Bushfire Prone Areas Advisory Note No 01 - 2014

Advisory Note 01	Exempt use and development under the terms of Clause E1.4 (a) of **E1.0 Bushfire-Prone Areas Code.**
Purpose	To provide guidance on vegetation which may be regarded as low threat and producing insufficient increase in risk to warrant any specific bushfire protection measures.
Version	2
Previous Advisory Notes	This note replaces Version 1 released on 19 February 2014. Certificates issued under Version 1 are consistent with Version 2.
Determination	Having regard to the objectives of all of the applicable standards in the Bushfire-Prone Area Code, there is insufficient increase in risk to the development from bushfire to warrant any specific bushfire protection measures if: a) the risk arises from vegetation located on land zoned as inner residential, general residential or village; or b) the development is on land that is shown on a bushfire prone areas map, endorsed by the Tasmania Fire Service, as not being a bushfire prone area.
Background	The management of bushfire risk in residential areas is based on landowner responsibilities, the intended use of the land, and emergency management policies: • Residential land is intended for residential use and must be capable of being used without an unreasonable burden on development. • Typically a parcel of residential land is of such a size that it is unable to contain an appropriate Hazard Management Area within its title. • A bushfire risk arising from vegetation on neighbouring land zoned as inner residential, general residential or village should be referred to the Council or the TFS so that that the Council can consider whether there is a need to issue an abatement notice to reduce that risk. • Vegetation on land zoned inner residential, general residential or village should be classified as low threat in terms of Clause 2.2.3.2 of **AS3959 – 2009 Construction of buildings in bushfire-prone areas** for the assessment of Bushfire Attack Levels and Bushfire Hazard. • A bushfire risk arising from vegetation on neighbouring land with other zonings should still be included in the assessment of Bushfire Attack Levels and Bushfire Hazard. • The inner residential, general residential and village zones are defined in **Planning Directive No. 1 – The Format and Structure of Planning Schemes.** (http://www.planning.tas.gov.au/the_planning_system/state_planning/planning_directives). These are the zone definitions used in the interim

	planning schemes. Older zone definitions will need to be separately analysed. • The TFS is engaged in the development of community protection planning, public education, and strategic fuel management programs to assist in managing the bushfire risk.
Chief Officer's Signature **Date**	

Code E1 – Bushfire-prone Areas Code Clause 1.4a

Certificate of Insufficient Increase in Risk under s51(2)(d) (ii) *Land Use Planning and Approvals Act 1993*

Office Use

Date Received

Reference No

1. Land to which certificate applies[1]	
Name of planning scheme or instrument Northern Midlands Interim Planning Scheme 2013 (The Scheme)	

Use or Development Site	Certificate of Title / PID
Street Address Lot 301 Edward St Perth	CT 168360/301

2. Proposed Use or Development *16 Lot subdivision and related road and drainage lots*	

3. Documents relied upon[2]	

[1] If the certificate relates to bushfire management or protection measures that rely on land that is not in the same lot as the site for the use or development described, the details of all of the applicable land must be provided.

[2] List each document that is provided or relied upon to describe the use or development, or to assess and manage risk from bushfire, including its title, author, date, and version.

	Document or certificate description:
X	***Description of Use or Development[3] (Proposal or Land Use Permit Application)*** ***Documents, Plans and/or Specifications*** *Title: Proposed 18 lot subdivision – Lot 301 Edward St Perth – 2014-213* *Author: Woolcott Survey* *Date*: 08/03/2016
X	***Bushfire Report or Plan[4]*** *Title: Bushfire Assessment – Lot 301 Edward St Perth* *Author: Ian Abernethy* *Date*: 18/03/2016

4. Bushfire Hazard Practitioner – Accredited Person

Name	Ian Abernethy	Phone No:	0417233732
Address:	113 Cimitiere St Launceston	Fax No:	
		Email address:	Ian.abernethy@hotmail.com
Fire Service Act 1979 Accreditation No:	BFP- 124	Scope:	1, 2 .3a ,3b

5. Certification

I, *Ian Abernethy* *certify that in accordance with the authority given under Part 4A of the Fire Service Act 1979 –*

There is an insufficient increase in risk to warrant specific measures for bushfire hazard management and/or bushfire protection in accordance with the objective of Clause 1.4 (a) of the Code, as: *a) the risk arises from vegetation located on land zoned as inner residential, general residential or village; or*	X
b) the development is on land that is shown on a bushfire prone areas map, endorsed by the Tasmania Fire Service, as not being a bushfire prone area.	☐

[3] Identify the use or development to which the certificate applies by reference to the documents, plans, and specifications to be provided with the permit application to describe the form and location of the proposed use or development. For habitable buildings, a reference to a nominated plan indicating location within the site and the form of development is required.

4 A Bushfire Report or other Plan or document demonstrating the relationship of the development to clause (a) or (b) of the exemption E1.4.

Signed 

Date *18/03/2016*

Annexure 4 – Hydrology and Modelling Report

Northern Midlands Interim Planning Scheme 2013

Flood Prone Areas Code

E5.5 Use Standards

Clause	*Action / Response / Conformance*
E5.5.1 – A1	Refer Risk Assessment

E5.5 Performance Standards

Clause	*Action / Response*
E5.6.1 – P1.1 (a)	Refer Risk Assessment
E5.6.1 – P1.1 (b)	Refer Risk Assessment
E5.6.1 – P1.2	Refer Risk Assessment
E5.6.1 – P1.3 (a)	Comply – refer Hydrology & Modelling Report
E5.6.1 – P1.3 (b)	Comply – refer Hydrology & Modelling Report
E5.6.1 – P1.3 (c)	Comply – refer Hydrology & Modelling Report
E5.6.1 – P1.3 (d)	N/A

Risk Assessment

Refer Attached Risk Assessment

Risk Assessment - Edward Street Subdivision

No.	Objective	Acceptable Solution	Performance Criteria	Comply with Acceptable Solution (Yes / No / NA)	Likelihood	Consequence	Risk Level	Safeguard / mitigation	Likelihood	Consequence	Risk Level	Performance Criteria Met (Yes / No)
E5.5.1	To ensure that the use does not compromise risk to human life, and that the property and environmental risks are resonsibly managed											
E5.5.1 - A1		The use must not include habitable rooms	P1 - Use including habitable rooms subject to flooding must demonstrate the risk to life and property damage is low risk level	No	Moderate	Major	HIGH	Subdivision lots to be filled to above the 1% AEP flood level (Level nominated by Council and confirmed in Hydrology & Modelling Report)	Rare	Minor	LOW	Yes
E5.5.1 - A2		Use must not be located in an area subject to a medium or high risk	P2 - Use must demonstrate that the risk to life, property and the environment will be mitigated to a low risk level	No	Moderate	Major	HIGH	Subdivision lots to be filled to above the 1% AEP flood level (Level nominated by Council and confirmed in Hydrology & Modelling Report). Environmental risk considered low already	Rare	Minor	LOW	Yes
E5.6.1	To protect human life, property and the environment by avoiding areas subject to flooding where practicable or mitigating the adverse impacts of inundation such that risk is reduced to a low level											
E5.6.1 - A1		None	P1.1(a) - Where access to the flooding water is not pertinent to the use of the development, the location of the access to the flooding water is low risk	NA	Unlikely	Minor	LOW					Yes
E5.6.1 - A1	Not Applicable											
E5.6.1 - A1		None	P1.2 - Development subject to a medium risk must demonstrate that the risk to life, property and the environment is mitigated through structural methods or site works to a low risk level	NA	Moderate	Major	HIGH	Subdivision lots to be filled to above the 1% AEP flood level (Level nominated by Council and confirmed in Hydrology & Modelling Report). Shaping of channel to improve hydraulics also to occur	Rare	Minor	LOW	Yes

Holliejett Investments PTY LTD
Edward Street Subdivision

Hydrology & Modelling Report

March 2016

IPD Consulting Pty Ltd
Infrastructure Planning & Design Mobile: 0419 574 975 Email: mwalters@ipdconsulting.com.au P.O. Box 1371, Launceston TAS 7250 www.ipdconsulting.com.au ABN 96 121 714 878

Document History and Status

Rev	Date	Reviewed By	Revision Details
A	17/03/2016	M Walters	

Distribution of copies:

Rev	Quantity	Issued To
A	1	Holliejett Investments PTY LTD (Joey Maloney & Noel Reid)

File Name:	I:\Projects\1452 - Hollijett - Perth Hydrology Report\1452_Hydrology Report_Rev A
Author:	M Hay
Client:	'Holliejett Investments PTY LTD'
Project:	'Edward Street Subdivision'
Subject:	'Hydrology Report'
Document	Report
Document Version	A
Job No.	1452

Contents

Executive Summary 4

1. Project Background 5
   - 1.1 Introduction 5
   - 1.2 Previous Studies 6

2. Documentation Review 7
   - 2.1 Introduction 7
   - 2.2 Bullocks Consulting Report 7
   - 2.3 Hydrodynamica Report 7

3. Hydrological Analysis 9
   - 3.1 Introduction 9
   - 3.2 Catchment Analysis 9
   - 3.3 RORB Model 10
   - 3.4 Hydrographs 12
   - 3.5 Adjacent Catchment & Flow Intensification 13

4. EONFUSION 2D Modelling 15
   - 4.1 Introduction 15
   - 4.2 Model Intent & Limitations 15
   - 4.3 Model 1: Existing Flooding 16
   - 4.4 Model 2: Proposed Subdivision Layout No. 1 17
   - 4.5 Model 3: Proposed Subdivision Layout No. 2 (Adopted Layout) 18

5. Discussion of EONFUSION Model Results 21
   - 5.1 Preamble 21
   - 5.2 Existing / Current Scenario 21

6. Conclusion 24

Appendices

A RORB Model Hydrographs

B Model 1 – Current Scenario Outputs

C Model 2 – Proposed Subdivision Layout No. 1 - Subdivision Layout & Outputs

D Model 3 – Proposed Subdivision Layout No. 2 - Subdivision Layout & Outputs

Executive Summary

The following is a Hydrology Report for the proposed Edward Street Subdivision in Perth, Tasmania. The intent of this report is to evaluate the impact of completing the 2nd stage of the proposed subdivision on flooding of the area, given the proposed sub division will be constructed within an area susceptible to flooding.

Previously Northern Midlands Council (Council) have expressed their concerns that the proposed subdivision (and associated filling of lots above set flood levels) will impact on the available storage during rainfall events, and may result in additional flooding of Youl Road.

A hydrological model was developed to determine an inflow hydrograph for the Edward Street catchment to determine the likely peak flow for a 1:100 year rainfall event. A before and after assessment was completed of the flooding in the area to assess the impact of the new subdivision on the existing flooding.

With some modification to the open drain and to the subdivision footprint, this report shows that the subdivision development does not generate any additional flooding of the area compared to the existing flooding condition, and does not pose any risk in intensifying the flooding of the area. This modified subdivision layout is included in Appendix D.

It is critical to understand that this report looks at the change in flooding, not the actual flood levels along Youl Road, in assessing the impact of the subdivision. It is outside the scope of this document to model the greater western Perth region, so the focus of the report is on the overall change, not the quantum of the flooding value.

It is important to note that Youl Road will still flood under heavy rainfall events due to downstream infrastructure being under capacity, as outlined in previous reports. However the proposed fill level of RL160.9 m for the subdivision lots ensures that the flood risk of the development is low, as Youl Road will flood prior to the subdivision.

1. Project Background

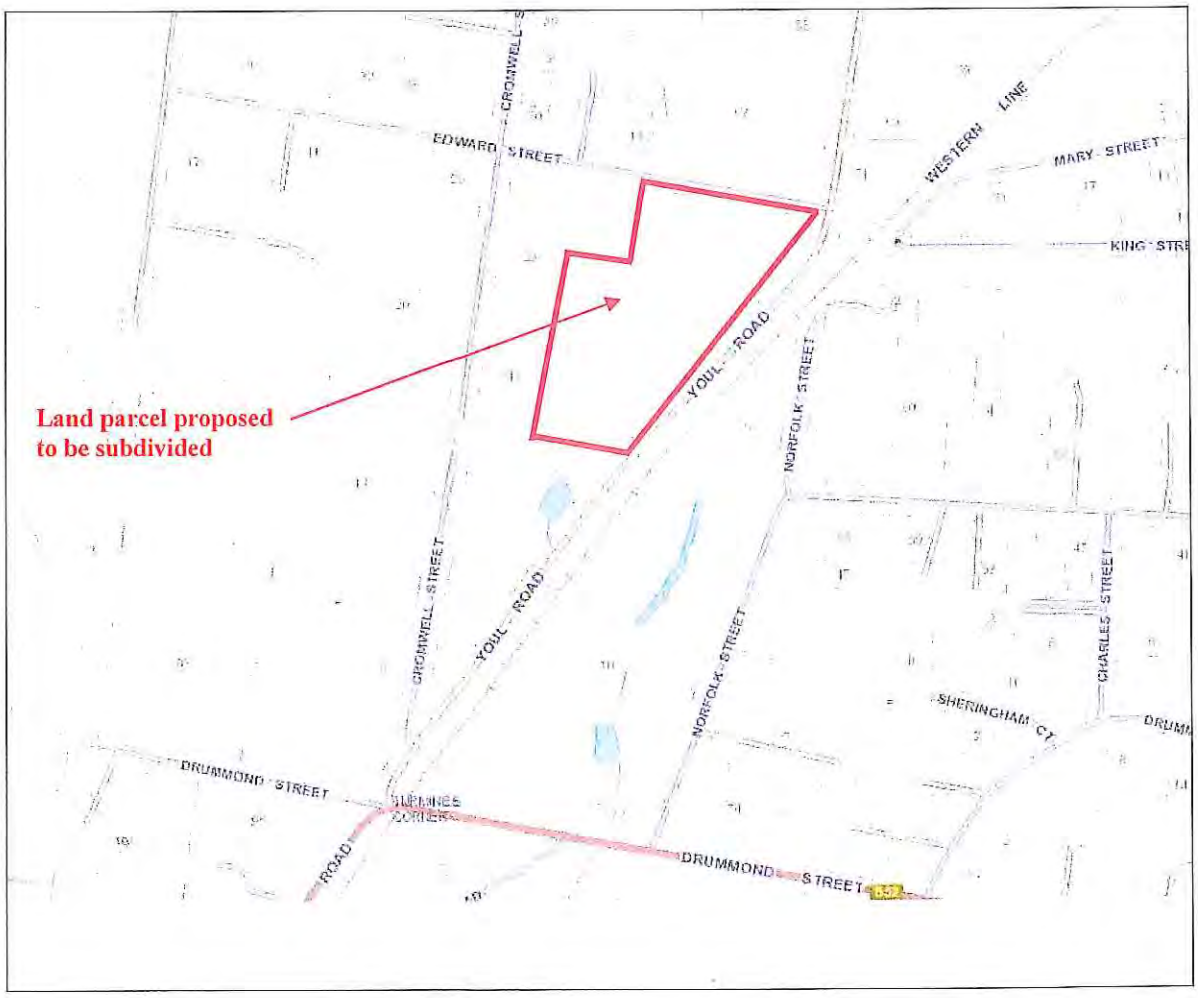
1.1 Introduction

The following is a Hydrology Report for the proposed Edward Street Subdivision in Perth, Tasmania. The intent of this report is to evaluate the impact of completing the 2nd stage of the proposed subdivision on flooding of the area, given the proposed sub division will be constructed within an area susceptible to flooding.

Previously Northern Midlands Council (Council) have expressed their concerns that the proposed subdivision (and associated filling of lots above set flood levels) will impact on the available storage during rainfall events, and may result in additional flooding of Youl Road. This has been the basis for previously opposing the development of stage 2 of the subdivision.

Figure 1.0 below shows the proposed subdivision site.

Figure 1. Subdivision Site Plan



It has been confirmed that Council officers have witnessed flooding of Youl Road under significant rainfall events. Flooding primarily occurs at the Drummond Street end of Youl Road, which is downstream of the proposed development.

1.2 Previous Studies

An initial hydrology report completed by Bullock Consulting in 2011 has calculated peak stormwater flows up to a 1:100year flood event. This indicated a peak flow of 12 m^3/s for the 1:100 year rainfall event, with the peak occurring 45 minutes into the event.

In 2015 Council engaged Cameron Oakley of Hydrodynamica (H-DNA) to complete a West Perth Stormwater Assessment which included assessment of the proposed subdivision site.

This report by H-DNA considers the impact of the proposed development on flooding in this area. The report suggests that filling lots to RL161.0 would negate flooding of the proposed development in a 1:100 year flooding event, however this results in overtopping of Youl Road on a more frequent basis, which is considered unsatisfactory by Council.

The limiting item in the stormwater system is the crossing under Youl Road and the railway line.

2. Documentation Review

2.1 Introduction

In completing this hydrological assessment, a high level review of two previous hydrology reports has been undertaken. This includes:

- *Perth Drainage Study* by Bullock Consulting (2011)
- *West Perth Stormwater Assessment* by Hydrodynamica (2015)

The review was undertaken to compare the results from previous studies and the methods used.

2.2 Bullocks Consulting Report

2.2.1 General Overview

The Bullock Consulting (Bullocks) report looks at the 1:20 year and 1:100 year flood events for the Edward Street catchment (including the creek), and some other smaller urban catchments which meet at the Drummond Street culverts.

This report was compiled prior to the construction of the upstream dam, and used fairly basic modelling software (DRAINS) to predict peak flows and levels through the catchment. This report produces a flood hydrograph for the creek, which was then adopted by H-DNA in their *West Perth Stormwater Assessment.*

2.2.2 Review Comments

The hydrograph produced by Bullocks appears to have a very quick time of concentration for a predominately rural catchment, and is likely a result of the software package used. The comments relating to the duration of flooding over Youl Road are notable, as this shows that the flood peak is very quick and any flooding is likely to disperse

The identified upgrades of critical infrastructure are reasonable, particularly highlighting the inadequacy of the infrastructure for the 1:100 year flood event.

The channel proposed is similar to what was recommended in this report as being suitable, even though the flows are different. This is likely a result of the modelling software used and the survey data available.

2.3 Hydrodynamica Report

2.3.1 General Overview

The H-DNA report focused on the greater Western Perth area, with reviews into infrastructure along the Edward Street catchment alignment through to Drummond Street.

Whilst this report assesses the capacity of critical infrastructure, no analysis of the catchment to determine if the peak flows outlined in the *Perth Drainage Study (Bullock Consulting 2011)* were

accurate, given the recent develop in software packages for this purpose.

