ENGENY
WATER MANAGEMENT

L. BISINELLA DEVELOPMENTS P/L

Avonlea Road – Geelong West

C395 Waterways and Stormwater Report

November 2019

V1323_001-REP-001

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REV	**DESCRIPTION**	**AUTHOR**	**REVIEWER**	**PROJECT MANAGER**	**APPROVER (PD)**	**DATE**
Rev 1	Client Issue	Andrew Prout	Scott Dunn	Andrew Prout	Scott Dunn	7 November 2019
Signatures						

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1. INTRODUCTION

1.1 Report Details

This report has been commissioned by L. Bisinella Developments P/L (Bisinella). This report was prepared to address issues related to the proposed planning scheme amendment C395.

1.2 Report Author Details

The details of the report author are provided below.

1.2.1 Names and Address of the Author

Andrew Glen Prout

Suite 5, Level 34
360 Elizabeth Street
Melbourne VIC 3000

1.2.2 Qualifications

Andrew Glen Prout has the following qualifications and professional memberships:

Education

Bachelor of Engineering (Civil), Swinburne Institute of Technology, 1984

Postgraduate Diploma in Management Studies, Melbourne University, 1992.

Registrations/Affiliations

Member, Institution of Engineers, Australia

Member, College of Civil Engineers, I.E. Aust.

1.2.3 Experience and Expertise of the Author

Andrew Prout is a Senior Principal Engineer in the Melbourne branch of Engeny. Andrew has over 35 years professional experience both in the consulting engineering field and with government and semi-government authorities. Andrew is a leader in the surface water management field, having updated Melbourne Water's Drainage Design Guide and having lectured at university level. Andrew has worked as a consultant and has undertaken numerous flood studies, master plans for waterway corridors and water sensitive design and waterway rehabilitation design and construction projects.

Andrew has undertaken expert witness work and produced scores of expert reports for a number of clients, including Melbourne Water, Southern Rural Water, Goulburn Murray Water, VicRoads, Councils and landowners.

A CV with more details regarding Andrew's experience is provided in **Appendix A**.

Andrew is very familiar with the Greater Geelong area. Andrew has previously undertaken RORB modelling of the entire Cowies Creek catchment for the City of Greater Geelong and developed remediation options for the Cowies Creek sediment pond and lake upstream of Geelong Road for Council. Andrew has also undertaken work related to the Fyansford Quarry and the Moorabool River. In relation to waterway condition and urban impacts Andrew reviewed the condition of Griggs Creek in Clifton Springs for the City of Greater Geelong. Andrew designed the urban stormwater harvesting system for Geelong Racecourse for Racing Victoria, including a stormwater collection pond in the showgrounds and the transfer pipe and pump system to the racecourse dam.

Scott Dunn reviewed this report in accordance with Engeny's Quality Assurance system. Scott is a principal engineer at the Melbourne branch of Engeny Water Management (Engeny). Scott has over fifteen years of experience in the water resources industry working as a consultant. His area of technical expertise is in the fields of drainage design, flood modelling, waterways and water sensitive urban design. He has authored a number of expert witness reports.

2. BACKGROUND INFORMATION

2.1 Location of Subject Site

The site that is the subject of this report is 35 Avonlea Road, Geelong West. The location of the site is shown in Figure 2-1 below.

