Our Ref: NW30132-L01: BCP/bcp
Contact: Dr Brett C. Phillips

29th March 2021

Cardno (NSW) Pty Ltd
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The Manager,
Apollo Fabrications Pty Ltd
10-12 Telegraph Road
YOUNG NSW 2594

Attention: Mr Caleb Jackson

Dear Caleb,

FLOODING ADVICE FOR 2, 10-12 AND 20 TELEGRAPH ROAD, YOUNG, NSW

In response to your request of 23 February 2021, we are pleased to provide the following advice on flooding of 2, 10-12 and 20 Telegraph Road, Young, NSW.

1. BACKGROUND

1.1 Location

The location of properties is indicated in **Figure 1**.

1.2 Proposed Development

A planning proposal is being prepared for a steel fabrication company called Apollo Fabrication who are based in Young, NSW. The subject properties are 4-20 Telegraph Road, Young.

Apollo Fabrication is looking to expand their operations to cover their landholdings.

Attachment A1 provides a survey of the eastern part of the overall landholding. This attachment identifies several features including:

- A steep bank within Lot 1171 DP 754611 and Lot 1154 DP 754611 which suggests that Victoria Gully extends into these two properties; and
- A gully which crosses Lot 3 DP374948 but the head of which appears confined to this property. This gully may provide some limited off-line flood storage of floodwaters conveyed down Victoria Gully.

Figure 1 Location of 2, 10-12 and 20 Telegraph Road, Young

Attachment A2 identifies the concept extent of earthworks on the eastern part of the overall landholding. It is noted that the proposed earthworks:

- Are outside the steep bank within Lot 1171 DP 754611 and Lot 1154 DP 754611 which suggests that development on these lots will not impact flood conveyance in Victoria Gully; and
- It is proposed to fill the gully within Lot 3 DP374948. This would eliminate the limited off-line flood storage of floodwaters conveyed down Victoria Gully on this lot.

Attachment A3 sets out a concept overall development of the landholding.

2. FLOOD RISK

2.1 2015 Young Floodplain Risk Management Study and Plan

As described in the 2015 Young Floodplain Risk Management Study and Plan[1]*:*

> *Young Shire Council commissioned the Floodplain Risk Management Study and Plan for the town of Young. The overall objectives of the Floodplain Risk Management Study (FRMS) were to assess the impacts of flooding, review existing Council policies as they relate to development of land in flood liable areas bordering Burrangong Creek and its tributaries, consider options for management of flood affected land and to develop a draft Floodplain Risk Management Plan (FRMP) which:*
>
> *(i) Proposes modifications to existing Council policies to ensure that the development of flood affected land is undertaken so as to be compatible with the flood hazard and risk.*
>
> *(ii) Proposes Flood Planning Levels for the various land uses in the floodplain.*
>
> *(iii) Sets out the recommended program of works and measures aimed at reducing over time, the social, environmental and economic impacts of flooding.*
>
> *(iv) Provides a program for implementation of the proposed works and measures.*
>
> *The FRMS focusses on Main Stream flooding from Burrangong Creek and its major tributary streams (Sawpit Gully, Victoria Gully, Petticoat Gully, Little Spring Creek and Big Spring Creek), Minor Tributary flooding caused by high flows in the minor un-named tributaries which drain to Burrangong Creek and its main tributaries, and Major Overland Flow (MOF) areas which occur in the three urban sub-catchments on the northern slopes (Railway Drain, Chance Gully and Golf Course Drain) which discharge to Burrangong Creek through the Central Business District (CBD) – Figures 2.1 and 2.2. Flooding problems on the MOF paths arise from surcharges of the trunk drainage systems, which comprise a mix of pipes, culverts and open drains.*
>
> *The solutions of problems resulting from surcharges of minor drainage lines in streets or in individual allotments remote from the MOF paths, are matters for stormwater management by Council and are outside the scope of the present investigation.*
>
> *…. Main stream flooding on Burrangong Creek, its tributary streams and along the MOF paths is "flash flooding" in nature. On the main arms of the creek system, flood levels peak about two hours after the commencement of heavy rainfall. On the smaller, urban catchments the time to peak on the MOF paths is less than one hour. Figure 2.3 shows the indicative extent of inundation for the 100 year ARI design flood. Figure 2.4 shows times of rise of floodwaters at representative locations in the drainage system.*
>
> *The channels of Burrangong Creek and its major tributary streams are incised and have a comparatively large hydraulic capacity, with flood events up to the 100 year ARI generally being conveyed without significant surcharges of the channels. Damages to urban development bordering the main creeks would not be significant at that level of flooding.*

[1] Lyall & Associates (2015) "The Town of Young Floodplain Risk Management Study and Plan", *Final Report*, Rev 1.4, 2 Vols, prepared for Young Shire Council, November.

Several Figures extracted from Volume 2 of Council's Flood Risk Management Study report are included in **Attachment B.** The area closest to the Telegraph Road properties is also clouded on the bottom right of the attached Figures. It is unclear if Council's flood study extended further east than mapped in the attached Figures.

2.2 Flood Depths

Attachment B1 plots the 100 yr ARI flood depths and extents in the vicinity of the western Telegraph Road properties in the overall landholding.

Attachment B2 plots the PMF flood depths and extents in the vicinity of the western Telegraph Road properties in the overall landholding.

It is noted from Attachments B1 and B2 that flooding is largely confined to Victoria Gully and does not inundate any of the land that it is proposed to develop or re-develop. It is anticipated that similar flooding is experienced on the western Telegraph Road properties except that there is limited storage of floodwaters in the gully in Lot 3 DP374948.

2.3 Flood and Floodplain Categories

Attachment B2 plots the following hydraulic and floodplain categories:

- High Hazard floodway
- Low Hazard Floodway and Flood Storage
- Intermediate Floodplain; and
- Outer Floodplain.

It is noted from Attachment B3 that flooding is flood and floodplain categories are largely confined to Victoria Gully and do not extend over any of the land that it is proposed to develop or re-develop on the western Telegraph Road properties. It is anticipated that similar mapping would be present on the western Telegraph Road properties except the gully in Lot 3 DP374948 which may be partly mapped as outer floodplain.

