



BUSH FIRE THREAT ASSESSMENT

Part LOTS 1, 2, 3 and 4 in DP 1154170

***90 VINEY CREEK ROAD EAST
TEA GARDENS***



***PREPARED BY
TATTERSALL LANDER
PTY LTD
DEVELOPMENT CONSULTANTS
September 2018***

DEVELOPMENT CONSULTANTS IN ENGINEERING, SURVEYING, PLANNING & ENVIRONMENTAL

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S:\projects\North Shearwater\Correspondence\205532-R001001 (FINAL) Bush Fire Assessment.docxx



Executive Summary

This Bush Fire Threat Assessment has been prepared to provide direction for a staged subdivision at 90 Viney Creek Road East, Tea Gardens (Part Lot 1, 2, 3 and 4 in DP 1154170).

It is considered that the development in its proposed form is acceptable and presents a better outcome than the previously approved layout from a bush fire planning perspective. No dwelling on any of the proposed lots will require construction exceeding BAL-29 AS3959-2009.

1.0 INTRODUCTION

Tattersall Lander Pty Ltd has been commissioned to undertake a Bush Fire Threat Assessment for a proposed development at 90 Viney Creek Road East Tea Gardens – the property is identified as part Lot 1, 2, 3 and 4 in DP 1154170 and is located in the Midcoast Local Government Area (the LGA). This Bush Fire Threat Assessment is based upon the guidelines as defined in the document, *Planning for Bush Fire Protection Guidelines (2006)*, which has been written by the *NSW Rural Fire Service*. This assessment outlines the risk posed from bush fire, and hence defines the constraints placed upon the proposed development from a bush fire planning perspective.

Specifically this report has been prepared by myself (Ben Folbigg); I have a Diploma in Planning for Bushfire Protection and am BPAD accredited (Level 2 – BPAD31379) with the FPA Australia.



Figure 1 – Site Location

2.0 METHODOLOGY

This assessment is conducted entirely in accordance with the guidelines, as outlined in *Planning for Bush Fire Protection (NSW Rural Fire Service) 2006*.

This assessment:

- identifies the slope and aspect of the property;
- identifies all vegetation categories within 140 metres of the site;
- determines the Bush Fire Attack Category (Fire Danger Index – FDI) which applies to the development;
- identifies Asset Protection Zones/Setbacks;
- identifies the Bush Fire Construction (Bush Fire Attack Level – BAL) required in relation to the above for the proposed development (AS 3959-2009)

The proposal has also been assessed with regard to the aim and objectives of *PBP*.

The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

The objectives which will help achieve the aim are:

- (i) *afford occupants of any building adequate protection from exposure to a bush fire;*
- (ii) *provide for a defensible space to be located around buildings;*
- (iii) *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- (iv) *ensure that safe operational access and egress for emergency service personnel and residents is available;*
- (v) *provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
- (vi) *ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).*

3.0 SITE DESCRIPTION

Lot 1 is an unsealed access handle. Lot 2 has an area of 3247 hectares – the area of the part lot relevant to this assessment is approximately 32 hectares. Lot 3 is an unformed road and Lot 4 is a closed gravel road. The site is undulating and includes some steep areas. There is a gully running through the site in a general west to east direction and there are some

smaller gullies in the western portion of the site running from north to south. A topographic map showing the site with 10 metre contours is featured below, however, the slope assessment has been undertaken using Lidar data for accuracy.

Vegetation on the site comprises a mixture of grazed grasslands, woodland, and forest.

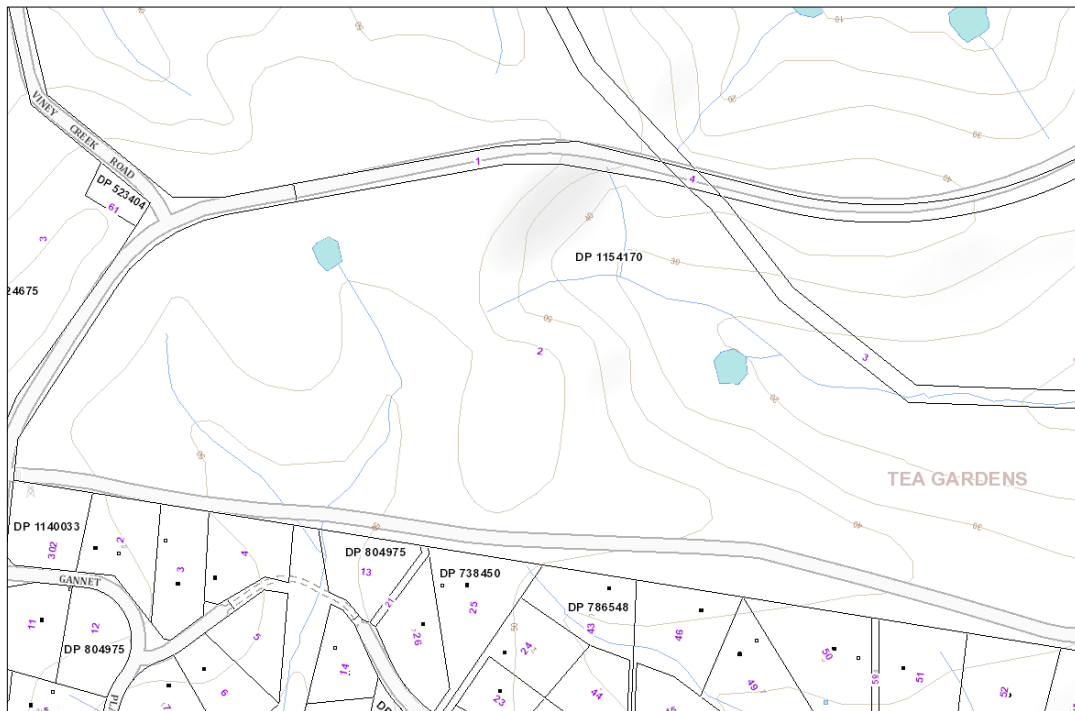


Figure 2 – Topographic Map

An aerial photograph of the site and surrounds is provided in Appendix A and photographs of the site are included in Appendix B.

The site is located in the Midcoast (previously the Great Lakes) LGA which is in the North Coast district and hence is afforded an FDI of 80.

4.0 THE PROPOSAL

The proposal is for a subdivision which will involve 3 stages, creating a total of 226 residential lots – Stage 1 will create 153 lots, Stage 2 will create 42 lots, and stage 3 will create 31 lots; relevant plans are included in the appendices, including a plan of the proposed layout, APZ plan and rehabilitation plan. It is noted that there was a previous proposed subdivision for this site which was approved.

