

Berten Pty Ltd

# Proposed Subdivision

## Lot 1 DP 1086066, Abbotsford Rd, Picton



*Proposed three Lot Subdivision of Lot 1 DP 1086066*

Flood Assessment Report

April 2019



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Flood Assessment Report

April 2019

**FLOODMIT PTY LTD**

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# 1 INTRODUCTION

FloodMit Pty Ltd was commissioned by Berten Pty Ltd to prepare a flood assessment report to accompany an application for a proposed three lot subdivision of Lot 1 DP 1086066 Abbotsford Road, Picton.

The subject property is located upstream of Picton in the Stonequarry Creek catchment. The property has a total area of 192 Ha, and is predominantly used for rural purposes. The property was initially zoned RU2 Rural Landscape under Wollondilly LEP 2011. Amendment 32 (December 2018) rezoned that part of the property that is located on the south side of Abbotsford Road to E4 Environmental Living.

The proposed three lot subdivision is shown on draft survey plans prepared by Rein Warry Surveyors, which are included at Figures 1 and 2. The proposed subdivision has also been superimposed on aerial photography, shown at Figure 3.

It is understood that the purpose of the proposed subdivision is to create the following allotments:

- i) Lot 101 – This is a “heritage” allotment that will largely include areas on the south side of Abbotsford Road that have been identified as having a significant heritage value, including the Abbotsford House ruins, trees, gardens and surrounds; and the Byrne’s Exhibition Dairy.
- ii) Lot 102 – This is a “future subdivision” allotment which includes the remaining part of the site located on the south side of Abbotsford Road, which is zoned E4 Environmental Living. It is anticipated that this site will be further subdivided into large lot residential properties (minimum of 4,000m<sup>2</sup>) in the future.
- iii) Lot 103 – This is a “rural” allotment located on the north side of Abbotsford Road which is zoned RU2 Rural Living. It is further divided into two parts by Fairleys Road.

The subject property is located within the Stonequarry Creek Catchment. Stonequarry Creek is a major creek that flows past the eastern corner of the site, before continuing through Picton and into the Nepean River. An unnamed tributary of Stonequarry Creek, known in this report as the Abbotsford Road Tributary, drains much of the site to Stonequarry Creek.

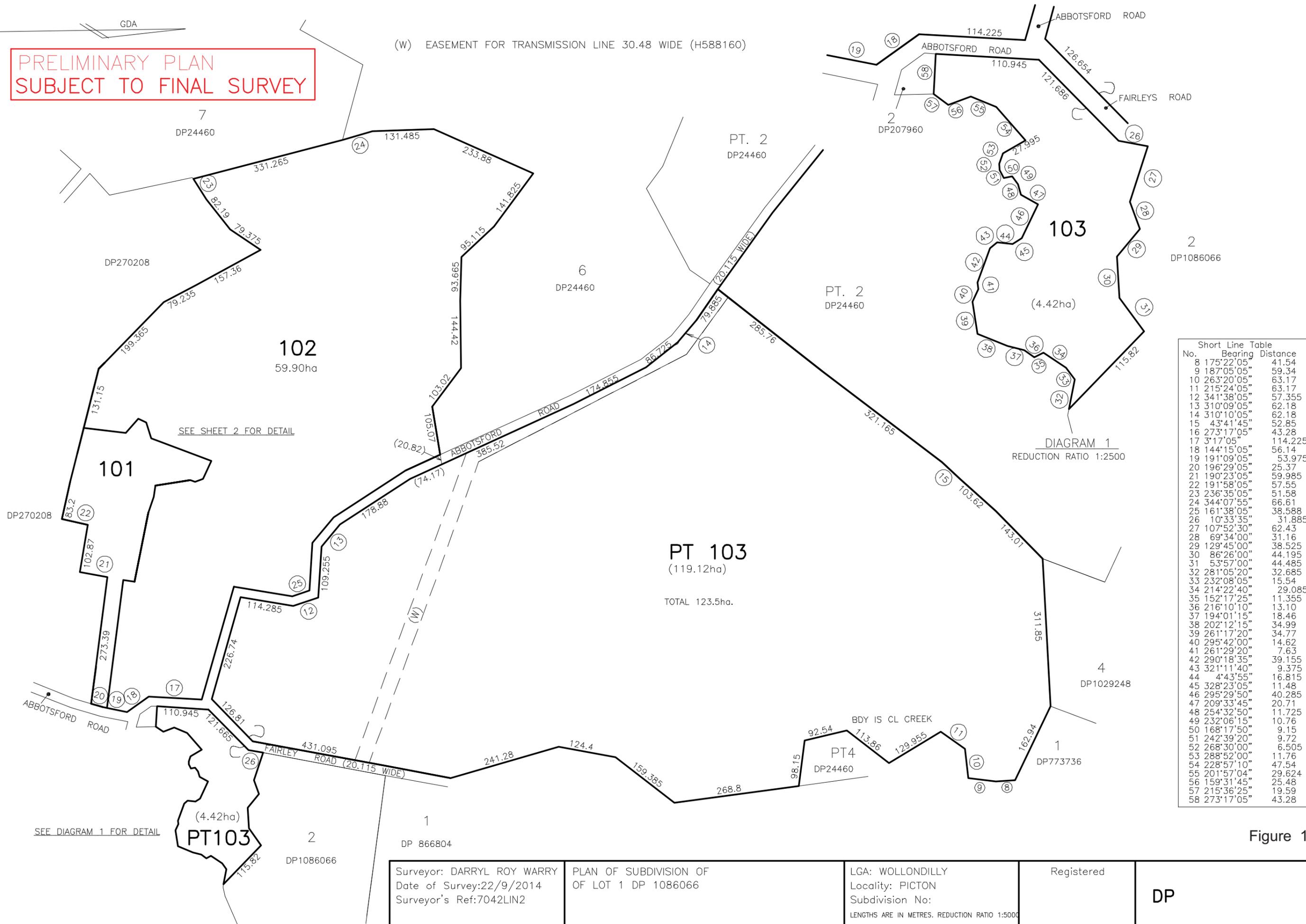
A flood assessment (FloodMit, 2013) was previously undertaken as part of the planning proposal prepared for the rezoning application. The assessment investigated the potential flood affectation of the land based on studies available at that time. It also established that development of the site could occur in accordance with the proposed rezoning without resulting in a detrimental impact on flooding to downstream areas.

The purpose of this current assessment is to:

- i) review the flood affectation of the site in view of new studies now available;
- ii) ensure that future development, in accordance with the proposed subdivision, can occur that is consistent with both mainstream flood behaviour (from Stonequarry Creek and the Abbotsford Road Tributary) and local runoff considerations from the site itself.