However, the importance of completing a RORB model / flood frequency analysis in the future was mentioned in the report.

2.3.2 Review Comments

The H-DNA report makes mention of the Edward Street development and that lots should be filled to RL161.0 m, compared to previous recommendations of RL 160.9 m provided by Council. There is also mention of ensuring floor levels of any structures to me a minimum of 300mm above this flood level, which is reasonable.

Modelling of flood levels was undertaken using a simplified 2D model (Infoworks ICM model) which would be accurate in determining flood levels at locations as shown, however would not take into account upstream storage to the degree of the EONFUSION software package as used in this report.

All recommendations for improving stormwater infrastructure and likely system deficiencies are agreeable to this author, and generally in accordance with the previous report by Bullocks.

The noted amendments to the channel appear reasonable based on the limited information available to H-DNA in regard to the flood hydrograph. The channel width is larger than what is proposed in this report, however the more advanced EONFUSION 2D modelling package and updated survey data enables more optimisation of this channel in this document.

3. Hydrological Analysis

3.1 Introduction

The hydrological analysis undertaken by IPD has focused on the catchment upstream of Edward Street, and has taken into account the effect of a newly constructed earth embankment dam within the catchment.

The dam has twin spillways however the total storage is quite small (30 ML between full supply level and maximum flood level) so it does not have a huge impact attenuating the flood flows.

It is likely to reduce the flood hydrograph peak by approximately 15% in the 1:100 year rainfall event.

3.2 Catchment Analysis

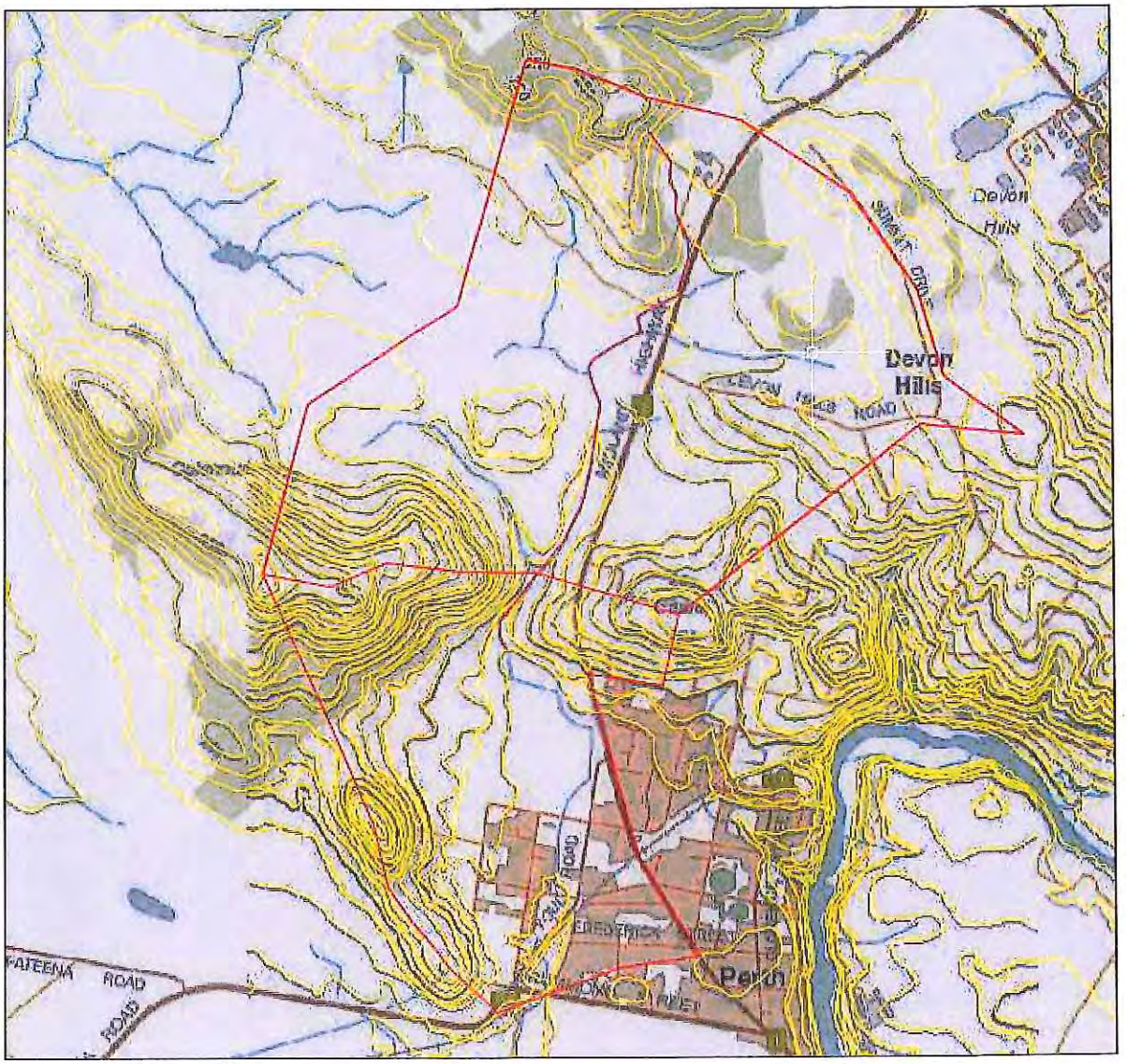
The total catchment above Edward Street is approximately 8.80 km^2.

This is split into two sub-catchments; upstream and downstream of the in line dam. The catchment size upstream of the dam is approximately 5.82 km^2. The flow path length from the dam to the Edward Street subdivision is approximately 2.5km long.

The catchment has been measured using the ListMap (www.thelist.tas.gov.au) and verified with Lidar contours supplied by Council (through H-DNA).

Figure 3.1 shows the Edward Street catchment.

Figure 3.1 Edward Street Catchment



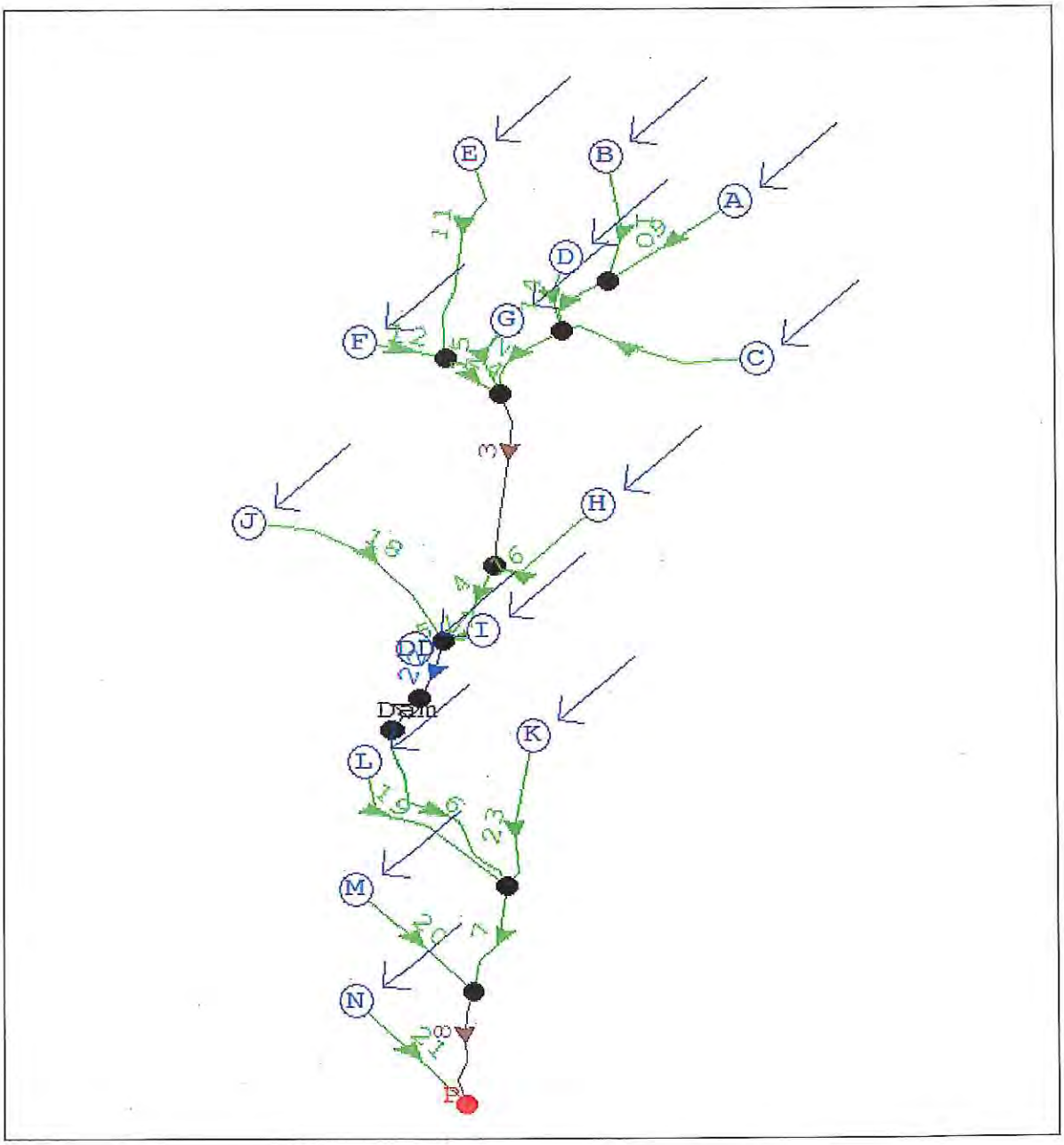
Note: The yellow lines in Figure 3.1 are 5m Lidar contours, and the red line is the catchment boundary

The catchment is primarily rural, with a minor section of urban catchment near Edward Street. The catchment is generally fairly flat from the middle and lower reaches, with steeper areas at the fringe of the catchment and the upper reaches of the flow path.

3.3 RORB Model

A RORB model (runoff routing model) was completed to determine the inflow hydrograph to the dam for the purpose of determining the impact of the dam on the flood event peak. Figure 3.1 below shows a screen shot of the RORB model.

Figure 3.1 RORB Model



The RORB model was completed using the model parameters shown in Table 3.1. The values chosen were checked for sensitivity, and conservative values were adopted. The initial loss (IL) of 10mm is considered reasonable given the model is looking at a specific storm event, instead of a range of events.

The continuing loss value (CL) of 0 mm / hr is considered normal for "extreme conditions" (as per the RORB Version 6 user manual). A loss value of 2 mm/hr to 3 mm/hr was probably reasonable to use, however it resulted in a significant loss of volume in the model, and was determined to not be conservative enough for this catchment analysis.

The adopted values of Kc and m were generated by the software. Discussions with other hydraulic modelling engineers suggested the Kc value could be higher, however a check of this number resulted in more favourable results, hence the program generated value was adopted for conservatism.

Table 3.1 RORB Parameters

Parameter	Value
Kc	6.17
m	0.8
IL	10 mm
CL	0 mm / hr

The RORB model was validated with a basic rational method based routing spreadsheet, using the nominated critical duration found in the RORB model.

From a sensitivity perspective, to achieve similar flows in both models a runoff coefficient of 0.5 was required. However, the routing spreadsheet did not allow for an initial loss which means this coefficient is likely to be slightly higher once the initial loss was factored into the equation. The time of concentration was also different due to the initial loss model.

Using the Turners Method for estimating a runoff coefficient, it was calculated this catchment would have a value of 0.65, which fits well with the RORB model, and signifies the conservative nature of the RORB model for this application.

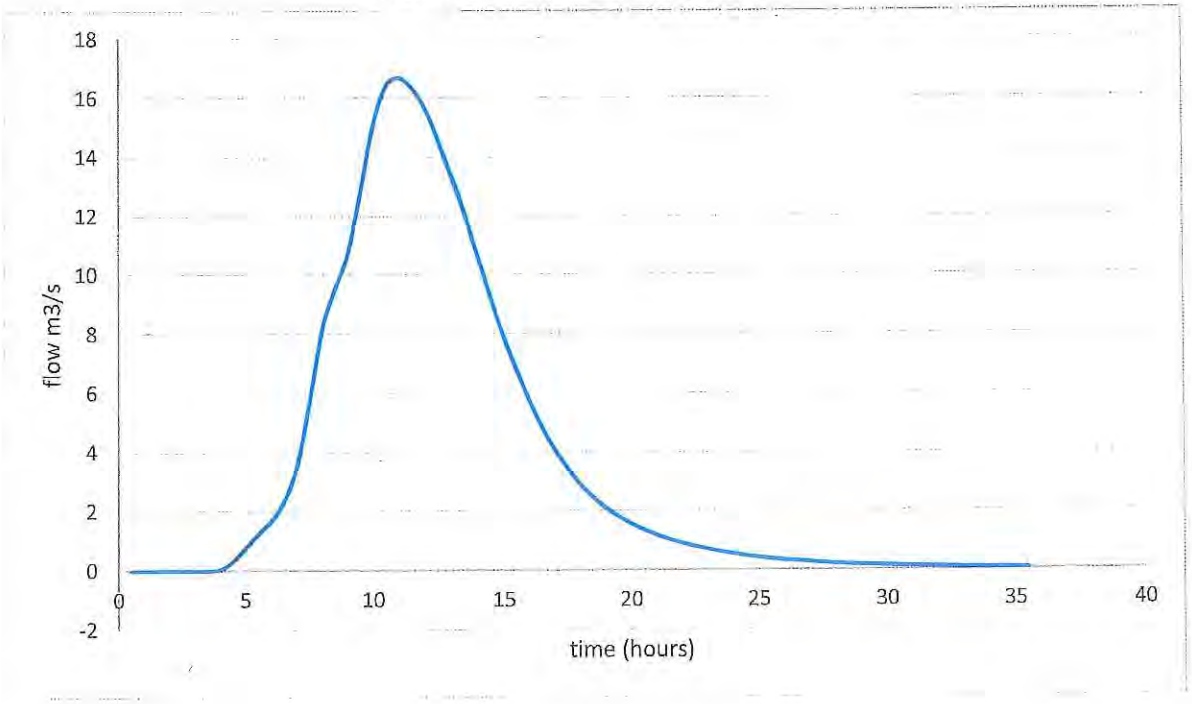
3.4 Hydrographs

The RORB model produced inflow and outflow hydrographs for multiple duration events for the dam, and upstream of Edward Street. The dam hydrographs were used for comparison to previous reports and for a sensitivity analysis, and the Edward Street hydrograph was used for the 2D modelling.

The inflow and outflow hydrographs for multiple duration events for the dam and Edward Street are included in Appendix A, and Figure 3.3 shows the 12hr duration hydrograph for Edward Street.

The 9hr hydrograph showed a similar peak to the 12hr hydrograph, however the 12hr hydrograph was chosen due to a higher total volume and marginally larger lag.

Figure 3.3 Edward Street Hydrograph



The hydrograph lag at the front of the model is dictated by the initial loss and appears reasonable given the catchment configuration and rural nature.

This hydrograph indicates that the peak flow occurs approximately 11 hours after the event started which seems reasonable given the catchment size, flow path length and grade.

3.5 Adjacent Catchment & Flow Intensification

The catchment upstream of Edward Street was the only catchment modelled for this review, based on the following observations of the greater West Perth region:

- Flows extending from the west further meeting at the Youl Road culvert would have a much quicker time of concentration (calculated to be less than 1 hour due to the steep nature of the catchment), and would therefore pass through the bottom of the development site prior to the arrival of the larger Edward Street event. Therefore, these flows were not required to be modelled, especially given the modelling was determining the "change in values" not the actual flow volumes and level
- The urban component of Perth and the impact of the new subdivision were not modelled given that the approximately time of concentration is less than 30 minutes, which ensures that the flood peak has subsided prior to the Edward Street catchment reaching the development
- Other catchments from the Drummond Street culverts were also not modelled due to their size and to limit the scope to an appropriate level. Similarly, to the West Perth catchment, the time of concentration will be much quicker than the Edward Street catchment. The Drummond Street culverts appear to collect a large amount of urban runoff which would pass prior to the Edward Street catchment peak.

The intensification of stormwater due to added impervious area to the catchment was considered negligible for the following reasons:

- The time of concentration would result in the peak flow passing well before the Edward Street catchment peak arriving
- The peak flow is very low compared to the peak flow from the Edward Street catchment, so all downstream infrastructure is capable of withstanding the additional load.
- The increase in impervious area compared to the greater catchment size is negligible

Due to these reasons no catchments other than the Edward Street catchment have been modelled and the additional stormwater runoff from the development is considered negligible.

4. EONFUSION 2D Modelling

4.1 Introduction

2D modelling of the Edward Street catchment was undertaken by Pitt & Sherry (P&S) to enable use of the EONFUSION software package for the simulations. This software was chosen as the ideal modelling package due to previous experience using the software on similar projects, including dam spillway design projects with a High B hazard category as defined by ANCOLD which takes into consideration a significant number of people at risk downstream.

The EONFUSION model has adopted the current survey data and applied a flow hydrograph to the catchment. A significant portion of the flow is used to "fill up" the system and fill the creeks and flood plain regions, which results in a lower flood peak reaching the subdivision.

The ground model is representative of the existing surface level, and does not take into account debris, fence lines (potential blockage locations), trees and other vegetation which are common in waterways, and contribute to blocking the flow paths, which can generate flooding for much smaller events than systems are designed to withstand.

A number of models and scenarios have been run, with the intention to show that filling of the lots for the proposed subdivision to lift the surface level above the 1:100 year flood level does not adversely impact the current flooding experienced on the site.

4.2 Model Intent & Limitations

Whilst the intent of hydraulic modelling is to imitate flooding scenarios to determine flood flows / velocities and flood levels, in this example it is not possible to accurately determine these values due to the interaction with multiple stormwater catchments, and the flat nature of the downstream drainage path.

It is therefore the intent of this model to show that there is no discernible change to the flooding due to the subdivision, compared to the existing flooding. The actual flood levels and flows are likely to be significantly impacted on by the downstream drainage infrastructure, however it is outside the scope of this document to model Perth in its entirety for the purpose of evaluating the subdivision development.

The Edward Street catchment was modelled as the primary catchment affecting the subdivision, and at the upstream end of the subdivision it is likely the flood level and velocities are accurate. Further downstream the flood levels are likely to be lower than was is expected in reality due to the downstream backwater effects.