3. FLOOD IMPACT ASSESSMENT

Based on the mapping contained in the 2015 Young Floodplain Risk Management Study and Plan, a qualitative assessment of the potential impact of the proposed development on flooding has been undertaken as follows.

3.1 Mainstream Flood Impacts

It is noted from Attachments B1 and B2 that flooding is largely confined to Victoria Gully and does not inundate any of the land that it is proposed to develop or re-develop. It is anticipated that similar flooding is experienced on the western Telegraph Road properties except that there is limited storage of floodwaters in the gully in Lot 3 DP374948. On the basis that the properties that it is proposed to develop is not inundated in a 100 yr ARI flood (except possibly Lot 3 DP374948) it is expected that the proposed development will have nil impact of 100 yr ARI flooding. In the case of Lot 3 DP374948 it is expected that the loss of limited off-line storage of floodwaters in the gully may lead to minor local impacts on flooding in this location only.

3.2 On-Site Detention

Potential impacts on flood would occur if controls are not incorporated into the development to limit the impact of increases in imperviousness as a result of the proposed development on the range of floods from frequent floods up to the 100 yr ARI flood.

Based on representative imperviousness for industrial development, a hydrological analysis was undertaken to estimate the indicative Site Storage Requirement (m^3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms.

As described in the 2014 Young Flood Study, hydrologic modelling used a rainfall-runoff routing approach based on the RAFTS software to determine the discharge hydrographs from the rural parts of the catchment, and incorporated a DRAINS module to assess flows generated in the urban areas.

The assessments were undertaken using a DRAINS model of a 1 ha local catchment under Pre-development and Post-development Conditions. The DRAINS model parameters were based on the parameter values adopted for design flood modelling in the 2014 Young Flood Study.

Pre-development Conditions

The DRAINS model was setup as follows:

- ILSAX hydrological model using soil type = 3;
- Australian Rainfall and Runoff 1987 IFD;
- Antecedent Moisture Condition (AMC) = 3;
- Assumed 0% paved and 100% grassed catchment;
- Paved flow path roughness (n) = 0.02;
- Grassed flow path roughness (n) = 0.07;

The storm burst durations for the 2 yr ARI and 100 yr ARI storm bursts which were analysed ranged from 5 minutes to 120 minutes.

Post-development Conditions

Two changes were made from the pre-development conditions to account for concept industrial development:

- The imperviousness was increased to 90% paved and 10% grassed;
- A dual outlet OSD system was added at the catchment outlet.

A further assessment based on 70% imperviousness was also undertaken.

It was assumed that OSD systems will be designed such that the 2 yr ARI and 100 yr ARI peak flows under pre-development conditions would not be exceeded and that the storage would not overflow in the 100 yr ARI event.

Results

The critical storm durations for the 1 ha catchment under pre-development and post-development conditions are summarised in **Table 1**. The peak outflows under pre-development and post-development conditions without OSD are summarised in **Table 2**.

Table 1: Critical Storm Burst Durations

Scenario	2 yr ARI	100 yr ARI
Pre-Development	60 mins	20 mins
Post-Development	20 mins	20 mins

Table 2: Peak Flows

Scenario	2 yr ARI	100 yr ARI
Pre-Development	0.012 m^3/s	0.214 m^3/s
Post-Development without OSD	0.141 m^3/s	0.393 m^3/s

The indicative Site Storage Requirement (m^3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms determined from the DRAINS modelling are summarised in Table 3.

Table 3: Indicative PSD and SSR Requirements

Scenario	2 yr SSR (m^3/ha)	100 yr SSR (m^3/ha)	2 yr PSD (L/s/ha)	100 yr PSD (L/s/ha)
Post-Development (90% paved)	170	220	12	213
Post-Development (70% paved)	130	175	12	211

4. PLANNING CONSIDERATIONS

Flood Planning Considerations are set out in the Young LEP 2010 and the Young DCP 2011 as follows:

4.1 Young LEP 2010

Part 6 Additional Local Provisions

6.4 Water

(1) The objective of this clause is to maintain the hydrological functions of riparian land, waterways and aquifers, including protecting—

(a) water quality, and

(b) natural water flows, and

(c) the stability of the bed and banks of waterways, and

(d) groundwater systems.

(2) This clause applies to land identified as "Riparian Corridor" or "Groundwater Vulnerability" on the Natural Resources Sensitivity Water Map.

Attachment C1 is the relevant LEP Biodiversity Map. It appears that the proposed development is largely outside mapped areas of high diversity.

Attachment C2 is the relevant LEP Land Map. It appears that the proposed development is largely outside mapped sensitive land areas except for Lot 3 DP374948. This mapping appears to map the gully as a sensitive land area which is not supported by the vegetation which is absent from the gully – refer Figure 1 – nor by the survey which indicates that this is not the main watercourse.

Attachment C3 is the relevant LEP Water Map. It appears that the proposed development is largely outside mapped areas of riparian corridor except for Lot 3 DP374948. This mapping appears to map the gully as a riparian corridor which is not supported by the vegetation which is absent from the gully – refer Figure 1 – nor by the survey which indicates that this is not the main watercourse.

(3) Before determining a development application for land to which this clause applies, the consent authority must consider any adverse impact from the proposed development on—

(a) the water quality of receiving waters, and

(b) the natural flow regime, and

(c) the natural flow paths of waterways, and

(d) the stability of the bed, shore and banks of waterways, and

(e) the flows, capacity and quality of groundwater systems.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any adverse environmental impact, or

(b) if that impact cannot be avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

It is noted from Attachments B1 and B2 that flooding is largely confined to Victoria Gully and does not inundate any of the land that it is proposed to develop or re-develop. It is anticipated that similar flooding is experienced on the western Telegraph Road properties except that there is limited storage of floodwaters in the gully in Lot 3 DP374948. On the basis that the properties that it is proposed to develop are not inundated in a 100 yr ARI flood (except possibly Lot 3 DP374948) it is expected that the proposed development will have nil impact of 100 yr ARI flooding. In the case of Lot 3 DP374948 it is expected that the

loss of limited off-line storage of floodwaters in the gully may lead to minor local impacts on flooding in this location only.

Based on representative imperviousness for industrial development, a hydrological analysis was undertaken to estimate the indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms.

The indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms determined from the DRAINS modelling are summarised in Table 3.

6.6 Flood planning

(1) The objectives of this clause are as follows—

(a) to minimise the flood risk to life and property associated with the use of land,

(b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,

(c) to avoid significant adverse impacts on flood behaviour and the environment.

(2) This clause applies to land that is at or below the flood planning level.

(3) Development consent must not be granted for development on land to which this clause applies unless the consent authority is satisfied that the development—

(a) is compatible with the flood hazard of the land, and

(b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

(c) incorporates appropriate measures to manage risk to life from flood, and

(d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and

(e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

(4) A word or expression used in this clause has the same meaning as it has in the NSW Government's Floodplain Development Manual published in 2005, unless it is otherwise defined in this clause.

(5) In this clause—

flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.

It is noted from Attachments B1 and B2 that flooding is largely confined to Victoria Gully and does not inundate any of the land that it is proposed to develop or re-develop. It is anticipated that similar flooding is experienced on the western Telegraph Road properties except that there is limited storage of floodwaters in the gully in Lot 3 DP374948. On the basis that the properties that it is proposed to develop are not inundated in a 100 yr ARI flood (except possibly Lot 3 DP374948) it is expected that the proposed development will

have nil impact of 100 yr ARI flooding. In the case of Lot 3 DP374948 it is expected that the loss of limited off-line storage of floodwaters in the gully may lead to minor local impacts on flooding in this location only. It is considered that the proposed development minimises the flood risk to life and property associated with the use of land.

Given the available mapping of the PMF which is far more extreme than changes in 100 yr ARI flooding as a result of climate change, it is considered that the proposed development is compatible with the land's flood hazard, taking into account projected changes as a result of climate change.

To avoid significant adverse impacts on flood behaviour and the environment, a hydrological analysis was undertaken to estimate the indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms.

The indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms determined from the DRAINS modelling are summarised in Table 3.

It is considered the proposed development is meets the objectives of Clause 6.6 Flood Planning.

4.2 Young DCP 2011

Appendix C Statements of Environmental Effects (SEE)

7.1.1 SEE Guidelines

K Drainage

Show how the proposal will deal with all aspects of drainage on the site:

- *have you proposed measures to maximise infiltration and minimise water runoff? (e.g. porous pavements, mulching and ground covers, low water demand native plants, rainwater tanks, stormwater reuse).*
- *Stormwater drainage: proposed management controls for flows entering within and leaving the site, proposed on-site detention calculations prepared by a consulting hydraulic engineer, justification that the proposed design measures will not increase stormwater runoff or adversely affect flooding on other land easements: provide copies of letters of intention to grant interallotment drainage easements across downstream properties*
- *Local flood mitigation measures*

To avoid significant adverse impacts on flood behaviour and the environment, a hydrological analysis was undertaken to estimate the indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms.

The indicative Site Storage Requirement (m3/ha) and Permissible Site Discharges (L/s/ha) to limit post-development peak runoff to no greater than pre-development peak runoff in 2 yr ARI and 100 yr ARI storms determined from the DRAINS modelling are summarised in Table 3.

The primary local flood mitigation measure is the proposed filling of the gully on Lot 3 DP374948.

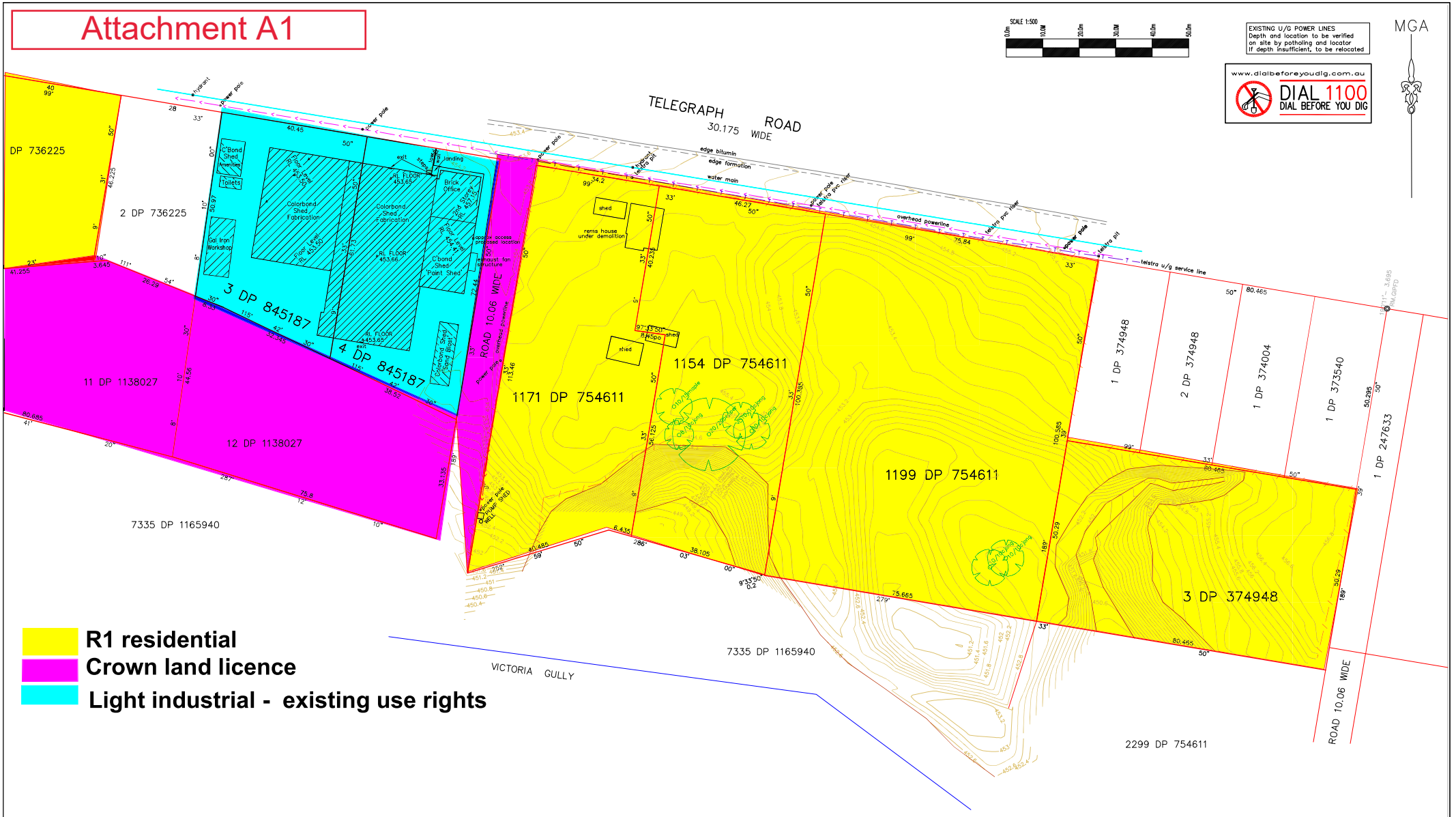
Yours faithfully

Brett C. Phillips

.....

