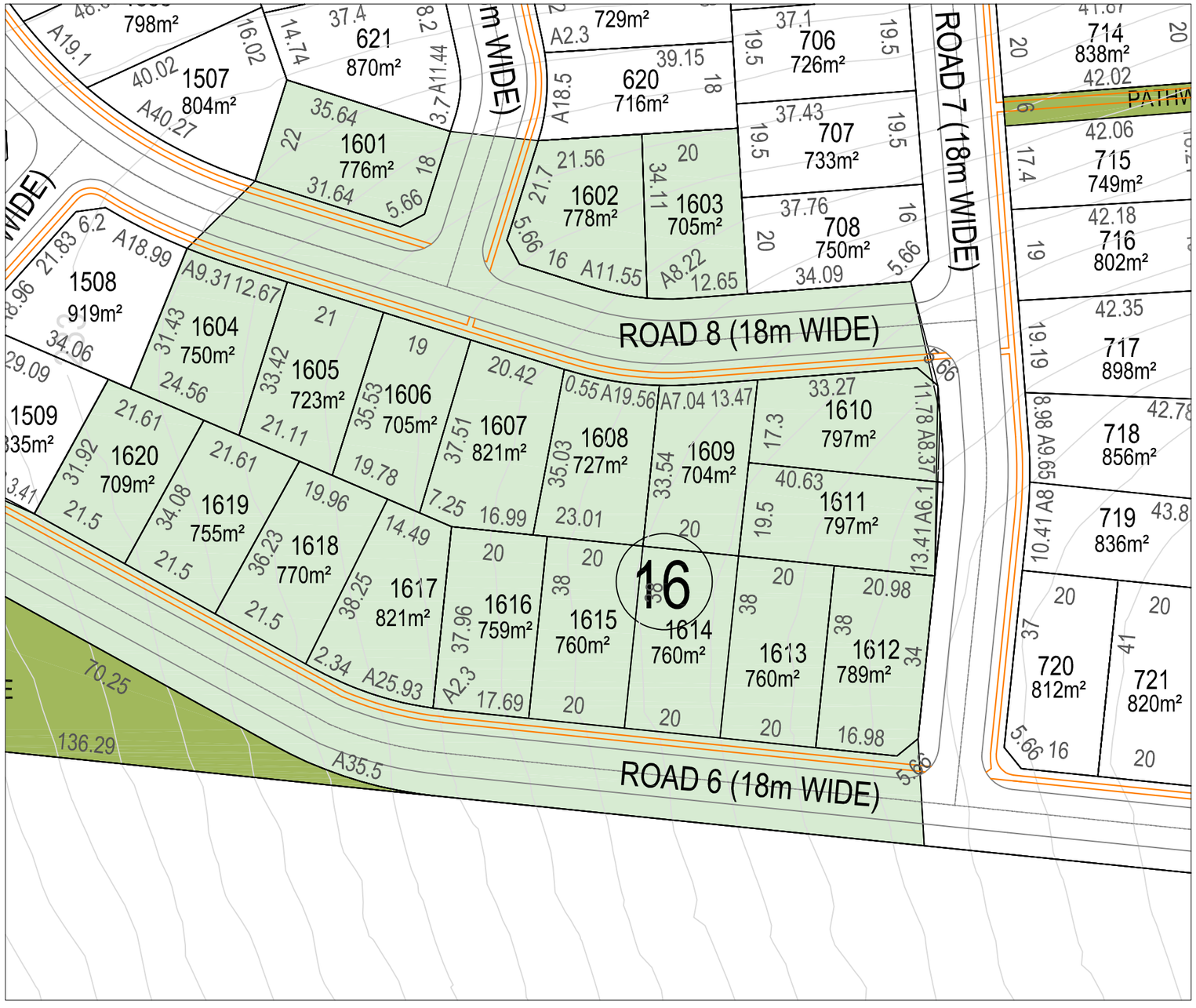
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 15
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_014	

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M

PROPOSED FOOTPATH 1.2m WIDE



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

STAGING PLAN - STAGE 16
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1500	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: STAGE_015	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M

EXTEND 2m WIDE FOOTPATH TO EXISTING ON NORTH SIDE OF GUNDY ROAD.