PRELIMINARY PLAN  
SUBJECT TO FINAL SURVEY

(W) EASEMENT FOR TRANSMISSION LINE 30.48 WIDE (H588160)



Short Line Table

No.	Bearing	Distance
8	175°22'05"	41.54
9	187°05'05"	59.34
10	263°20'05"	63.17
11	215°24'05"	63.17
12	341°38'05"	57.355
13	310°09'05"	62.18
14	310°10'05"	62.18
15	43°41'45"	52.85
16	273°17'05"	43.28
17	3°17'05"	114.225
18	144°15'05"	56.14
19	191°09'05"	53.975
20	196°29'05"	25.37
21	190°23'05"	59.985
22	191°58'05"	57.55
23	236°35'05"	51.58
24	344°07'55"	66.61
25	161°38'05"	38.588
26	10°33'35"	31.885
27	107°52'30"	62.43
28	69°34'00"	31.16
29	129°45'00"	38.525
30	86°26'00"	44.195
31	53°57'00"	44.485
32	281°05'20"	32.685
33	232°08'05"	15.54
34	214°22'40"	29.085
35	152°17'25"	11.355
36	216°10'10"	13.10
37	194°01'15"	18.46
38	202°12'15"	34.99
39	261°17'20"	34.77
40	295°42'00"	14.62
41	261°29'20"	7.63
42	290°18'35"	39.155
43	321°11'40"	9.375
44	4°43'55"	16.815
45	328°23'05"	11.48
46	295°29'50"	40.285
47	209°33'45"	20.71
48	254°32'50"	11.725
49	232°06'15"	10.76
50	168°17'50"	9.15
51	242°39'20"	9.72
52	268°30'00"	6.505
53	288°52'00"	11.76
54	228°57'10"	47.54
55	201°57'04"	29.624
56	159°31'45"	25.48
57	215°36'25"	19.59
58	273°17'05"	43.28

Figure 1

Surveyor: DARRYL ROY WARRY Date of Survey: 22/9/2014 Surveyor's Ref: 7042LIN2	PLAN OF SUBDIVISION OF OF LOT 1 DP 1086066	LGA: WOLLONDILLY Locality: PICTON Subdivision No: LENGTHS ARE IN METRES. REDUCTION RATIO 1:5000	Registered  <b>DP</b>
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PRELIMINARY PLAN  
SUBJECT TO FINAL SURVEY

SCHEDULE OF PERMANENT MARKS  
SURVEYING AND SPATIAL INFORMATION REGULATION 2012  
CL 35(1)(B) AND CL 61 (1)(2)

MARKS	EASTINGS	NORTHINGS	ZONE	CLASS	ORDER
TS10721	279 300.876	6 216 288.928	56	C	3
PM 46952	279 416.023	6 217 120.071	56	B	U

SOURCE : S.C.I.M.S. - 19-9-2014  
COMBINED SCALE & SEA LEVEL CORRECTION : 1.000172

CALCULATED POSITION FROM AUSPOS STATIC OBSERVATIONS

MARKS	EASTINGS	NORTHINGS	CLASS/ORDER
SSM 119518	278 932.294	6 217 246.952	U/U
SSM 119519	278 597.398	6 217 015.16	U/U

**PT.103**  
(119.12 ha. dedn)  
TOTAL 123.5ha.

**PT.103**  
(4.42ha.)

**102**  
59.90ha

**101**  
6.652ha

**PT.1**  
DP270208

No.	Bearing	Distance
1	42°48'15"	24.58
2	16°28'30"	25.37
3	11°08'30"	9.435
4	11°08'30"	27.36
5	148°29'30"	29.69
6	323°49'00"	30.375
7	3°17'05"	12.19
11	312°20'15"	40.536
12	22°55'48"	18.798
13	73°36'39"	35.398
14	114°53'51"	43.163
15	161°43'43"	17.534
16	195°44'09"	12.381
17	171°08'40"	27.629
18	100°02'37"	24.647
19	108°33'19"	35.84