5.0 LEGISLATION

The proposal is for subdivision and hence the NSW Rural Fire Service is the authority responsible for the issue of the BSA under *Section 100B* of the *Rural Fires Act 1997*.

6.0 SITE ANALYSIS

Due to the complexities arising from the scale of the proposal, it is considered prudent to break the assessment up into 3 stages for assessment of vegetation, slope and calculation of the Asset Protection Zones; the stages in which this is undertaken correspond with the proposed staging of the development.

6.1 Stage 1

(i) Northern Aspect

The northern aspect presents a combination of grasslands and forest; the grassland is separated from the subdivision by a road which is 20 metres in width. This grassland also includes a band of forest which has been planted to form an ecological corridor. The slope under the vegetation to the north is variable but has a worst case scenario in the >15-20 degree category.

There is a very small area with the northern aspect which contains forest and has a slope of 23 degrees, however, this very small area does not reflect the real topography and it is requested that this insignificant area be discounted from the assessment. It is further noted that the entire APZ will be located on land that does not exceed 18 degrees as per the requirements of *PBP*.

(ii) Southern Aspect

The southern aspect presents existing large lifestyle/rural residential lots. These lots contain predominantly managed vegetation, however, it is considered prudent to classify this vegetation as woodland due to the fact that some sections are poorly managed. The slope to the south is predominantly in the >0-5 degree category, with a very small section in the >5-10 degree category.

There is to be a road in between the proposed lots and the woodland to the south and this road shall be 14.5 metres in width.

(iii) Eastern Aspect

The eastern aspect presents forest and areas which are not currently forest, but will be forest following revegetation works. The slope to the east is in the >15-20 degree category and the proposed lots are to be separated from the vegetation via a road of 21.5 metres in width.

(iv) Western Aspect

The western aspect presents Viney Creek Road East (with a width of 20 metres), followed by grassland. The slope under the grassland to the west is in the >10-15 degree category.

6.2 Stage 2

(i) Northern Aspect

The northern aspect for stage 2 presents forest and a slope in the >15-20 degree category. The proposed lots shall be separated from this vegetation by a road of 22 metres in width and there shall also be an APZ located over the proposed lots restricting the area on the lots which can be built upon – this is identified on the attached plans but is generally 30 metres thereby providing an APZ of 52 metres.

(ii) Southern Aspect

The southern aspect for stage 2 is similar to that for stage 1, with lifestyle/rural residential lots with predominantly managed vegetation which is to be classified as woodland. The slope to the south is in the >5-10 degree category. There shall be a road separating the proposed lots within Stage 2 from the vegetation to the south and this road is 17.5 metres in width.

(iii) Eastern Aspect

The eastern aspect presents vegetation in the form of forest and a slope under this forest in the >0-5 degree category. There is to be a road of 14.5 metres in width between the proposed lots of stage 2 and the forest.

(iv) Western Aspect

The western aspect for stage 2 will present residential properties and no bush fire hazard for more than 140 metres. There is no requirement for a slope assessment or Asset Protection Zone to the west.

6.3 Stage 3

(i) Northern Aspect

The northern aspect for proposed stage 3 presents a road which shall be 20 metres in width, followed by grasslands. The slope under the grasslands is in the >10-15 degree category.

(ii) Southern Aspect

The southern aspect for proposed stage 3 is to contain forest following the revegetation of this area. The slope under the vegetation is in the upslope/flat category and there is to be a road of 15.5 metres in width separating the proposed lots from the vegetation.

(iii) Eastern Aspect

The eastern aspect will contain forest following the revegetation of this area. The slope under the forest to the east is predominantly flat, although there is a small area which is in the >0-5 degree category. The vegetated area is to directly adjoin the proposed lots, however, this should be considered acceptable based on the fact that there is to be a restriction on building on the relevant areas of the lots for APZs, and in light of the fact that the over-all development will have a perimeter road upon completion of the latter stages.

(iv) Western Aspect

The western aspect of stage 3 shall contain forest following the revegetation of this area. The slope under the forest to the west is in the flat/upslope category and there shall be a road of 15.5 metres in width separating the proposed lots from this vegetation.

7.0 SITE ANALYSIS

Table 1 – Vegetation and Slope Determination and Minimum Asset Protection Zone Requirements for Stage 1

Aspect	Vegetation Classification	Slope (degrees) Under Vegetation	Distance of Required Asset Protection Zone (metres) to achieve a BAL-29 rating
North	Forest	>15-20	52
	Grassland	>10-15	12
South	Woodland	>0-5	17
		>5-10	22
East	Forest	>15-20	52
West	Grassland	Upslope/Flat	8
		>10-15	12
North west	Forest	>5-10	33

Table 2 – Vegetation and Slope Determination and Minimum Asset Protection Zone Requirements for Stage 2

Aspect	Vegetation Classification	Slope (degrees) Under Vegetation	Distance of Required Asset Protection Zone (metres) to achieve a BAL-29 rating
North	Forest	>10-15	42
		>15-20	52
South	Woodland	>5-10	22
	Forest	>5-10	33
East	Forest	>5-10	33
West	N/A	N/A	N/A

Table 3 – Vegetation and Slope Determination and Minimum Asset Protection Zone Requirements for Stage 3

Aspect	Vegetation Classification	Slope (degrees) Under Vegetation	Distance of Required Asset Protection Zone (metres) to achieve a BAL-29 rating
North	Grassland	>10-15	12
		>15-20	14
South	Forest	Upslope/flat	21
East	Forest	>0-5	27
West	Forest	Upslope/flat	21

8.0 UTILITIES

8.1 Water

All of the proposed lots will have access to the reticulated town water supply and installation of this supply shall be undertaken so that there is no area within any of the proposed lots greater than 60 metres from a fire hydrant. This is considered acceptable and the consent should be conditioned accordingly.

8.2 Electricity

Electrical supply within the subdivision shall be underground and shall therefore be compliant with the requirements of *PBP*. The electrical supply shall not result in any potential fire ignition source.

8.3 Gas

Reticulated gas is not available to the site. Any bottled gas shall be required to be installed in accordance with the requirements of *PBP* and the detail of such installation will need to be confirmed with development applications for future dwellings. No bottled gas will be installed as part of this subdivision.

9.0 ACCESS

9.1 Road Capacity and Design

The road network throughout the proposed subdivision shall be constructed so that it is capable of carrying fully laden fire fighting vehicles, including tankers.