GUNDY ROAD

INSTALL LANDSCAPE SCREENING

TURNING LANE

EXISTING
SENIORS LIVING
(NOT PART OF DEVELOPMENT)

SENIORS LIVING DEVELOPMENT

PROPOSED DRAINAGE RESERVE

PROPOSED OPEN SPACE / PARK

ABORIGINAL MARKED TREE TO BE PROTECTED

ROAD FOR FUTURE EXPANSION

NOTE: EXISTING DAM TO BE RETAINED AND LANDSCAPED AS PART OF STAGE 3 CONSTRUCTION.
DETAILED LANDSCAPE PLAN FOR THIS AREA TO BE DEVELOPED IN CONSULTATION WITH COUNCIL WITH STAGE 3 C.C DOCUMENTATION.

EXISTING TREE

PROPOSED FOOTPATH 1.2m WIDE

PROPOSED CYCLEWAY 2m WIDE

ROAD 1 (18m WIDE)
ROAD 2 (18m WIDE)
ROAD 3 (18m WIDE)
ROAD 4 (18m WIDE)
ROAD 5 (18m WIDE)
ROAD 6 (18m WIDE)
ROAD 7 (18m WIDE)
ROAD 8 (18m WIDE)
ROAD 9 (18m WIDE)
ROAD 10 (18m WIDE)
ROAD 11 (18m WIDE)
ROAD 12 (18m WIDE)
ROAD 13 (18m WIDE)
ROAD 14 (18m WIDE)
ROAD 15 (18m WIDE)
ROAD 16 (18m WIDE)

PUBLIC PARK - PLAY EQUIPMENT
PUBLIC PARK
EXISTING DAM
OPEN SPACE
BASIN 1
BASIN 2
RESTRICTION ON USE OF LAND(SALINITY)
ELECTRICITY EASEMENT
PATHWAY

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

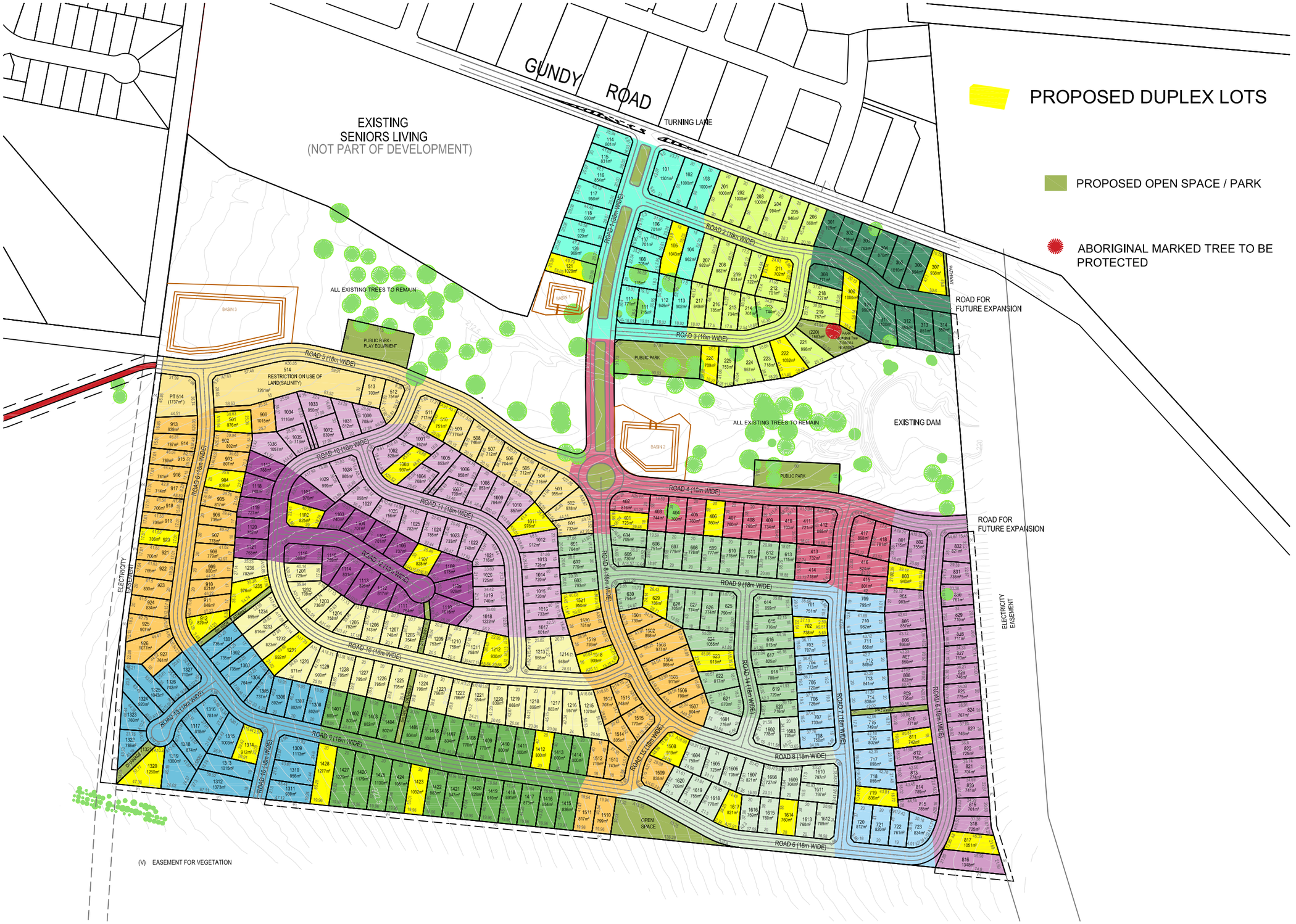
PROPOSED FOOTPATH / CYCLEWAY PLAN
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: PATHWAY_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER: M