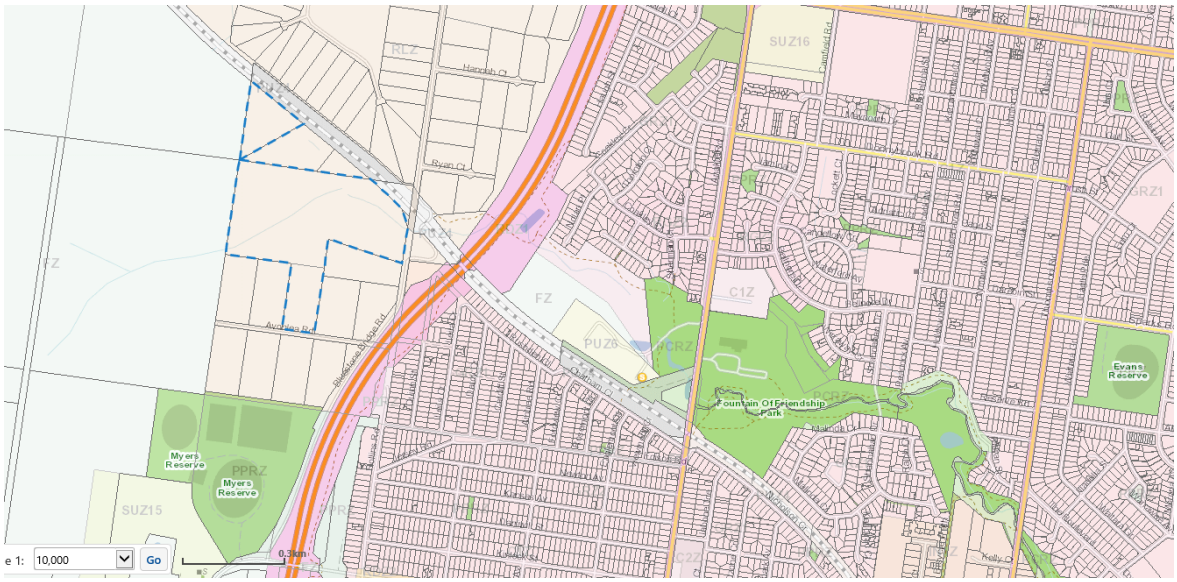

Figure 2-1 Locality Plan

2.2 Planning Scheme

The subject site is zoned as Rural Residential. There are no flood related zones or overlays in the Planning Scheme that affect any of the subject site.

The City of Greater Geelong has exhibited Planning Scheme Amendment C395 that seeks to rezone the land to the Urban Growth Zone. The proposed land uses in C395 are shown in Figure 2-2 below which is an extract from the "Future Structure Plan" exhibited with C395.

As can be seen from Figure 2-2 below the majority of the subject site is covered by a proposed waterway corridor.

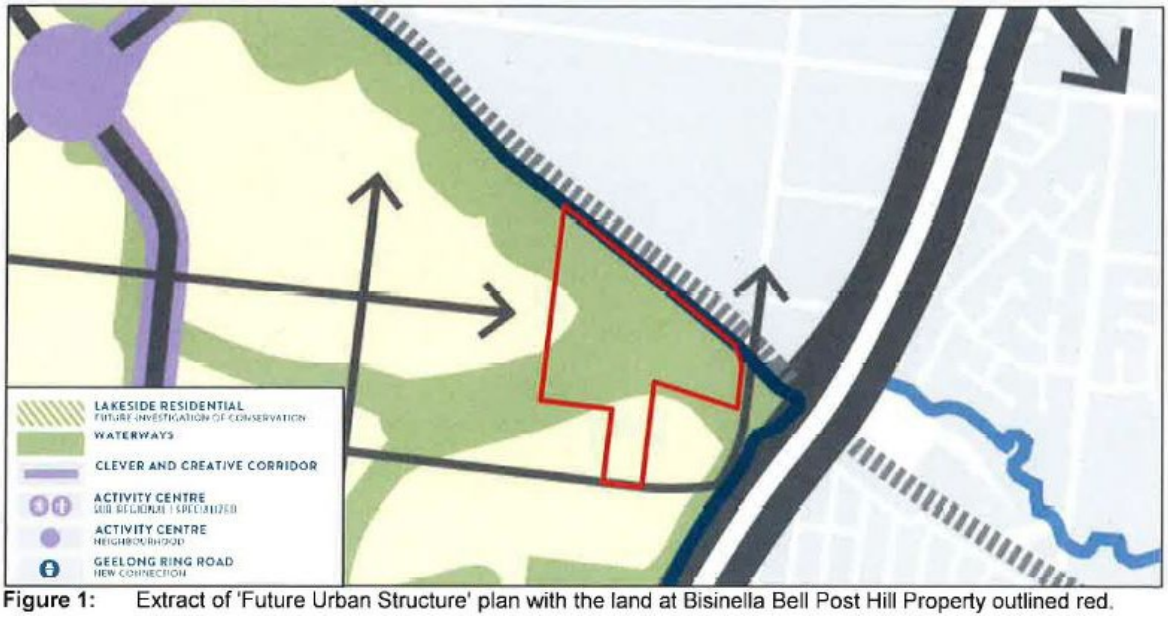

Figure 1: Extract of 'Future Urban Structure' plan with the land at Bisinella Bell Post Hill Property outlined red.