The layout and design of the proposed road network is mostly compliant with the requirements of *PBP* with regard to width, grades, crossfalls, and radius. There is one proposed small cul-de-sac in Stage 1. The only area of technical non-compliance is that of the perimeter roads to the south (Roads 9 and 3) which are only 5.5 metres in width. To overcome this non-compliance, these roads shall be made one way and shall have no parking allowed on the southern side and this will ensure that there are no congestion issues in a bush fire emergency. It should be noted that the layout as previously approved did not have a road in this location and therefore this addition should be considered an improvement on what was previously approved.

Regarding Stage 3, there is part of the perimeter road as shall be constructed, however, this is in effect not a through road at the current time (it shall be a through road once the remaining stages are complete); however, there are no no-through roads which exceed 200 metres in length

9.2 Access and Egress

Access and egress to the site is via Viney Creek Road East and also Viney Creek Road. There are no isolated areas within this road network and there is only one cul-de-sac and this has a length of approximately 50 metres, therefore significantly less than the 200 metre maximum; this cul-de-sac is unavoidable in allowing for the maximum and most efficient development of the site, and is fully compliant with the requirements of PBP 2006.

10.0 DISCUSSION and RECOMMENDATIONS

A plan illustrating the required minimum APZs (in order to achieve a maximum BAL-29 rating) for the outer most lots, and the subsequent BALs for all of the lots has been provided in Appendix C. Table 4 (below) identifies the BAL for each lot.

It is noted that there are to be easements for APZs created on the adjacent land to the north and west and this land is currently under the same ownership as the development site; the creation of these easements shall ensure that the APZs are maintained in perpetuity.

The road network and all services are compliant with PBP excepting for the road to the south and this road is a significant improvement on the previously approved layout which did not include a road in this location; in addition, this road shall be one way and include no parking on the southern side of the road to ensure that there is adequate area for fire fighting vehicles.

This report is able to be utilised for development applications for future dwellings and in doing so, will provide the maximum BAL required for each lot. It may be that there is a potential BAL reduction for a given lot due to such factors as discounts, however, this is not factored into this report. In addition, in the event of the PBP being updated, the BAL for a given lot should be reviewed.

Crucially, the aim and objectives of PBP are to be met – the aim is met by ensuring the objectives are achieved and these are addressed below.

The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

The objectives which will help achieve the aim are:

- (i) afford occupants of any building adequate protection from exposure to a bush fire;*

Comment – This is to be dealt with when a dwelling is proposed, however, the establishment of adequate APZs and the imposition of appropriate BALs, will help ensure that occupants of any future buildings have adequate protection from exposure to bush fire and therefore it may be stated that this objective is achieved.

- (ii) provide for a defensible space to be located around buildings;*

Comment – The provision of the required APZs is satisfactory to ensure that there is adequate defensible space around a future dwelling and therefore this objective is met.

- (iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

Comment – The establishment of suitable APZs which provide maximum BAL-29 requirement ensures that any future dwelling will not be located in flame zone and hence will be outside of any potential flame contact.

- (iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*

Comment – The road network, both existing and proposed, is considered to be appropriate so that safe operational access and egress for emergency service personnel as well as residents is available.

- (v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);*

Comment – The creation of the required easements for APZs will allow for the ongoing management of these areas to ensure this objective is able to be met.

- (vi) ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).*

Comment – the positioning of the fire hydrants within the development shall ensure that the required services are readily available to those involve in any potential fir fighting in the location.

All objectives are met and hence it may be stated that the aim of PBP is also achieved and therefore the proposal is compliant with PBP.

Table 4 – Maximum BAL for Each Proposed Lot

Lot	BAL	Lot	BAL	Lot	BAL	Lot	BAL	Lot	BAL
1	29	47	19	93	12.5	139	Low	232	29
2	19	48	19	94	12.5	140	Low	233	29
3	19	49	12.5	95	12.5	141	Low	234	29
4	29	50	Low	96	12.5	142	12.5	235	29
5	29	51	Low	97	12.5	143	12.5	236	29
6	29	52	Low	98	12.5	144	19	237	29
7	29	53	12.5	99	12.5	145	29	238	29
8	29	54	19	100	12.5	146	29	239	29
9	29	55	19	101	12.5	147	29	240	29
10	29	56	19	102	12.5	148	29	241	29
11	12.5	57	Low	103	12.5	149	29	242	29
12	12.5	58	Low	104	12.5	150	29	301	29
13	12.5	59	Low	105	12.5	151	29	302	19
14	12.5	60	Low	106	12.5	152	29	303	19
15	12.5	61	Low	107	12.5	153	29	304	19
16	12.5	62	Low	108	Low	201	29	305	19
17	12.5	63	Low	109	Low	202	29	306	19
18	19	64	Low	110	Low	203	29	307	19
19	29	65	Low	111	Low	204	29	308	19
20	29	66	Low	112	Low	205	12.5	309	29
21	29	67	Low	113	Low	206	19	310	29
22	29	68	12.5	114	Low	207	29	311	29
23	29	69	12.5	115	Low	208	29	312	29
24	29	70	12.5	116	Low	209	29	313	29
25	29	71	Low	117	Low	210	29	314	12.5
26	29	72	Low	118	Low	211	29	315	12.5
27	29	73	Low	119	Low	212	29	316	29
28	29	74	Low	120	29	213	29	317	29
29	29	75	Low	121	29	214	29	318	12.5
30	29	76	Low	122	29	215	29	319	12.5
31	19	77	Low	123	29	216	29	320	29
32	29	78	Low	124	29	217	29	321	29
33	29	79	Low	125	29	218	29	322	19
34	29	80	12.5	126	12.5	219	29	323	29
35	29	81	19	127	12.5	220	29	324	29
36	29	82	29	128	12.5	221	29	325	29
37	19	83	29	129	12.5	222	29	326	29
38	19	84	29	130	12.5	223	29	327	29
39	19	85	29	131	12.5	224	29	328	29
40	19	86	19	132	19	225	29	329	29
41	29	87	12.5	133	12.5	226	29	330	29
42	29	88	19	134	19	227	29	331	29
43	29	89	Low	135	19	228	29		
44	29	90	Low	136	19	229	29		
45	29	91	Low	137	12.5	230	29		
46	29	92	Low	138	12.5	231	29		

11.0 CONCLUSION

The proposal is for a three staged subdivision of part Lot 1, 2, 3 and 4 in DP 1154170 which will result in 226 residential lots. The site is located at 90 Viney Creek Road East Tea Gardens in the Midcoast LGA.

No lots will be created which will require a dwelling to be constructed which exceeds BAL-29. Additionally, all roads, utilities and services

have been designed and will be constructed so that they are compliant with PBP except for the one small transgression as described and justified within this report. The proposal is considered compliant with PBP and is hereby submitted for referral to and assessment by the RFS.