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

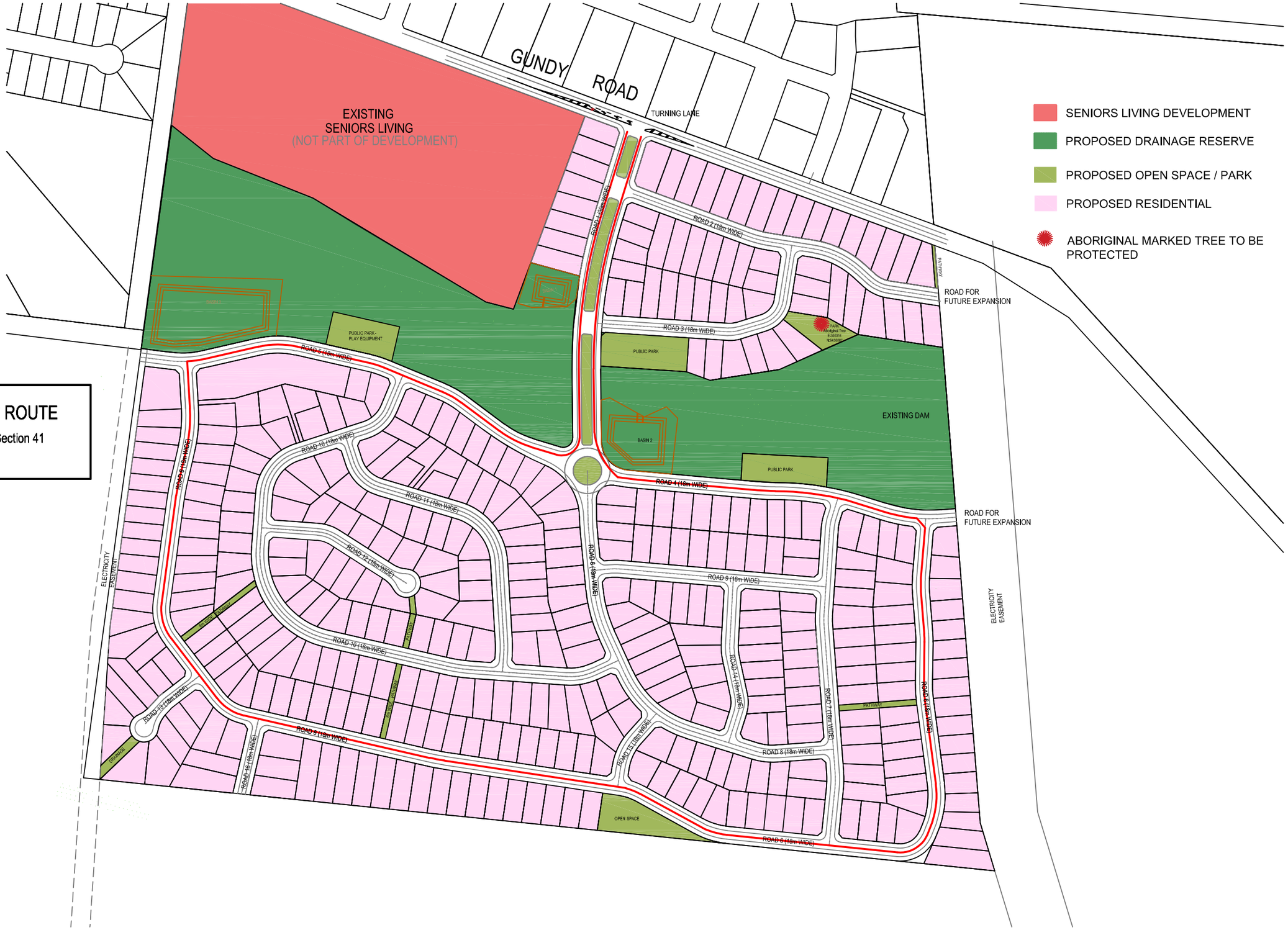
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED DUPLEX LOTS
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: DUPLEX_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED BUS ROUTE
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: BUS_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER: M

