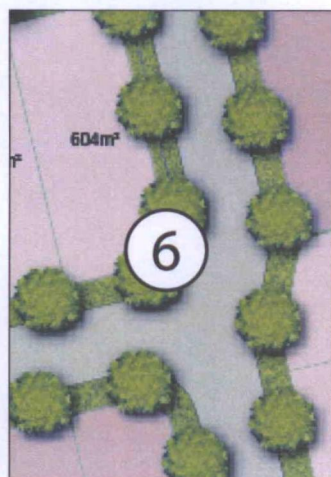


Former Ballarat Orphanage

Recommendations - Site 6.



Free Standing Pedestal Sign - rolled with side panel



SITE 6. – DAIRY LANE

Sign Type:

(E) Freestanding Primary sign

Proposed Signage Concepts:

The primary sign with pictures depicting the site in its entirety and some historical dates and people.

Recommended contents:

Location map will also provide guidance regarding the location of each sign and orientation around the site.

This information will include:

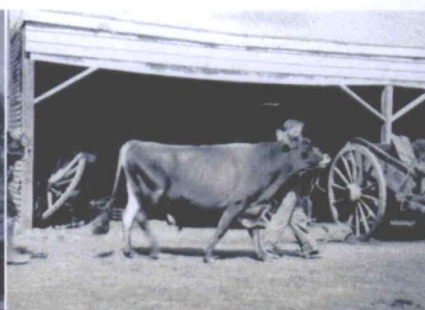
- Photo or photos reflecting the history
- Historic text and key accounts and recollections of the site
- Orientation



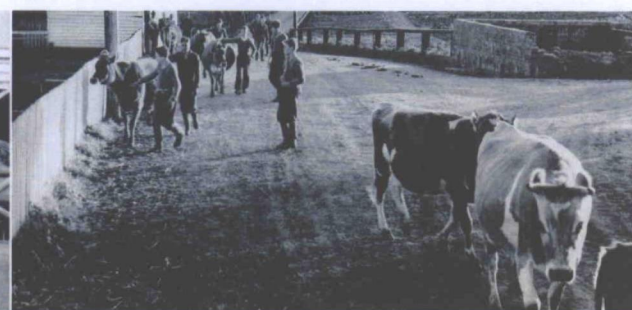
Dairy Cows



Farm



Farmcattle



Former Ballarat Orphanage

Siting Plan - Streets to be named to commemorate the site



Street 1. to be named

Street 2. to be named



Classroom

Former Ballarat Orphanage

Implementation Roles & Responsibilities



The implementation of the Heritage and Site Interpretation Plan (Plan) will be undertaken when each site is developed. There is no timeframe for the development of each site as it will depend on a number of issues including infrastructure supply, servicing and demand.

The development of each site will be subject to granting of a planning permit by the City of Ballarat and it is recommended that each planning permit include a condition that requires the implementation of the site specific recommendations of the Plan.

The planning permit will also include a condition that requires a restriction on title that requires the landowner for each site to maintain and or replace the sign or signs in good order. This will ensure the future maintenance of the sign is guaranteed.

In regard to the issue of how the history and heritage of the site will be communicated to the broader public. The Plan proposes to site interpretative signage in publicly accessible spaces throughout the site. Outside of this the signs promote CAFs who have a considerable amount of heritage material relevant to the site that is available via their web page and the CAFs Legacy and Research Centre on request.



Former Ballarat Orphanage Proposed Sign Types



Primary Sign



Wall Sign - horizontal to match in with Primary Sign



Free Standing Pedestal Sign - horizontal to match in with Primary Sign



Free Standing Pedestal Sign - rolled with side panel

9 August 2017

Peter Burley
Director
Buxton
c/- pburley@buxton.com.au

Dear Peter

Thank you for meeting with me and Shane Callahan today to review the Heritage and Site Interpretation Plan for the Former Ballarat Orphanage, 200 Victoria Street Ballarat.

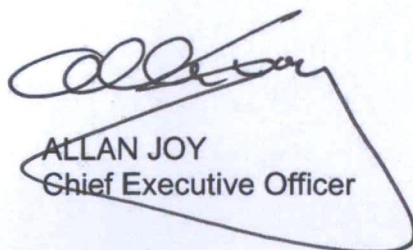
CAFS approves the Heritage and Site Interpretation Plan noting that considerable effort has been put into reflecting the history of the Ballarat Orphanage.

In particular CAFS has noted the use of a range of significant images that will enhance the development.

CAFS has also noted the intention to refer people from the site to our website and to the CAFS Legacy and Research Centre at our head office in Lydiard Street North Ballarat.

We believe that is important for past residents and their descendants in particular.

Yours sincerely


ALLAN JOY
Chief Executive Officer



ABN 83 786 843 940

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- 1231a Howitt Street
Wendouree 3355
- 11 Grenville Street South
Ballarat 3350.

www.cafs.org.au

Appendix 6



Legend

- Street tree planting (refer to L1.01 plant schedule)
- Reserve tree planting (refer to L2.01 plant schedule)
- Existing trees to be retained and protected subject to future Arborist report and in accordance with future Tree Protection Plan.
- Brick pier and metal picket style fencing to match existing fencing on north-west frontage.
- 16m wide road reserve including nature strip and footpath
- Residential
- Potential childcare facility
- Retail area
- Waterway to future design
- Buffer / Greenway. Tree planting at detailed design stage.
- Publicly Accessible Open Space (Refer L2 for concept plans)
- Vehicle and pedestrian access opportunities
- Pedestrian access opportunities

Planning and Environment Act 1987
BALLARAT PLANNING SCHEME
DEVELOPMENT PLAN OVERLAY
 Development Plan Schedule No. 9
 Signed Deanne Gibson
 Authorised Officer for and on behalf of the
CITY OF BALLARAT
 DATE 6/12/17

Plant Schedule

KEY	BOTANICAL NAME (COMMON NAME)
	Ulmus parvifolia 'Todd'
	Zelkova serrata 'Green Vase'

- Street Trees**
- Ulmus parvifolia 'Todd'
 - Zelkova serrata 'Green Vase'



Ulmus parvifolia 'Todd'