12.0 DISCLAIMER

All effort has been made to ensure the accuracy of this report, however, it is noted that bush fires can be unpredictable and this report in no way implies that any part of the proposed development is totally safe from fire.

Additionally it is noted that despite the site details at the time of writing this report, the situation may change; factors resulting in change to bush fire hazard include (but are not limited to) vegetation regrowth and improper maintenance of Asset Protection Zones.

No responsibility is accepted or implied for damage to, or loss of, life and/or property at any time resulting from bush fire or bush fire related issues (or any other factors) on this site.

Appendix A: Aerial photograph



Source: LPI Six Viewer Website

NB: Positioning and direction of photographs approximate only

Appendix B:

Photographs



Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 6



Photograph 7



Photograph 8



Photograph 9



Photograph 10



Photograph 11



Photograph 12



Photograph 13



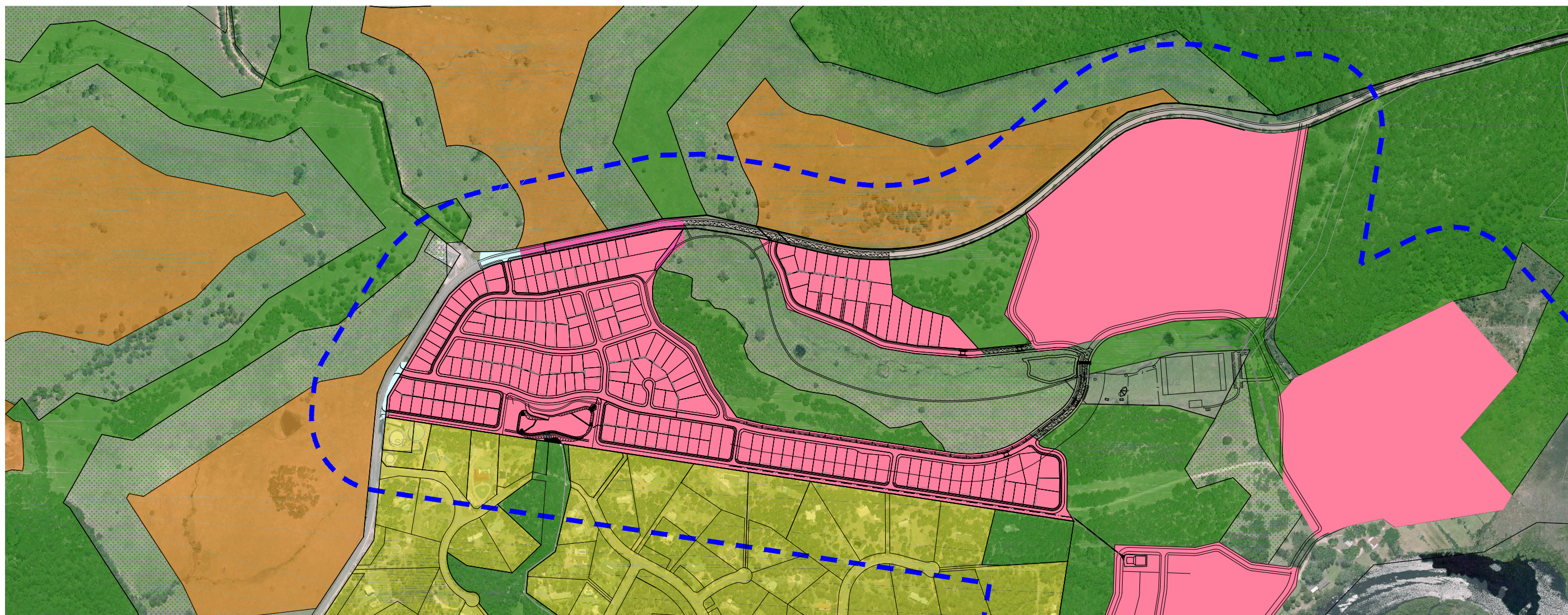
Photograph 14



Photograph 15

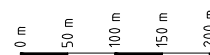
Appendix C:

Plans



LEGEND:

- FOREST 
- 'FOREST' - GRASSLAND
WITHIN 100m OF FOREST 
- GRASSLAND 
- WOODLAND 
- DEVELOPMENT
FOOTPRINT 
- 140m VEGETATION
ASSESSMENT LIMIT 



REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
A	Original Issue					

* Denote the original signature and date when revision was issued.

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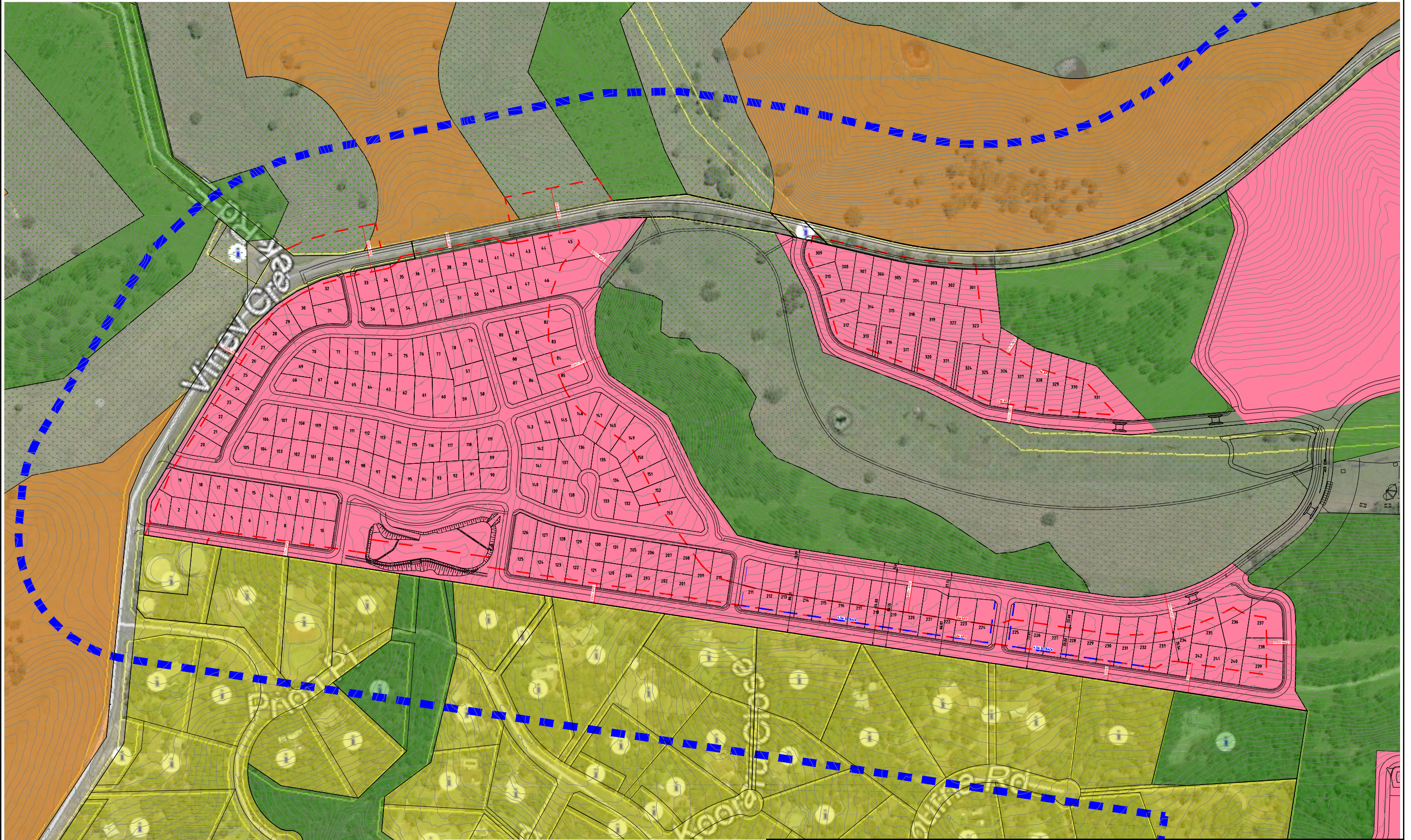
OVERALL SITE PLAN
VEGETATION MAPPING
DURNESS STATION
VINEY CREEK RD, TEA GARDENS