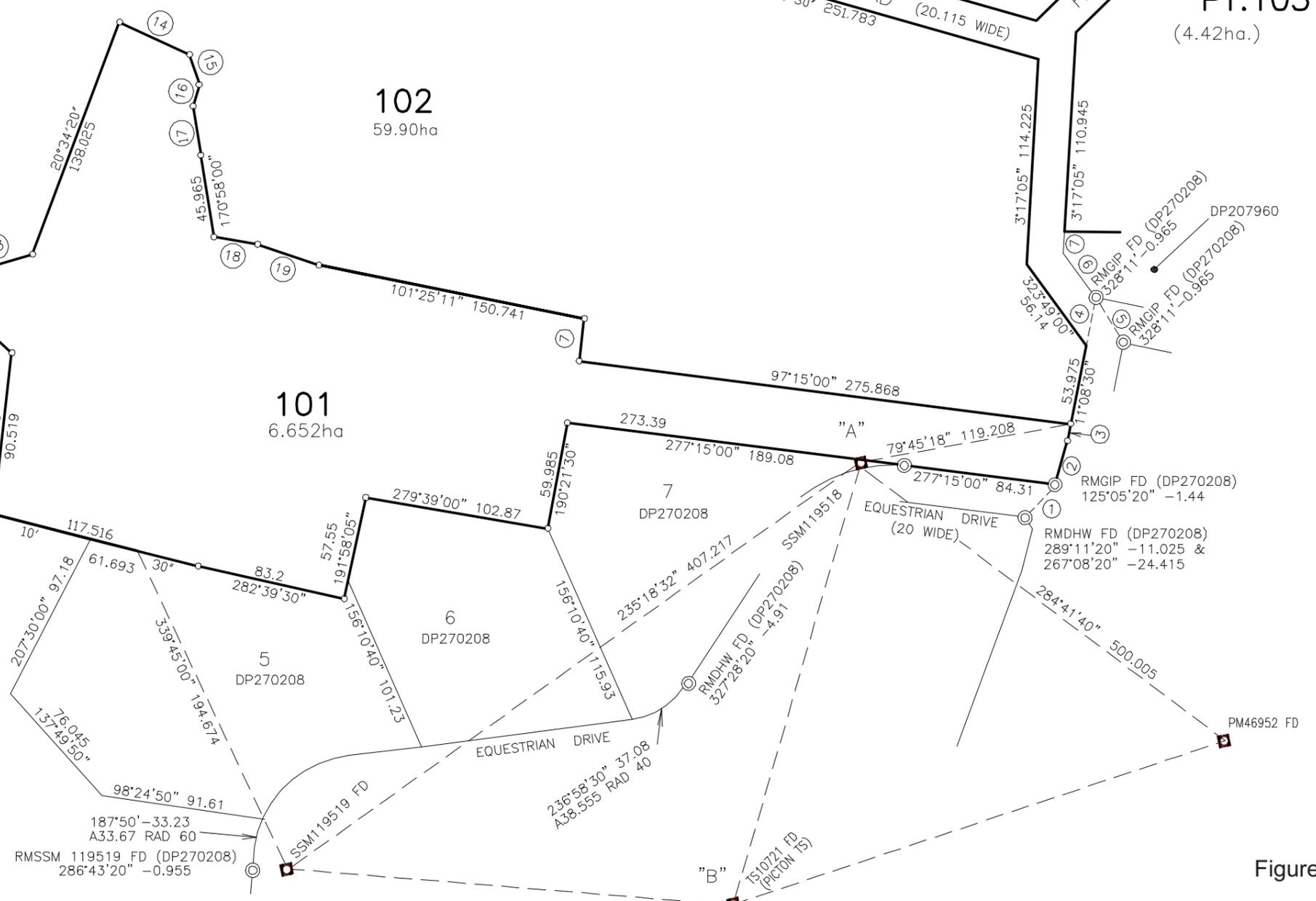
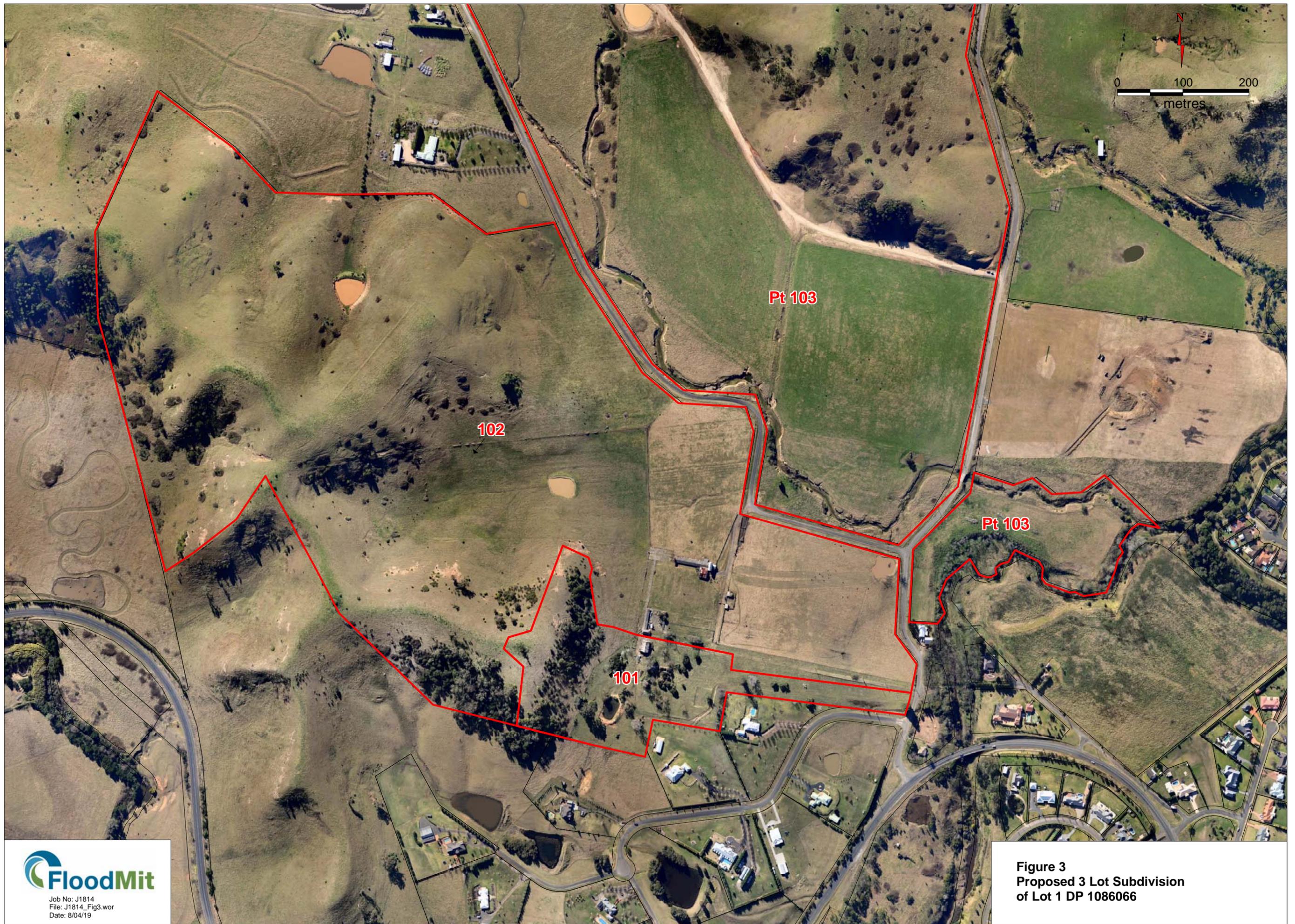


Figure 2

Surveyor: DARRYL ROY WARRY Date of Survey: 22/9/2014 Surveyor's Ref: 7042LIN1	PLAN OF SUBDIVISION OF LOT 1 DP 1086066	LGA: WOLLONDILLY Locality: PICTON Subdivision No: LENGTHS ARE IN METRES. REDUCTION RATIO 1:2000	Registered	<b>DP</b>
-------------------------------------------------------------------------------------	--------------------------------------------	----------------------------------------------------------------------------------------------------------	------------	-----------



**Figure 3**  
**Proposed 3 Lot Subdivision**  
**of Lot 1 DP 1086066**

## **2 AVAILABLE FLOOD INFORMATION**

### **2.1 ABBOTSFORD PLANNING PROPOSAL (FLOODMIT, 2013)**

A flood assessment report was prepared in support of the proposed rezoning of that part of the subject property that is located south of Abbotsford Road.

The report assessed the flood affectation of the site from Stonequarry Creek and the Abbotsford Road Tributary. The flood mapping was based on the results of flood modelling that had been prepared for Council from the *Stonequarry Creek 2D Modelling and Climate Change Assessment* (Worley Parsons, July 2011) and delineation of inundation extents using LiDAR survey that had just become available at that time.