Zelkova serrata 'Green Vase'

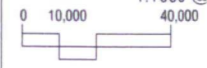
No.	Issue	Date
01	Development Plan Issue	31.05.2016
02	Development Plan Issue	03.08.2017
03	Development Plan Issue	31.10.2017

Victoria Street
 (Former Damascus College Site)
 BALLARAT EAST

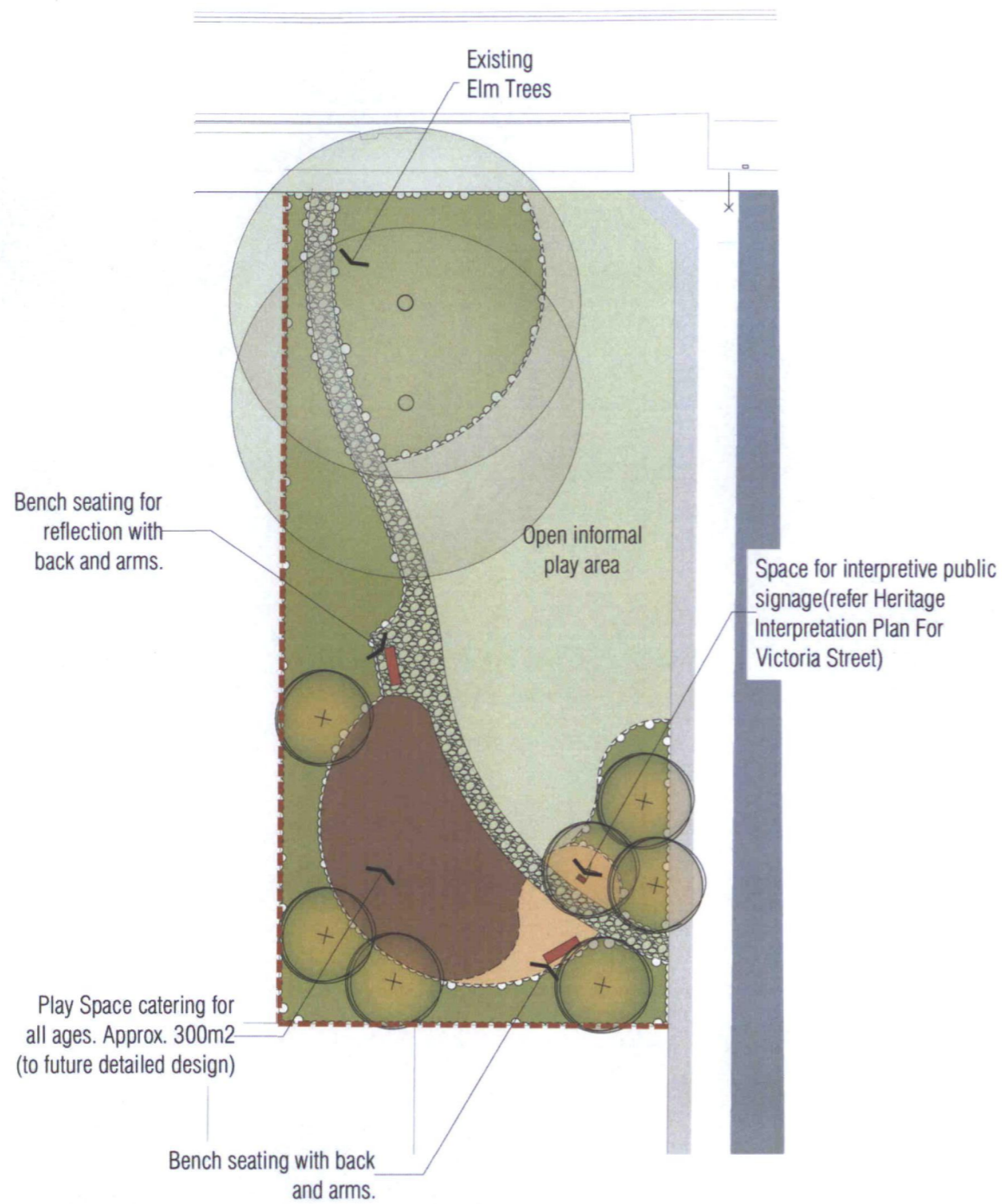
Street Tree Landscape Plan

MEXTED RIMMER
 LANDSCAPE ARCHITECTS
 MEXTED RIMMER ASSOCIATES PTY LTD
 A B N E F O O R O S E
 14 MC LARTY PLACE GEELONG VIC 3220
 TEL : 03 5229 1414 FAX : 03 5229 2500
 EMAIL : mail@mextedrimmer.com

project no: 2890
 drawing no: L1.03
 sheet no: 1 of 2
 designed by: GM
 drawn by: JD & EJ
 date: 31.10.2017
 scale: 1:500 @ A1
 1:1000 @ A3



No.	Issue	Date
01	Development Plan Issue	31.05.2016
02	Development Plan Issue	03.08.2017
03	Development Plan Issue	31.10.2017



1
L2 Memorial Garden Reserve Concept Plan
scale 1:200 @ A3

Legend

- Reserve tree planting - Elm Trees (refer to plant schedule)
- Existing trees to be retained and protected subject to future Arborist report and in accordance with future Tree Protection Plan.
- Brick pier and metal picket style fencing to match existing fencing on north-west frontage.
- Shrub and groundcover planting in mulched garden bed areas
- Grassed areas
- Gravel paved areas
- 'Dairy Lane Walk' - Bluestone foundation stone paved pathway
- Soft fall mulch area.
- Pedestrian access opportunities

Plant Schedule

KEY

Reserve Trees	BOTANICAL NAME (COMMON NAME)
	Ulmus parvifolia 'Reflection'
	Ulmus parvifolia 'Todd'