It should also be noted that whilst the RORB model generated the hydrograph in Figure 3.3 at Edward Street, this hydrograph has been utilised in the model at the discharge point of the dam. This was done to capture the small urban area of the catchment, but also to enable system storage to be modelled. It is not suitable to release the Edward Street hydrograph at Edward Street due to the lack of storage considered in the RORB model.

RORB models only have primitive storage capability based on the channel dimensions, and the 2D EONFUSION model uses a contour model to map the storage available.

4.3 Model 1: Existing Flooding

The first model run was to determine the baseline for the investigative models, to determine the impact of the new 1:100 year hydrograph on the land where the subdivision is proposed.

Given that the Council nominated 1:100 year flood level is RL160.9 m (based on a previous stage of this development), it was important to clarify the likely extent of flooding using the EONFUSION software under the current configuration.

The developed flood inundation plan and cross sections are included in Appendix B.

Figure 4.1 shows the flood plan for the proposed subdivision site without any development.

Figure 4.1 Model 1 Flood Plan

The above shows the extent of flooding in the subdivision area. It should be noted that flooding is expected to occur on Cromwell Street near Drummond Street under the current flooding scenario.

4.4 Model 2: Proposed Subdivision Layout No. 1

The Model 2 – Proposed Subdivision Layout No. 1 run was undertaken using the subdivision layout as shown in Appendix C, with an extract shown in Figure 4.2 below.

Figure 4.2 Model 2 Subdivision Layout

The resulting flood plan is included in Appendix C. An extract of this flood plan is included in Figure 4.3.

Figure 4.3 Model 2 – Proposed Subdivision Layout No. 1 Flood Plan

Figure 4.3 shows that no flooding occurs in the subdivision layout area, but does show extra flooding (both depth and extent) at the top end of Youl Road. The extent of flooding on Cromwell Street remains as per the Model 1 scenario.

4.5 Model 3: Proposed Subdivision Layout No. 2 (Adopted Layout)

The Model 3 – Proposed Subdivision Layout No. 2 had a number of changes made in comparison to Model 2 – Proposed Subdivision Layout No. 1 as outlined below:

- The subdivision footprint was reduced to increase the channel width for the drainage path;
- The drainage path was modified to have a 6m wide channel (base width) with 1:2 batters extending up to the existing surface level near Youl Road, and up to the subdivision fill line on the other side;
- The ground level was adjusted at the location of the trees and the drainage path formalised to improve hydraulics; and
- A transition from a 6m wide (base width) channel back to the existing channel width below the subdivision to match to existing.

The proposed subdivision layout, flood plan and cross sections have been included in Appendix D for the Model 3 – Proposed Subdivision Layout No. 2 run results.

Figure 4.4 shows an extract of the subdivision layout showing the change in block sizes and footprint proximity to the existing creek, and Figure 4.5 shows an extract of the flood plan showing the extent of flooding.

Figure 4.4 Model 3 Subdivision Layout

Figure 4.5 Model 3 – Proposed Subdivision Layout No. 2 Flood Plan

The above shows that no additional flooding of Youl Road occurs and that the flow is contained within the newly shaped swale drain.

5. Discussion of EONFUSION Model Results

5.1 Preamble

The following sections address the key results and discuss the impact of the proposed subdivision (i.e. filling of part of the inundation area).

Two possible subdivision layouts have been assessed, with the first subdivision layout (Model 2 – Proposed Subdivision Layout No. 1) adversely impacting Youl Road, and the second subdivision layout (Model 3 – Proposed Subdivision Layout No. 2) which has no increased effect on Youl Road.

The quantum of the flooding value is discussed given that the modelling of the Edward Street catchment does not cause flooding of Youl Road according to the 2D model, however recent flooding events have occurred.

5.2 Existing / Current Scenario

The EONFUSION model shows that part of the subdivision footprint is inundated during the 1:100 year flood event as anticipated. A flood plan including the cross sections (and location of cross sections) is included in Appendix B.

The cross sections show that the maximum flood level for the 1:100 year event at the Edward Street end of the subdivision is RL160.75, which indicates the Council requirement of RL160.9 m is reasonable.

As discussed in Section 2 it should be noted that previous flood levels were determined using a different (smaller) hydrograph and peak flow, however they also did not allow for storage as shown in this model run.

Figure 5.1 shows cross section No. 6 which is approximately at the location of the Youl Road culvert. This shows that if no downstream effects are modelled (i.e. only the Edward Street catchment is considered) then in a 1:100 year flood event does not flood Youl Road. The exact locations of the cross sections are shown in Appendix B.

Figure 5.1 Cross Section No. 6

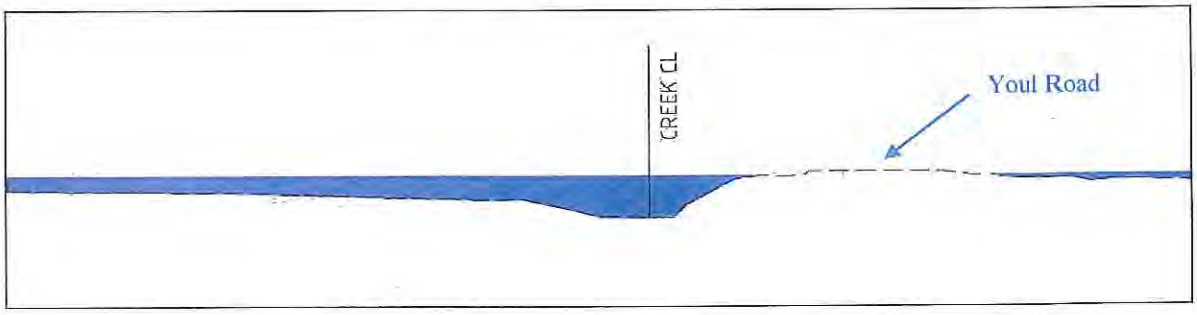


Figure 5.1 shows the impact of the downstream infrastructure and associated backwater effects on this site, as there have been reports of regular flooding of Youl Road in large rainfall events. It is not understood to have occurred since the installation of the upstream Dam.

As discussed in Section 4.2, the quantum of the flood level is not critical for this report, it is the change in level which is being investigated.

5.2.1 Model 2: Subdivision Layout No. 1

EONFUSION modelling found that flooding of Youl Road occurred at the locations of Sections 1 through to 3 (refer Appendix B for section locations). This is at the upper end of Youl Road, and has occurred due to the filling of the subdivision lots driving the water towards the road, rather than allowing it to flow into the flood plain and reduce the velocity.

The depth of water over Youl Road ranged from approximately 300mm in the 1:100 year event for Section 1, through to 150mm at Section 3. Note that cross sections have not been included in Appendix C for this layout as they were not produced in a PDF format due to the results not being required.

This was considered to be an adverse impact and a significant change to the current flooding scenario outlined in Model 1, and deemed not to achieve the intention of the report as outlined in Section 4.2.

5.2.2 Model 3: Subdivision Layout No. 2

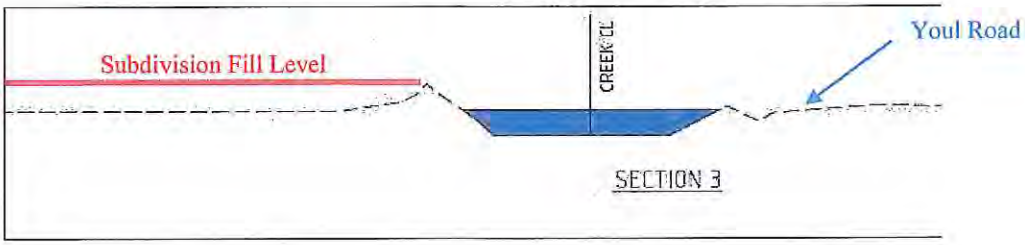
The Model 3 – Proposed Subdivision Layout No. 2 had a number of changes made in comparison to Model 2 – Proposed Subdivision Layout No. 1 as outlined below:

- Subdivision footprint was reduced to increase the channel width of the drainage path;
- The drainage path was modified to have a 6m wide channel (base width) with 1:2 batters extending up to the existing surface level near Youl Road, and up to the subdivision fill line on the other side;
- The ground level was adjusted at the location of the trees and the drainage path formalised to improve hydraulics; and
- A transition from a 6m wide (base width) channel back to the existing channel width below the subdivision to match to existing.

As shown in Figure 4.5 the changes mentioned above result in the drainage being contained in the newly shaped swale drain, with no flooding of Youl Road. The swale drain reformation improves the hydraulics of the drainage channel, and would significantly reduce nuisance flooding.

The cross sections in Appendix D show the shape of the proposed new drain, with Section 3 shown in Figure 5.2 below.

Figure 5.2 Model 3 – Proposed Subdivision Layout No. 2 - Section 3



The new drain cross section is clearly shown in Figure 5.2, which includes a 6m wide base width a 1:2 batters. This transitions into a smaller cross section with an approximate base width of 2m beyond the subdivision. This is shown in the Appendix D cross sections.

Note that the berm shown on the left hand side in Figure 5.2 is the subdivision fill height. It was modelled as a berm, not a change in ground level.

6. Conclusion

The following is a summary of the key findings of this report relating to the proposed subdivision on Edward Street, Perth:

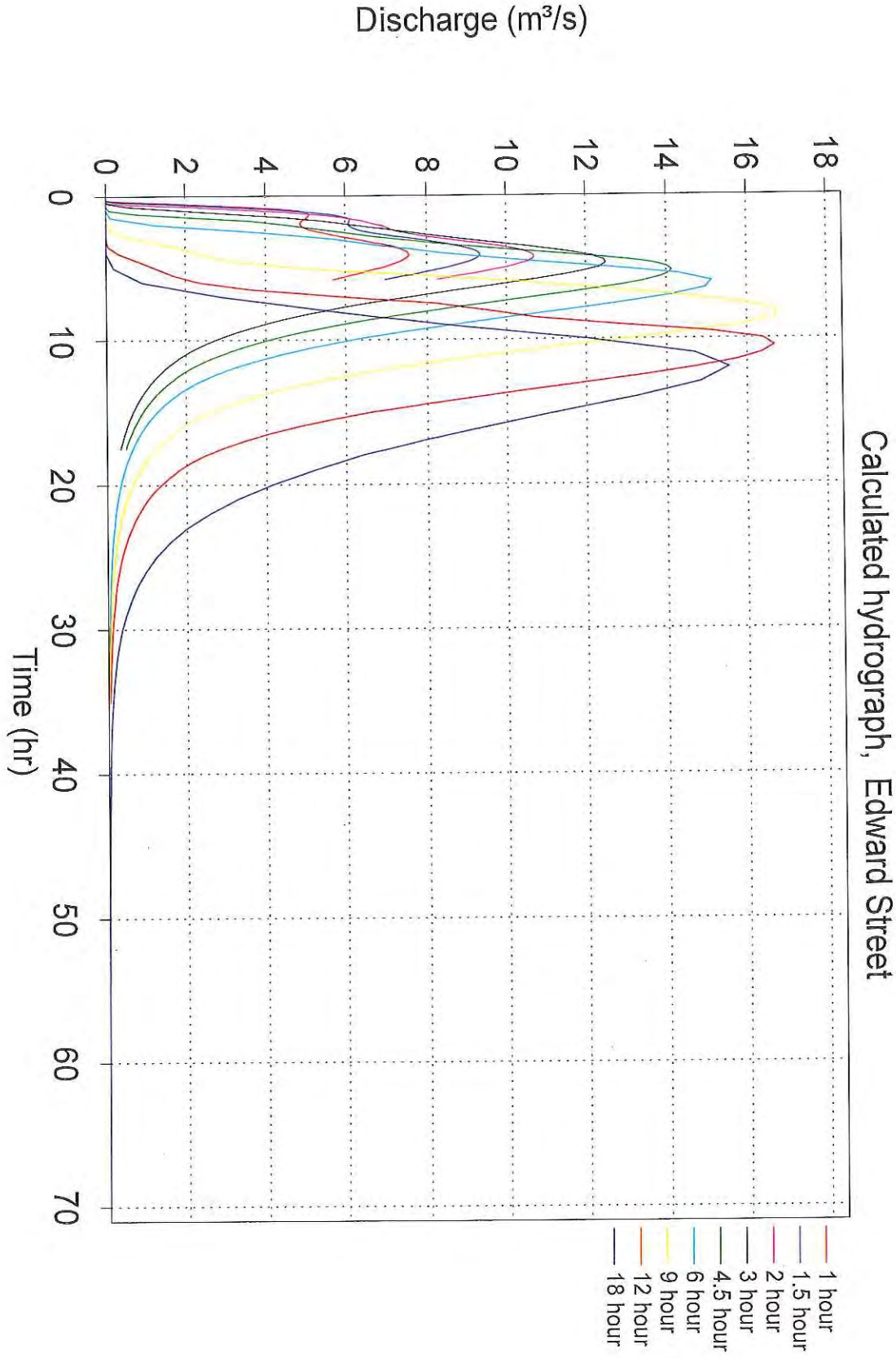
- This report shows that the subdivision development using the Model 3 – Proposed Subdivision Layout No. 2 layout and modifications to the existing drainage path does not adversely impact the flooding of the area in a 1:100 year flood event;
- The previously determined (and required by Council on previous developments) 1:100 year flood level of RL160.9 m appears reasonable and will be adopted for the subdivision design;
- **The report only focuses on the change in flood level**, not the actual flood level or volume of the flood in making this recommendation. To model the actual flood levels, far greater modelling is required of the western Perth area, which is outside the scope of this report;
- It is likely that Youl Road will continue to flood until the downstream infrastructure is upgraded, with upgrades as outlined in previous reports. This is still required in the future even with the improvements to the drainage path through the subdivision; and
- It is proposed to use the Council recommended 1:100 year flood level of RL160.9 m and add an additional 300mm height requirement for habitable areas of the development. It is noted that the BCA requires a minimum 150mm freeboard to habitable areas, so this requirement is not considered unreasonable.

Given that the 2D modelling suggests no intensification of the stormwater or flooding of the area, it is therefore recommended that Council accept the proposed subdivision layout and drainage modifications to allow the development of the site to occur.

Any aspect of this report can be discussed with Michael Hay, contactable on Mob: 0417 015 560 or Email: mhay@ipdconsulting.com.au

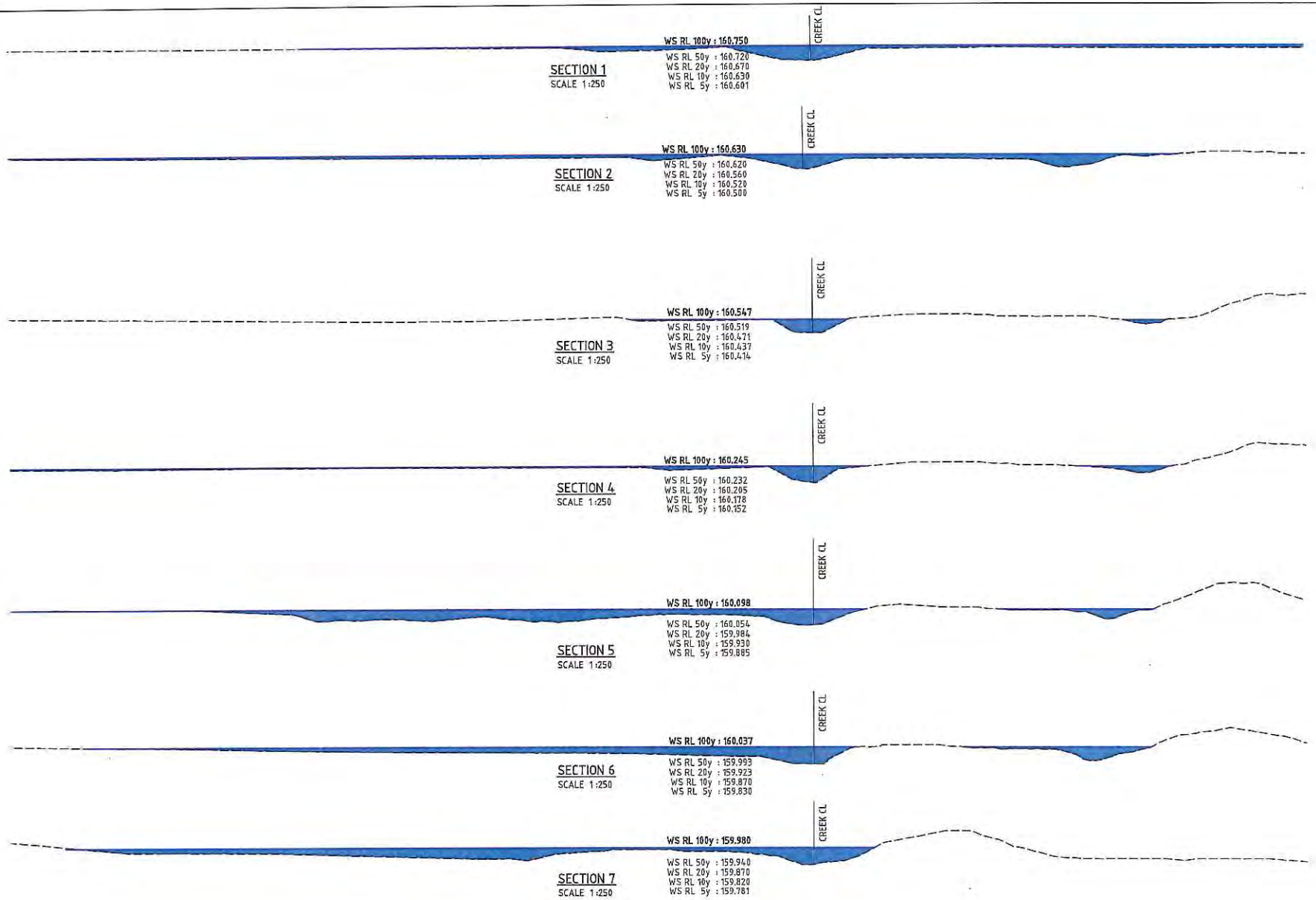
Appendix A

RORB Model Hydrographs


Calculated hydrograph, Edward Street
Discharge (m³/s)
Time (hr)
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
1 hour
1.5 hour
2 hour
3 hour
4.5 hour
6 hour
9 hour
12 hour
18 hour

Appendix B

Model 1 – Current Scenario Outputs



1-336

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
		M.MOLLER	M.MOLLER	R.CASIMATY	04.02.2016

APPROVED

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) 1:250

SHEET SIZE A3

PITT & SHERRY
ACN 27 160 104 288
HOBART OFFICE
199 Macquarie Street
Hobart
Tasmania 7000
Ph. (03) 8233 1800
Fax. (03) 8233 1250
www.pitt&sherry.com.au
pitt&sherry
sustainable thinking