CLIENT:

JOB No.: #####

COMPUTER FILE : S:\projects\North Shearwater\Dwg\Bushfire Plans.dwg

COUNCIL MIDCOAST	REFERENCE ####
PARISH	SHEET SIZE A3
SCALE 1:8000 on A3	SHEET No. ####
DATE :	Plotted 14/24/06/02/18



REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
A	Original Issue					

* Denote the original signature and date when revision was issued.

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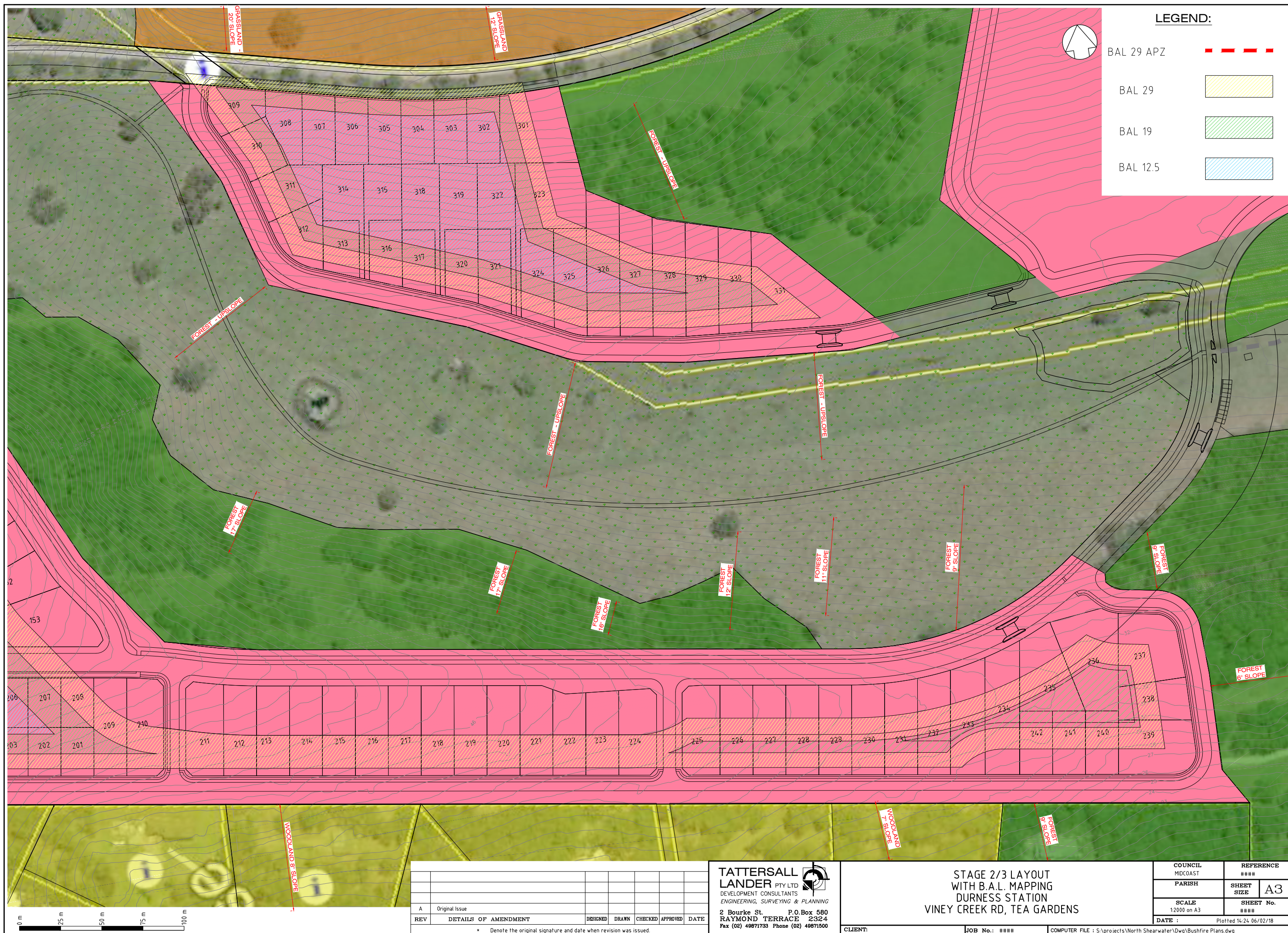


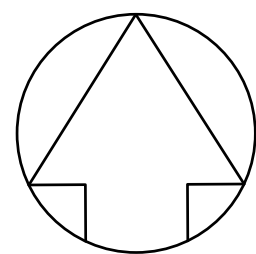
OVERALL SITE PLAN
SHOWING BUSHFIRE APZ'S
DURNESS STATION
VINEY CREEK RD, TEA GARDENS

CLIENT: JOB No.: ##### COMPUTER FILE : S:\projects\North Shearwater\Dwg\Bushfire Plans.dwg