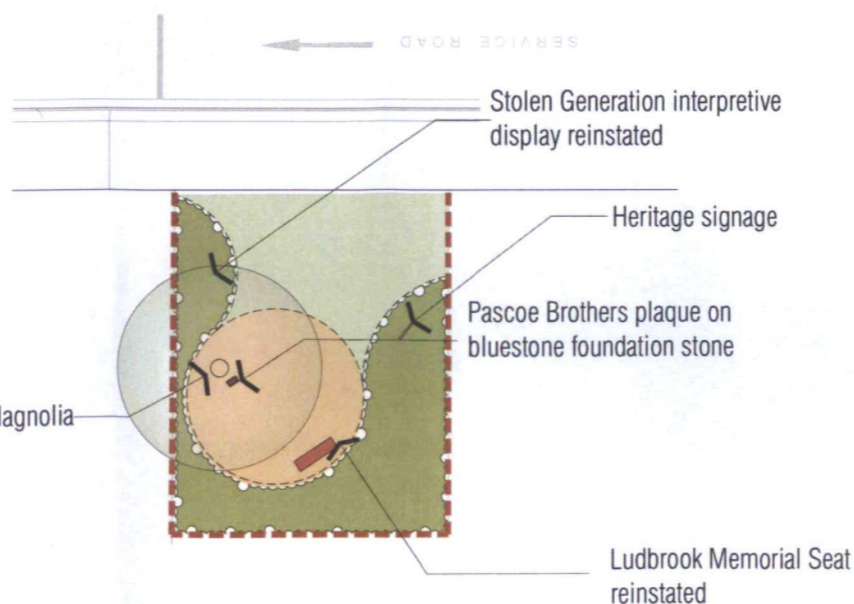
Reserve Trees



Ulmus parvifolia 'Reflection'



Ulmus parvifolia 'Todd'



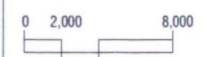
2
L2 Pocket Park Reserve Concept Plan - Magnolia Tree Reflection Garden
scale 1:200 @ A3

Planning and Environment Act 1987
 BALLARAT PLANNING SCHEME
 DEVELOPMENT PLAN OVERLAY
 Development Plan Schedule No. 9
 Signed: *Jeanne Wilson*
 Authorised Officer for and on behalf of the
 CITY OF BALLARAT
 DATE: 6/12/17

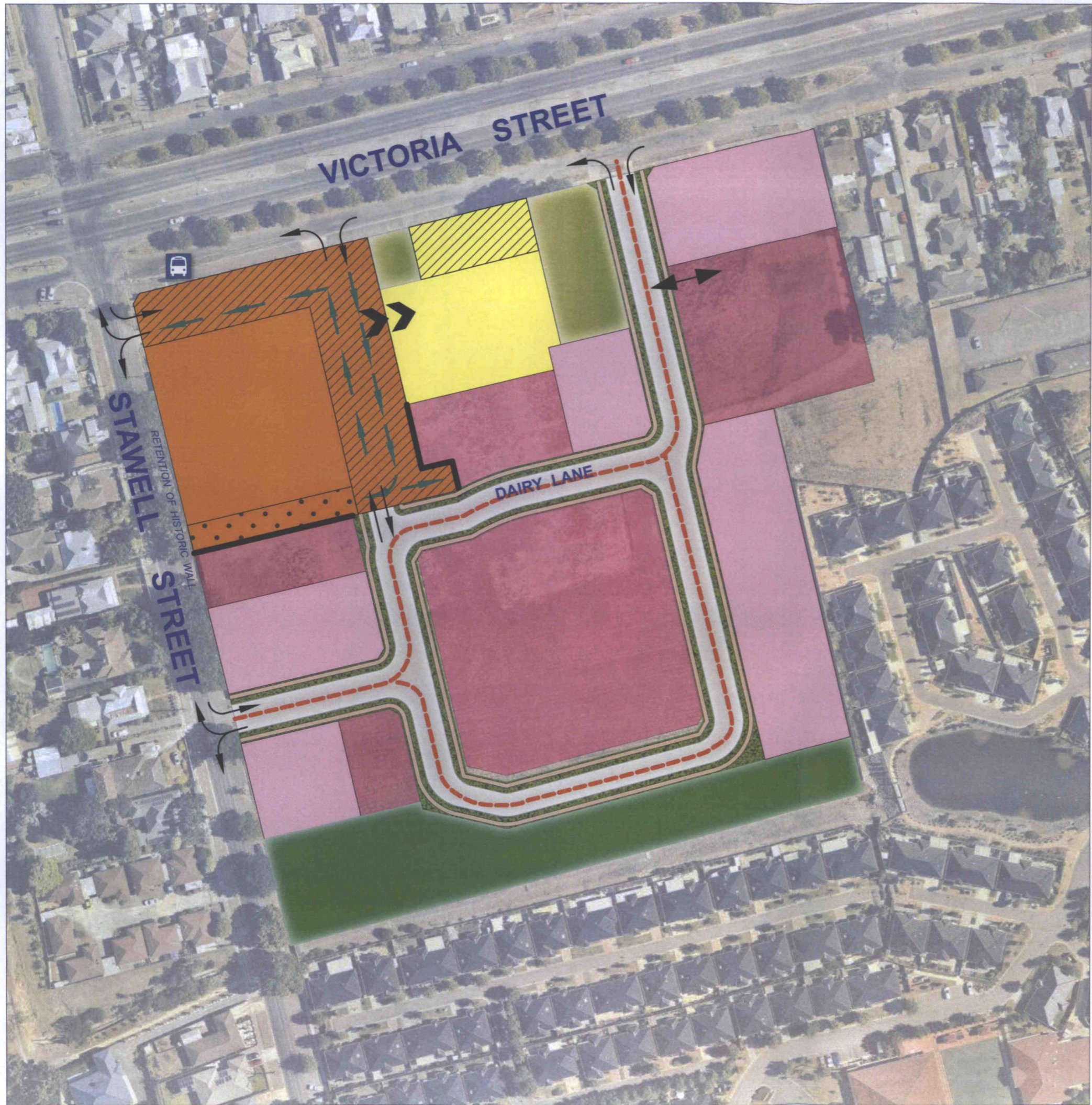
Victoria Street
 (Former Damascus College Site)
 BALLARAT EAST
 Pocket Park & Memorial Garden
 Landscape Concept Plan



project no: 2890
 drawing no: L2.03
 sheet no: 2 of 2
 designed by: GM
 drawn by: JD & EJ
 date: 31.10.2017
 scale: 1:200 @ A1