Council's flood model for Stonequarry Creek has since been updated to include topographic data from the LiDAR survey. It was also further updated following a large flood event that occurred in June 2016 which provided useful data to calibrate/verify the flood model to observed data. Consequently, the flood inundation mapping provided in the Abbotsford Planning Proposal Flood Assessment is now out of date and further review is required.

The flood assessment report also investigated the quantity of site runoff under existing and proposed development conditions, to determine whether the site could be developed in accordance with the proposed rezoning without having a detrimental impact on downstream flood behaviour. It was determined that a drainage scheme incorporating two detention basins could adequately mitigate these impacts. Alternatively, it was noted that local on-site measures could be considered to mitigate these impacts, including on-site detention, rainwater tanks, or other water sensitive urban design measures. These findings are still relevant to future development that may be considered in the rezoned area.

### **2.2 PICTON/STONEQUARRY CREEK FLOOD STUDY**

The *Picton/Stonequarry Creek Flood Study* (Advisian, September 2017) is the most current flood study report that includes information on flood behaviour in Stonequarry Creek and the Abbotsford Road Tributary, in the vicinity of the subject site. The flood model has been updated to incorporate topographic data from the available LiDAR survey and the model calibrated/verified to historical flood observations from a large flood event that occurred in June 2016. This event is quoted as being close to a 100 year ARI event upstream of Picton.

The new flood study now provides improved information on flood behaviour for the subject site. This information forms the basis of the current assessment of the proposed three lot subdivision.

### **2.3 PICTON/STONEQUARRY CREEK FLOODPLAIN MANAGEMENT STUDY**

The *Picton/Stonequarry Creek Floodplain Management Study* (WMA Water, in progress) is currently being prepared. This study will review the flood risk encountered throughout the floodplain and investigate measures to manage this risk. The study is also likely to review the previous Picton/Stonequarry Creek Flood Study, including the adoption of revised design rainfall intensities and patterns that are now included in Australian Rainfall & Runoff (2016). This could further impact on design flood behaviour in the vicinity of the subject site.

Information from the floodplain management study is not currently available.

### 3 REVIEW OF MAINSTREAM FLOOD BEHAVIOUR

#### 3.1 REVISED FLOOD INUNDATION EXTENTS

A comparison of the 100 year ARI flood extent previously determined for the subject site (FloodMit, 2013) with the latest results now available from the Picton/Stonequarry Creek Flood Study (Advisian, 2017) is provided on Figure 4. A similar comparison for the Probable Maximum Flood (PMF) event is shown on Figure 5.

The results of the comparison indicate that whilst there has been little change in the PMF flood extent, the 100 year flood has contracted significantly within the subject site.

In relation to the area that has been recently rezoned (ie proposed Lots 101 and 102) only a minor portion of this area would be inundated in the 100 year flood, near the intersection of Abbotsford Road and Fairleys Road. The area subject to inundation in such an event has contracted from 1.6Ha to approximately 0.3Ha, and is now largely confined to the location of an existing farm dam. This site is not directly impacted by floodwater in Stonequarry Creek, but is impacted by flows in the Abbotsford Road tributary which spill out of the gully and over Abbotsford Road to inundate this area. Floodwater temporarily ponds in this area until flood levels in the Abbotsford Road tributary subside, allowing floodwater to drain back over the road to the gully.

In relation to the area north of Abbotsford Road (ie proposed Lot 103), flooding has also contracted in the 100 year ARI flood to be largely confined to the gully, which is the main drainage feature in this part of the site. Some minor overbank flooding occurs near the intersection of Abbotsford Road and Fairleys Road (as mentioned above), and also on the upstream side of the Fairleys Road bridge. More significant flooding occurs downstream of the bridge, from both the Abbotsford Road Tributary and Stonequarry Creek.

#### 3.2 DESIGN FLOOD LEVEL ESTIMATES

Design flood levels that are applicable to the proposed three lot subdivision are summarised in Table 1. These levels have been extracted from the Picton/Stonequarry Creek Flood Study (Advisian 2017). The levels should be treated as indicative and subject to confirmation, as they are based on the interpolation of 0.5m contours shown in the flood study report.

**Table 1**  
**Design Flood Levels for the Subject Site**

Design Flood Event	Maximum Flood Level Affecting the Site (m AHD)		
	Proposed Lot 101	Proposed Lot 102	Proposed Lot 103
20 Year Flood	-	162.2	Variable*
100 Year Flood	-	162.8	Variable
Flood Planning Level (100year +0.5m)	-	163.3	Variable
Probable Maximum Flood (PMF)	166.0	166.0	Variable

\* Refer to design contour levels shown on Figures 4 and 5.

### 3.3 CLASSIFICATION OF FLOOD RISK

Wollondilly Shire Council has adopted development controls, specified in Wollondilly DCP 2016, that recognise both the type of development proposed and the flood risk where the development is to be located. These controls require the floodplain to be divided into three different flood risk precincts. In the absence of a floodplain management plan that identifies these flood risks, they are to be determined as follows:

*High Flood Risk* – Land below the 100 year flood that is subject to a high hydraulic hazard, as defined with the provisional criteria outlined in the Floodplain Development Manual (NSW Govt, 2005).

The *High Flood Risk* precinct is where high flood damage, potential risk to life and evacuation problems would be anticipated, or where development would significantly and adversely affect flood behaviour. Only in exceptional circumstances will development be permitted in this precinct.

*Medium Flood Risk* – Land below the 100 year flood level plus 0.5m freeboard (ie the flood planning level) that is not within the *High Flood Risk* precinct.

In this precinct there would still be a significant risk of flood damage, but these damages can be minimised by the application of appropriate development controls.

*Low Flood Risk* – All other land within the floodplain (up to the PMF) but not identified within either the *High Flood Risk* or the *Medium Flood Risk* precinct.

The *Low Flood Risk* precinct is that area outside the Flood Planning Level. Most land uses would be permitted within this precinct.

The flood risk management precincts are not defined in the Picton/Stonequarry Creek Flood Study (Advisian, 2017). These precincts have been estimated for the rezoned area (proposed Lots 101 & 102) based on mapping and flood hazards presented in that study. It is not possible to define these precincts in the rural zoned land (proposed Lot 103) without obtaining additional information from the flood model.

Flood risk management precincts for proposed Lots 101 & 102 are shown on Figure 6.

Proposed Lot 101 contains approximately 0.57Ha (8.6%) of land that would be categorised as *Low Flood Risk*. No part of this lot would be categorised as *Medium* or *High Flood Risk*. Hence flood related development controls specified in Wollondilly DCP 2016 would not apply to this lot.