COUNCIL MIDCOAST	REFERENCE ####
PARISH	SHEET SIZE A3
SCALE 1:4000 on A3	SHEET No. ####
DATE :	Plotted 14/25 06/02/18







E2 ZONED REHABILITATION AREA
SEE TATTERSALL LANDER REHABILITATION PLAN

PRECINCT 1 CONCEPT LANDSCAPE PLAN

SYMBOL	SPECIES	COMMON NAME	HEIGHT	QUANTITY	POT SIZE
	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	Drooping Red Gum	Up to 15m	68	27 Litre
	<i>Lophostemon confertus</i>	Brush Box	Up to 15m	153	27 Litre
	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Up to 10m	329	27 Litre
	<i>Tristaniopsis laurina</i>	Water Gum	Up to 12m	60	27 Litre
	<i>Glochidion ferdinandi</i>	Cheese Tree	Up to 8m	29	14 Litre
	<i>Carex appressa</i>	Tall Sedge	0.5m	15894 (9/sqm)	TUBE STOCK
	<i>Lomandra longifolia</i>	Spiny-headed Matt Rush	1m	9078 (3/sqm)	TUBE STOCK
	<i>Dianella caerulea</i>	Blue Flax Lilly	0.5m	51414 (6/sqm)	TUBE STOCK
	<i>Juncus kraussii</i>	Jointed Rush	1m	5373 (9/sqm)	TUBE STOCK

A	Original Issue	BF	AV			
REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
* Denote the original signature and date when revision was issued.						

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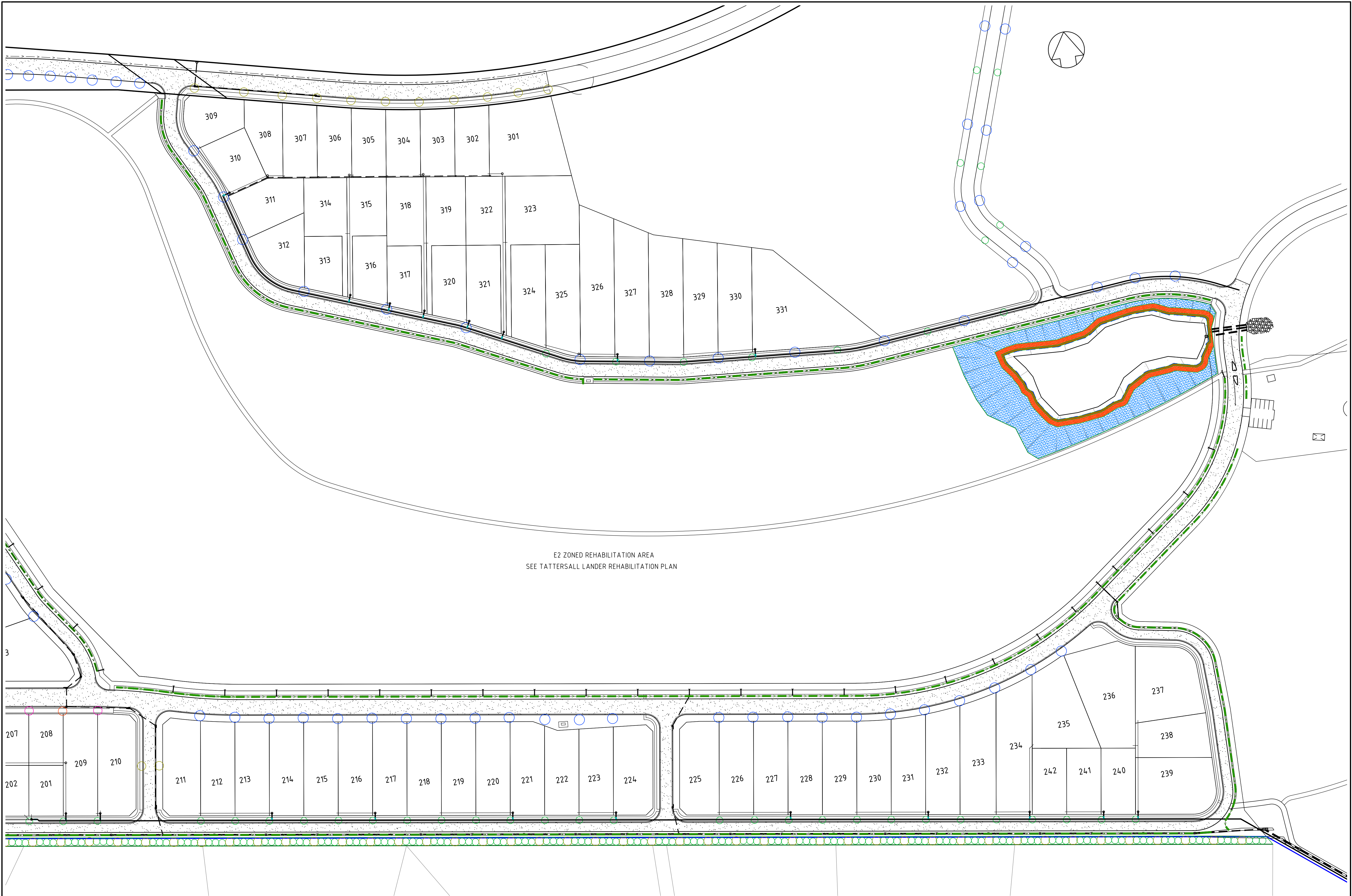
SCALE : 1 : 600 for A3 Size Plot

SHEET No. : 14
JOB No. : 217416

FILE : #####
DATE : Plotted 09/51 10/11/17

SHEET
SIZE
A3

COMPUTER FILE : S:\Clients\2017\217416\DWG\217416 DA Design.dwg



PRECINCT 2 - 3 CONCEPT LANDSCAPE PLAN

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REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
* Denote the original signature and date when revision was issued.						