Appendix 7




















MOVEMENT NETWORK PLAN

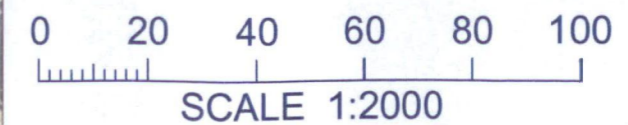
FORMER BALLARAT ORPHANAGE
 200, 200A, 200B VICTORIA STREET
 BALLARAT EAST



Planning and Environment Act 1987
 BALLARAT PLANNING SCHEME
 DEVELOPMENT PLAN OVERLAY
 Development Plan Schedule No. 9
 Signed *Deanne Wilson*
 Authorised Officer for and on behalf of the
 CITY OF BALLARAT
 DATE *6/12/17*

LAND USE LEGEND

-  PEDESTRIAN PATH
-  BUS STOP
-  INTEGRATION & ACCESS OPPORTUNITIES
-  HIGH DENSITY ADJACENT TO OPEN SPACE
-  PEDESTRIAN LINKAGE BETWEEN COMMERCIAL AREA & TODDLER BLOCK
-  CAR PARKING AREA
-  LOADING / UNLOADING AREA
-  TRUCK MOVEMENT
-  NOISE WALL
-  CONNECTING ROADWAY BETWEEN STAWELL STREET, VICTORIA STREET & RESIDENTIAL AREA
-  OPEN SPACE
-  ENCUMBERED OPEN SPACE/ DETENTION BASIN
-  COMMERCIAL USE / RETENSION OF FORMER BALLARAT SCHOOL HOUSE
-  MIXED USE / RETENTION OF TODDLERS BLOCK
- RESIDENTIAL**
-  - CONVENTIONAL
-  - MEDIUM
-  - HIGH



REF: 15324-00
 DATE: 24/05/2017



Melbourne | Geelong | Ballarat

Appendix 8



200 Victoria Street Ballarat East Flood Investigation Final Report



June 2016

Planning and Environment Act 1987
BALLARAT PLANNING SCHEME
DEVELOPMENT PLAN OVERLAY
Development Plan Schedule No.....9.....
Signed.....*Deanne Lusk*.....
Authorised Officer for and on behalf of the
CITY OF BALLARAT
DATE.....6/12/17.....

DOCUMENT STATUS

Version	Doc type	Reviewed by	Approved by	Distributed to	Date issued
v01	Prelim Report	Ben Hughes	Ben Hughes	Cameron Gray	24/03/2016
v02	Final Report	Julian Skipworth	Julian Skipworth	Chris Mason	21/06/2016

PROJECT DETAILS

Project Name	200 Victoria Street Ballarat East Flood Investigation
Client	St Quentin Consulting
Client Project Manager	Cameron Gray/Chris Mason
Water Technology Project Manager	Julian Skipworth
Report Authors	Julian Skipworth
Job Number	4099-01
Report Number	R01
Document Name	4099-01_R01V02_DamascusPrelimFloodRiskReport.docx

Cover Photo: Former Damascus College site viewed from the south-east corner of the site

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1. INTRODUCTION

This preliminary report documents a flood risk investigation for the former Damascus College site at 200 Victoria Street, Ballarat East.

Water Technology understands the proposal involves sub-division of the site for private sale and residential construction on each new title.

The investigation has sought to understand flood risk under both existing and concept developed conditions, and demonstrate that a concept drainage design for the site results in no adverse impacts off-site. A number of recommendations are outlined, these are required for the completion of the sites flood risk assessment.

Discussions with relevant drainage authorities, Corangamite Catchment Management Authority (CCMA) and the City of Ballarat (COB) were conducted to inform the strategy within this report.

It should be noted that an analysis of on-site stormwater management was not within the scope of this report and has been addressed in a separate report. The recommendations in that report include water quality features located within the proposed retarding basin at the south-west of the site. The water quality features are compatible with the proposed drainage features described in this report and will not impact the available flood storage.

2. SITE OVERVIEW

The subject site is located in Ballarat East and is bordered by Victoria Street to the north and Stawell Street South. The site is located on a hillside with the lower, southern portions of the property located on a floodplain of Specimen Vale Creek.

The site consists of a former school. The lower portions of the site adjacent to Specimen Vale Creek are undeveloped and grassed. The site is currently zoned predominately General Residential with some areas of Commercial and Mixed Use Zone in the northern portion of the site.

Specimen Vale Creek borders the property to the south and is piped through a 1650 mm Reinforced Concrete Pipe (RCP) through that reach. An open pit is located at the south-east corner of the site where the underground network transitions from two 1200 mm RCPs to the single 1650 mm RCP. Downstream of the site the waterway passes under Stawell Street through a large box culvert and then into an open lined channel.

A map of the site illustrating the major features is shown in Figure 2-1. The site topography is shown in Figure 2-2 while key drainage features are shown in Figure 2-3.