CLIENT: IPD CONSULTING PTY LTD

PROJECT: FLOOD STUDY
EDWARD STREET

STATUS: **PRELIMINARY**

DRAWING TITLE: FLOOD MODELLING
CROSS SECTIONS

DATUMS: AHD / MGA Z55 GDA94

CLIENT No. –

DRAWING No. HB14306-C102

REVISION –

Feb. 12, '16 - 17:29:07 Name: HB14306-C102.dwg Updated By: Max Moller

1-337

AREA AFFECTED BY FLOODING
255-1300mm

AREA AFFECTED BY FLOODING
155-255mm

AREA AFFECTED BY FLOODING
100-155mm

AREA AFFECTED BY FLOODING
0-100mm

SECTION	FLOW	FLOW HIGH (mm)		FLOW RATE
NUMBER	VELOCITY (m/s)	MINIMUM	MAXIMUM	(m^3/s)
1	0.427	55	822	15.772
2	0.365	57	817	15.013
3	0.374	65	774	15.223
4	0.357	121	911	14.898
5	0.331	133	1123	15.001
6	0.381	111	971	14.785
7	0.380	104	867	15.233

PLAN VIEW
SCALE 1:10000

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
		M.MOLLER	M.MOLLER	R.CASIMATY	04.02.2016

APPROVED

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3) SHEET SIZE A3

PITT & SHERRY
ABN 47 140 184 809
HOBART OFFICE
100 Macquarie Street
Hobart
Tasmania 7000
Ph. (03) 6223 1900
Fax. (02) 6223 1299
www.pitsh.com.au
pitt&sherry
sustainable thinking

CLIENT: IPD CONSULTING PTY LTD

PROJECT: FLOOD STUDY
EDWARD STREET

STATUS: **PRELIMINARY**

DRAWING TITLE: FLOOD MODELLING
EONFUSION PLAN

DATUMS: AHD / MGA Z55 GDA94 CLIENT No. -

DRAWING No. HB14306-C101 REVISION -

Feb. 12, 16 - 17:26:04 Name: HB14306-C101.dwg Updated By: Max Moller

Appendix C

Model 2 – Proposed Subdivision Layout No. 1 - Subdivision Layout & Outputs

1-339

AREA AFFECTED BY FLOODING
255–1300mm

AREA AFFECTED BY FLOODING
155–255mm

AREA AFFECTED BY FLOODING
100–155mm

AREA AFFECTED BY FLOODING
0–100mm

PLAN VIEW
SCALE 1:10000

REFERENCE FILES ATTACHED:

PLS FORM 2016-A3 REV-4

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
		M.MOLLER	M.MOLLER	R.CASIMATY	04.02.2016

APPROVED

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

PITT & SHERRY
ACN / ACT 140 104 305
HOBART OFFICE
100 Macquarie Street
Hobart
Tasmania 7000
Ph. (03) 8223 1800
Fax. (02) 8223 1209
www.pitsh.com.au
pitt&sherry
sustainablethinking

CLIENT: IPD CONSULTING PTY LTD

PROJECT: FLOOD STUDY
EDWARD STREET

STATUS: **PRELIMINARY**

DRAWING TITLE: FLOOD MODELLING NEW EMBANKMENT
EONFUSION PLAN

DATUMS: AHD / MGA Z55 GDA94

CLIENT No. –

DRAWING No. HB14306-C103

REVISION –

Feb. 23, 16 – 11:31:20 Name: HB14306-C103.dwg Updated By: Max Moller

PLANNING

THIS PLAN WAS PREPARED AS A PROPOSAL PLAN
TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL
AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.

LEGEND

SAMPLE BUILDING ENVELOPE
AS PER. 10.4.4.1, A1, a) ,i)
OF THE PLANNING SCHEME

10.00m
15.00m

NOTES:
1. ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
2. CONTOUR INTERVAL IS 0.10 METRES.

PROPOSED 18 LOT SUBDIVISION
(16 LOTS, 1 ROAD LOT AND 1 LOT RESERVED FOR DRAINAGE PURPOSES)
LOT 301, EDWARD STREET, PERTH
C.T.168360-301

N

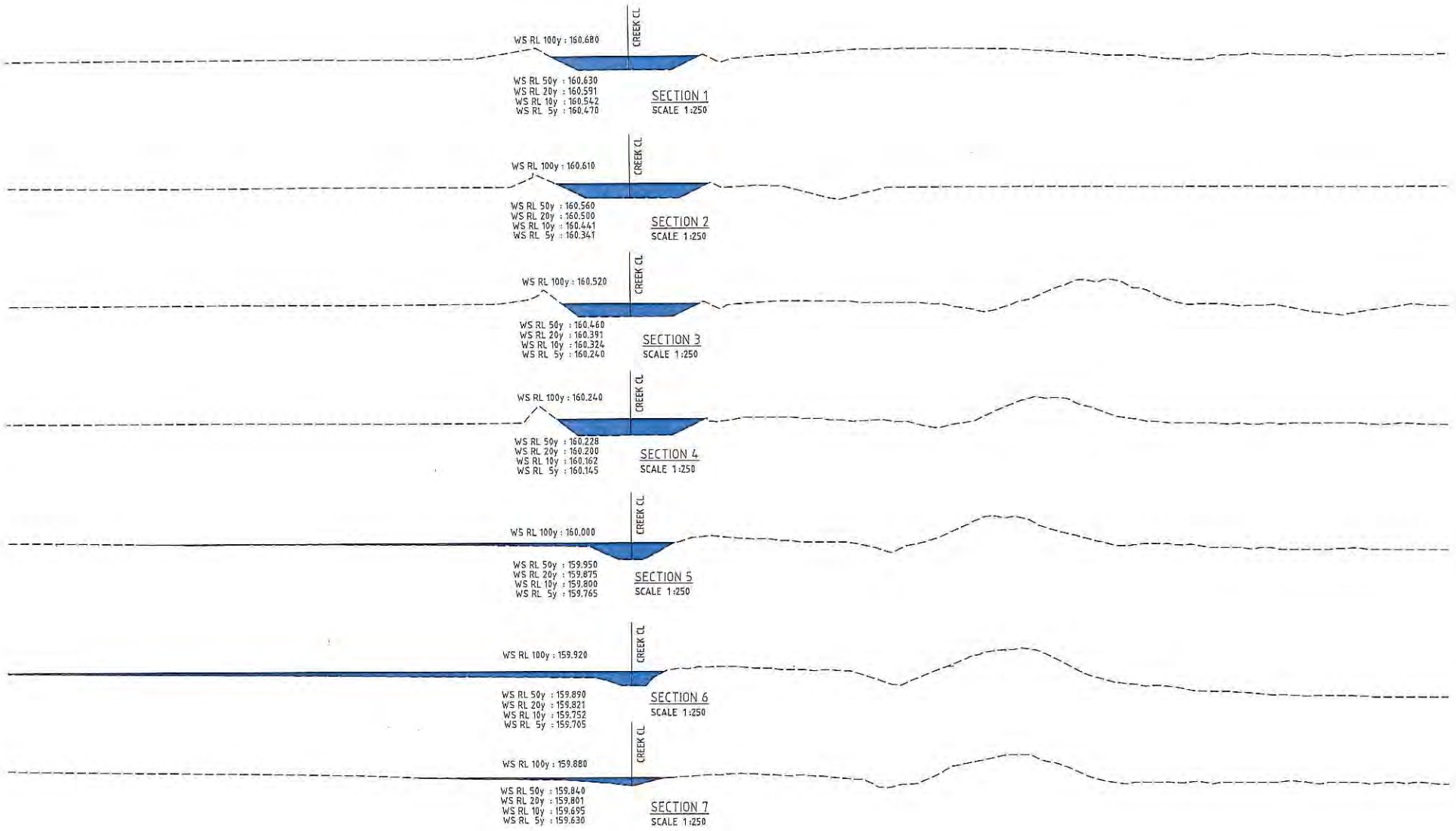
WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number 2014-213

Drawn	File Name	Date	Scale	Edition	Sheet
CSS	2014-213_Proposal_Plan_030316	03/03/2016	1:1000@A3	5	1

Appendix D

Model 3 – Proposed Subdivision Layout No. 2 - Subdivision Layout & Outputs



1-342

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
		M.MOLLER	M.MOLLER	R.CASIMATY	04.02.2016

APPROVED

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) 1:250

SHEET SIZE A3

PITT&SHERRY
ABN 87 610 164 309
HOBART OFFICE
100 Macquarie Street
Hobart
Tasmania 7000
Ph. (03) 6223 1800
Fax. (03) 6223 1299
www.pitt&sherry.com.au
sustainable thinking

CLIENT: IPD CONSULTING PTY LTD

PROJECT: FLOOD STUDY
EDWARD STREET

STATUS: **PRELIMINARY**

DRAWING TITLE: FLOOD MODELLING
CROSS SECTIONS

DATUMS: AHD / MGA 55 GDA94

CLIENT No.: -

DRAWING No.: HB14306-C102

REVISION: -

Mar. 8, 16 - 11:44:37 Name: HB14306-C102.dwg Updated By: Max Moller

P&S FORM CRS-A3 REV -4

1-343

AREA AFFECTED BY FLOODING
255-1300mm

AREA AFFECTED BY FLOODING
155-255mm

AREA AFFECTED BY FLOODING
100-155mm

AREA AFFECTED BY FLOODING
0-100mm

PLAN VIEW
SCALE 1:10000

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
		M.MOLLER	M.MOLLER	R.CASIMATY	04.02.2016

APPROVED

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3) SHEET SIZE A3

PITT&SHERRY
ABN 47 140 184 389
HOBART OFFICE
109 Macquarie Street
Hobart
Tasmania 7000
Ph. (03) 6223 1800
Fax. (03) 6223 1200
www.pitsh.com.au

CLIENT: IPD CONSULTING PTY LTD

PROJECT: FLOOD STUDY
EDWARD STREET

STATUS: **PRELIMINARY**

DRAWING TITLE: FLOOD MODELLING
EONFUSION PLAN

DATUMS: AHD / MGA Z55 GDA94

CLIENT No. -

DRAWING No. HB14306-C101

REVISION -

Mar. 8, 16 - 11:20:15 Name: HB14306-C101.dwg Updated By: Max Moller

PLANNING

THIS PLAN WAS PREPARED AS A PROPOSAL PLAN
TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL
AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.

LEGEND

SAMPLE BUILDING ENVELOPE
AS PER. 10.4.4.1, A1, a) ,i)
OF THE PLANNING SCHEME

10.00m
15.00m

NOTES:
1. ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
2. CONTOUR INTERVAL IS 0.10 METRES.

PROPOSED 18 LOT SUBDIVISION
(16 LOTS, 1 ROAD LOT AND 1 LOT RESERVED FOR DRAINAGE PURPOSES)
LOT 301, EDWARD STREET, PERTH
C.T.168360-301

N

WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number	Drawn	File Name	Date	Scale	Edition	Sheet
2014-213	CSS	2014-213_Proposal_Plan_80316	8/03/2016	1:1000@A3	5	1

Annexure 5 – Traffic Impact Assessment Report

Holliejett Investments PTY LTD
18 Lot Subdivision (New Road Access)
Lot 301, Edward Street, Perth

Traffic Impact Assessment (TIA)

March 2016

IPD Consulting Pty Ltd
Infrastructure Planning & Design Mobile: 0419 574 975 Email: mwalters@ipdconsulting.com.au P.O. Box 1371, Launceston TAS 7250 www.ipdconsulting.com.au ABN 96 121 714 878

Document History and Status

Rev	Date	Reviewed By	Revision Details
A	29/03/16	M Hay	TIA Draft

Distribution of Copies

Rev	Quantity	Issued To
A	1	Holliejett Investments (Joey Maloney & Noel Reid)

File Name:	\Hollijet TIA - Lot 301, Edward Street, Perth_Rev A MH.docx
Author:	Andrew Howell
Client:	Holliejett Investments PTY LTD
Project:	'18 Lot Subdivision (New Road Access) – Lot 301 Edward Street, Perth'
Subject:	'Traffic Impact Assessment (TIA)'
Document	Report
Document Version	A
Job No.	1452

Contents

1. Introduction 2
   - 1.1 Background & Project Scope 2
   - 1.2 Objectives 2
   - 1.3 Subject Site Location 2
   - 1.4 Information Sources & References 4
   - 1.5 Planning Scheme and Council Input 4
2. Existing Conditions 5
   - 2.1 Transport Network 5
   - 2.2 Road Conditions & Road Safety Performance 5
3. Proposed Development 7
   - 3.1 Site Development and Facilities Upgrade 7
   - 3.2 Traffic Generation & Distribution 7
4. Traffic Impacts 8
   - 4.1 Access Impacts 8
   - 4.2 Surrounding Road Network Impacts 8
   - 4.3 Parking Assessment 8
   - 4.4 Sight Distances 8
   - 4.5 Road Safety & Traffic Service 8
   - 4.6 Pedestrian and Cyclist impacts 9
   - 4.7 Public Transport Provision 9
   - 4.8 Summary of Assessment against Planning Scheme E4 – Road and Railway Assets Code 9
5. TIA Conclusions 10

Limitations 10

Appendices

A Subdivision Plan (inc. Access Junction Proposed)

1. Introduction

IPD Consulting has been engaged to complete a Traffic Impact Assessment (TIA) relating to proposed subdivision development at Lot 301 Edward Street, Perth (*refer Fig 1.1 - Locality Plan*)

The development proposed consists of an 18 lot subdivision, including 16 residential lots, a new road reserve, and a lot provided for drainage purposes for Northern Midlands Council. (*refer APPENDIX A – Subdivision Layout Plan)*

A site inspection was carried out on 25th March 2016.

1.1 Background & Project Scope

Preliminary information has been developed by Woolcott Surveying, in anticipation of providing a Development Application to Northern Midlands Council (NMC). The nature of the development requires that a TIA is required to be undertaken, and the below report addresses traffic related aspects and attempts to identify any potential impacts affecting the development.

1.2 Objectives

The key objectives of this report are:

- Review of the existing road physical characteristics in the vicinity of the site.
- Review of existing traffic conditions and arrangements.
- Describe the development with regards to arrangements for access, including any implications for traffic efficiency, safety, and amenity.

1.3 Subject Site Location

The subject site considered in this TIA is located on Edward Street, Perth, nominated as "Lot 301". The land is currently vacant and undeveloped, and subdivision as shown in the attached plan will require a new road access junction be constructed to NMC Municipal Standards.

Fig 1.1 – Locality Plan

Fig 1.2 – Photo of Existing Area for Proposed Access Road Junction (approx.)

1.4 Information Sources & References

IPD have been provided with relevant information from the proponent, including the preliminary subdivision development plan (Refer *APPENDIX A*). This provides an outline of the proposed development, and indicates that generally the development proposes construction of a typical road access junction with Edward Street which will be in accordance with LGAT/IPWEA Municipal Standards.

IPD have undertaken a site inspection to ascertain any obvious issues relating to the development.

IPD have utilised the DIER (now Department of State Growth or DSG) document "Traffic Impact Assessment (TIA) Guidelines" in the preparation of this report.

Further referenced documents include:

- DSG Tasmanian State Road Hierarchy
- Road and Rail Assets Code (Feb 2013)
- Northern Midlands Council Interim Planning Scheme 2013
- Tasmanian Standard Drawing Set (LGAT/IPWEA Municipal Standards)

1.5 Planning Scheme and Council Input

The Planning scheme applicable is the Northern Midlands Council Interim Planning Scheme 2013.

The current zoning for the land and surrounding area is believed to be General Residential.

Based on the likely traffic movements to be generated by the development (>40 VPD), a TIA is required as part of the Development Application, based on E4.6.1.

2. Existing Conditions

2.1 Transport Network

The site access is direct to Edward Street, which is considered a Category 5 "other road" under the DSG Tasmanian Road Hierarchy; nominally a "local traffic only" road. Edward Street in this location is a through road which provides access between Cromwell Street and Youl Main Road, with one intermediate cul-de-sac for residential purposes (Thames Court). It is likely that this road acts as an alternate minor feeder to Youl Main Road for the area of residential land in the immediate vicinity to the West.

Due to the nature of the development in a nominated residential growth area, and the capacity of Youl Road as the main feeder road (believed to be a State Government DSG road), the likelihood of any additional negative impacts on intersections in the network beyond the new junction has a low probability, and so are not considered further by this report. Specific comment is provided only on the new subdivision junction in terms of traffic service, and traffic safety.

2.2 Road Conditions & Road Safety Performance

The speed limit of Edward Street outside the subject site is 50km/hr, similar to adjacent residential streets. This speed zone commences by default at the intersection of Youl Main Road which is signposted as a 60 km/hr zone around the Junction with Edward Street. Traffic count data including vehicle speeds has not currently been sought for Edward Street. Based on the residential nature of the area, short streets between junctions, and the default speed limit of 50 km/hr it is likely vehicle speeds are 50 km/hr or less.

Edward Street outside the proposed access junction is constructed generally to rural road standards, with a chip-seal pavement, narrow gravel shoulders, and open drains either side. The development of adjacent land to the West of the subdivision to a general residential standard means that Edward Street immediately to the West of the proposed junction is built to an urban road standard, with kerb and channel installed. It is anticipated that a similar standard will be applied to the new junction, with continuous kerb and channel to be matched in to any new junction.

The horizontal and vertical alignment of the road at the proposed junction location is close to ideal for visibility and accessibility, with no issues anticipated at the proposed development junction site.

For the proposed junction the Safe Intersection Site Distance (SISD) is approximately 110m to the West. This meets the requirements of the NMC planning scheme code (Table E4.7.4). For the 50km/hr vehicle speeds in a speed limit zone of 60km/hr or less, a SISD of 80m is required. To the East, the SISD is approx. 135m, also meeting requirements.

Fig 2.1 – Existing Sight distance (approx.) to West (approx.)

Fig 2.2 –Sight Distance (Approx) - Looking East (approx.)

3. Proposed Development

3.1 Site Development and Facilities Upgrade

The development as proposed provides for 16 new residential lots, proposed generally as per the layout plan attached.

The access road junction likely to be proposed will need to be specified and constructed to the IPWEA/LGAT municipal standard drawings in terms of construction/width, etc., which consists of a level sealed junction of suitable width and with continuous kerb and channel.

The interface at the roadside edge appears sound and existing edge of pavement and kerb alignment on the South side of the road appears to be able to be easily matched in with.