Proposed Lot 102 contains approximately 2.38Ha (4.0%) of land that would be categorised as *Low Flood Risk*, and 1.45Ha (2.4%) that would be categorised as *Medium Flood Risk*. No part of this lot would be categorised as having a *High Flood Risk*. That part of the lot identified as having a *Medium Flood Risk* will be subject to flood related development controls specified in Wollondilly DCP 2016.

Note that these risk precincts apply to mainstream flood behaviour only (from Stonequarry Creek or the Abbotsford Road Tributary), and do not include areas within the subject site that may need to be reserved for local drainage features.

### **3.4 POTENTIAL CLIMATE CHANGE IMPACTS**

The impact of potential climate change on design flood levels was investigated in the Picton/Stonequarry Creek Flood Study (Advisian, 2017), which considered design rainfall increases of between +10% to +30%. Council previously nominated that a +10% increase in the 100 year design rainfall intensity should be considered for the subject site (FloodMit, 2013).

Mapping provided in the flood study report indicates that the 100 year flood level would increase by +0.12m near the intersection of Abbotsford Road and Fairleys Road if design rainfall intensities were to increase by +10%. This is a relatively small amount and is not considered to be a significant impact that would warrant any special consideration.

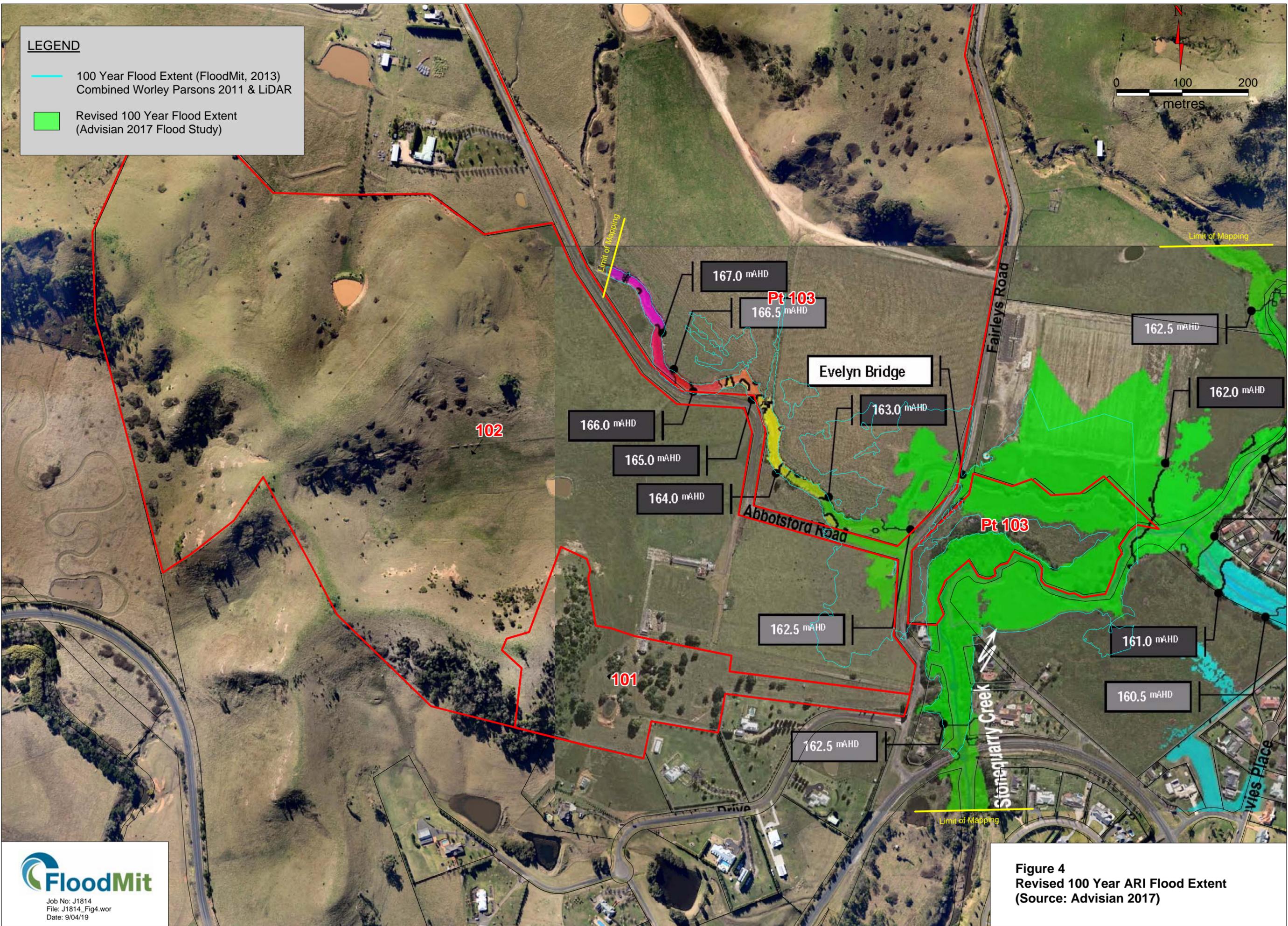
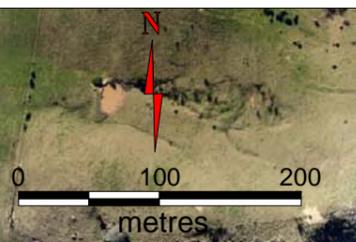
### **3.5 FUTURE DEVELOPMENT PROPOSALS**

A small portion of the rezoned area in proposed Lot 102 is located within Council's flood planning area (See Figure 6). Consequently, future development of this area will have certain requirements, including minimum floor levels for new dwellings, potential filling of the site to remove its flood liability, and evacuation considerations. The potential impact of future development on flooding will need to be considered, and this will depend on future proposals in this area.

Details of the future subdivision of Lot 102, and subsequent development, are not known at this stage. Further consideration of flood requirements will need to be undertaken when these details are available.