STAGE	LOTS
1	21
2	25
3	14
4	18
5	13
6	30
7	23
8	32
9	28
10	36
11	21
12	36
13	26
14	28
15	21
16	20
TOTAL	392

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

WATER SERVICING STRATEGY
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:4000	A3	CONT. INT:	
V.SCALE		DATUM:	
DATE 21.07.2021		FILE: WATER_001	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M

REPORT BY RGH ENGINEERS
EXTERNAL SEWER SERVICE
STRATEGY (OPTION 1)

CONNECT TO EXISTING SEWER MANHOLE

EXISTING
SENIORS LIVING
(NOT PART OF DEVELOPMENT)

300mm uPVC TRUNK MAIN MAX ET'S 936 APPROX GRADE 0.5%

TURNING LANE

CATCHMENT 1

CATCHMENT 2

CATCHMENT 3

ROAD FOR FUTURE EXPANSION

ROAD FOR FUTURE EXPANSION
300mm uPVC TRUNK MAIN STUB FOR FUTURE CONNECTION MAX ET'S 470

EXISTING DAM

BASIN 1
BASIN 2
BASIN 3

PUBLIC PARK - PLAY EQUIPMENT
PUBLIC PARK
OPEN SPACE

ROAD 1 (18m WIDE)
ROAD 2 (18m WIDE)
ROAD 3 (18m WIDE)
ROAD 4 (18m WIDE)
ROAD 5 (18m WIDE)
ROAD 6 (18m WIDE)
ROAD 7 (18m WIDE)
ROAD 8 (18m WIDE)
ROAD 9 (18m WIDE)
ROAD 10 (18m WIDE)
ROAD 11 (18m WIDE)
ROAD 12 (18m WIDE)
ROAD 13 (18m WIDE)
ROAD 14 (18m WIDE)
ROAD 15 (18m WIDE)
ROAD 16 (18m WIDE)

RESTRICTION ON USE OF LAND(SALINITY)

ELECTRICITY EASEMENT

PLAN KEY

ACCESS CHAMBER
PROPERTY JUNCTION
150MM GRAVITY RETICULATION SEWER MAIN
300MM GRAVITY TRUNK SEWER MAIN

ON SITE SEWERAGE DRAINAGE STRATEGY
SEWARAGE CODE OF AUSTRALIA WSA 002
THESE PLANS ARE STRATEGY ONLY ARE ARE NOT FOR CONSTRUCTION

ALL SEWER MAINS IN PRIVATE PROPERTY TO BE CONTAINED WITHIN AN EASEMENT TO DRAIN SEWER IN FAVOUR OF UPPER HUNTER SHIRE COUNCIL