Dr Brett C. Phillips
Senior Principal
for **Cardno**

Attachment A1



DATUM AHD SSM 39765: RL 447.048
COORDINATES MGA ZONE 55 SSM 39765: E 620693.766, N 6201834.952

.	.	.
D	RAISE BUILDING PAD FFL 454.3, MODIFY EASTERN PAD AREA	20th Sept, 2017
C	RAISE BUILDING PAD 0.3!, EXTEND OUTER PAD	28th Aug, 2017
B	VOLUME AND BUILDING PAD	20th July, 2017
A	DETAIL AND CONTOUR SURVEY	12th July, 2016
ISSUE	AMENDMENT	DATE

I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS

NAME: .....
SIGNATURE: .....
CAPACITY: .....
DATE: .....

DATE	CHECKED
20th Sept 2017	WJC
DRAWN	APPROVED
WJC	WJC
DESIGNED	SCALE
WJC	PLAN 1:500 LS H5 1:500 LS V5 1:100

SHEET A1

C.P.C.
LAND DEVELOPMENT CONSULTANTS P\L
ACN 003 772 975

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121 NASMYTH STREET
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COWRA OFFICE
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COWRA NSW, 2794
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GOULBURN OFFICE
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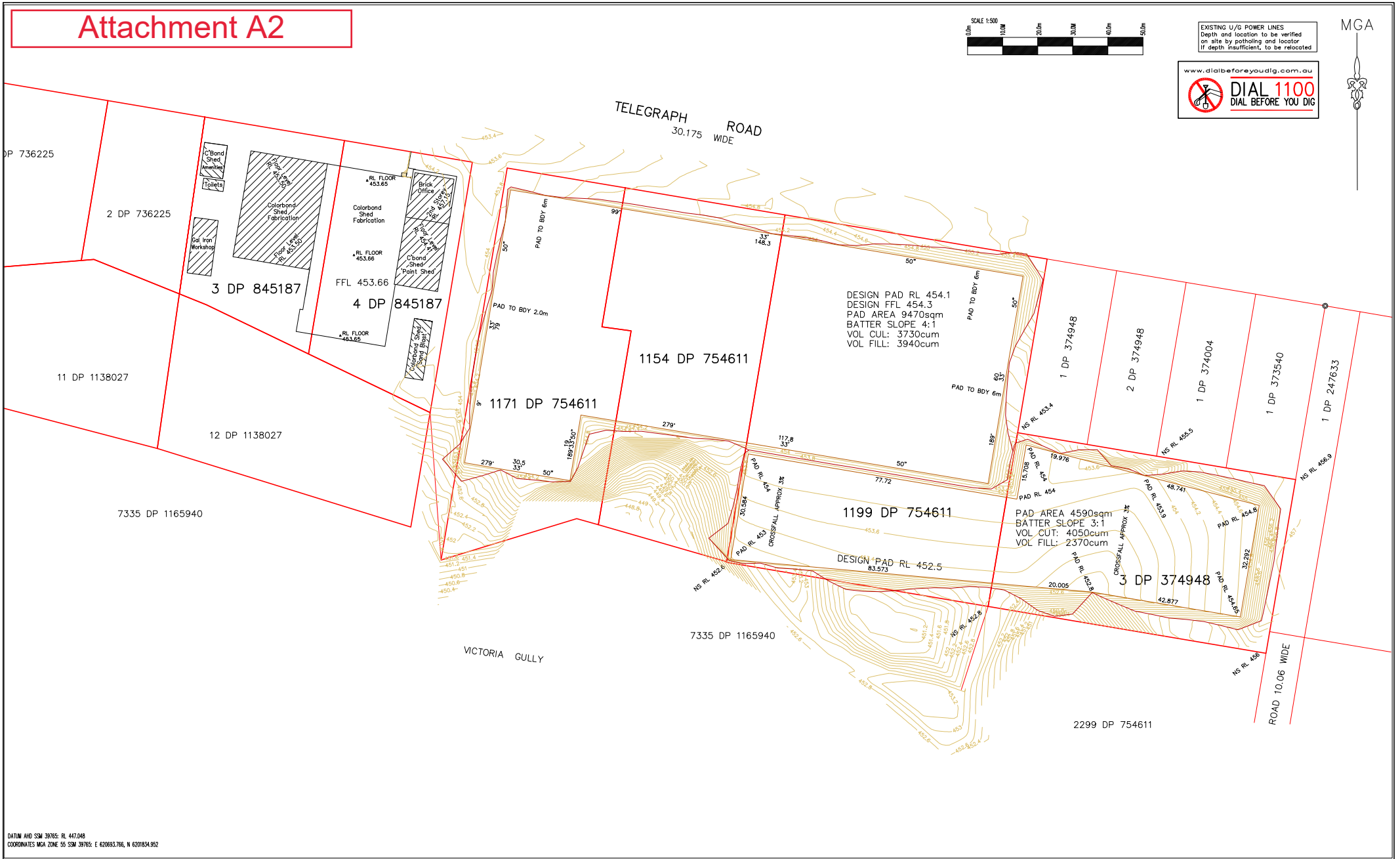
SHEET SUBJECT
PLAN VIEW
DETAIL AND CONTOURS

CLIENT
Apollo Fabrication Group Pty Ltd

PROJECT APOLLO FABRICATION GROUP PTY LTD
TELEGRAPH ROAD, YOUNG

ISSUE	PROJECT NO.	SHEET NO.	SHEET
D	18424	1 of 2	A1

Attachment A2



DATUM AHD SSM 39765: RL 447.048
COORDINATES MGA ZONE 55 SSM 39765: E 620693.766, N 6201834.952

.	.	.
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NAME: .....
SIGNATURE: .....
CAPACITY: .....
DATE: .....