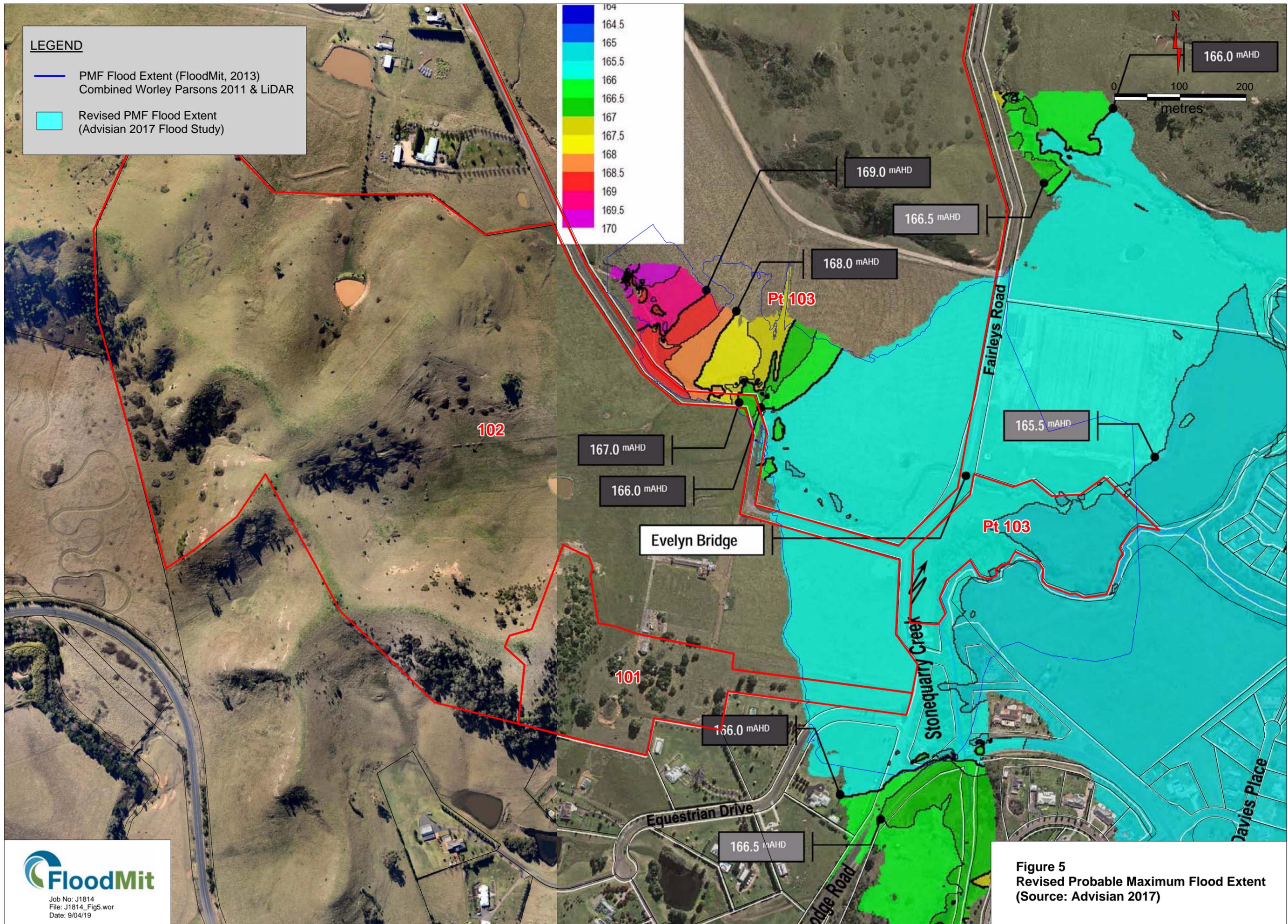
**LEGEND**

-  100 Year Flood Extent (FloodMit, 2013)  
Combined Worley Parsons 2011 & LiDAR
-  Revised 100 Year Flood Extent  
(Advisian 2017 Flood Study)



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Date: 9/04/19

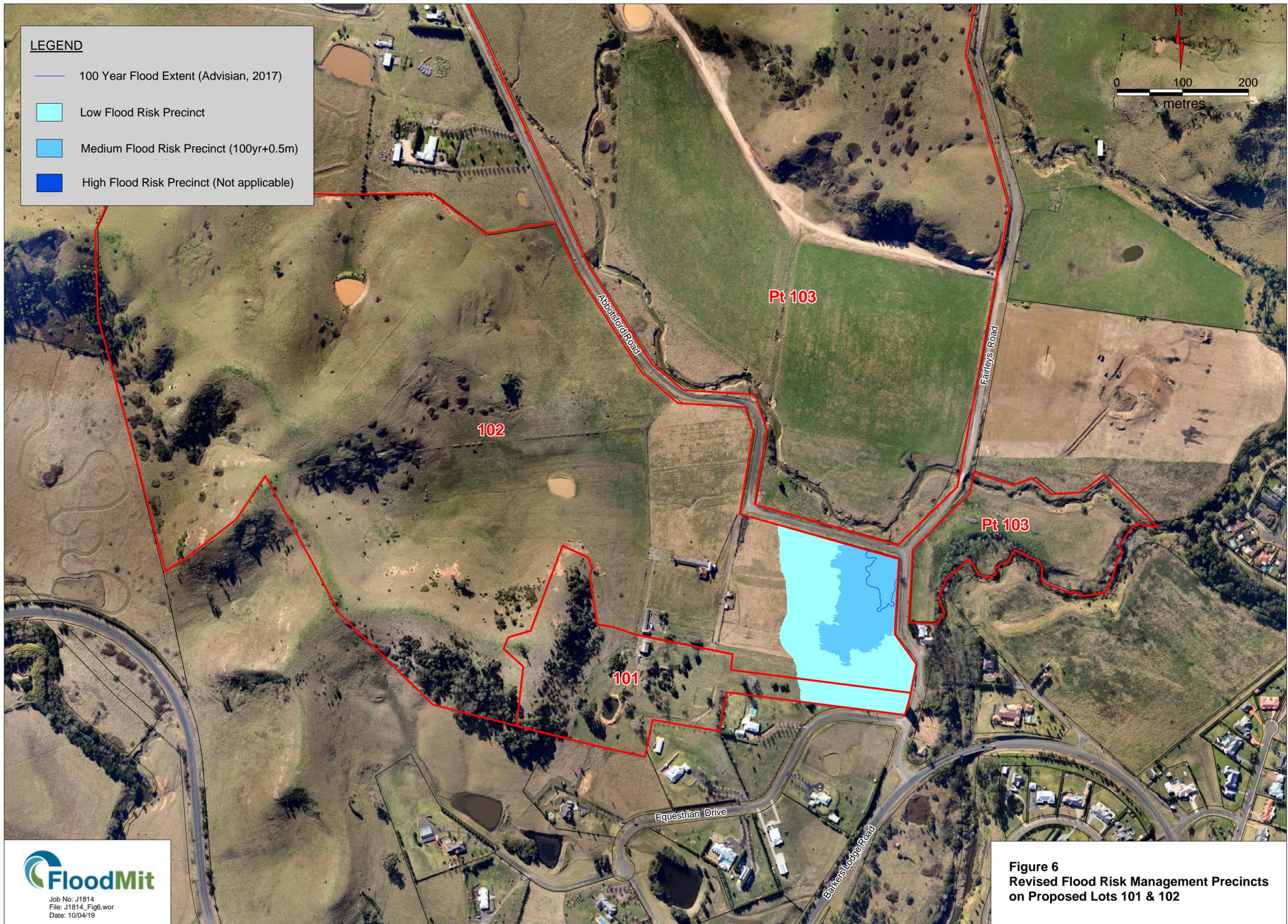
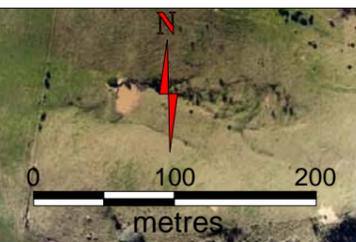
**Figure 4**  
Revised 100 Year ARI Flood Extent  
(Source: Advisian 2017)