3.2 Traffic Generation & Distribution

Due to the low probability of off-site impacts in light of the general residential nature of the area, a detailed assessment of external site impacts, beyond the proposed new junction, is not likely to be required by Council at this time.

4. Traffic Impacts

4.1 Access Impacts

Based on our understanding of the current and proposed situation the new junction to the subdivision, constructed as per the *Subdivision Layout Plan* and LGAT Municipal Standards, appears to be able to easily cater for the proposed access to the property.

It is noted that the standard LGAT junction with appropriate road widths, construction standards, etc. will contribute to ensuring safe and efficient turning and access opportunities for vehicles entering and exiting the site.

4.2 Surrounding Road Network Impacts

Whilst assessment of additional road network parameters beyond junction access arrangements were outside the formal remit of this report, it is believed that off-site impacts arising from this development would not significantly affect the wider road network, based on the development clearly fitting within the existing residential arrangements for the area.

It is noted that other similar junctions servicing somewhat similar developments in the immediate surrounding area (e.g. the nearby Thames Court opposite) have provided similar access junctions to the proposed development site.

4.3 Parking Assessment

Not required to be considered as part of this report.

4.4 Sight Distances

Clause E4.7.4 of the Planning Scheme notes that sight distance for accesses for Acceptable Solution A1 comply with Safe Intersection Sight Distance (SISD) from table E4.7.4. For a speed limit of 50 km/hr and a vehicle speed of approx. 50km/hr this would require 80 metres at the proposed site.

This distance is easily achieved for the junction as proposed looking to the East.

This distance is considered to also be met to the West, with the sight distance to Cromwell Street approx. 112m. *The nearby Thames Court, on the opposite side of the road is approx. 51m from the required sight distance location from the proposed subdivision junction, however this is considered acceptable based on both vehicles (a Thames court vehicle and a new junction vehicle) being required to give way at their respective junction, and being close to or actually stopped should a simultaneous arrival occur.*

ACCEPTABLE SOLUTION A1 able to be met.

Based on above analysis, E4.7.4 is met by A1. Sight distances are satisfactory.

4.5 Road Safety & Traffic Service

Due to the adequate sight distances with regard to Planning Scheme Acceptable Solution A1, there appears no apparent issues for road safety arising from the development.

Traffic service for the proposed development is likely to be adequately provided with the existing infrastructure off site (capacity, turning gaps, etc.), based on the current development levels, the low

traffic volumes anticipated in Edward Street, and the zoning of the surrounding area which permits and enables residential growth.

4.6 Pedestrian and Cyclist impacts

Currently there is a dedicated pedestrian footpath on the Northern side of Edward Street, to the West of the site (assumed arising from previous development associated with Thames Court). It would be likely that based on the local area, a footpath on only one side of the road would be required and that this would continue on the Northern side of the road, with pram crossings either side of Edward Street to allow a footpath to be constructed likely on the Eastern side of a new road into the proposed subdivision under consideration in this TIA.

Existing cyclist access appears to be informal only in Perth (no dedicated infrastructure), and no specific impacts or changes are identified.

4.7 Public Transport Provision

Not part of this assessment, however taxis are able to service the site. No change to any existing arrangements in the Perth area is proposed.

4.8 Summary of Assessment against Planning Scheme E4 – Road and Railway Assets Code

Item	Comment/Criteria Met
E4.6.1 – Use of Road or Rail Infrastructure	*A1 – Not Applicable (speed limit <60km/hr)* A2 – Not Met – refer P2 P2 – refer comments Section 4 – **REQUIREMENTS ARE MET (Safety and Service requirements met)** *A3 – Not applicable (speed limit <60km/hr)*
E4.7.1 – Development on and adjacent to Existing and Future Arterial Roads and Railways	*NOT APPLICABLE IN RELATION TO ROADWORKS & ACCESS JUNCTION ASPECTS CONSIDERED BY THIS TIA*
E4.7.2 – Management of Road Accesses and Junctions	A1 – **REQUIREMENTS ARE MET (Single access junction only)** *A2 – Not applicable (speed limit <60km/hr)*
E4.7.3 – Management of Rail Level Crossings	*NOT APPLICABLE*
E4.7.4 – Sight Distances at Accesses, Junctions and Level Crossings	A1 – **REQUIREMENTS ARE MET (refer Section 4.4)**

Conclusion: Requirements for E4 are met.

5. TIA Conclusions

This TIA has investigated the potential impacts from the development of upgraded facilities and increased capacity (including increased parking) on the subject site.

Key findings are as follows:

- That the new access junction location in the layout as generally proposed will likely meet the requirements for traffic safety and service (when constructed in accordance with LGAT/IPWEA Municipal Standard requirements).
- Sight distances comply with the planning scheme E4.7.4 requirements.

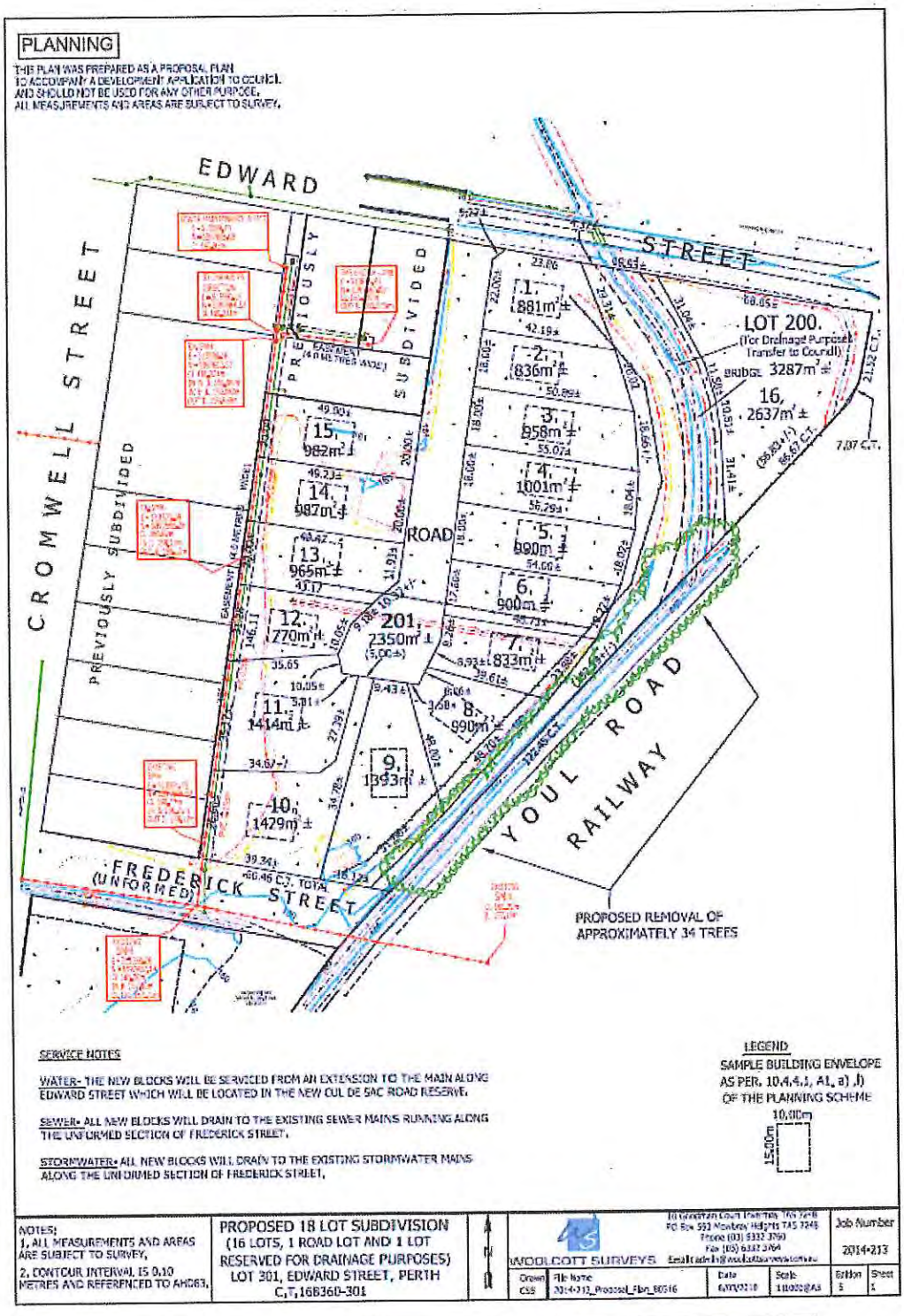
IPD Consulting conclude based on the above assessment of available information, that the development including the new road access junction, is likely to meet the requirements for Traffic Safety and Service, and any potential for adverse effect on the existing Traffic Safety situation is unlikely.

Limitations

- *IPD have completed this TIA based on information provided by the client and available in the public domain, additional information beyond this has not been considered*
- *Based on the nature of the development, this TIA has considered the access aspects for this development only, and has not considered in detail the wider impacts beyond the site (upstream network impacts), this being currently outside the scope of this report*

Appendix A

Subdivision Plan (including Access Junction Proposed)



WOOLCOTT SURVEYS

EAST COAST SURVEYING
CONSULTING SURVEYORS & LAND PLANNERS

Our Ref: 2014-213

18/04/2016

Paul Godier
The Planning Department
Northern Midlands Council
P.O. Box 156
LONGFORD TAS 7301

Dear Paul,

P16-065, PROPOSED 18 LOT SUBDIVISION (15 RESIDENTIAL LOTS, BALANCE LOT 16, ROAD LOT AND LOT TO BE SET ASIDE FOR DRAINAGE PURPOSES) – 1 EDWARD STREET, PERTH, 168360-301

The following is our response to the additional information request from Council. The council requested extra information is shown in italics.

Point 1

An amended application from showing Holliejett Investments Pty. Ltd. as the owner of the subject site.

Response: An amended Application form is attached showing the owner details as Holliejett Investments Pty. Ltd.

Point 2

A plan showing the proposed filling of the land.

Response: A Concept Filling Plan has been attached. A full engineering design will be completed which will include a filling plan if a planning permit is issued.

Point 3

A plan showing water, sewer and stormwater connections for each lot.

Response: A preliminary concept services diagram is attached for water, sewer and stormwater connections. It will be a condition on any Council and TAS Water planning permit that a full engineering design be completed.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Point 4

Practitioner's name inserted into Part 5 of the Certificate of Insufficient Increase in risk.

Response: A revised document is attached which includes the Practitioner's name.

Point 5

For those lots within 50m of the railway, a report from a suitably qualified person addressing clause E4.7.1 P1 b).

Response: A report has been prepared by Linda Drummond of Pitt and Sherry in support of the Subdivision and this report is included in this additional information supplied.

Point 6

To address clause E5.6.1 P1.3, Lot 16 shown as for Drainage purposes transfer to Council.

Further to this query, P1.3 of the planning scheme states:

Where mitigation of flood impacts is proposed or required, the application must demonstrate that:

a) *The works will not unduly interfere with natural coastal or water course processes through restriction or changes to flow; and*

b) *The works will not result in increase in the extent of flooding on other land or increase the risk to other structures;*

c) *Inundation will not result in pollution of the watercourse or coast through appropriate location of effluent disposal or the storage of materials; and*

d) *Where mitigation works are proposed to be carried out outside the boundaries of the site, such works are part of an approved hazard reduction plan covering the area in which the works are proposed.*

Response: This proposed subdivision includes 15 new Lots for Residential purposes. Lot 16 is the balance of the owner's undeveloped land. No proposed Development on this piece of land is proposed as part of this application. Any future development on this parcel of land would require future Council approval. A Hydrology and Modelling Report has been completed by IPD Consulting. The conclusions of the report are as follows as found on page 24 of the report:

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

The following is a summary of the key findings of this report relating to the proposed subdivision on Edward Street, Perth:

- *This report shows that the subdivision development using the Model 3 – Proposed Subdivision Layout No. 2 layout and modifications to the existing drainage path does not adversely impact the flooding of the area in a 1:100 year flood event;*
- *The previously determined (and required by Council on previous developments) 1:100 year flood level of RL160.9 m appears reasonable and will be adopted for the subdivision design;*
- ***The report only focuses on the change in flood level**, not the actual flood level or volume of the flood in making this recommendation. To model the actual flood levels, far greater modelling is required of the western Perth area, which is outside the scope of this report;*
- *It is likely that Youl Road will continue to flood until the downstream infrastructure is upgraded, with upgrades as outlined in previous reports. This is still required in the future even with the improvements to the drainage path through the subdivision; and*
- *It is proposed to use the Council recommended 1:100 year flood level of RL160.9 m and add an additional 300mm height requirement for habitable areas of the development. It is noted that the BCA requires a minimum 150mm freeboard to habitable areas, so this requirement is not considered unreasonable.*

Given that the 2D modelling suggests no intensification of the stormwater or flooding of the area, it is therefore recommended that Council accept the proposed subdivision layout and drainage modifications to allow the development of the site to occur.

Point 6

Written consent from the General Manager that no land is required for Public open space but instead that there is to be a cash payment in lieu (clause E10.6.1, A1) or an amended plan showing public open space in accordance with clauses E10.6.1 P1, 10.4.15.5 and 10.4.15.6.

Response: It is not initially proposed as part of this layout to include any Public Open Space. This is proposed in line with the previously approved subdivision north of the site in Thames Court. We have included a letter regarding this request addressed to

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph. (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING
CONSULTING SURVEYORS & LAND PLANNERS

the General Manager. Should the General Manager wish to discuss this item our clients are willing to review in the upcoming meeting with Council.

Please let us know if you have any questions.

Yours faithfully
Woolcott Surveys

Colin Smith
Registered Land Surveyor

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

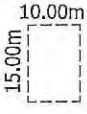
ABN 15 808 360 064

PLANNING

THIS PLAN WAS PREPARED AS A PROPOSAL PLAN
TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL
AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.

LEGEND

SAMPLE BUILDING ENVELOPE
AS PER. 10.4.4.1, A1, a) ,i)
OF THE PLANNING SCHEME



NOTES:
1. ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
2. CONTOUR INTERVAL IS 0.10 METRES AND REFERENCED TO AHD83.

FILLING PLAN
PROPOSED 18 LOT SUBDIVISION
LOT 301, 1 EDWARD STREET, PERTH
C.T.168360-301

N

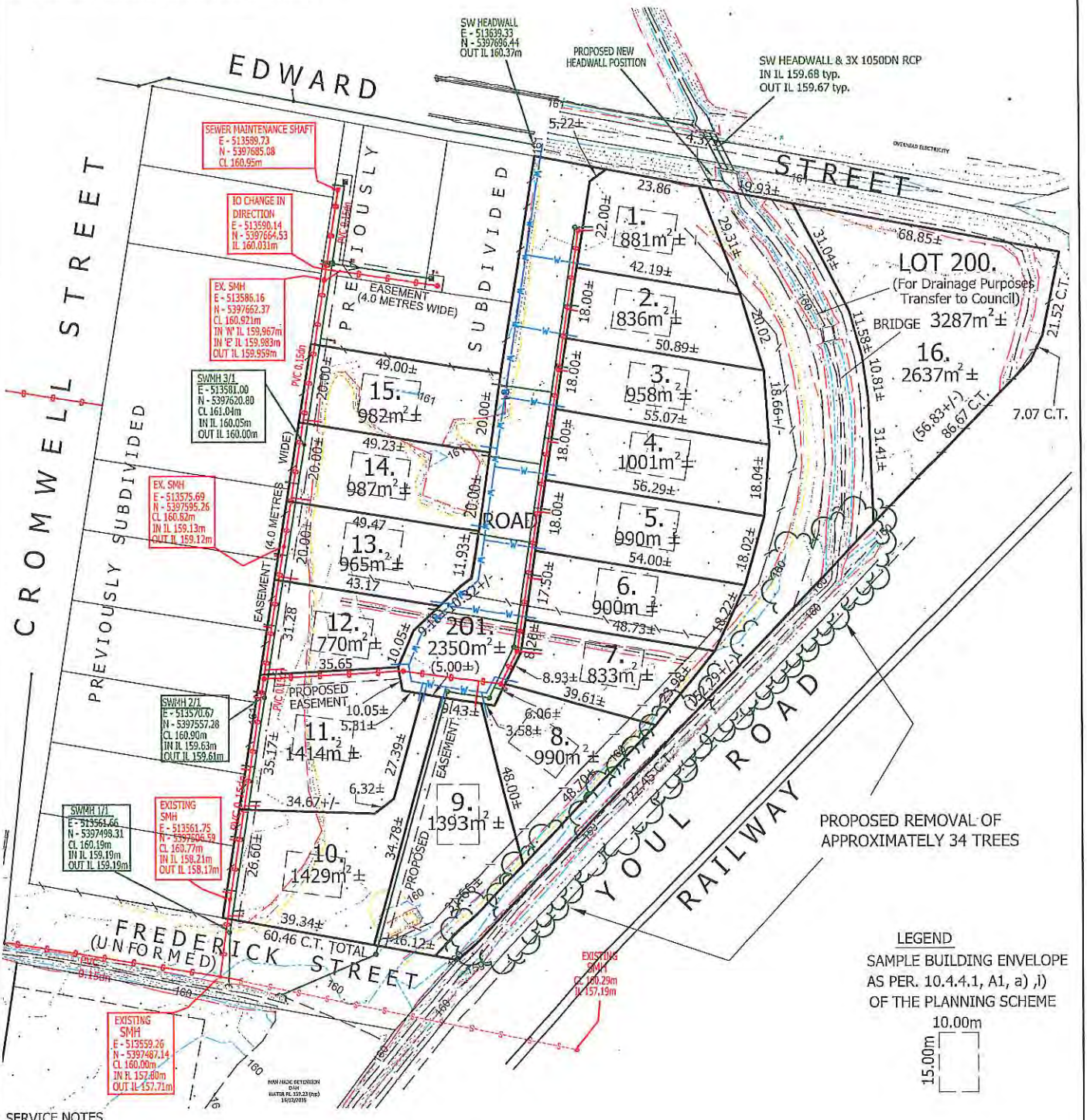
WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number 2014-213

Drawn	File Name	Date	Scale	Edition	Sheet
CSS	2014-213_Filling_Plan_190416	19/04/2016	1:1000@A3	5	1

PLANNING

THIS PLAN WAS PREPARED AS A PROPOSAL PLAN
TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL
AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.