TATTERSALL LANDER Pty Ltd
DEVELOPMENT CONSULTANTS



SCALE : 1:600 for A3 Size Plot

SHEET No. :11
JOB No. : 217416

FILE : #####
DATE : Plotted 09/51 10/11/17

SHEET
SIZE
A3

COMPUTER FILE : S:\Clients\2017\217416\Drawings\217416 DA Design.dwg

PROPOSED RESIDENTIAL SUBDIVISION

'DURNNESS STATION', LOT 2, 3 & 4 DP 1154170

VINEY CREEK ROAD, NORTH SHEARWATER

DEVELOPMENT APPLICATION, ROAD & DRAINAGE DESIGN PLANS



LOCALITY SKETCH

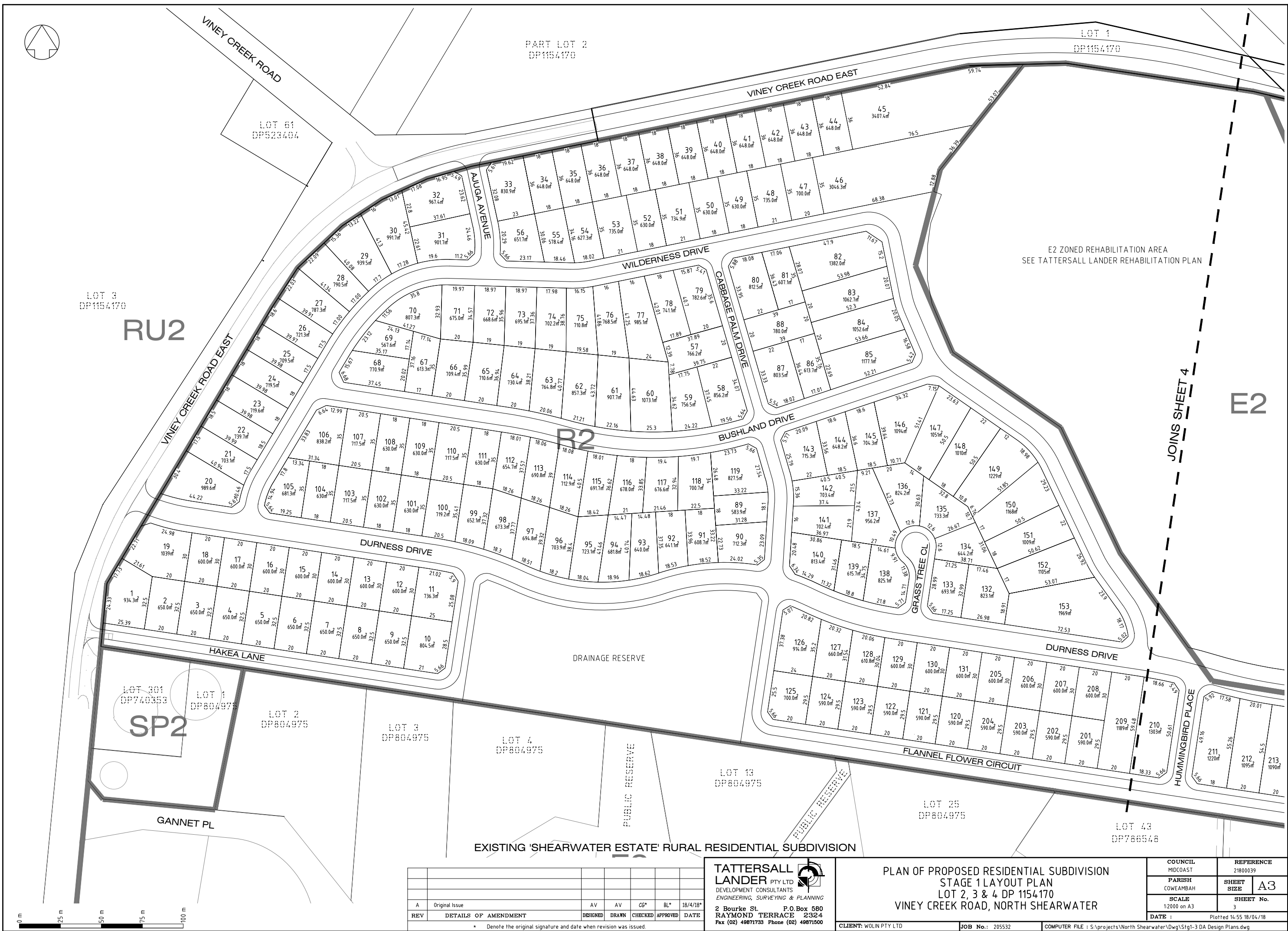
Schedule of Drawings

Sheet	File Number	Description	Revision
1	21800037	COVER SHEET, LOCALITY SKETCH & SCHEDULE OF DRAWINGS	A
2	21800038	OVERALL SITE PLAN	A
3	21800039	STAGE 1 SUBDIVISION LAYOUT	A
4	21800040	STAGE 2 & 3 SUBDIVISION LAYOUT	A
5	21800041	STAGE 1 DETAIL PLAN	A
6	21800042	STAGE 2 & 3 DETAIL PLAN	A
7	21800043	RU2 RECREATIONAL AREA DETAIL PLAN	A
8	21800044	STAGE 1 TREE REMOVAL PLAN	A
9	21800045	STAGE 2 & 3 TREE REMOVAL PLAN	A
10	21800046	STAGE 1 PRECINCT RELEASE PLAN	A
11	21800047	DETAILS PLAN - ROAD TYPICALS	A
12	21800048	DETAILS PLAN - SERVICES ALLOCATIONS & VINEY CREEK RD LANDSCAPE BUFFER	A
13	21800049	ROAD LONGITUDINAL SECTIONS	A
14	21800050	ROAD LONGITUDINAL SECTIONS	A
15	21800051	ROAD LONGITUDINAL SECTIONS	A
16	21800052	ROAD LONGITUDINAL SECTIONS	A
17	21800053	ROAD LONGITUDINAL SECTIONS	A
18	21800054	RIPARIAN CORRIDOR PATHWAY & STG 2-5 SERVICE ROAD LONGITUDINAL SECTIONS	A
19	21800055	STAGE 1 BASIN PLAN	A
20	21800056	STAGE 1 BASIN SECTIONS	A
21	21800057	STAGE 1 BASIN DETAILS	A
22	21800058	STAGE 2 BASIN PLAN	A
23	21800059	STAGE 3 BASIN PLAN	A
24	21800060	STAGE 3 BASIN SECTIONS	A
25	21800061	CATCHMENT PLAN	A
26	21800062	STAGE 1 CUT-FILL PLAN	A
27	21800063	STAGE 2 & 3 CUT-FILL PLAN	A
28	21800064	OVERALL SHARED PATHWAYS PLAN	A
29	21800065	STAGE 1 CONCEPT SOIL & WATER MANAGEMENT PLAN	A
30	21800066	STAGE 2 & 3 CONCEPT SOIL & WATER MANAGEMENT PLAN	A
31	21800067	CONCEPT SOIL & WATER MANAGEMENT NOTES	A
32	21800068	OVERALL CONCEPT ELECTRICAL SERVICING PLAN	A

Designed By

TATTERSALL LANDER PTY LTD
DEVELOPMENT CONSULTANTS IN ENGINEERING, SURVEYING & PLANNING
PO Box 580 RAYMOND TERRACE Phone (02) 4987 1500





REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
A	Original Issue	AV	AV	CG*	BL*	18/4/18*

* Denote the original signature and date when revision was issued.