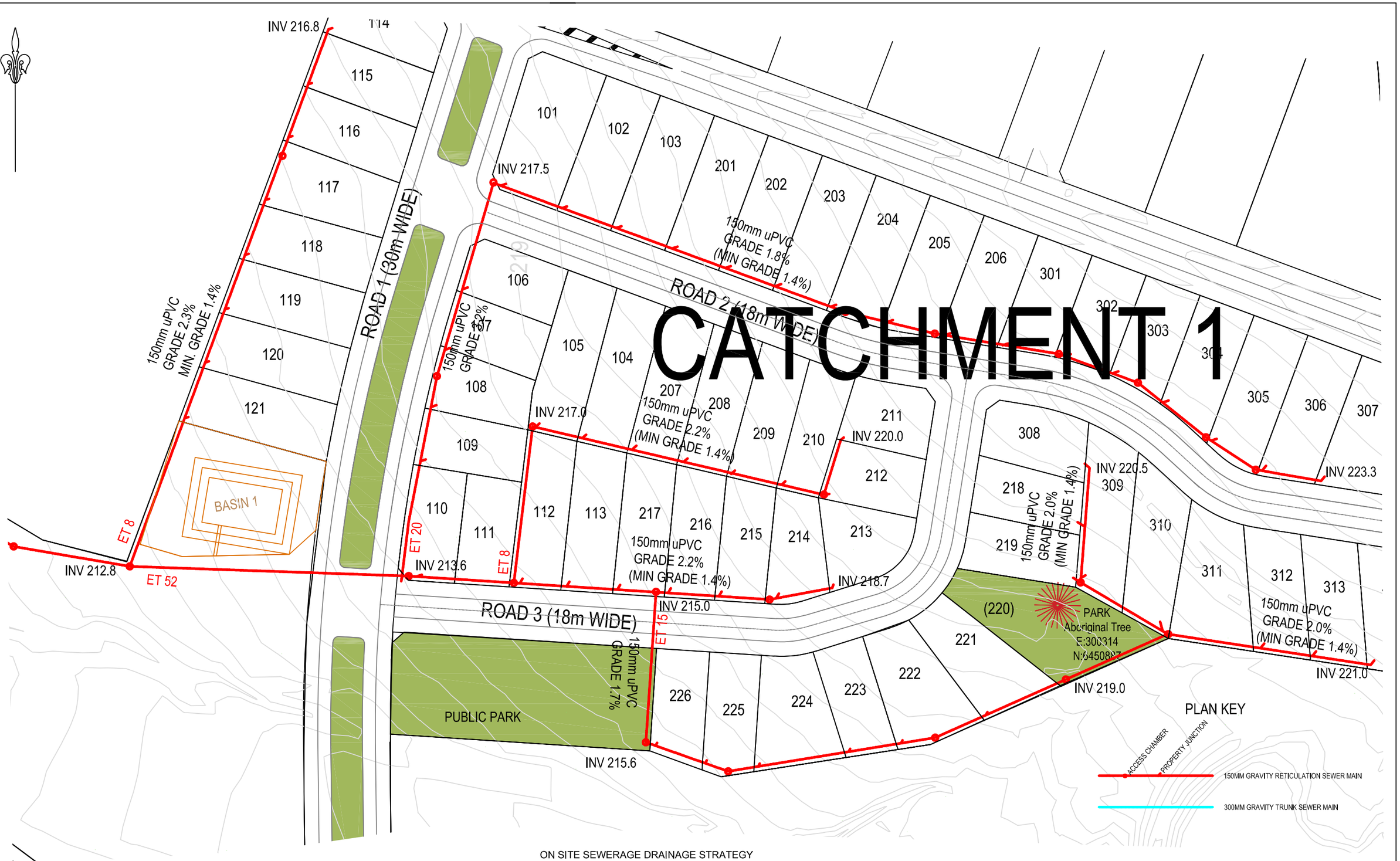
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED INTERNAL SEWERAGE DRAINAGE STRATEGY
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:3250	A3	CONT. INT: 0.5m	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM: AHD	
DATE 21.07.2021		DRAWING: SEW_001	