LEGEND

SAMPLE BUILDING ENVELOPE AS PER. 10.4.4.1, A1, a) ,l) OF THE PLANNING SCHEME

10.00m × 15.00m

SERVICE NOTES

WATER- THE NEW BLOCKS WILL BE SERVICED FROM AN EXTENSION TO THE MAIN ALONG EDWARD STREET WHICH WILL BE LOCATED IN THE NEW CUL DE SAC ROAD RESERVE.

SEWER- LOTS 10-15 WILL CONNECT TO THE EXISTING SEWER MAIN ON THE WESTERN BOUNDARY. LOTS 1-9 WILL CONNECT TO A NEW SEWER MAIN WHICH WILL RUN ALONG THE NEW ROAD RESERVE.

STORMWATER- LOTS 10-11 WILL CONNECT TO THE EXISTING STORMWATER MAIN ON THE LOTS WESTERN BOUNDARY. LOTS 1-9 AND 12-15 WILL CONNECT TO A NEW STORMWATER MAIN WHICH WILL BE LOCATED WITHIN THE ROAD RESERVE.

ALL PROPOSED SERVICES ARE FOR DIAGRAMETRIC PURPOSES ONLY AND ARE SUBJECT TO A FULL ENGINEERING DESIGN.

LEGEND

—W— - DENOTES WATERMAIN.

—S— - DENOTES SEWER MAIN.

—— - DENOTES STORMWATER MAIN.

NOTES:
1. ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
2. CONTOUR INTERVAL IS 0.10 METRES AND REFERENCED TO AHD83.

CONCEPT SERVICES PLAN FOR PROPOSED 18 LOT SUBDIVISION

LOT 301, 1 EDWARD STREET, PERTH
C.T.168360-301

N

WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number 2014-213

Drawn	File Name	Date	Scale	Edition	Sheet
CSS	2014-213_Concept_Serv_Plan_190416	19/04/2016	1:1000@A3	5	1

28 April 2016

Doc ref: 1452_01

Woolcott Surveys
10 Goodman Court
Invermay
Tasmania 7248

Attn: Colin Smith

Dear Colin,

Edward Street Hydrology & Modelling Report
Clarification Letter

Following from discussions and your email dated 22 April 2016, please see below for clarification on the concerns raised by Northern Midlands Council (NMC) for the proposed subdivision at Edward Street, Perth.

1.1 Clarification / Confirmation Required

It is our understanding that NMC need further clarification on the following items relating to the modelling of the open drain which passes through the proposed Edward Street subdivision site.

1. NMC are concerned that the potential choke points have not been understood or included in the modelling analysis; and
2. Potential backwater effects in the open drain may result in flooding as a result of these "choke points" and may not have been considered.

1.2 Choke Point Clarification

We confirm that the impact of the downstream culverts under Youl Road and the railway line have been included in the assessment of the proposed development on the Edward Street subdivision site.

The following key points are to be noted:

- The software package uses the most recent survey data available to generate a 3D terrain model, which is then imported into a full 2D modelling software package. This software is able to use the terrain model to accurately represent hydraulic flow paths and storages;
- The model was manipulated to limit the outflow at the location of the Youl Road culvert based on hand calculations on the hydraulic capacity of the culvert. These hand calculations were verified via comparison with the Hydrodynamica *West Perth Stormwater Assessment Report* (2015) completed by Cameron Oakley; and
- Limiting the outflows results in backwater effects and storages being filled based on the terrain model, and are shown in the modelling report results (flood plans).

IPD Consulting Pty Ltd
Infrastructure Planning & Design Mobile: 0419 574 975 Email: mwalters@ipdconsulting.com.au P.O. Box 1371, Launceston TAS 7250 www.ipdconsulting.com.au ABN 96 121 714 878

1.3 Backwater Effects Clarification

The Hydrology & Modelling Report (IPD Consulting – dated March 2016) submitted with the Development Application clearly states the following in the Executive Summary on Page 4:

"It is critical to understand that this report looks at the change in flooding, not the actual flood levels along Youl Road, in assessing the impact of the subdivision. It is outside the scope of this document to model the greater western Perth region, so the focus of the report is on the overall change, not the quantum of the flooding value."

Based on the above statement, the following key points are to be noted:

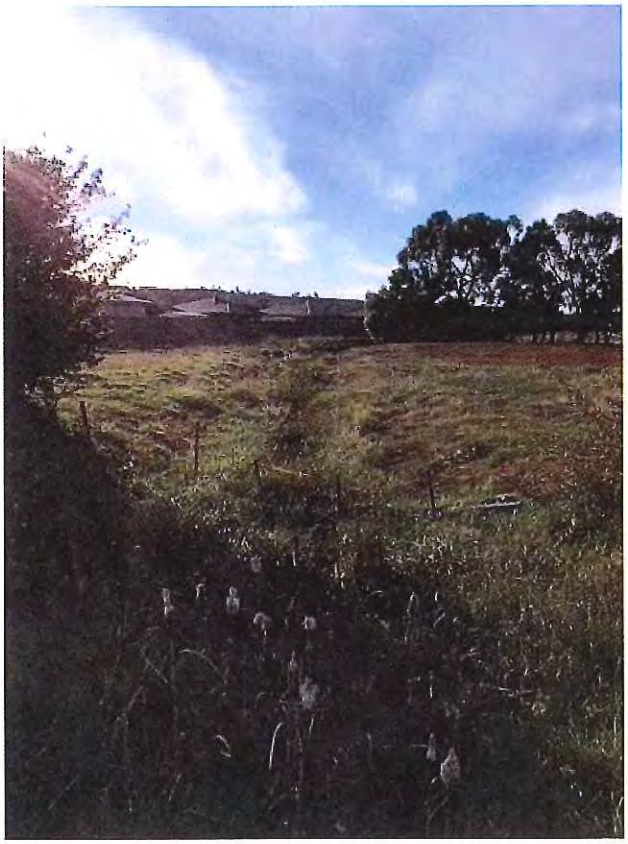
- The backwater effects due other stormwater catchments and undersized downstream infrastructure have not been considered in this report as they are outside the scope for what is reasonable to model by the developer for the site;
- The report looks at the impact of filling the lots in the design event, and compares it back to the existing condition. The modelling shows that by modifying the subdivision plan to the layout submitted as part of the Development Application, and with improvements to the open drain, results in no net negative impact on the flooding for the Youl Road area;
- The development is not intensifying or increasing the flooding risk of the site by filling the lots, as outlined in the Hydrology & Modelling Report;
- **Youl Road will still likely flood in a rainfall event more frequent than a 1% AEP event (1:100 year event) due to the undersized downstream infrastructure.** The finished surface level of the lots and the approved building levels for the subdivision has been set to ensure that any flooding will overtop Youl road (as it currently does), and not increase the flood risk to the community; and
- The existing condition of the open drain is poor, and the proposed improvements to the open drain offset the loss in storage.

The concerns relating to the safety of the community due to stormwater flows overtopping Youl Road are valid, however this responsibility lies with NMC. The Hydrology & Modelling Report shows that the development does not intensify flooding, and therefore the overtopping of Youl Road and the subsequent risk to the community is a separate issue.

If you require any further information or clarification on any aspect of the above, please don't hesitate to contact me on Mob: 0417 015 560 or Email: mhay@ipdconsulting.com.au.

Yours faithfully
IPD Consulting Pty Ltd

Michael Hay



18 Lot Subdivision Perth
Rail Noise Assessment

transport | community | mining | industrial | food & beverage | carbon & energy

Prepared for: Holliejet Pty Ltd c/o Woolcott Surveys

Client representative: Colin Smith

Date: 15 April 2016
Rev00

Inspired thinking embracing
the challenges of a changing world.

pitt&sherry

Table of Contents

1. Introduction 1
2. Regulatory Environment 1
3. Calculations 2
4. Conclusion 3

List of tables

Table 1: Relevant acoustic indicator levels – sleep disturbance 1
Table 2: Noise calculations, lots 6-9 2

Appendices

Appendix A: Subdivision Plan

Prepared by: ..... Date: 15 April 2016
Linda Drummond

Reviewed by: ..... Date: 15 April 2016
Ian Woodward

Authorised by: ..... Date: 15 April 2016
Ian Abernathy

Revision History					
Rev No.	**Description**	**Prepared by**	**Reviewed by**	**Authorised by**	**Date**

1. Introduction

Northern Midlands Council has requested further information on rail noise for an 18 lot subdivision located at Lot 301, Edward Street Perth. The subdivision plan is found in Appendix A.

For those lots within 50 m of the railway, a report from a suitably qualified person addressing clause E4.7.1 P1 b.

This clause states:

> *P1 Development including buildings, road works, earthworks, landscaping works and level crossings on or within 50m of a category 1 or 2 road, in an area subject to a speed limit of more than 60km/h, a railway or future road or railway must be sited, designed and landscaped to:*
> *a) maintain or improve the safety and efficiency of the road or railway or future road or railway, including line of sight from trains; and*
> *b) mitigate significant transport-related environmental impacts, including noise, air pollution and vibrations in accordance with a report from a suitably qualified person; and*
> *c) ensure that additions or extensions of buildings will not reduce the existing setback to the road, railway or future road or railway; and*
> *d) ensure that temporary buildings and works are removed at the applicant's expense within three years or as otherwise agreed by the road or rail authority.*

This report responds to the noise component of sub clause b of this requirement.

2. Regulatory Environment

Control of noise in Tasmania is regulated under the *Environmental Management and Pollution Control Act (Miscellaneous Noise)* and regulations. The regulations provide limitations on the levels and timing of the noise that may be emitted by various types of plant, vehicles or activities. The act and regulations do not specify limitations to noise emitted by railway operations or the maximum acceptable noise levels inside or outside residences. However the *Environmental Protection Policy (Noise) – 2009* (EPP) provides general guidance on acceptable noise levels for different activities. The relevant indicator levels from table 1 of the EPP are found in Table 1 below.

Table 1: Relevant acoustic indicator levels – sleep disturbance

Specific environment	Critical health effect(s)	L_{Aeq} dB(A)	Time base (hours)	L_{Amax} fast dB(A)
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

The EPP objective is for noise levels to be limited to $L_{Aeq, 8hr}$ 30 dB(A) inside bedrooms or $L_{Aeq, 8hr}$ 45 dB(A) outside bedrooms, with a L_{Amax}fast of 45 dB or 60 dB inside or outside respectively in order to prevent sleep disturbance. L_{Aeq} can for convenience be thought of as a measure of the "average" noise level over an extended period of time (in this case 8 hours). L_{Amax} is a measure of the maximum noise level that occurs, even if the noise has a very short duration.

For a regional railway line with a small number of train movements, the maximum noise level is most relevant, as it is the short, loud noise from a train passing that could wake someone up. A small number of short train movements spread over 8 hours would not significantly raise the average noise level. Average noise levels would be more relevant at a shunting yard, siding or workshop where operations are carried out continuously all day.

Pacific National Tasmania adopted a Noise Management Plan in 2007 which specifies noise levels from train operations on the Tasmanian Rail Network: 70 dB(A) ($L_{Aeq,\ 24hr}$) and 95 dB (L_{Amax}), measured 15 m from the centerline of the railway. These levels are therefore adopted as the assumed maximum noise level of a train passing the subject subdivision.

3. Calculations

Calculations of potential train noise were conducted for lots 6 to 9, which are the closest of the proposed 18 lot subdivision to the railway line. Their building envelopes are approximately 50 m or less from the line. The remaining lots are greater than 50 m away and therefore would have a lesser exposure to rail noise.

Noise diminishes with distance from the source. Assuming a train noise level of 95 dB(A) 15 m from the line allows noise levels at greater distances to be calculated for the subject lots.

The distances from the rail line, the calculated noise levels outside each residence and hence the required noise reduction from inside to outside are shown in Table 2.

Table 2: Noise calculations, lots 6-9

Lot Number	Distance from rail (m)	Calculated noise L_{Amax} dB(A)	Calculated noise L_{Aeq} dB(A)	Noise reduction required inside bedrooms	
				L_{Amax}	L_{Aeq}
Lot 6	51.4	84	59	39	29
Lot 7	40.3	86	61	41	31
Lot 8	39.7	87	62	42	32
Lot 9	42.6	86	61	41	31

Lot 8 shows the highest noise level and the following discussion relates to that lot. Satisfying the requirements for lot 8 will also satisfy the requirements for the other lots.

The nearest bedroom at this lot will potentially be located 39.7 m from the centerline of the railway line. After correcting for the distance to the bedroom window, the noise levels are calculated to be L_{Amax} 87 dB and L_{Aeq} 62 dB(A).

Table 1 of the EPP recommends that inside noise levels for inside bedrooms should not exceed $L_{Aeq,\ 8hr}$ 30 dB(A) and L_{Amax} fast 45 dB. To achieve these levels, the fabric of the building would need to achieve a noise reduction of 42 dB(A) from inside to outside.

AS3671-1989 Acoustics – Road traffic noise intrusion – Building siting and construction provides guidance on building design and material selection to achieve various noise reductions. A reduction target of 42 dB(A) equates to a category 4 construction under that standard (these require specialist acoustic calculations).

A lighter standard of construction would be possible if an external noise barrier, such as a boundary fence, was used to assist with the blocking of noise. The materials used and to construct the fence or noise barrier together with the height influences the effectiveness of its noise reduction properties. As a minimum, the fence should block the line of sight to the train.

To be effective the materials used for the barrier must have[1] a surface density of at least 20 kg/m^2 (as a general rule materials that weigh 20 kg/m^2 have[3] a transmission loss of 20 dB(A)) or be constructed from materials with similar acoustic properties.

Assuming an appropriate boundary fence was constructed to reduce train noise by 20 dB(A), the amount of noise reduction needed to be achieve by the house facade would reduce to 22 dB(A). This equates to a Category 2 construction under the *AS3671-1989 Acoustics – Road traffic noise intrusion – Building siting and construction* (this is a standard construction, with the exception of lightweight elements such as fibrous cement or metal cladding or all glass facades. Windows, doors and other openings must be closed).

4. Conclusion

It is feasible to construct houses within the proposed subdivision lots and achieve noise objectives.

A combination of boundary fences and building materials would be most effective. It is recommended that the nearest lots construct solid timber or sheet metal fences (no gaps) along their boundary to block line of sight of passing trains. The technical product specifications for the fence materials should be consulted in order to confirm that their acoustic properties are adequate. The houses should then be designed and built to satisfy Category 2 construction under *AS3671-1989 Acoustics – Road traffic noise intrusion – Building siting and construction.*

If fences are not constructed, the houses should be designed and built to satisfy Category 4 construction under *AS3671-1989 Acoustics – Road traffic noise intrusion – Building siting and construction.*

[1] https://www.sa.gov.au/__data/assets/pdf_file/0016/21391/Design_Guidelines_Reducing_noise_and_air_impacts_from_road_rail_and_mixed_land_use.pdf p 14.
[2] http://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm#sec3.4.2

Appendix A

Subdivision Plan

PLANNING

THIS PLAN WAS PREPARED AS A PROPOSAL PLAN
TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL
AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.

SERVICE NOTES

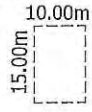
WATER- THE NEW BLOCKS WILL BE SERVICED FROM AN EXTENSION TO THE MAIN ALONG EDWARD STREET WHICH WILL BE LOCATED IN THE NEW CUL DE SAC ROAD RESERVE.

SEWER- ALL NEW BLOCKS WILL DRAIN TO THE EXISTING SEWER MAINS RUNNING ALONG THE UNFORMED SECTION OF FREDERICK STREET.

STORMWATER- ALL NEW BLOCKS WILL DRAIN TO THE EXISTING STORMWATER MAINS ALONG THE UNFORMED SECTION OF FREDERICK STREET.

LEGEND

SAMPLE BUILDING ENVELOPE
AS PER. 10.4.4.1, A1, a) ,i)
OF THE PLANNING SCHEME



NOTES:
1. ALL MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
2. CONTOUR INTERVAL IS 0.10 METRES AND REFERENCED TO AHD83.

PROPOSED 18 LOT SUBDIVISION
(16 LOTS, 1 ROAD LOT AND 1 LOT RESERVED FOR DRAINAGE PURPOSES)
LOT 301, EDWARD STREET, PERTH
C.T.168360-301

N

WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number 2014-213

Drawn	File Name	Date	Scale	Edition	Sheet
CSS	2014-213_Proposal_Plan_80316	8/03/2016	1:1000@A3	5	1

Contact
Linda Drummond
6210 1464
ldrummond@pittsh.com.au

transport | community | mining | industrial | food & beverage | carbon & energy

Brisbane
Level 2
276 Edward Street
Brisbane QLD 4000
T: (07) 3221 0080
F: (07) 3221 0083

Canberra
LGF, Ethos House
28-36 Ainslie Place
Canberra City ACT 2601
PO Box 122
Civic Square ACT 2608
T: (02) 6274 0100

Devonport
Level 1
35 Oldaker Street
PO Box 836
Devonport TAS 7310
T: (03) 6424 1641
F: (03) 6424 9215

Hobart
199 Macquarie Street
GPO Box 94
Hobart TAS 7001
T: (03) 6210 1400
F: (03) 6223 1299

Launceston
Level 4
113 Cimitiere Street
PO Box 1409
Launceston TAS 7250
T: (03) 6323 1900
F: (03) 6334 4651

Melbourne
Level 1, HWT Tower
40 City Road
Southbank VIC 3006
PO Box 259
South Melbourne VIC 3205
T: (03) 9682 5290
F: (03) 9682 5292

E: info@pittsh.com.au
W: www.pittsh.com.au

incorporated as
Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

CONSULT AUSTRALIA
Member Firm

pitt&sherry

B.

TasWater

Submission to Planning Authority Notice

Council Planning Permit No.	P16-065	Council notice date	2/05/2016
TasWater details			
TasWater Reference No.	TWDA 2016/00554-NMC	Date of response	12/05/2016
TasWater Contact	Phil Papps	Phone No.	(03) 6237 8246
Response issued to			
Council name	NORTHERN MIDLANDS COUNCIL		
Contact details	planning@northmidlands.tas.gov.au		
Development details			
Address	EDWARD ST, PERTH	Property ID (PID)	3338568
Description of development	15 Lots and balance subdivision		

Schedule of drawings/documents

Prepared by	Drawing/document No.	Revision No.	Date of Issue
Woolcott Surveys	Concept Serrvices Plan / 190416 / 1	5	19/04/2016

Conditions

Pursuant to the *Water and Sewerage Industry Act* 2008 (TAS) Section 56P(1) TasWater imposes the following conditions on the permit for this application:

CONNECTIONS, METERING & BACKFLOW

1. A suitably sized water supply with metered connections / sewerage system and connections to Lots 1 to 15 of the development must be designed and constructed to TasWater's satisfaction and be in accordance with any other conditions in this permit.