DATE	CHECKED
20th Sept 2017	WJC
DRAWN	APPROVED
WJC	WJC
DESIGNED	SCALE PLAN 1:500 LS H5 1:500 LS V5 1:100
WJC	SHEET A1

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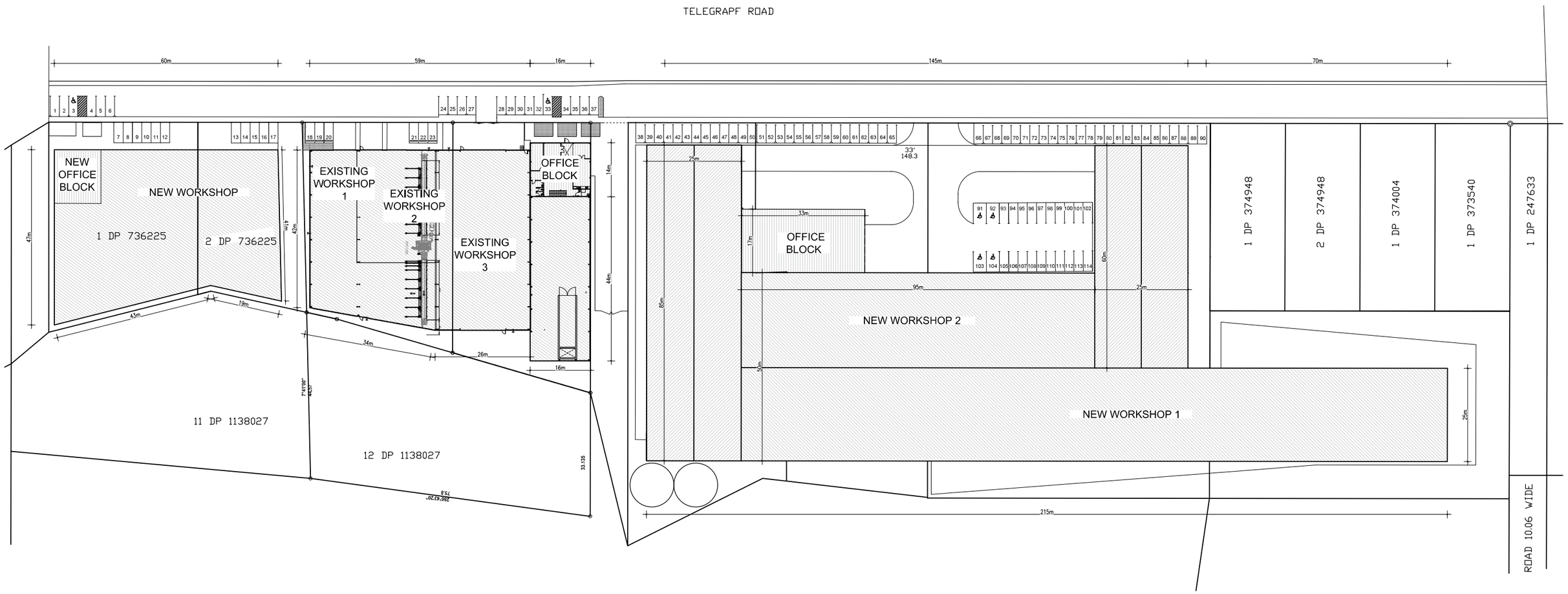
SHEET SUBJECT
DESIGN PAD CUT/FILL
DESIGN DETAIL AND CONTOURS

PROJECT APOLLO FABRICATION GROUP PTY LTD
TELEGRAPH ROAD, YOUNG

CLIENT
Apollo Fabrication Group Pty Ltd

ISSUE	PROJECT NO.	SHEET NO.	SHEET
D	18424	2 of 2	A1

Attachment A3



ISSUE	DATE	REASON FOR REVISION
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UNIQUE CAD EXPERIENCE

Client: APOLLO FABRICATION GROUP Pty Ltd

Project: PROPOSED ADDITION
2 - 20 Telegraph road, Young

Drawing: PROPOSED SITE PLAN

Job Number:

No. in Set: 2

Sheet No.: A 1.1

Scale: 1 : 750

Revision No.:

Date: 11.03.2021

Revision Date.:

Drawn: MG

A2

YOUNG SHIRE COUNCIL

Attachment B

THE TOWN OF YOUNG
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

VOLUME 2 – FIGURES

NOVEMBER 2015

Job No: DO315 File: YFRMSP V2 Figures [Rev 1.4].doc	Date: November 2015 Rev No: 1.4	Principal: BWL Author: BWL/SAB

LIST OF FIGURES

Attachment B1

Indicative Depth of Above-Floor Inundation (m)

Residential	Commercial	Public	
○	▽	□	0.00 to 0.20
○	▽	□	0.20 to 0.40
●	▼	■	0.40 to 0.60
●	▼	■	0.60 to 0.80
●	▼	■	0.80 to 1.00
●	▼	■	1.00 to 1.50
●	▼	■	1.50 to 2.00
●	▼	■	2.00 to 3.00
●	▼	■	3.00 to 4.00

Indicative Depth of Inundation (m)

	< 0.05
	0.05 to 0.10
	0.10 to 0.20
	0.20 to 0.30
	0.30 to 0.40
	0.40 to 0.50
	0.50 to 0.60
	0.60 to 0.70
	0.70 to 0.80
	0.80 to 0.90
	0.90 to 1.00
	> 1.00

PROPERTY FLOOD AFFECTATION SHOWN ON THIS FIGURE IS INDICATIVE ONLY, AS FLOOR LEVELS WERE ESTIMATED BY A "DRIVE-BY" SURVERY. SURVEY BY A REGISTERED SURVEYOR IS REQUIRED TO CONFIRM DEPTHS OF INUNDATION OF INDIVIDUAL PROPERTIES.