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER. M



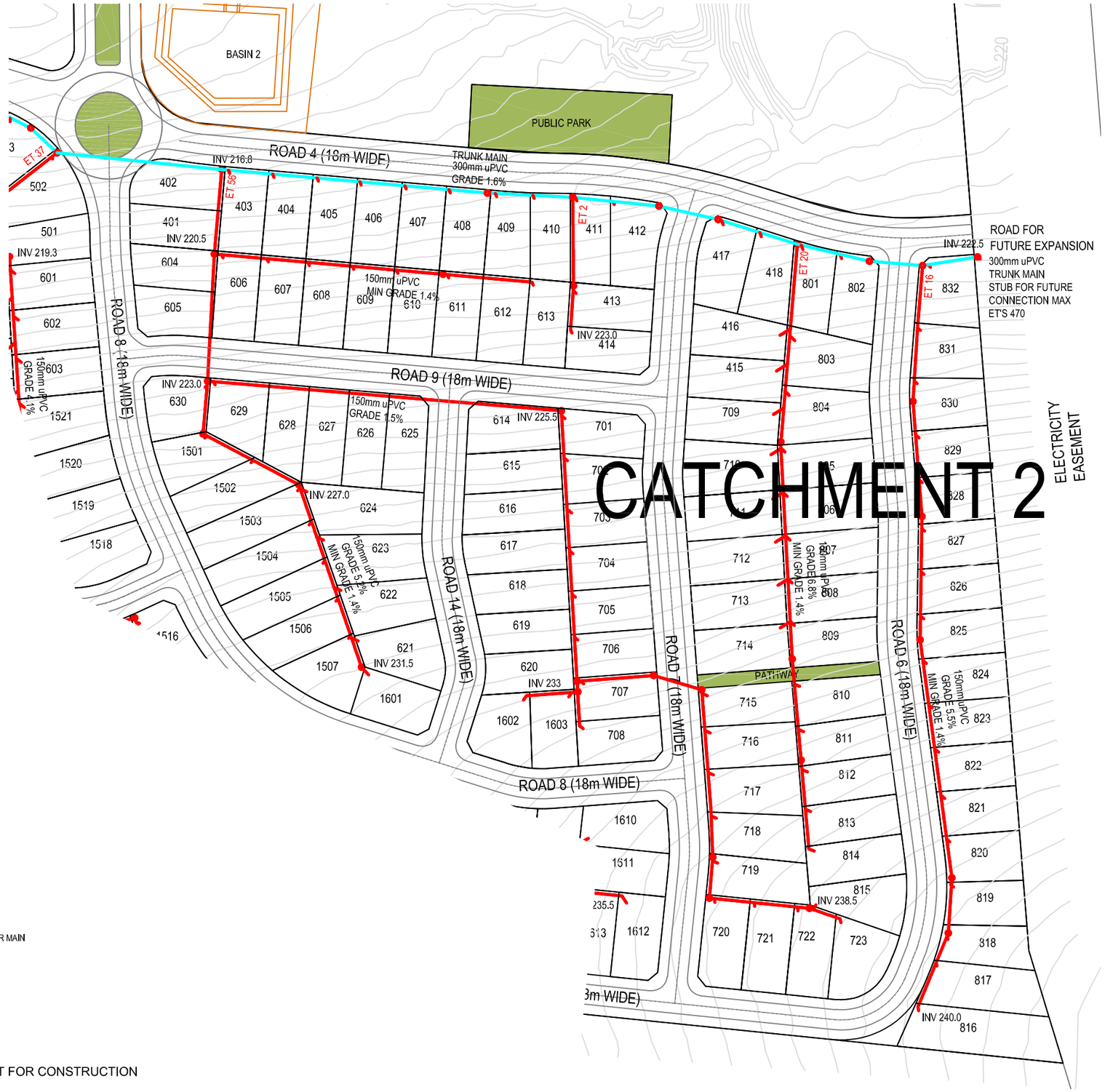
ON SITE SEWERAGE DRAINAGE STRATEGY
SEWERAGE CODE OF AUSTRALIA WSA 002
THESE PLANS ARE STRATEGY ONLY ARE ARE NOT FOR CONSTRUCTION

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED INTERNAL SEWERAGE DRAINAGE STRATEGY
CATCHMENT AREA 1
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:1250	A3	CONT. INT: 0.5m	CLIENT: CHARLES DAVID PTY LTD
V.SCALE		DATUM: AHD	
DATE 21.07.2021		DRAWING: SEW_002	

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE
JOB REF: 217133
VER M



PLAN KEY

ACCESS CHAMBER

PROPERTY JUNCTION

150MM GRAVITY RETICULATION SEWER MAIN

300MM GRAVITY TRUNK SEWER MAIN

ON SITE SEWERAGE DRAINAGE STRATEGY
SEWERAGE CODE OF AUSTRALIA WAS 002
THESE PLANS ARE STRATEGY ONLY ARE ARE NOT FOR CONSTRUCTION