**Figure 5**  
 Revised Probable Maximum Flood Extent  
 (Source: Advisian 2017)

**LEGEND**

- 100 Year Flood Extent (Advisian, 2017)
- Low Flood Risk Precinct
- Medium Flood Risk Precinct (100yr+0.5m)
- High Flood Risk Precinct (Not applicable)



**Figure 6**  
Revised Flood Risk Management Precincts  
on Proposed Lots 101 & 102

## **4 SITE RUNOFF CONSIDERATIONS**

### **4.1 INTRODUCTION**

The proposed three lot subdivision mainly aims to separate the subject property into three distinct areas where there are different development expectations. Future development is anticipated to mainly occur within proposed Lot 102, which based on current planning controls, could see up to 40 large lot residential properties created.

Runoff from the subject site is a consideration for any future development that may occur within the subject property. Development needs to be compatible with existing site drainage characteristics and must also ensure that downstream flood behaviour is not adversely affected.

Whilst details of future development are not yet available, it is important that the subdivision currently under consideration does not provide any significant impediment to the above considerations.

### **4.2 SITE DRAINAGE PATTERNS AND FLOW RATES**

Site drainage patterns and quantification of catchment flows throughout Lots 101 and 102 were previously quantified as part of the Abbotsford Planning Proposal – Flood Assessment Report (FloodMit, 2013).

Drainage patterns and peak flow estimates for a 100 year ARI storm event under existing conditions are shown on Figure 7.

The site contains a number of small discreet catchment areas that drain mostly in an easterly direction towards Abbotsford Road, and into the Abbotsford Road Tributary. Other parts of the site drain in a northerly direction, into an adjacent property, before ultimately discharging into the Abbotsford Road Tributary. A smaller portion of the site flows in a southerly direction towards Stonequarry Creek.

The drainage lines almost entirely consist of natural depressions, and include four farm dams located along these drainage paths. These drainage lines will need to be formalised as development occurs, and drainage measures incorporated in the development to ensure that downstream flood behaviour is not detrimentally impacted.

The drainage of proposed Lot 101 is impacted by a drainage swale that prevents site runoff from flowing to the south and into adjacent properties in Equestrian Drive. The majority of flow from this area flows through culverts under a former raised driveway from Abbotsford Road (in proposed Lot 102) and then into a small farm dam near the intersection of Abbotsford Road and Fairleys Road. An earth drain has also been constructed in the lower portion of proposed Lot 101, largely to drain adjacent properties located in Equestrian Drive. This drain passes under Abbotsford Road and into Stonequarry Creek.

### **4.3 IMPACT ON DOWNSTREAM FLOOD BEHAVIOUR**

The impact of developing the catchment on peak flow estimates leaving the site, and also on the total flows within the Abbotsford Road Tributary, was previously assessed as part of the Abbotsford Planning Proposal – Flood Assessment (FloodMit, 2013).

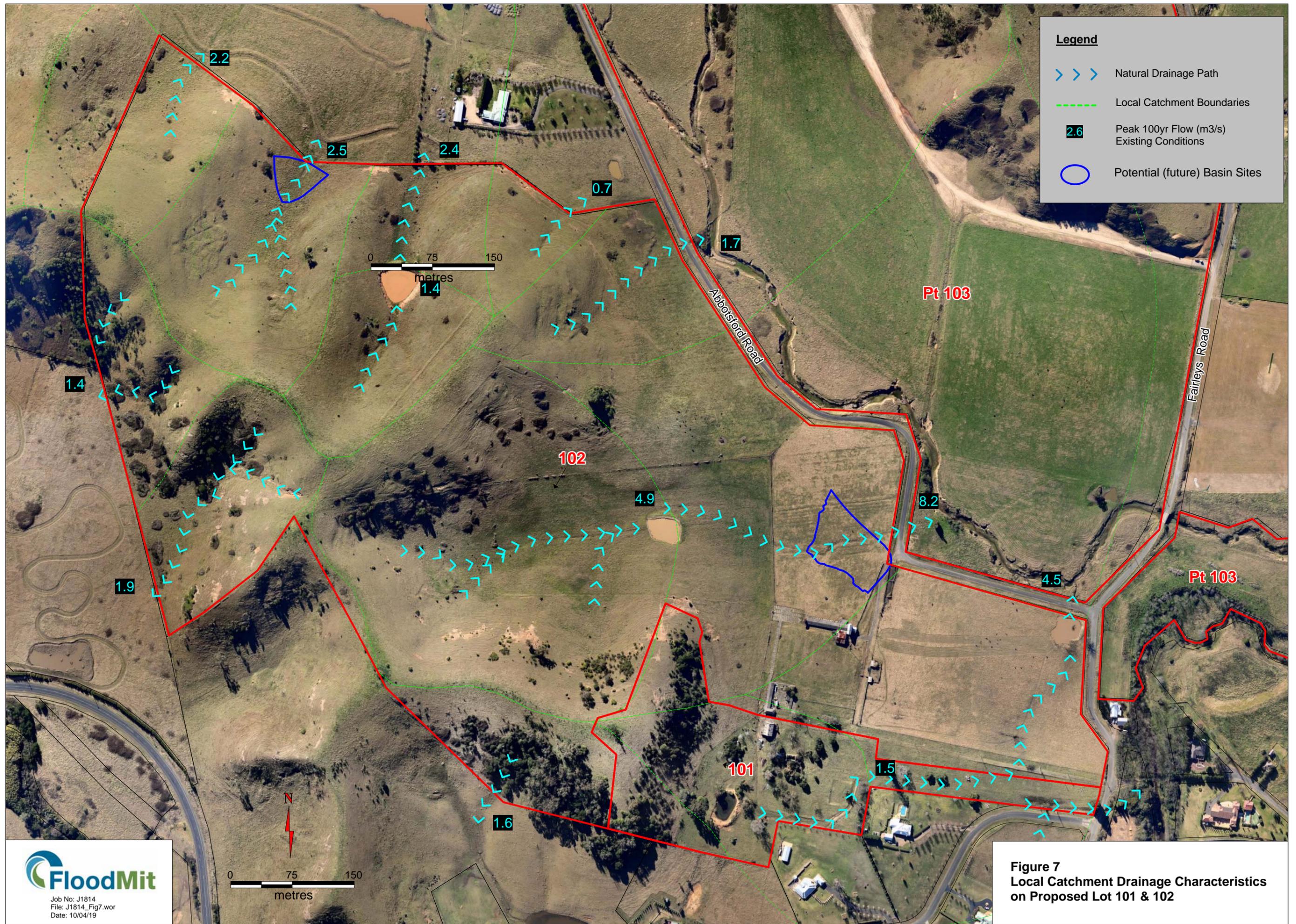
The impact of future development in accordance with the planning proposal was found to have little impact on design flows at the lower end of the Abbotsford Road Tributary (and hence no impact through Stonequarry Creek). However, some individual impacts were noted