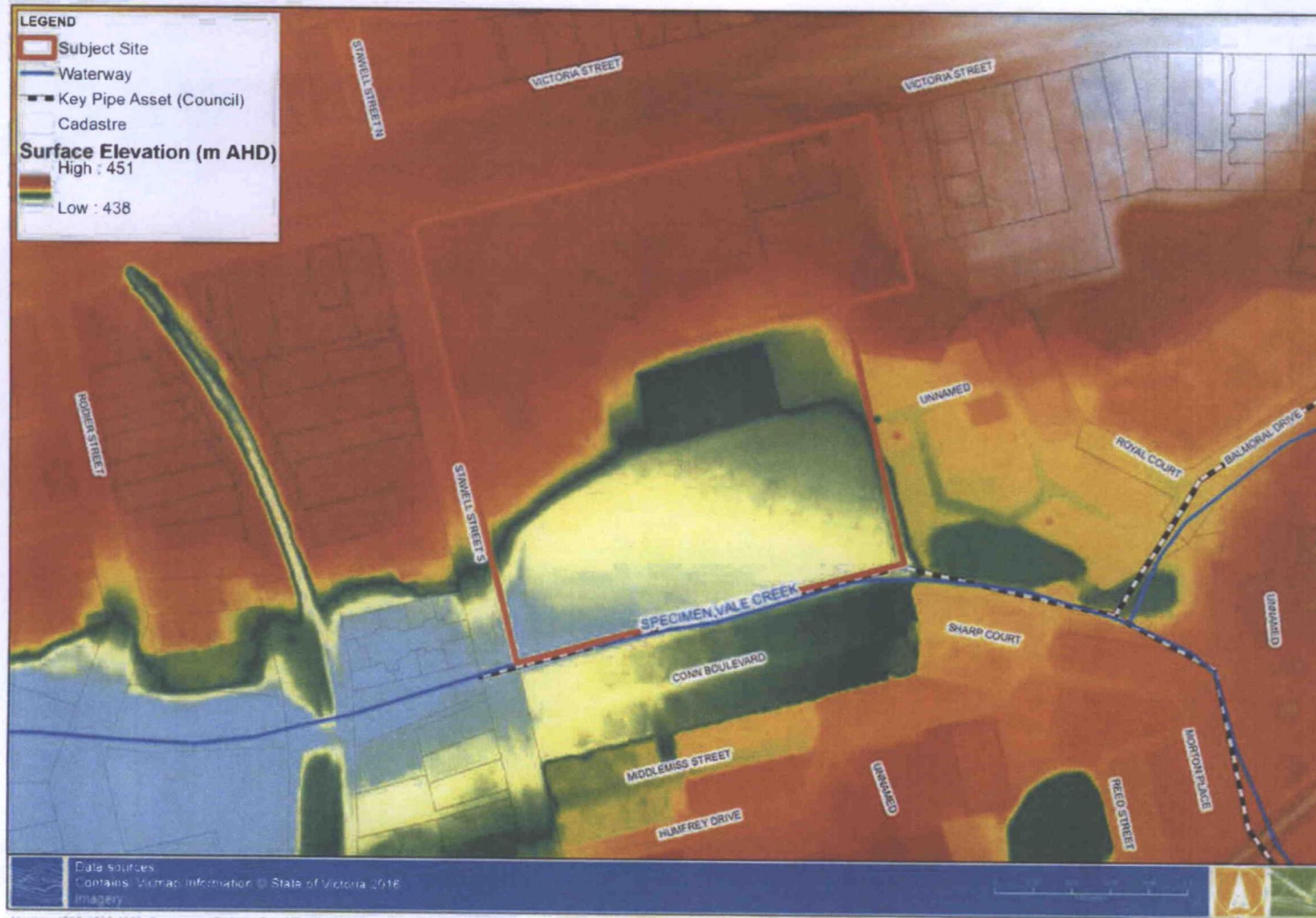


Figure 2-2 Site Topography



Figure 2-3 Drainage Features under Existing Conditions

3. MODELLING BACKGROUND

Specimen Vale Creek borders the southern boundary of the development site has undergone significant investigation and flood modelling in recent years, including the following:

- Canadian Creek Tributaries Flood Investigation, Water Technology (2014)¹ - The project involved a detailed flood study of Specimen Vale Creek, Warrenheip Gully, Pennyweight Creek and Lal Lal Drain. Key input data included Light Distance and Ranging (LiDAR) topographic survey, rainfall data and details of key hydraulic structures throughout the catchment, including bridges, culverts and piped sections of waterway.
- Canadian Creek Tributaries Flood Modelling Update, Water Technology (2016)² - Following on from the 2014 study, recent work completed by Water Technology involved re-schematising the hydraulic model along Specimen Vale Creek between Charlesworth Street and Stawell Street. The development site is located within this reach. This work was completed as a result of additional survey commissioned by COB which showed a number of differences in the pit and pipe network compared with the Council dataset that was originally available for the flood study.

The re-modelling work was recently completed and results provided to City of Ballarat. The modelling has undergone independent review and the results are considered appropriate to represent existing conditions for future development along Specimen Vale Creek. It is of note that there are significant drainage issues still to be resolved and further modelling and drainage upgrades are likely in the vicinity of the Begonia Village retirement village.

Based on the scenarios run to date through this area, it is believed that the current flood levels across the Damascus College represent worse-case conditions and any future upstream works to address drainage issues in the vicinity of Begonia Village would only improve flood levels at the site.

For further detail regarding the specific changes to the hydraulic model in the retirement village area refer to the memorandum which described the re-modelling work².

The modelling in this project was based on the hydrology completed during original Canadian Creek Tributaries Flood Study¹ and the recently revised hydraulic model. No modifications were made to the hydrology or hydraulic model within this investigation other than the changes representing the developed drainage works.

4. EXISTING CONDITIONS

4.1 1% AEP Hydraulic Modelling

The existing hydraulic model developed for the Canadian Creek Tributaries Flood Study was used for this study with the recent modifications made to the underground drainage network around Charlesworth Street, Begonia Village and Stawell St North were included.

Modelling was completed using the hydraulic modelling suite TUFLOW. TUFLOW is a widely used hydraulic model that is suitable for the analysis of overland flows in urban areas. TUFLOW has five main inputs:

- Topography and drainage infrastructure data;
- Rainfall data (used when a rainfall-on-grid methodology is adopted);
- Catchment losses (used when a rainfall-on-grid methodology is adopted);

¹ Water Technology, *Canadian Creek Tributaries Flood Investigation Study Report*, 2014

² Water Technology, *Canadian Creek Tributaries Flood Modelling Update Results Memorandum*, 2016

- Roughness; and
- Boundary conditions.

The original Canadian Creek Tributaries Flood Study report¹ contains more detail regarding the model inputs and schematisation.

The recent modifications made to the hydraulic model as part of the re-modelling of Specimen Vale Creek are described in a results memorandum submitted to City of Ballarat in March 2016².

4.2 Hydraulic Modelling Results – Existing Conditions

Existing conditions hydraulic modelling results are shown below in Figure 4-1 and Figure 4-2. The results show that in the 1% AEP flood event a significant flow path exists across the site flowing from the south-east corner to the south-west corner. 1% AEP peak flood depths of 0.80 m occur in the south-west corner of the site and reach as high as 1.70 m in the south-east corner at the open pit.