Figure 2-2 Extract from C395

2.3 Site Visit

I attended the subject site and surrounding area on Thursday 23 October 2019. Access to the site was provided by Jamie Forssman of Bisinella. Mark Trengove of Mark Trengove Ecological Services also visited the site at the same time in relation to flora and fauna issues.

During this site visit I attended the following areas:

- Bluestone Bridge Road in the vicinity of Cowies Creek and the adjacent railway line
- Avonlea Road
- Cowies Creek through the subject site
- The local tributary through the subject site
- Views of the subject site from a number of vantage points within the site.

Photographs from this site visit that I took are provided in the following figures.

Figure 2-3 **Cowies Creek within subject site – looking downstream**

Figure 2-4 **Cowies Creek within subject site – looking north**

Figure 2-5 **Cowies Creek within subject site – looking upstream**

Figure 2-6 **Tributary within subject site – looking downstream**

Figure 2-7 Panorama of Tributary within subject site – looking downstream

Figure 2-8 Tributary within subject site – looking downstream

Figure 2-9 **Tributary – looking upstream into neighbouring property**

Figure 2-10 **Tributary – looking upstream**

Figure 2-11 Subject site looking north from Avonlea Road

Figure 2-12 Cowies Creek downstream side of Bluestone Bridge Road

Figure 2-13 Cowies Creek – looking downstream at Bluestone Bridge Road

Figure 2-14 Cowies Creek – looking upstream at Bluestone Bridge Road

3. INSTRUCTIONS

Instructions were received from Arnold Bloch Leibler dated 8 October 2019. A copy of the instructions is provided as **Appendix B**.

4. REFERENCE MATERIAL

Documents related to the subject site and Planning Scheme Amendment C395 were provided to me by Arnold Bloch Leibler. A list of these documents is provided as **Appendix C**.

I also sought further documents related to the matter. This included reviewing the available information exhibited by the City of Greater Geelong at https://www.geelongaustralia.com.au/amendments/item/8d6e9c1bda2a1e1.aspx. From this web site I reviewed a few documents and then downloaded and referenced the following document:

- Western Geelong Growth Area – Flood Impact Assessment and Stormwater Management Strategy, Developed Conditions Report, Water Technology May 2019 (Water Technology report)

I also reviewed the following document while preparing this report:

- Waterway Corridors, Guidelines for greenfield development areas within the Port Phillip and Westernport Region, Melbourne Water, as obtained in October 2019 from Melbourne Water's website

5. ASSESSMENT

My assessment is related to:

- Proposed waterway corridors on the subject site
- Flood impacts assessment
- Proposed residential development layout options and stormwater treatment requirements for the subject site.

5.1 Waterway corridors

Amendment C395 proposes significant waterway corridors on the subject site as shown on Figure 2.2.

I have referred to the exhibited waterway corridors, the Water Technology report, the Melbourne Water Waterway Corridors guideline and observations from my site visit to form my opinions on the appropriate widths for waterway corridors on the subject site.

There are two waterways that flow through the subject site:

- Cowies Creek which flows from west to east on the south side of the railway line.
- An unnamed tributary that flows from near the south west corner of the subject site to its confluence with Cowies Creek within the subject site.

I have attached a copy of Water Technology's Figure 3-2 to this report in **Appendix D**. This Figure clearly shows the proposed C395 flood strategy for the Cowies Creek catchment but does not show recommended corridor widths. Water Technology's Figure 3-2 also provides some flood extents and peak flows. A combined wetland / retarding basin (WLRB_G) is proposed on the tributary immediately upstream of the subject site. WLRB_G will protect the tributary through the subject site by controlling peak flows and treating the quality of stormwater flowing into the tributary. The control of peak flows from WLRB_G to a maximum 1% AEP flow of 8 m^3/s will ensure no increase in peak flows compared with the existing conditions and will limit the 1% AEP flow to a value that in my opinion will comfortably be contained within the bed and banks of the tributary through the subject site. Section 3.5 of the Water Technology report adopts the Melbourne Water Waterways Corridor Guideline for determining the appropriate reserve widths for the creeks in the C395 area and I agree with this approach.