ASSET CREATION & INFRASTRUCTURE WORKS

2. TasWater's existing water and sewerage infrastructure must be extended to service Lots 1 to 15 of the proposed subdivision.
3. Plans submitted with the application for Engineering Design Approval must, to the satisfaction of TasWater show, all existing, redundant and/or proposed property services and mains.
4. Prior to applying for a Permit to Construct new infrastructure the developer must obtain from TasWater Engineering Design Approval for the new TasWater infrastructure. The application for Engineering Design Approval must include engineering design plans prepared by a suitably qualified person showing the hydraulic servicing requirements for water and sewerage to TasWater's satisfaction.
5. Prior to works commencing, a Permit to Construct must be applied for and issued by TasWater. All infrastructure works must be inspected by TasWater and be to TasWater's satisfaction.
6. In addition to any other conditions in this permit, all works must be constructed under the supervision of a suitably qualified person in accordance with TasWater's requirements.
7. Prior to the issue of a Consent to Register a Legal Document all additions, extensions, alterations or upgrades to TasWater's water and sewerage infrastructure required to service the development, generally as shown on the Concept Servicing Plan listed in the schedule of drawings/documents are to be at the expense of the developer to the satisfaction of TasWater, with live connections performed by Taswater.

8. After testing/disinfection, to TasWater's requirements, of newly created works, the developer must apply to TasWater for connection of these works to existing TasWater infrastructure, at the developer's cost.

9. At practical completion of the water and sewerage works and prior to TasWater issuing a Consent to a Register Legal Document the developer must obtain a Certificate of Practical Completion from TasWater for the works that will be transferred to TasWater. To obtain a Certificate of Practical Completion:

   a) Written confirmation from the supervising suitably qualified person certifying that the works have been constructed in accordance with the TasWater approved plans and specifications and that the appropriate level of workmanship has been achieved;

   b) A request for a joint on-site inspection with TasWater's authorised representative must be made;

   c) TasWater may, at its discretion, require security for the twelve (12) month defects liability period to the value of 10% of the works must be lodged with TasWater. This security must be in the form of a bank guarantee;

   d) As constructed drawings must be prepared by a suitably qualified person to TasWater's satisfaction and forwarded to TasWater.

10. After the Certificate of Practical Completion has been issued, a 12 month defects liability period applies to this infrastructure. During this period all defects must be rectified at the developer's cost and to the satisfaction of TasWater. A further 12 month defects liability period may be applied to defects after rectification. TasWater may, at its discretion, undertake rectification of any defects at the developer's cost. Upon completion, of the defects liability period the developer must request TasWater to issue a "Certificate of Final Acceptance". The newly constructed infrastructure will be transferred to TasWater upon issue of this certificate and TasWater will release any security held for the defects liability period.

11. The developer must take all precautions to protect existing TasWater infrastructure. Any damage caused to existing TasWater infrastructure during the construction period must be promptly reported to TasWater and repaired by TasWater at the developer's cost.

12. Ground levels over the TasWater assets and/or easements must not be altered without the written approval of TasWater.

FINAL PLANS, EASEMENTS & ENDORSEMENTS

13. Prior to the Sealing of the Final Plan of Survey, the developer must obtain a Consent to Register a Legal Document from TasWater and the certificate must be submitted to the Council as evidence of compliance with these conditions when application for sealing is made.

14. Pipeline easements, to TasWater's satisfaction, must be created over any existing or proposed TasWater infrastructure and be in accordance with TasWater's standard pipeline easement precedent.

DEVELOPMENT ASSESSMENT FEES

15. The applicant or landowner as the case may be, must pay a development assessment and Consent to Register a Legal Document fee to TasWater, as approved by the Economic Regulator and the fees will be indexed, until the date they are paid to TasWater, as follows:

    1. $975.00 for development assessment; and

    2. $216.00 for Consent to Register a Legal Document

The payment is required within 30 days of the issue of an invoice by TasWater.

16. In the event Council approves a staging plan, a Consent to Register a Legal Document fee for each stage, must be paid commensurate with the number of Equivalent Tenements in each stage, as approved by Council.

Advice

For information on TasWater development standards, please visit http://www.taswater.com.au/Development/Development-Standards

For information regarding further assessment fees and other miscellaneous fees, please visit http://www.taswater.com.au/Development/Fees---Charges

For application forms please visit http://www.taswater.com.au/Development/Forms

The developer is responsible for arranging to locate existing TasWater infrastructure and clearly showing it on any drawings. Existing TasWater infrastructure may be located by TasWater (call 136 992) on site at the developer's cost, alternatively a surveyor and/or a private contractor may be engaged at the developers cost to locate the infrastructure.

Declaration

The drawings/documents and conditions stated above constitute TasWater's Submission to Planning Authority Notice.

Authorised by

Jason Taylor
Development Assessment Manager

TasWater Contact Details			
Phone	13 6992	Email	development@taswater.com.au
Mail	GPO Box 1393 Hobart TAS 7001	Web	www.taswater.com.au

Paul Godier

From: outlook_d72c18b952f5bf07@outlook.com on behalf of Cameron Oakley <cameron.oakley@h-dna.com.au>
Sent: Tuesday, 12 April 2016 7:53 PM
To: Paul Godier
Cc: Duncan Payton
Subject: RE: P16-065 - application for 18 lot subdivision, 1 Edward St, Perth

Dear Paul,

I have reviewed the documents you provided in relation to the Edward Street subdivision and stormwater, in particular the Hydrology and Modelling Report undertaken by IPD.
Please note I built the base RORB model (ref. pages 10 and 11 of the report) for IPD for use in their assessment. This was the extent of my involvement in the submission. IPD determined the hydrology parameters and Pitt and Sherry undertook the 2-D modelling which includes consideration of storage within the floodplain.

Key points from the report are:

- IPD predicts a peak 100 year flow rate of over 16 m3/s during the 9 and 12 hour duration storm events, this is greater to a predicted rate of 10.2 m3/s predicted in the Perth Drainage Study (Bullock Consulting, 2011) which was adopted in my West Perth Stormwater Assessment (H-DNA, 2015).
- Despite using a larger flow peak the report predicts that will be no discernible change to existing flooding between the Dam and Drummond Street as a result proposed subdivision and associated channel and level works.

- The modelling outputs shown in Appendix B show the 100 year flow (1) for the current state of the catchment and (2) including the proposed subdivision. The only change is reduced flooding in the vicinity of the proposed subdivision as a result of the proposed changes to surface level. Both plans show the extent of stormwater storage within the flood plain.

Given the small size of the proposed subdivision relative to the overall catchment and floodplain I agree with the findings in the report that the proposed changes will not adversely affect flooding downstream or upstream of Edward Street during the 100 year event. The subdivision will be at no greater risk than existing properties to flooding, nor will it increase the risk of flooding or any properties.

It should be noted that Lot 16 will continue to flood and approval should not be given to develop this lot based on the current proposal. Lot 16 is adjacent to the low point in Edward Street near the Youl Road intersection which will flood when the Edward Street culverts over-top.

It must be noted that the modelling and report does not consider the effects of inadequacies of road culverts at Drummond Street and Youl Road. These create barriers to flow and potential backwater effects which may impact upstream flows and flood levels as discussed in West Perth Stormwater Assessment (H-DNA, 2015).

Regards,

Cam Oakley
Consulting Engineer
Hydrodynamica
M: 0431 208 450
E: cameron.oakley@h-dna.com.au

From: paul.godier@nmc.tas.gov.au
To: cameron.oakley@h-dna.com.au
CC: duncan.payton@nmc.tas.gov.au
Subject: P16-065 - application for 18 lot subdivision, 1 Edward St, Perth
Date: Thu, 7 Apr 2016 02:42:00 +0000

Hello Cameron, can you please review the attached hydrology report and advise if you require any additional information to be requested from the applicant.

Please contact me if you have any questions.

Regards,

Paul Godier

NORTHERN MIDLANDS COUNCIL

Senior Planner | Northern Midlands Council
Council Office, 13 Smith Street (PO Box 156), Longford Tasmania 7301
T: (03) 6397 7303 | F: (03) 6397 7331
E: paul.godier@nmc.tas.gov.au | W: www.northernmidlands.tas.gov.au
Tasmania's Historic Heart

REFERRAL OF DEVELOPMENT APPLICATION P16-065
TO WORKS & INFRASTRUCTURE DEPARTMENT

Property/Subdivision No: 27/003/ 104500.6;s750
Date: 27-Apr-2016
Applicant: Woolcott Surveys
Proposal: 18-lot subdivision, filling of lots 1-15 & 201, and removal of 34 trees (within 50m of railway)
Location: 1 Edward Street, PERTH

W&I referral P16-065, 1 Edward Street, PERTH

Jonathan - if you require further information, advise planning section as soon as possible – there are only 14 days from receipt of Permitted applications and 21 days from receipt of Discretionary applications to stop the clock.

Please inspect the property and advise regarding stormwater/drainage, access, traffic, and any other engineering concerns.

Is there is a house on one of the lots?	*No*
Is it connected to all Council services?	*N/A*
Are any changes / works required to the house lot?	*No*
Are the discharge points for stormwater, infrastructure that is maintained by Council? (This requires a check to ensure the downstream infrastructure is entirely owned, maintained, operated by Council and have been taken over as Council assets.)	*Yes*

Stormwater:

Does the physical location of stormwater services match the location shown on the plan? (Requires an on-site inspection)	*Yes*
Is the property connected to Council's stormwater services?	*No (vacant land)*
If so, where is the current connection/s?	*N/A*
Can all lots access stormwater services?	*Yes*
If so, are any works required?	*Yes, as per design plan*
Stormwater works required:	
Works to be in accordance with Standard Drawing TSD-SW25 – a 100mm stormwater connection.	
Is there kerb and gutter at the front of the property?	*No*
Are any kerb-and-gutter works required?	*Yes, as per design plan*

Road Access:

Does the property have access to a made road?	*Yes*
If so, is the existing access suitable?	*No*
Does the new lot/s have access to a made road?	*Yes*
If so, are any works required?	*Yes, as per design plan*
Is off-street parking available/provided?	*Yes*
Road / access works required:	
As per design plan	
Is an application for vehicular crossing form required?	*No, covered in design plan*
Is a footpath required?	*Yes*
Extra information required regarding driveway approach and departure angles	*No*

Are any road works required:	*Yes, as per design*
Are street trees required?	*No*
Additional Comments:	An Engineer's design **is** required.

Engineer's comment:

WORKS & INFRASTRUCTURE DEPARTMENT CONDITIONS

STANDARD CONDITIONS FOR SMALL SUBDIVISIONS

W1 Stormwater

a) Each lot must be provided with a connection to the Council's stormwater system, constructed in accordance with Council standards and to the satisfaction of Council's Works & Infrastructure Department.

b) A stormwater design plan including long sections and the depth, size and grade of all mains is to be provided to Council prior to the commencement of any works on site.

c) Calculations shall be provided to demonstrate that the system is of sufficient capacity to drain the road and all lots to be created.

W2 Access (Urban)

a) A concrete driveway crossover and apron must be constructed from the edge of road to the property boundary of each lot in accordance with Council standards.

W.3 Roadworks

d) Road widening shall be carried out in Edward St in accordance with Tasmanian Standard Drawing TSD-R06 and kerb and channel shall be installed at the frontage of each lot.

e) A 1.8m wide concrete footpath shall be constructed on one side of the Cul de Sac to service all lots.

f) An engineering design of the road and drainage system including pavement long sections and cross sections is to be approved by Council before the commencement of works on site

W3 As constructed information

As Constructed Plans and Asset Management Information must be provided in accordance with Council's standard requirements.

W4 Municipal standards & certification of works

Unless otherwise specified within a condition, all works must comply with the Municipal Standards including specifications and standard drawings. Any design must be completed in accordance with Council's subdivision design guidelines to the satisfaction of the Works & Infrastructure Department. Any construction, including maintenance periods, must also be completed to the approval of the Works & Infrastructure Department.

W5 Works in Council road reserve

g) Works must not be undertaken within the public road reserve, including crossovers, driveways or kerb and guttering, without prior approval for the works by the Works & Infrastructure Manager.

h) Twenty-four (24) hours notice must be given to the Works & Infrastructure Department to inspect works within road reserve, and before placement of concrete or seal. Failure to do so may result in rejection of the vehicular access or other works and its reconstruction.

W5 Works in State road reserve

a) The developer must obtain a permit from the Department State Growth for any works to be undertaken within the State Road reservation, including any works necessary in relation to access construction, stormwater drainage and/or traffic management control and devices from the proposal.

b) Application requirements and forms can be found at transport.tas.gov.au/road/permits, applications must be submitted at least twenty eight (28) days prior to any scheduled works. In accordance with the Roads and Jetties Act 1935, works must not be commenced within the State Road reservation until a permit has been issued.

W6 Separation of stormwater services

a) All existing stormwater pipes and connections must be located.

b) Where required, pipes are to be rerouted to provide an independent system for each lot.

c) Certification must be provided that services have been separated between the lots.

W7 Easements to be created

Easements must be created over all Council owned services in favour of the Northern Midlands Council. Such easements must be created on the final plan to the satisfaction of the Planning & Development Manager.

W8 Pollutants

a) The developer/property owner must ensure that pollutants such as mud, silt or chemicals are not released from the site.

b) Prior to the commencement of the development works the developer/property owner must install all necessary silt fences and cut-off drains to prevent soil, gravel and other debris from escaping the site. Material or debris must not be transported onto the road reserve (including the naturestrip, footpath and road pavement). Any material that is deposited on the road reserve must be removed by the developer/property owner. Should Council be required to clean or carry out works on any of their infrastructure as a result of pollutants being released from the site the cost of these works may be charged to the developer/property owner.

W9 Bonds

The subdivision shall be subject to a maintenance period and a bond shall be held by Council until the completion of the maintenance period. The bond shall be calculated based on 5% of the total cost of works based on Council's standard road construction rates.

W10 Naturestrips

Any new naturestrips, or areas of naturestrip that are disturbed during construction, must be topped with 100mm of good quality topsoil and sown with grass. Grass must be established and free of weeds prior to Council accepting the development.

Jonathon Galbraith (Works & Infrastructure Officer) 11/5/16
Stormwater design discussed with Cameron Oakley (Consultant Engineer), 3/5/16
Wayne Chellis 5/5/16 & Des Jennings 9/5/16

From: Jan Cunningham
Sent: Tue, 3 May 2016 09:23:41 +1000
To: Register Email in ECM
Cc: Paul Godier;Erin Boer
Subject: Advice from Department of State Growth - P16-065 - 1 Edward Street, Perth

#ECMbody
#QAPdefault
#silent

From: Hills, Garry (StateGrowth) [mailto:Garry.Hills@stategrowth.tas.gov.au]
Sent: Tuesday, 3 May 2016 9:00 AM
To: NMC Planning <planning@nmc.tas.gov.au>
Subject: RE: Referral to Department of State Growth of Planning Application P16-065 - 1 Edward Street, PERTH

Our Ref: D16/74442 & A1662-5

Rosemary,

Thank you for your referral. In reference to the abovementioned Planning Application I can advise that State Growth do not object to the proposal subject to the below points.

Access to Lot 16 must be via the Edward Street frontage, no direct access to Youl Road is permitted.

Please ensure that the Developer is aware that the Department of State Growth will not be responsible for any future issues relating to current or further increases in traffic noise arising from Youl Road. This is inclusive of funding and / or providing any form of sound mitigation or attenuation treatments and signage.

It is recommended that the Developer considers the impacts from traffic noise including potential increases that may occur from future traffic volume growth. Provision and associated costs of any appropriate sound mitigation measures are the responsibility of the Developer.

Thanks,

Garry Hills | Senior Traffic Engineering Officer
State Roads Division | Department of State Growth
287 Wellington Street, Launceston TAS 7250 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6777 1940
www.stategrowth.tas.gov.au

From: NMC Planning [mailto:planning@nmc.tas.gov.au]
Sent: Monday, 2 May 2016 1:28 PM
To: Development (StateGrowth) <Development@stategrowth.tas.gov.au>
Subject: Referral to Department of State Growth of Planning Application P16-065 - 1 Edward Street, PERTH

Paul Godier

From: Cameron Oakley <outlook_D72C18B952F5BF07@outlook.com> on behalf of Cameron Oakley <Cameron.Oakley@h-dna.com.au>
Sent: Friday, 29 April 2016 12:17 PM
To: Paul Godier
Subject: Re: Edward St subdivision - clarification on hydrology report

Hi Paul, yes I think this is as per my understanding of their report and our discussions since.

The two main points are -

a) no predicted/modelled difference in behaviour and extent of flooding due to development; and
b) downstream blockages/restrictions were not modelled, however the nominated development ground level (and min. floor level) accommodates for uncertainty surrounding the study.

On another note Steve Ratcliffe has obtained some information re McKinnon's Dam from DPIPWE . I haven't had a chance to go through it but will forward it momentarily.

Regards,

Cam Oakley
Consulting Engineer
Hydrodynamica
M: 0431 208 450
E: cameron.oakley@h-dna.com.au

From: Paul Godier <paul.godier@nmc.tas.gov.au>
Sent: 29 April 2016 08:48
To: Cameron Oakley
Subject: Edward St subdivision - clarification on hydrology report

Hello Cameron, can you please review the attached letter from IPD and provide comment.

Thanks, Paul.

Paul Godier

Senior Planner | Northern Midlands Council
Council Office, 13 Smith Street (PO Box 156), Longford Tasmania 7301
T: (03) 6397 7303 | F: (03) 6397 7331
E: paul.godier@nmc.tas.gov.au | W: www.northernmidlands.tas.gov.au
Tasmania's Historic Heart

C.

The General Manager
Northern Midlands Council

4th May, 2016

Re: Development Application P16-065

I wish to object to the above application on the following grounds:

1. The application wrongly assumes the trees identified for removal are well past maturity, ie. at the end of their life. These trees have not yet reached maturity and could be considered quite young. No real justification has been given for their removal except the possibility of dropping debris. Removal is not a suitable option as these trees form part of a landscape that is visually important to surrounding properties.
2. The block of land concerned in this application is part of a larger area of undeveloped land which is home to native bird species, including the Masked Lapwing (plover), Striated Pardalote and Bush Duck. Masked Lapwings are fully protected under the Nature Conservation Act 2002, meaning that any interference with the bird, nest or egg is not permitted. These three species of bird breed in and around the area, and in the case of the ducks and pardalotes, could even use the trees marked for removal, as nesting sites. I note that the development application mentions the site does not "contain any unique or special eco systems". I believe that it does, and suggest that a proper assessment should be required and a conservation management plan prepared considering the large number of birds using this ground.
3. The site has been subject to a noise assessment report because of the proximity to the railway line. The report identifies that blocks 6, 7, 8 and 9 as particularly problematic, and while solutions have been suggested it would be inappropriate to approve a sub-division where noise will be a problem and require special building conditions for prospective purchasers.