The results show the flow path continues to the west across Stawell St and then into an open lined channel which passes under the disused rail line a short distance downstream. A block of units is located adjacent to the lined channel and it is known that two of those units are susceptible to above floor flooding in the 1% AEP flood event. Peak depths of 0.33 m occur across Stawell Street in the 1% AEP flood event.

The hazard mapping shown in Figure 4-2 indicates generally low hazard conditions exist within the 1% AEP flood extent, however there are some high hazard areas in the middle of the flow path where depths and velocities are greatest. It is noted that low hazard conditions exist at the overtopping of Stawell Street.

For the proposed works to be considered acceptable by CCMA, developed conditions modelling needs to demonstrate flood depths and hazards are not increased off-site as a result of the proposed works. The development must not cause any adverse impacts to adjacent properties. Flood depths across Stawell Street in the 1% AEP flood event cannot be increased by the development.



Figure 4-1 1% AEP flood depths under existing conditions



Figure 4-2 1% AEP flood hazard under existing conditions

4.3 Existing Conditions Summary

Modelling completed as part of the Canadian Creek Tributary Flood Study¹ and the recent re-modelling of Specimen Vale Creek² has demonstrated that the development site is susceptible to inundation in the 1% AEP flood event with a significant flow path occurring along the southern boundary of the site.

Specimen Vale Creek is piped through a 1650 mm RCP through this reach however it has insufficient capacity in the 1% AEP flood event with significant surface flows occurring as a result.

At the south-west corner of the site flood water flows over Stawell Street to depths of up to 0.33 m. Hazard conditions across the road are considered low. A number of properties lie close to the development site with some susceptible to above floor flooding in the 1% AEP flood event.

5. DEVELOPED CONDITIONS

5.1 Background and Design Objectives

Residential development is proposed for the development site, preliminary layout plans were provided to Water Technology indicating development extending to the southern boundary of the site. However, based on the existing conditions results discussed above it is clear that sufficient space will need to be provided along the southern boundary in the layout plan to allow the passage of overland flow.

The key objectives of providing passage to overland flow are to:

- Allow the 1% AEP flow to pass along the existing flow path along the southern boundary of the site;
- Ensure no adverse off-site impacts to other properties;
- Ensure flood depths are not made worse at the overtopping of Stawell Street;
- Ensure a neutral or negative cut-fill balance within the 1% AEP flood extent; and
- Achieve the above objectives while maximising the remaining area available for development.

5.2 Concept Drainage Design

A range of concept designs were trialled to meet the key objectives and a concept design was determined and adopted, as described below. The aim of the design was to reduce the 1% AEP flood extent across the site and ensure no adverse impacts occurred to adjacent properties.

The adopted design is shown in Figure 5-4 below and consists of:

- An excavated grassed trapezoidal channel running from the south-east corner of the site flaring out into a retarding basin at the south-west corner of the site. The basin has an invert level of 437 m AHD at the downstream end. The channel has a total width of 20 m with a base width of 8 m. Batter slopes vary from 1:6 at the upstream end of the channel to approximately 1:2 on the northern border of the basin. The batter slopes are likely to vary depending on the final layout design and proposed surface levels of the development and this will be confirmed in the final report. A typical cross section is shown in Figure 5-1.

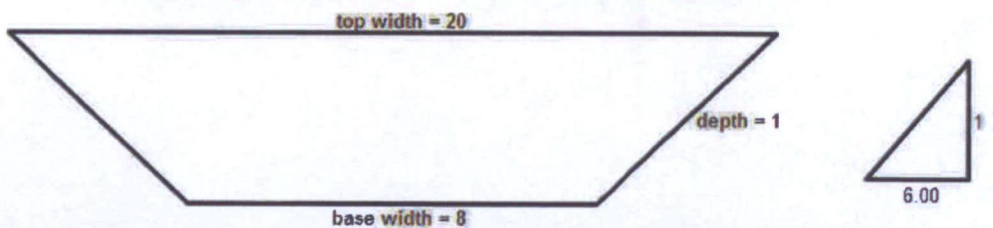


Figure 5-1 Typical cross-section along trapezoidal channel

- A 300 mm diameter RCP extending from the base of the basin to the existing 1200 mm RCP which runs along the southern boundary of the site. The pipe will drain the basin in low flow events when Stawell Street is not overtopped and ensures the basin can freely drain in large events once the flood peak has passed. The pipe inlet arrangements will be determined in detailed design however the inlet will need to incorporate a 150 mm orifice plate to control the flow into the pipe. An example of an orifice plate is shown in Figure 5-2 below.



Figure 5-2 Example sketch of an orifice plate fitted to a pipe inlet

- A 300 mm diameter RCP along the eastern boundary of the site which captures flow from some small overland flow paths that flow from the east. The pipe will outfall into the open pit at the south-east corner of the site. The modelling indicates that a minimum of four grated pits would be required along the pipe to capture the overland flow from the east.
- As part of the channel works in the vicinity of the existing open pit a small bund/levee would be constructed adjacent to the open pit as shown in the figure below. The bund is design to keep flood water within the pit until water levels reach 440.6 metres AHD. This feature ensures the channel and basin are not engaged until necessary and maximises the conveyance of the 1650mm RCP. The location of the bund is shown below:

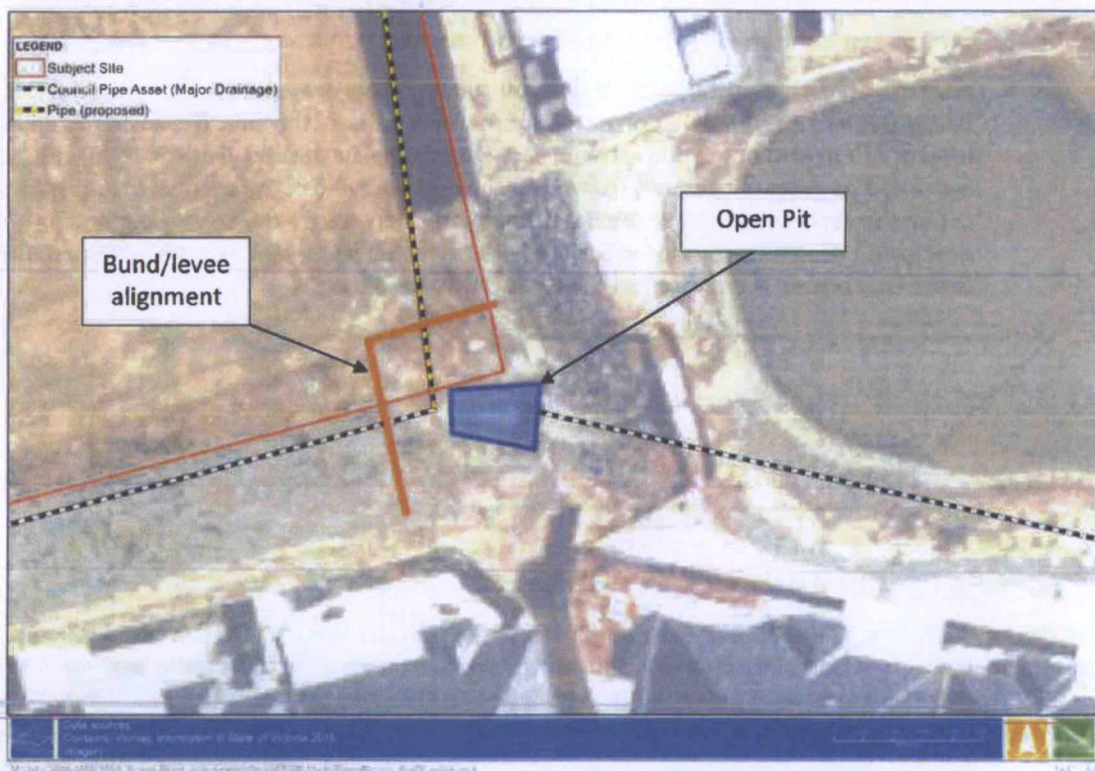


Figure 5-3 Location of proposed bund

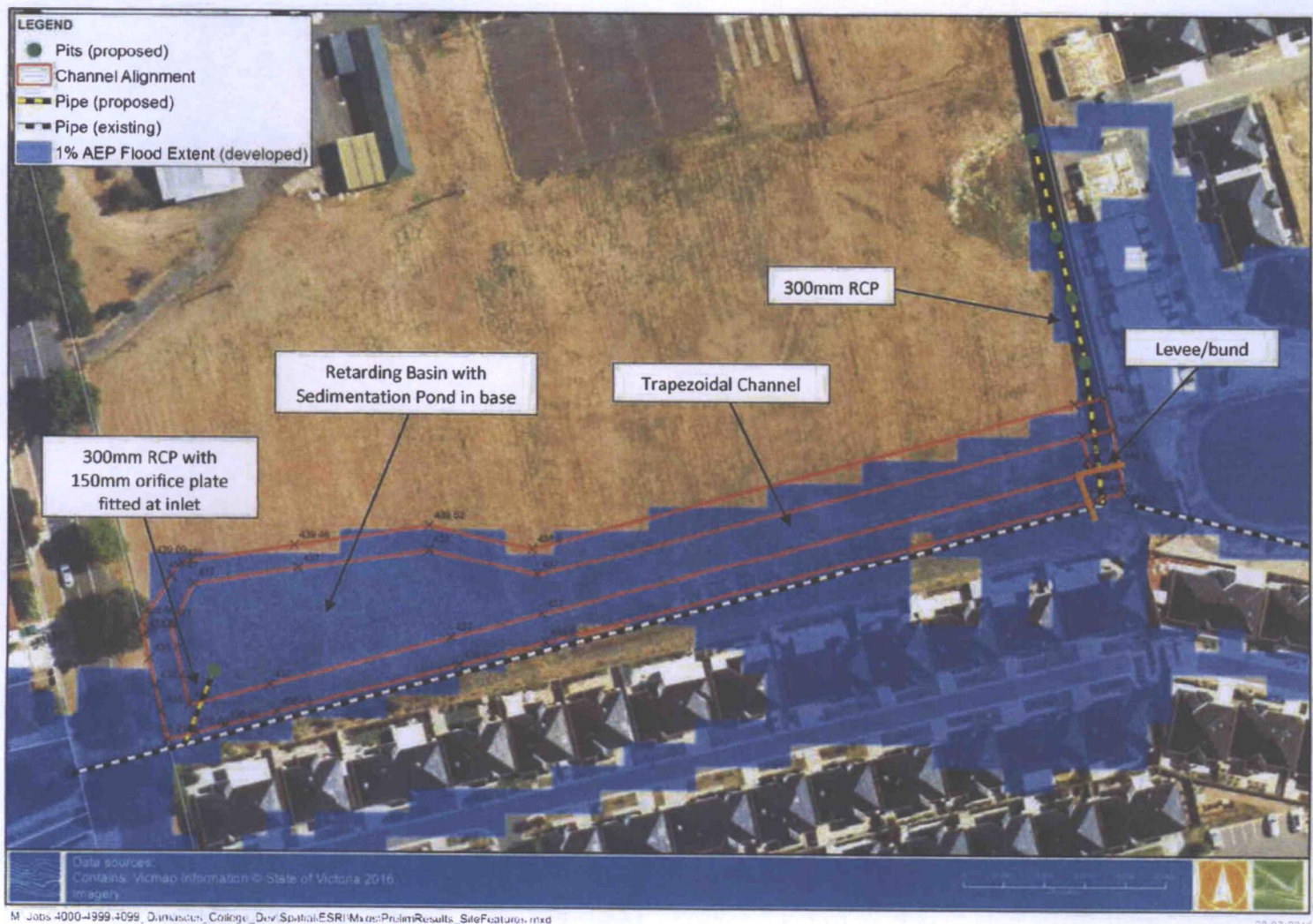


Figure 5-4 Drainage design features

5.3 Hydraulic Modelling Results – Developed Conditions

Results for developed conditions are shown below in Figure 5-5 through to Figure 5-7. The results indicate that the upgraded channel adequately conveys the required flow and there are no adverse impacts off-site. Flood levels are generally lower on site as a result of the excavated channel. There are some small pockets of increased flood levels, mainly around the open pit, but these do no impact property and are located within the existing 1% AEP flow path.