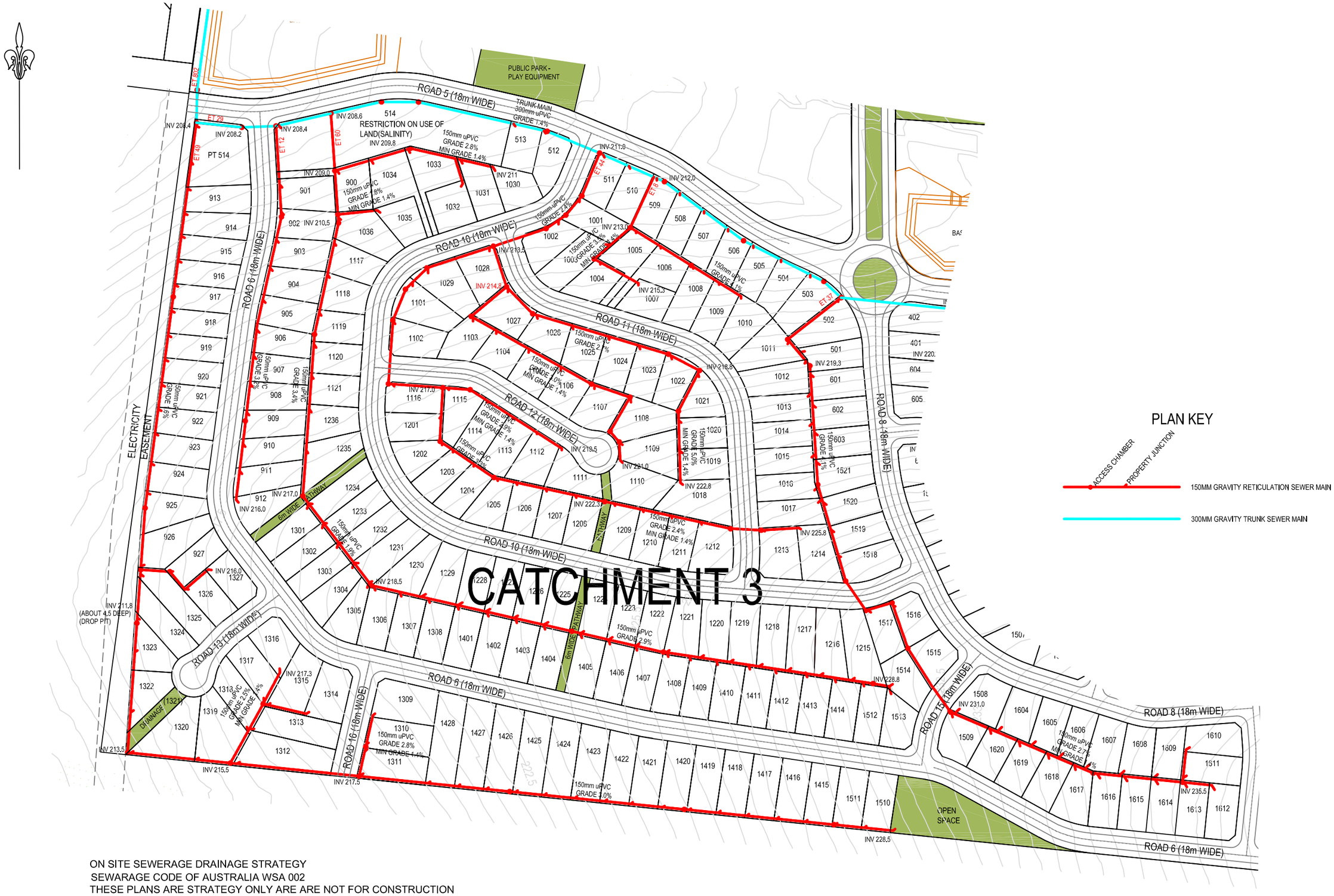
MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
16 COMMON ROAD (PO Box 26), MUSWELLBROOK NSW 2333

PROPOSED INTERNAL SEWERAGE DRAINAGE STRATEGY
CATCHMENT AREA 2
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:2000	A3	CONT. INT: 0.5m	
V.SCALE		DATUM: AHD	
DATE 21.07.2021		DRAWING: SEW_003	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER	JOB REF: 217133
PARISH: SCONE	
COUNTY: BRISBANE	VER M



PLAN KEY

ACCESS CHAMBER

PROPERTY JUNCTION

150MM GRAVITY RETICULATION SEWER MAIN

300MM GRAVITY TRUNK SEWER MAIN

ON SITE SEWERAGE DRAINAGE STRATEGY
SEWARAGE CODE OF AUSTRALIA WSA 002
THESE PLANS ARE STRATEGY ONLY ARE ARE NOT FOR CONSTRUCTION

MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920
Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