N

80 0 80 160 240 m

Scale: 1:8,000

Lyall & Associates

NOTE:

THE EXTENTS AND DEPTHS OF FLOODING SHOWN WERE DETERMINED FROM AIRBORNE LASER SCANNING SURVEY AND ARE APPROXIMATE ONLY.THE EXTENT OF INUNDATION IN INDIVIDUAL ALLOTMENTS NEAR THE FLOOD FRINGE SHOULD BE CONFIRMED BY SITE SPECIFIC SURVEY.

REFER TABLE A1 OF APPENDIX A OF FLOOD STUDY FOR PEAK FLOWS AND CRITICAL STORM DURATIONS AT LOCATIONS SHOWN.

ABOVE-FLOOR INUNDATION ONLY SHOWN FOR PROPERTIES LOCATED WITHIN THE MAJOR OVERLAND FLOW URBAN PRECINCT.

LEGEND

- Modelled Stormwater System
- Two-Dimensional Model Boundary
- Water Surface Elevation Contours (m AHD) (414)
- Q17 Peak Flow Location and Identifier
- Extent of Major Overland Flow Urban Precinct

THE TOWN OF YOUNG
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Figure 2.3
Sheet 3 of 3

INDICATIVE FLOOD EXTENTS
100 YEAR ARI

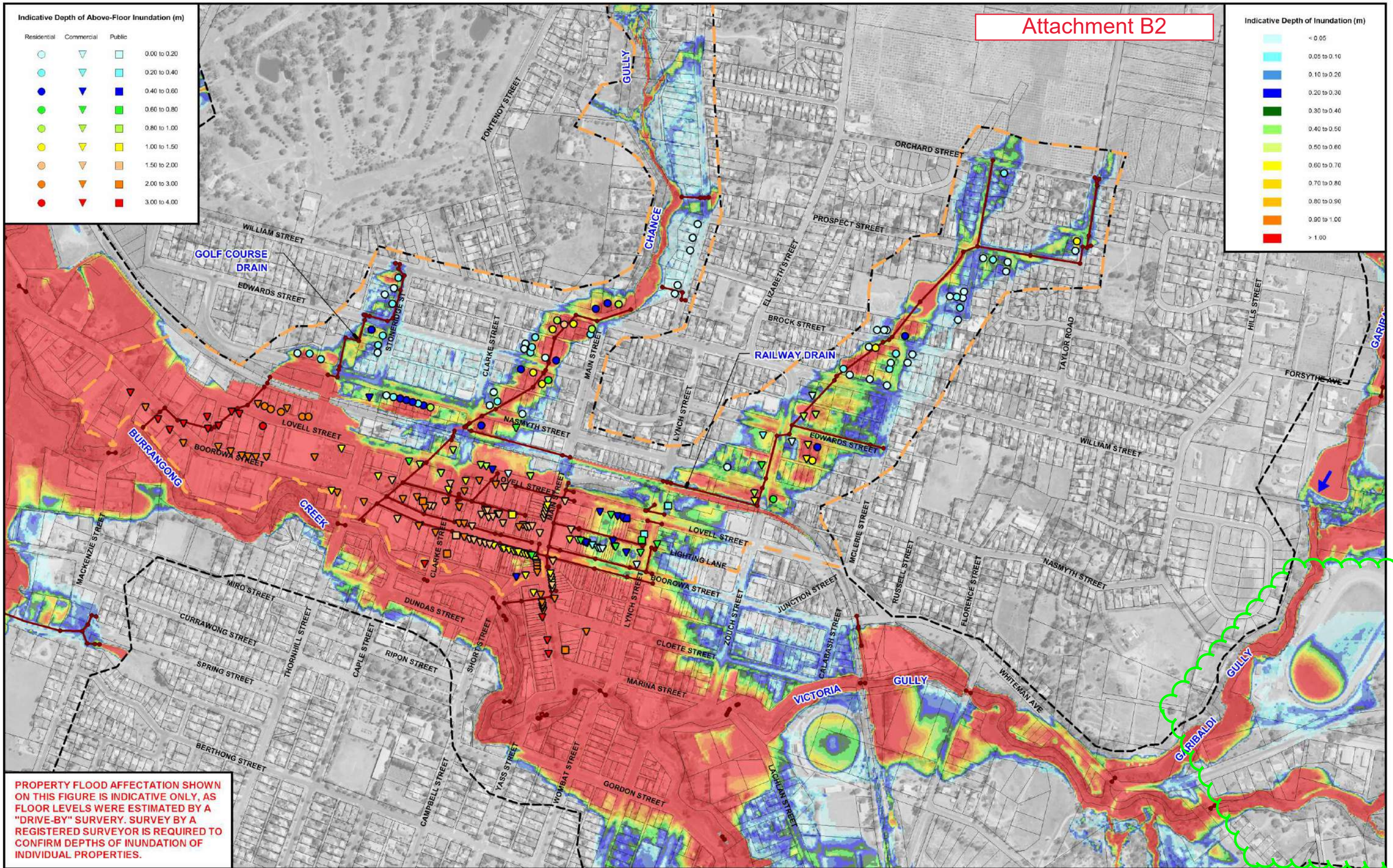
Attachment B2

Indicative Depth of Above-Floor Inundation (m)

Residential	Commercial	Public	
○	▽	□	0.00 to 0.20
○	▽	□	0.20 to 0.40
●	▼	■	0.40 to 0.60
●	▼	■	0.60 to 0.80
●	▼	■	0.80 to 1.00
●	▼	■	1.00 to 1.50
●	▼	■	1.50 to 2.00
●	▼	■	2.00 to 3.00
●	▼	■	3.00 to 4.00

Indicative Depth of Inundation (m)

	< 0.05
	0.05 to 0.10
	0.10 to 0.20
	0.20 to 0.30
	0.30 to 0.40
	0.40 to 0.50
	0.50 to 0.60
	0.60 to 0.70
	0.70 to 0.80
	0.80 to 0.90
	0.90 to 1.00
	> 1.00



PROPERTY FLOOD AFFECTATION SHOWN ON THIS FIGURE IS INDICATIVE ONLY, AS FLOOR LEVELS WERE ESTIMATED BY A "DRIVE-BY" SURVERY. SURVEY BY A REGISTERED SURVEYOR IS REQUIRED TO CONFIRM DEPTHS OF INUNDATION OF INDIVIDUAL PROPERTIES.