I am happy to discuss these issues with you further should you require any clarification to the points raised.

Yours sincerely,

Robert Henley

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Our Ref: 2014-213

26th of May 2016

Paul Godier
The Planning Department
Northern Midlands Council
P.O. Box 156
Longford, TAS
7301

Dear Paul,

PLANNING APPLICATION P16-065 -RESPONSE TO REPRESENTATION - 18 LOT SUBDIVISION, FILLING OF LOTS 1-15 & 201 AND REMOVAL OF 34 TREES (WITHIN 50M OF RAILWAY).

Below is a response to a representation received against the above development application. We will address the three points raised individually. The representor's words are shown in italics.

Representation Point #1

1) *The application wrongly assumes the trees identified for removal are well past maturity, ie. At the end of their life. These trees have not reached maturity and could be considered quite young. No real justification has been given for their removal except the possibility of dropping debris. Removal is not a suitable option as these trees form part of a landscape that is visually important to surrounding properties.*

Response: The trees proposed to be removed as part of this development application are a species of Eucalypt Plantation tree which were planted in the early 1990's as landscaping by the previous owner of the land under development. These trees are not native to the area. These specific type of plantation trees are normally harvested at 25-30 years of age in a Plantation environment as this is the age that the trees are considered mature. After this age the trees are known to gradually become susceptible to dieback. These types of trees are also considered ideal for a

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Plantation Environment as they have natural properties of self-pruning where the lower limbs of the trees shed naturally. Several of the trees in this application for removal have already died and significant number of the trees are showing considerable dieback. It is clear to whomever attends the site that these trees are in a continual state of shedding limbs and debris. Late last year one tree partially fell into the road reserves and the land owner had to remove a portion of this tree as it had protruded into the road. The trees in question are also located on the edge of the bank of a significant open drain and many of the trees root structures are exposed and the stability of these trees is a major safety concern.

Foremost is the safety concern that these trees pose to anyone who comes within a distance equivalent to the height of these trees. Regularly large branches fall from these trees (see attached photos). If any of these branches were to hit a passerby (pedestrian or car) or anyone in close proximity to the trees it could cause major injury or death. The owner's of 23 Cromwell Street have small children and these trees present a significant risk to their well being and to the well being of anyone who comes within a safe distance of these trees.

Unfortunately, these species of eucalypt tree are not appropriate for an urban residential environment as they grow to a large height and shed large branches and foliage regularly which endangers the local residents and general public travelling Youl Road. They are certainly not appropriate to be in close proximity to residential backyards or future council walkways.

The trees also pose a major problem to the Council Open drain as the debris from the trees limits the flow path of the drain and decreases the capacity of the drain to deal with Stormwater flow. The location of the trees also undermines the ongoing maintenance of this drain and future works to improve the drains flow and capacity.

It is asserted by the representor that these trees *'form part of the landscape that is visually important to surrounding properties'.* We would strongly refute this argument, as the closest property is some 85 metres away from these trees and fencing and elevation mean that the trees are not readily visible from these properties. The majority of land near these trees is vacant land owned by the developer proposing to remove these trees. The rail line shields these trees from any properties to the east.

These trees pose an unacceptable liability to the land owner, council and the general public which unfortunately can only be mitigated by the removal of the trees.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Figure 1. – Large Branch which has fallen near the open drain including leaning tree on the right.

Figure 2. – Large dead tree which is ready to fall.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7215
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Figure 3. – Debris from shedding Eucalypts in the open drain.

Figure 4. – Exposed Root Structure of tree and evidence of leaning towards road reserve.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Figure 5. – Stump of tree that fell into road reserve late last year. Notice location of tree in relation to open drain and the exposed root structure.

Representation Point #2

2. The block of land concerned in this application is part of a larger area of undeveloped land which is home to native bird species, including the Masked Lapwing (plover), striated pardalote and Bush Duck. Masked Lapwings are fully protected under the Nature Conservation Act 2002, meaning that any interference with the bird , nest or egg is not permitted. These three species of bird breed in and around the area, and in the case of the ducks and pardalotes, could even use the trees marked for removal as nesting sites. I note that the development application mentions the site "does not contain any unique or special eco systems". I believe that it does, and suggest that a proper assessment should be required and a conservation management plan prepared considering the large number of birds using this ground.

Response: The representor refers to land which "*is part of a larger area of undeveloped land which is home to native bird species.*" It is unclear which land the representor refers to but it can only be assumed that they are referring to the land to the south of the unformed portion of Frederick Street which our client's own and this site contains a manmade dam.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

This land is not part of this application, not proposed to be developed and thus cannot be considered in any assessment in regard to this application.

The land under development is General Residential Land which has been earmarked for development since a Council initiated rezone of the property in 2009. The land in this application has undergone extensive assessment under this process and should the land have been deemed naturally sensitive it is argued that it would not have been rezoned from Rural Land to General Residential zoned Land. The property is mainly cleared land which until recently has been used for grazing and horse agistment by the previous owners. The trees proposed to be removed were planted by the previous owners as landscaping and are not native to the area.

The subject property is not contained in the Priority Habitat Overlay of the planning scheme and there is no information available or known that would suggest that this land is any more than a vacant, cleared paddock.

The representor lists three species of bird that they suggest *"could even use the trees marked for removal as nesting sites"*. Two of the species listed by the representor, the masked lapwing and the bush duck are ground nesting birds. The bush duck is a timid bird and requires significant undergrowth/bush for nesting. Trees with very limited understorey ten metres from Youl Road are not suitable habitat for the Bush Duck. No Bush ducks have been sighted on the area in this development application and the habitat is not appropriate for them to do so in this area. The masked lapwing is also a ground nesting bird and the plover will nest in any area where there is sufficient grass. The area under development is regularly mowed and can be considered cleared paddock. There is nothing especially significant that would suggest that this is prime habitat for the masked lapwing. It would be suggested that there is thousands of hectares of land surrounding Perth that fit the description of open paddock/grassland.

It is known that Striated Pardalotes frequent the Perth area. It is possible that Striated Pardalotes could nest in the area of development but this is highly unlikely as the nest is constructed close to the ground, usually in a tree hollow or tunnel, excavated in an earthen bank; small openings in human-made objects are frequently used. The birds display regularly at the entrance to the nesting chamber, and vigorously guard the vicinity against other pardalotes.

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Striated Pardalotes migrate to the mainland each winter and will not be in the vicinity at the time of the removal of the dangerous trees. Furthermore, the Tasmanian Winter is not the time that the Striated Pardalotes breed.

Representation Point #3

The site has been subject to a noise assessment report because of the proximity to the railway line. The report identifies that blocks 6, 7, 8 and 9 as particularly problematic, and while solutions have been suggested it would be inappropriate to approve a subdivision where noise will be a problem and require special building conditions for prospective purchasers.

Response: The representor states *"the report identifies that blocks 6, 7, 8 and 9 as particularly problematic"*. This is a completely false statement. At no point in the noise report does the author use this terminology. Lots 6, 7, 8, and 9 are assessed in the Noise report due to their proximity to the rail line (less than 50m). The conclusion of the report offers suggestions to help mitigate the noise effects of the railway line and the Conclusion clearly states, *"It is feasible to construct houses within the proposed subdivision lots and achieve noise objectives"*. Any potential purchasers will be made well aware of this fact.

Furthermore, recent dwellings have been constructed under approval of this planning scheme at 67 Youl Road (15 metres from railway centreline) and 59 Youl Road (28 metres from the Railway centreline) and this is evidence that construction of future dwellings on the lots proposed as part of this application can most certainly be completed.

Yours Faithfully,

Colin Smith
Registered Land Surveyor
Planning Officer

WOOLCOTT SURVEYS
Ph: (03) 6332 3760 F: (03) 6332 3764
10 Goodman Court, Invermay, TAS, 7248
PO Box 593, Mowbray Heights, TAS, 7248
Email: admin@woolcottsurveys.com.au

EAST COAST SURVEYING
Ph: (03) 6376 1972
Avery House Level 1
48 Cecilia Street, St Helens, TAS, 7216
PO Box 430, St Helens, TAS, 7216
Email: admin@ecosurv.com.au

ABN 15 808 360 064

PLAN 3

PLANNING APPLICATION P16 068

530 WHITE HILLS ROAD, EVANDALE

ATTACHMENTS

A Application & plans, correspondence with applicant

B Representations

C Applicant's response to representations

ATTACHMENT A.

PLANNING APPLICATION

Proposal

Description of proposal: .....

VISITOR ACCOMMODATION

.....

.....

(attach additional sheets if necessary)

Site address: 530 WHITE HILLS ROAD EVANDALE.

ID no: 2050511 *and/or Council's property no:* 202900.26

AND/OR

Area of land: ..... *ha/m²* *and/or CT no:* 136174/1

Estimated cost of project $..... *(include cost of landscaping, car parks etc for commercial/industrial uses)*

Are there any existing buildings on this property? *Yes / No*

If yes – main building is used as .....

If variation to Planning Scheme provisions requested, justification to be provided:

USE OF EXISTING BUS AS VISITOR ACCOMMODATION

DISPENSATION FOR BOUNDARY OFFSET.

.....

(attach additional sheets if necessary)

If outbuilding has a floor area of over 56m², or there will be over 56m² of outbuildings on the lot, or is over 3m at apex in residential zone, details of the use of the outbuilding to be provided:

.....

.....

External colours: GREEN

(attach additional sheets if necessary)

Is any signage required? .....

(if yes, provide details)

EXHIBITED

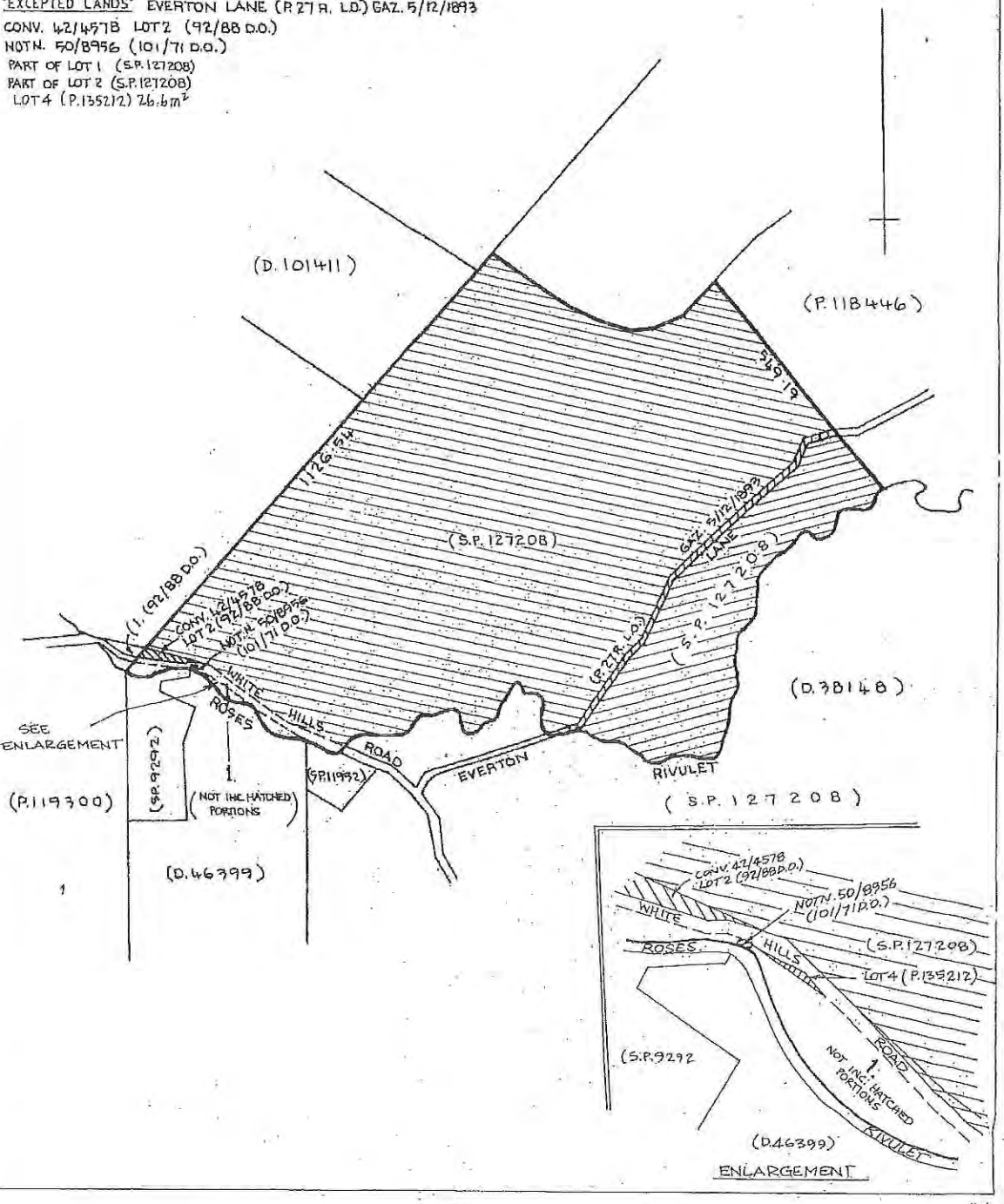
OWNER FOLIO REFERENCE F/R 127218-1 GRANTEE PART OF 738 ACRES GTD TO JOCELYN BARTHOLOMEW THOMAS	**PLAN OF TITLE** LOCATION CORNWALL EVANDALE FIRST SURVEY PLAN No. 67/4368 (1STLY DESC.) COMPILED BY L.T.O. ~~SCALE 4~~ NOT TO SCALE LENGTHS IN METRES	REGISTERED NUMBER **P136174** APPROVED .. 6 AUGUST 2001 Alice Kawa Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 123 (5240)	LAST UPI No FJZ 86	LAST PLAN No. P.127218	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

BALANCE PLAN

SKETCH BY WAY OF ILLUSTRATION ONLY

"EXCEPTED LANDS" EVERTON LANE (P.27 R. L.O.) GAZ. 5/12/1893
CONV. 42/4578 LOT 2 (92/88 D.O.)
NOTN. 50/8956 (101/71 D.O.)
PART OF LOT 1 (S.P.127208)
PART OF LOT 2 (S.P.127208)
LOT 4 (P.135212) 26.6m²

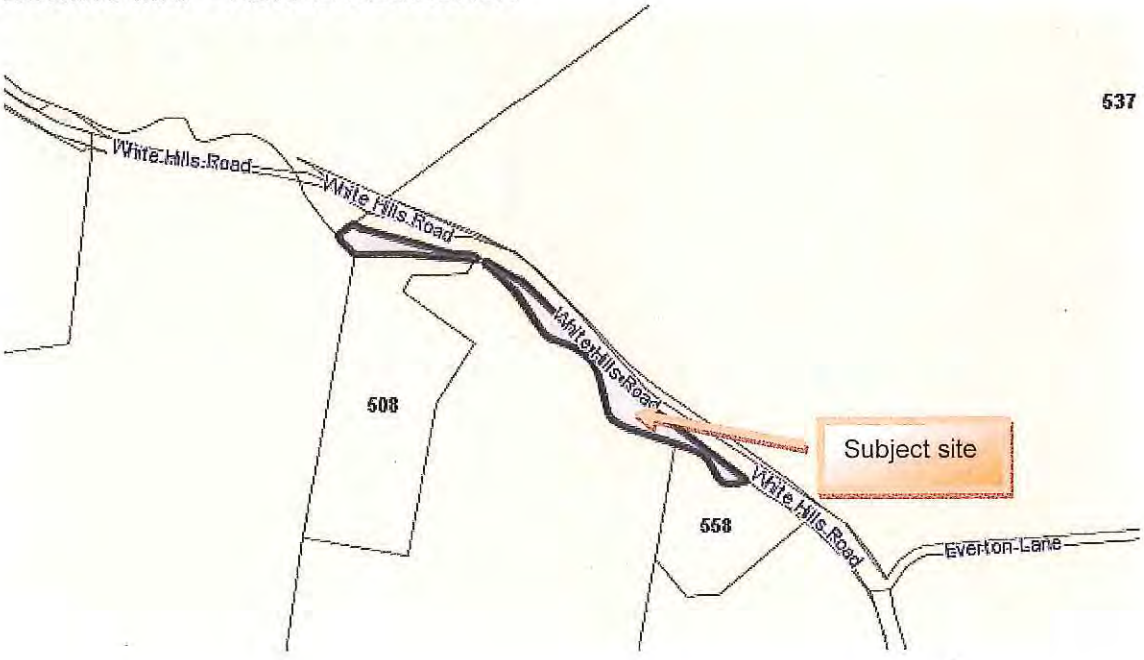


EXHIBITED

P16-068

AERIAL PHOTOGRAPH & SERVICES MAP for 530 WHITE HILLS ROAD, EVANDALE

ZONING MAP - RURAL RESOURCE



Planning Application for 530 White Hills Road, Evandale

TR: 136174/1

PID: 2050544

Visitor Accommodation (retrospective)

This form and the associated drawings are submitted for planning approval in accordance with the Northern Midlands Council Planning Scheme
The development is located o a small parcel of land bounded by White Hills Road on the east and Roses Rivulet on the west.
The development is located on one part of three small sections following the meandering of the rivulet and is bounded by hawthorn hedges.

The nearest are 185m to the south east and 200m to the west
neither are visible from the site.

from the Northern Midlands Planning Scheme document it states that Visitor Accommodation is defined as the following.

use of land for providing short or medium term accommodation for persons away from their normal place of residence. Examples include backpackers hostel, bed and breakfast establishment, camping and caravan park, holiday cabin, holiday unit, motel, overnight camping area residential hotel and serviced apartment.

The owner has on the site a large bus measuring 10.5m x 2.4m and it is being used as occasional accommodation for his family to spend a day and sometimes a night getting away from the city.
on site is a portable toilet that can be removed for cleaning.
cooking facilities are by barbeque
hot water heating is by gas barbeque
water tanks are on site to provide clean water

a storage shed has been removed

access is via 6000 wide gates and site distance is excellent in either direction