on individual drainage paths leaving the site. Consequently a scheme involving two detention basins was investigated (shown on Figure 7) with the objective of limiting the total flow that leaves the site to existing levels.

The two basins were found to be capable of reducing the total post-developed flows leaving the site to less than pre-developed flow rates. Other measures were also noted as being able to achieve this objective, including on-site detention requirements for new development, large capacity rainwater tanks, or other water sensitive urban design methods (including rain gardens, permeable paving, swales, ponds, etc).

A Stormwater Masterplan will ultimately need to be developed for the site in conjunction with future subdivision plans. The plan will need to consider:

- i) the subdivision layout;
- ii) treatment of existing drainage paths;
- iii) whether or not existing farm dams will be retained for water quality or quantity control;
- iv) on-site stormwater requirements;
- v) whether additional detention basins are required to limit flows leaving the site;
- vi) the capacity of existing culverts under Abbotsford Road, and where these culverts need to be upgraded.



**Legend**

- >>> Natural Drainage Path
- Local Catchment Boundaries
- 2.6 Peak 100yr Flow (m3/s) Existing Conditions
- Potential (future) Basin Sites

0 75 150  
metres

0 75 150  
metres

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Date: 10/04/19

**Figure 7**  
Local Catchment Drainage Characteristics  
on Proposed Lot 101 & 102

## 5 CONCLUSIONS

FloodMit Pty Ltd was commissioned by Bertin Pty Ltd to prepare a flood assessment report to accompany an application for a proposed three lot subdivision of Lot 1 DP 1086066 Abbotsford Road, Picton.

The subject property was initially zoned RU2 Rural Landscape under Wollondilly LEP 2011. Amendment 32 (December 2018) rezoned that part of the site that is located on the south side of Abbotsford Road to E4 Environmental Living.

The proposed three lot subdivision is primarily aimed at separating the subject property (Lot 1 DP 1086066) into three distinct areas that are subject to different future development expectations. These are broadly to separate that part of the site that was recently rezoned from RU2 Rural Living to E4 Environmental Living (proposed Lots 101 and 102) from the remainder of the property that is zoned as RU2 Rural Living (proposed Lot 103). It also separates an area of the rezoned land where there are items of significant heritage value (proposed Lot 101).

It is anticipated that proposed Lot 102 will be further subdivided into approximately 40 large lot residential properties, with a minimum lot size of 4,000m<sup>2</sup> some time in the future.

A comparison of the 100 year ARI flood extent previously determined for the subject site (FloodMit, 2013) with the latest results now available from the Picton/Stonequarry Creek Flood Study (Advisian, 2017) is provided on Figure 4. A similar comparison for the Probable Maximum Flood (PMF) event is shown on Figure 5. The results indicate similar degrees of flood affectation for the PMF event, and a substantial contraction in flood affectation in the 100 year ARI event.

A small portion of Lot 102 is located within Council's flood planning level, shown on Figure 6. Consequently future development of this area, should it be considered, will have certain flood related development requirements, including minimum floor levels for new dwellings, potential filling of the site to remove its flood liability, and evacuation considerations. However, this area is relatively small and not considered to substantially impact on future development opportunities on Lot 102.

Site drainage patterns and quantification of catchment flows throughout Lots 101 and 102 were previously quantified as part of the Abbotsford Planning Proposal – Flood Assessment Report (FloodMit, 2013). Drainage patterns and peak flow estimates for a 100 year ARI storm event under existing conditions are shown on Figure 7.

A Stormwater Masterplan will ultimately need to be developed for the site as further subdivision plans are formulated.

## 6 REFERENCES

Advisian, September 2017, *“Picton/Stonequarry Creek Flood Study”*, Final Draft prepared for Wollondilly Shire Council

Advisian, November 2016, *“Picton Post Event Analysis – June 2016 Weather and Flood Event”*, Revision C, prepared for Wollondilly Shire Council

Department of Climate Change and Water (DECCW), October 2009, *“New South Wales Sea Level Rise Policy Statement”*, prepared by the New South Wales Government

Department of Water Resources, February 1989, *“Picton Flood Study”*, prepared for Wollondilly Shire Council

FloodMit, 2013, *“Abbotsford Road Planning Proposal – Flood Assessment Report”*, prepared for Bertin Pty Ltd

New South Wales Government, 2005, *“Floodplain Development Manual”*

Willing & Partners, September 1992, *“Stonequarry Creek Floodplain Management Study”*, prepared for Wollondilly Shire Council

Willing & Partners, June 1996, *“Stonequarry Creek Floodplain Management Plan”*, prepared for Wollondilly Shire Council

Wollondilly Shire Council, May 2000, *“Picton Local Flood Policy”*

Wollondilly Shire Council, 2011, *“Wollondilly Local Environmental Plan 2011”*

Wollondilly Shire Council, 2016, *“Wollondilly DCP 2016 – Part 8 Flooding”*

Worley Parsons, July 2011, *“Stonequarry Creek 2D Modelling and Climate Change Assessment”*, prepared for Wollondilly Shire Council