N

80 0 80 160 240 m

Scale: 1:8,000

Lyall & Associates

NOTE:

THE EXTENTS AND DEPTHS OF FLOODING SHOWN WERE DETERMINED FROM AIRBORNE LASER SCANNING SURVEY AND ARE APPROXIMATE ONLY.THE EXTENT OF INUNDATION IN INDIVIDUAL ALLOTMENTS NEAR THE FLOOD FRINGE SHOULD BE CONFIRMED BY SITE SPECIFIC SURVEY.

ABOVE-FLOOR INUNDATION ONLY SHOWN FOR PROPERTIES LOCATED WITHIN THE MAJOR OVERLAND FLOW URBAN PRECINCT.

LEGEND

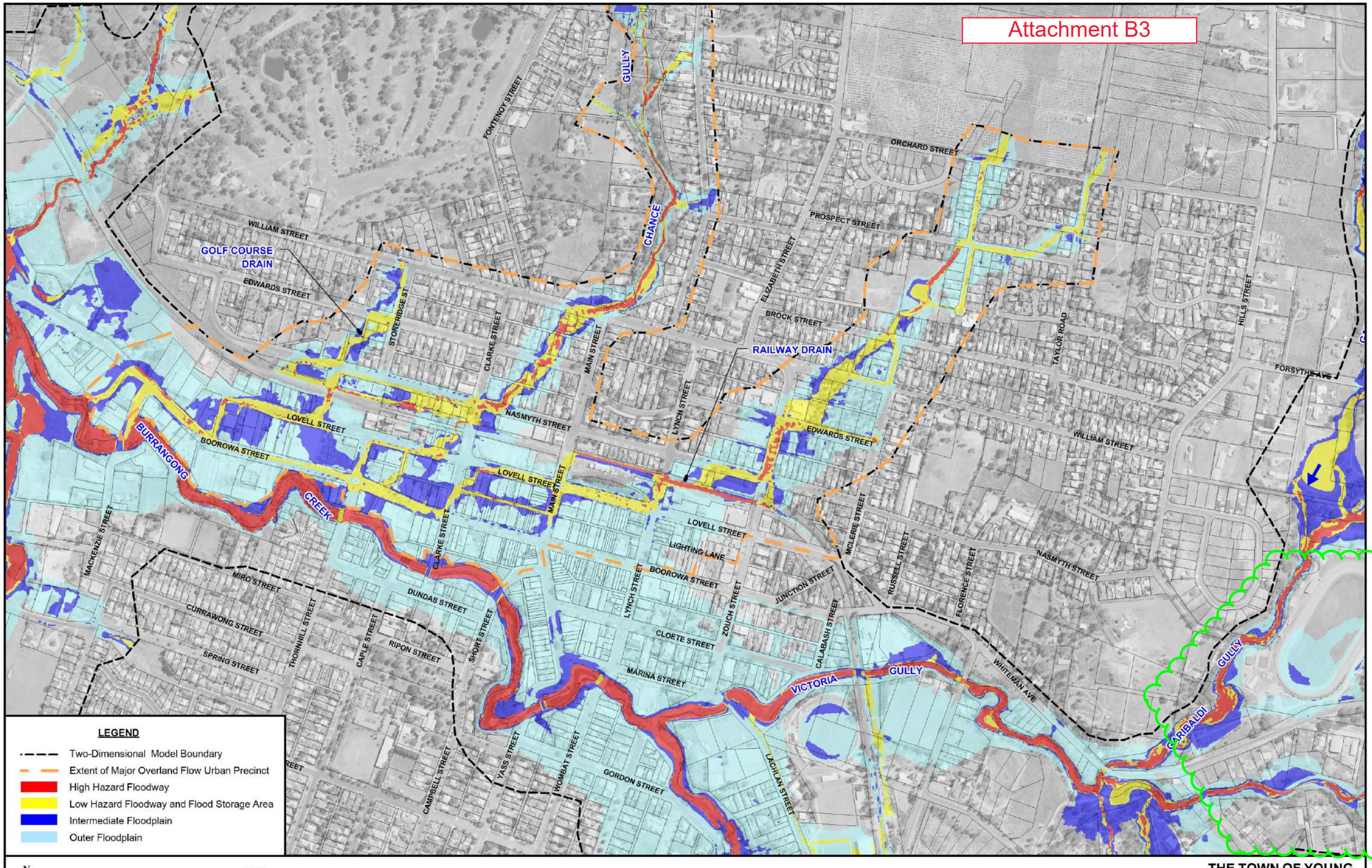
- Modelled Stormwater System
- Two-Dimensional Model Boundary
- Extent of Major Overland Flow Urban Precinct

THE TOWN OF YOUNG
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Figure 2.8

INDICATIVE DEPTHS OF ABOVE-GROUND AND ABOVE-FLOOR INUNDATION
MAJOR OVERLAND FLOW URBAN PRECINCT - PMF

Attachment B3



LEGEND

- Two-Dimensional Model Boundary
- Extent of Major Overland Flow Urban Precinct
- High Hazard Floodway
- Low Hazard Floodway and Flood Storage Area
- Intermediate Floodplain
- Outer Floodplain

N

80 0 80 160 240 m

NOTE:

THE EXTENTS AND DEPTHS OF FLOODING SHOWN WERE DETERMINED FROM AIRBORNE LASER SCANNING SURVEY AND ARE APPROXIMATE ONLY. THE EXTENT OF INUNDATION IN INDIVIDUAL ALLOTMENTS NEAR THE FLOOD FRINGE SHOULD BE CONFIRMED BY SITE SPECIFIC SURVEY.