Under developed conditions Stawell St continues to overtop however flood depths are marginally lower by approximately 3-4mm. It should be noted overtopping of Stawell Street does not prevent safe egress to the north along Stawell Street from the development site. During large flood events it would be necessary to cross the overtopped road for residents to access the site.

The hazard mapping (Figure 5-6) shows that hazard conditions remain similar under developed conditions. Hazard conditions remain generally low along the waterway however there are areas of high hazard in the centre of the watercourse where depths and velocities are greatest.

To further lower flood risk for nearby residents and through traffic along Stawell Street, a standalone flood warning device could be installed in or adjacent to the basin upstream of Stawell Street. The warning device would trigger a flashing warning sign when Stawell Street is about to overtop. There are a number of relatively inexpensive standalone systems available on the market. Capital costs would be met by the developer whilst it is likely ongoing costs would be met by Council however maintenance costs are relatively low for such systems. While not a requirement of the development given it has safe egress as described above, the consideration of reduced flood risk would be likely to be viewed as a gesture of good faith for CCMA and COB.



Figure 5-5 1% AEP flood depths under developed conditions



Figure 5-6 1% AEP flood hazard under developed conditions

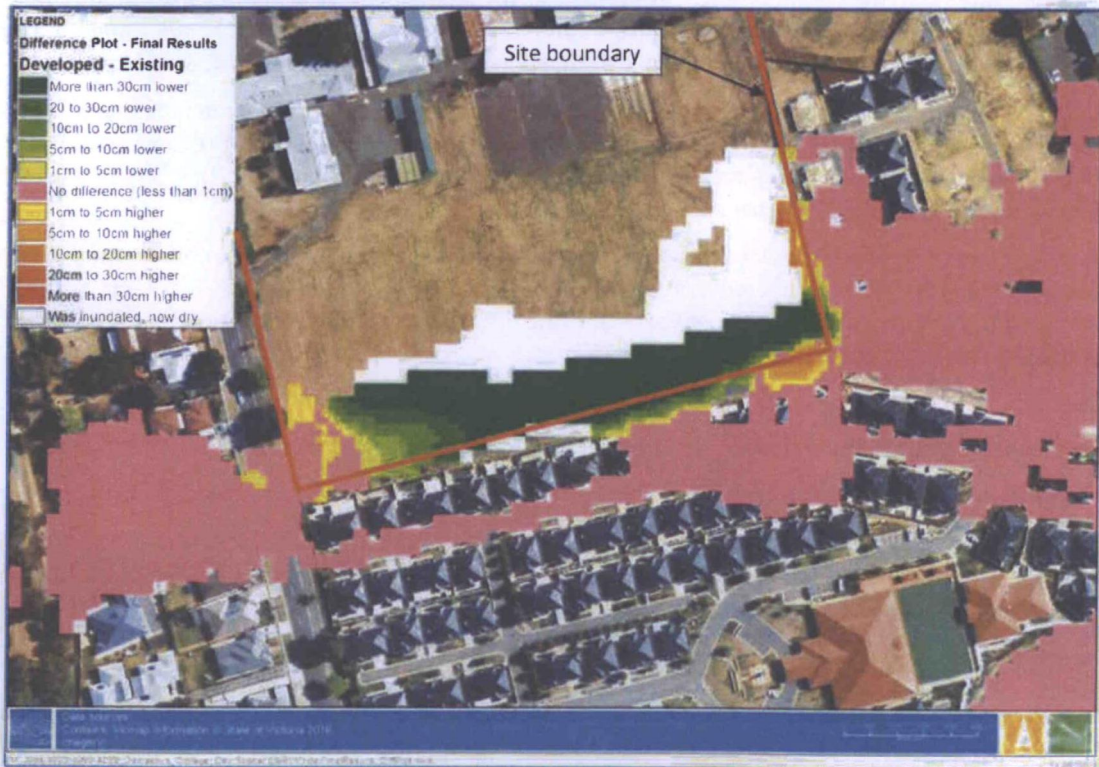


Figure 5-7 1% AEP Difference Plot comparing developed to existing conditions

5.4 Cut and Fill Balance

A cut and fill balance for the 1% AEP event flood storage has been completed which shows that, based on the proposed drainage works, within the existing 1% AEP flood extent there would be a total cut of 6,761 m³ and total fill of 344 m³, resulting in a net cut/fill balance of -6,695 m³. This demonstrates there will be no loss of flood storage as a result of the works. The works will help to restore the large volume of natural flood storage that was available in this area prior to the Begonia Village development.

5.5 Developed Conditions Summary

A concept design for drainage works along the southern portion of the site was developed and modelled in the hydraulic model. The modelling demonstrates that the concept design has achieved the key objectives of conveying the 1% AEP surface flow across the site, ensuring no adverse impacts to off-site properties and ensuring overtopping of Stawell Street is the same or shallower under developed conditions. The current design has also achieved a negative cut-fill balance as required by CCMA.

6. SUMMARY AND RECOMMENDATIONS

Water Technology has developed a concept design to manage 1% AEP Specimen Vale Creek flood flows across the former Damascus College site under developed conditions. The modelling has demonstrated that the concept design results in no adverse off-site impacts in the 1% AEP flood event. This was demonstrated both in terms of flood depth and flood hazard. A cut fill balance analysis has also demonstrated there will be no less of available flood storage through the proposed works.

It should be noted that this investigation has not considered on-site stormwater management which has been addressed in a separate report. The stormwater management report recommends water quality features which are compatible with the drainage features proposed in this report and will impact on the available flood storage.

It should be noted that this work was undertaken using upstream conditions recently adopted in the remodelling of Specimen Vale Creek for the City of Ballarat. This work was finalised earlier in the year however the ongoing management of Specimen Vale Creek flows through the retirement village area is still the subject of consideration by City of Ballarat.

APPENDIX A DEVELOPMENT PLAN