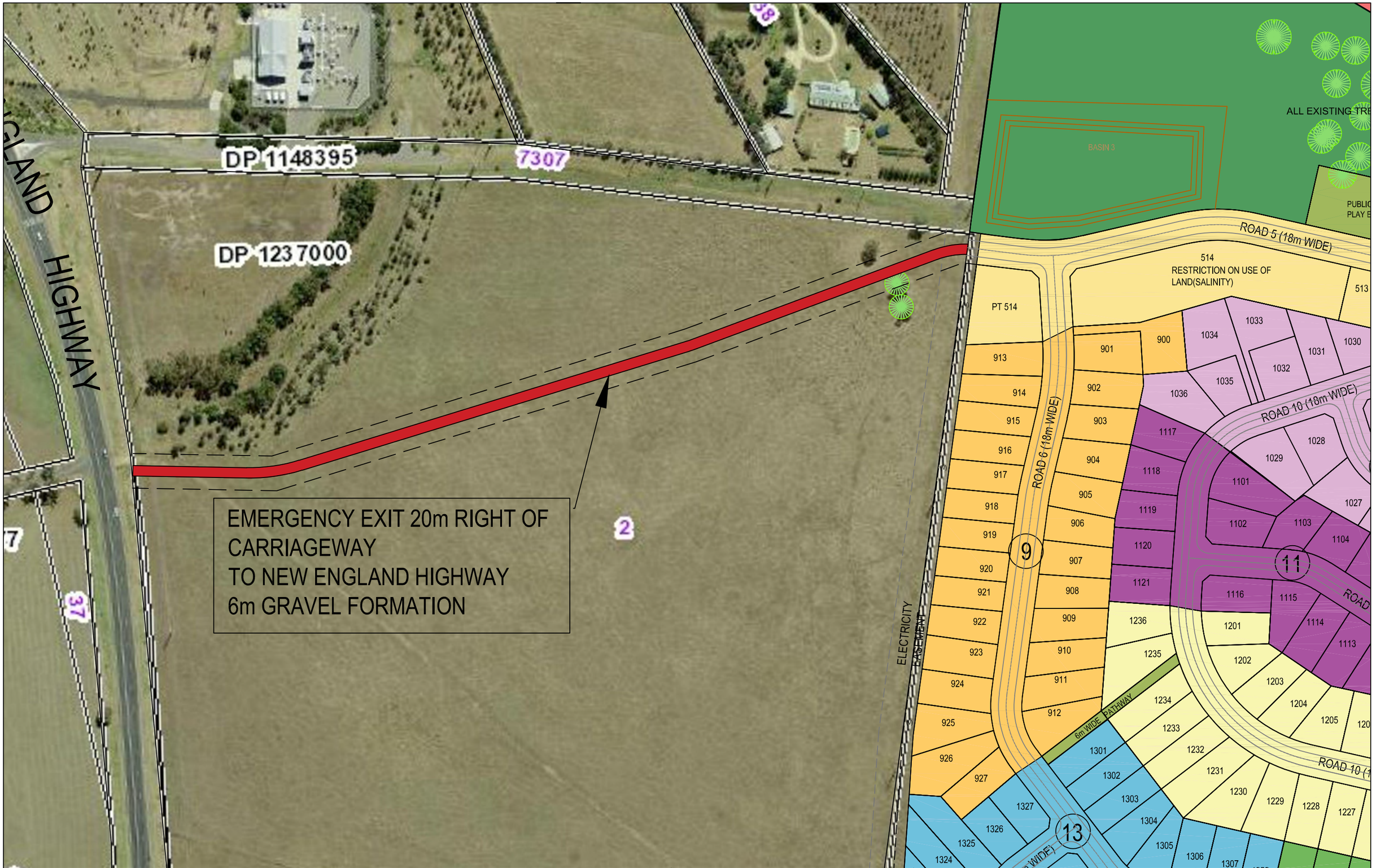
PROPOSED INTERNAL SEWERAGE DRAINAGE STRATEGY
CATCHMENT AREA 3
PROPOSED SUBDIVISION
LOT 2 IN DP1169320, GUNDY ROAD SCONE

H.SCALE: 1:2500	A3	CONT. INT: 0.5m	
V.SCALE		DATUM: AHD	
DATE 21.07.2021		DRAWING: SEW_004	

CLIENT: CHARLES DAVID PTY LTD

LGA: UPPER HUNTER
PARISH: SCONE
COUNTY: BRISBANE

JOB REF: 217133
VER M



MM HYNDES BAILEY & Co.
REGISTERED SURVEYORS - TOWN PLANNING - CIVIL DESIGN
Surveying the Hunter since 1920

Ph: 02 65432475 Email: office @hbsurveys.com.au
PO Box 26, MUSWELLBROOK NSW 2333

PROPOSED EMERGENCY ACCESS ROAD
20m RIGHT OF CARRIAGEWAY OVER LOT 2 IN DP1237000

H.SCALE: 1:2000	A3 CONT. INT:	CLIENT: CHARLES DAVID PTY LTD	LGA: UPPER HUNTER
V.SCALE	DATUM:		PARISH: SCONE
DATE 21.07.2021	FILE: EMERG_001		COUNTY: BRISBANE

JOB REF: 217133
VER M

APPENDIX B ASSET PROTECTION ZONES

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.