Lyall & Associates

THE TOWN OF YOUNG
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Figure A1.3
(Sheet 3 of 3)

FLOOD HAZARD MAP

Young Local Environmental Plan 2010

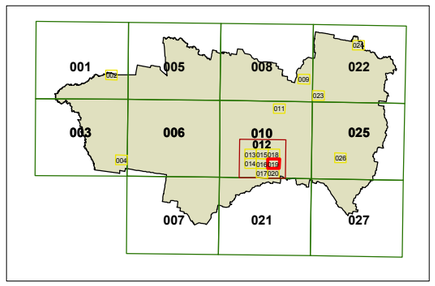
Natural Resources Sensitivity
Biodiversity Map - Sheet NRB_019

Natural Resource Sensitivity

Areas of High Biodiversity

Cadastre

Cadastre 1/3/10 © Dept of Lands



N
W E
S

0 100 200 metres

Scale: 1:10,000 @ A3

Projection: GDA 1994
Zone 55

Map Identification Number:

8750_COM_NRB_019_010_20100610

Attachment C1

Young Local Environmental Plan 2010

Natural Resources Sensitivity Land Map - Sheet NRL_019

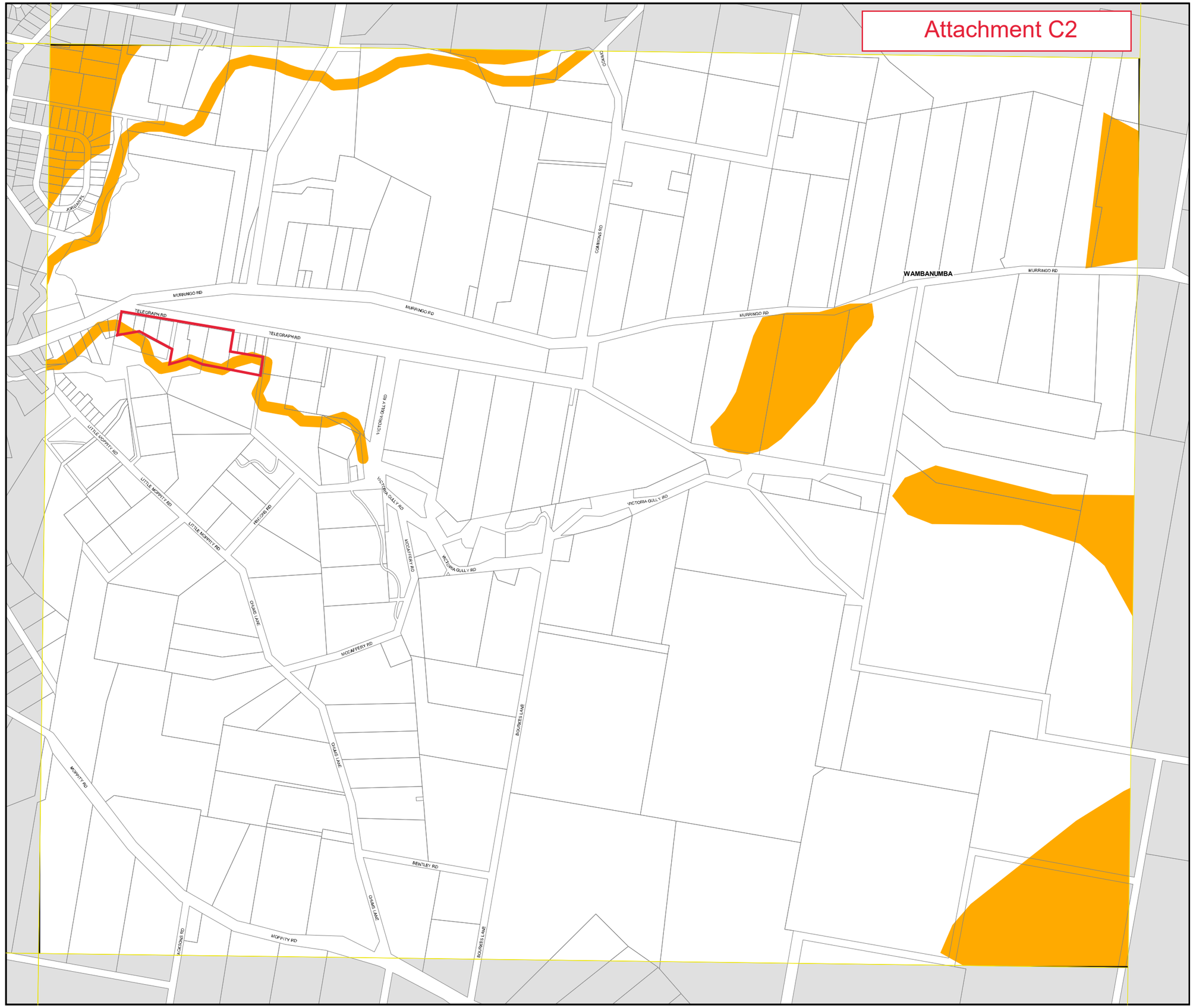
Sensitive Areas

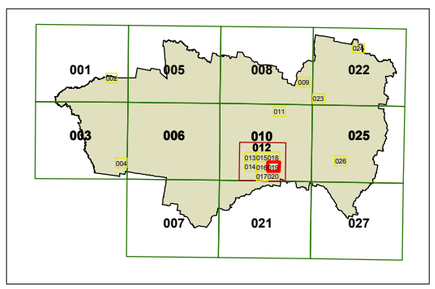
Sensitive Land Areas

Cadastre

Cadastre 1/3/10 © Dept of Lands

Attachment C2





N
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Projection: GDA 1994
Zone 55

0 100 200 metres

Scale: 1:10,000 @ A3

Map Identification Number:

8750_COM_NRL_019_010_20100610

Young Local Environmental Plan 2010

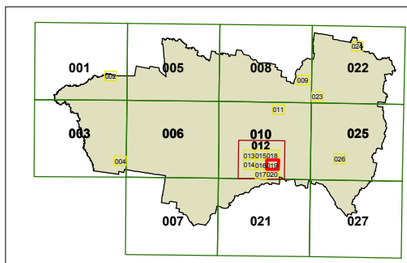
Natural Resources Sensitivity
Water Map - Sheet NRW_019

Natural Resource Sensitivity

- Riparian Corridor
- Groundwater Vulnerability

Cadastre

- Cadastre 1/3/10 © Dept of Lands



N
W E
S

0 100 200 metres

Scale: 1:10,000 @ A3

Projection: GDA 1994
Zone 55

Map Identification Number:

8750_COM_NRW_019_010_20100610

Attachment C3