TATTERSALL LANDER PTY LTD
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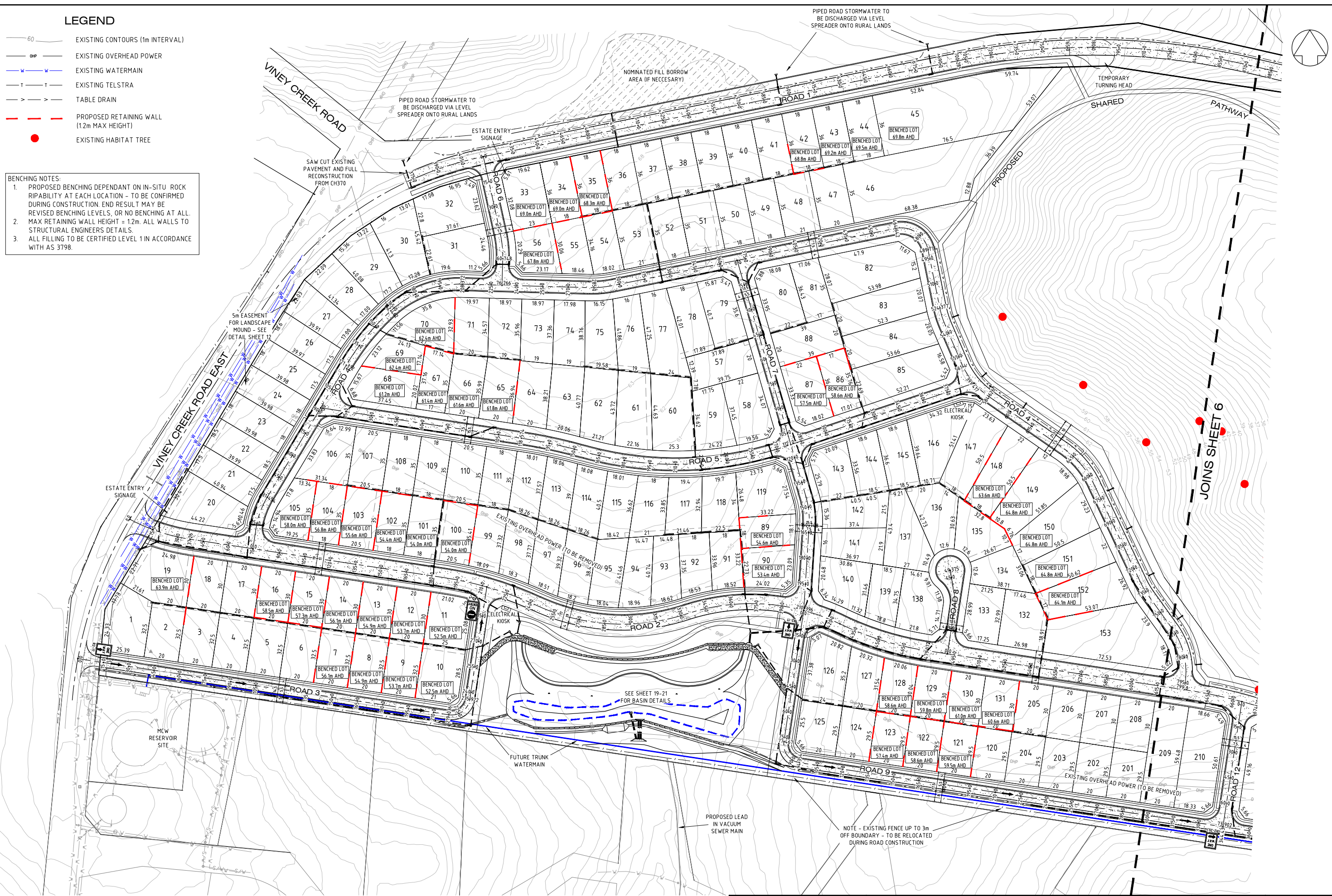
**PLAN OF PROPOSED RESIDENTIAL SUBDIVISION
STAGE 1 LAYOUT PLAN
LOT 2, 3 & 4 DP 1154170
VINE CREEK ROAD, NORTH SHEARWATER**

COUNCIL MIDCOAST	REFERENCE 21800039
PARISH COWEAMBAH	SHEET SIZE A3
SCALE 1:2000 on A3	SHEET No. 3
DATE : Plotted 14/55 18/04/18	

CLIENT: WOLIN PTY LTD JOB No.: 205532 COMPUTER FILE : S:\projects\North Shearwater\DWG\S1g1-3 DA Design Plans.dwg

	EXISTING CONTOURS (1m INTERVAL)
	EXISTING OVERHEAD POWER
	EXISTING WATERMAIN
	EXISTING TELSTRA
	TABLE DRAIN
	PROPOSED RETAINING WALL (1.2m MAX HEIGHT)
	EXISTING HABITAT TREE

BENCHING NOTES:	1. PROPOSED BENCHING DEPENDANT ON IN-SITU ROCK RIPABILITY AT EACH LOCATION - TO BE CONFIRMED DURING CONSTRUCTION. END RESULT MAY BE REVISED BENCHING LEVELS, OR NO BENCHING AT ALL. 2. MAX RETAINING WALL HEIGHT = 1.2m. ALL WALLS TO STRUCTURAL ENGINEERS DETAILS. 3. ALL FILLING TO BE CERTIFIED LEVEL 1 IN ACCORDANCE WITH AS 3798.
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(A) - PROP. EASEMENT FOR DRAINAGE OF SEWAGE (3' WIDE & VARIABLE)
(B) - PROP. EASEMENT FOR DRAINAGE OF WATER (1' WIDE)

A	Original Issue		AV	AV	CG*	BL*	18/4/18		
REV	DETAILS OF AMENDMENT		DESIGNED	DRAWN	CHECKED	APPROVED	DATE		

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ENGINEERING, SURVEYING & PLANNING



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RAYMOND TERRACE 2324
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PLAN OF PROPOSED RESIDENTIAL SUBDIVISION
STAGE 1 DETAIL PLAN
LOT 2, 3 & 4 DP 1154170
VINEY CREEK ROAD, NORTH SHEARWATER

CLIENT: WOLIN PTY LTD

JOB No.: 205532

COMPUTER FILE : S:\projects\North Shearwater\Dwg\Std1-3 DA Design Plans.dwg

COUNCIL MIDCOAST	REFERENCE 21800041	
PARISH COWEAMBAH	SHEET SIZE	A3
SCALE 1:2000 on A3	SHEET No. 5	
DATE :	Plotted 14-08-18/04/18	