I was provided with a draft 88 lot subdivision plan for the subject site at tab 34 of the documents provided by Arnold Bloch Leibler. On the 88 lot plan the waterway corridor for Cowies Creek complied with the Melbourne Water Waterways Corridor Guidelines, but the corridor for the local tributary was too narrow.

I reviewed the Melbourne Water Waterway Corridor Guidelines (I am familiar with these guidelines, including previous versions). This included both Section 7 for existing waterways and Section 8 for constructed waterways. Applying all aspects of these guidelines produce the following results for waterway corridor requirements through the subject site.

- Tributary – The existing creek is incised, with minor erosion and some rock beaching evident. Based on the 1 % AEP flow of 8 m^3/s from Water Technology's Figure 3-2 the 1 % AEP flow can be contained within the bed and banks of the creek. The Melbourne Water Guideline for existing waterways then proposes a reserve width of Top of Bank, plus 20 metre setbacks on either side. The draft 88 lot subdivision plan that I was provided in tab 34 of the documents listed in **Appendix C** had a narrower proposed reserve width for this corridor. Following my advice, a revised draft 75 lot subdivision plan has been produced for Bisinella. This revised plan is provided in **Appendix E.** This revised 75 lot plan has a waterway corridor for the tributary that complies with the Melbourne Water Waterways Corridor Guidelines.

- Cowies Creek – The draft 88 lot subdivision plan that I was provided in tab 34 of the provided documents showed an area along Cowies Creek that varied in width from approximately 75 to 140 metres. That area included an area of waterway corridor that complied with the Melbourne Water Waterway Corridor Guideline requirements. The revised draft 75 lot subdivision plan provides a waterway corridor that contains the waterway and setbacks of at least 20 metres from Top of Bank. The waterway corridor for Cowies Creek also contains the entirety of the 1 % AEP flood extent. The revised 75 lot plan has a waterway corridor for Cowies Creek that complies with the Melbourne Water Waterways Corridor Guidelines

The revised draft 75 lot subdivision plan has also been improved in relation to design for the waterway corridors compared with the 88 lot plan in that waterway corridors are bordered by roads which have a number of advantages for additional space for access along the waterways, passive surveillance and landscape values, as encouraged in the Melbourne Water Waterway Corridor Guidelines. The road across the tributary within the waterway corridor can be constructed over the tributary with a culvert or small bridge, as per usual arrangements in this situation. The location of this road has the advantage of providing continuous access and surveillance along the Cowies Creek corridor.

To clearly show waterway corridors that comply with the Melbourne Water Waterway Corridor Guideline for both waterways the revised 75 lot draft subdivision plan has been prepared and is provided in **Appendix E.**

The waterway corridors as exhibited (see Figure 2-2) are significantly wider than they need to be to comply with the Melbourne Water Waterway Corridor Guideline and the Water Technology report. I would suggest that the Panel consider replacing the exhibited waterway corridors with those shown on the plan in **Appendix E.**

5.2 Flood impacts assessment

As mentioned in Section 5.1 above Figure 3-2 of the Water Technology report shows some flood extents and proposed retarding basins to control the 1 % AEP peak flows throughout and downstream of the West Geelong Growth area (a copy of this Figure is provided in **Appendix D**). The retarding basins have been sized to offset the increase in runoff from the proposed urban development to ensure that peak flows up to and including those in the 1 % AEP flood are not increased above existing peak flows. This approach complies with current Best Practice for urban flood flow control and I agree with the approach taken.

I have reviewed the locations and sizes of the proposed retarding basins, but not the RORB model that was used to determine the basin sizes. I have done this type of work over many decades and the basin layout and sizes are as I would expect.

The proposed draft 75 lot subdivision layout for the subject site as shown in **Appendix E** will result in a slight change to flood behaviour in Cowies Creek. Some of the lots (1 to 24 as a minimum) will be able to be drained to WLRB_G and peak flows from these lots will be able to be attenuated so as not to increase peak flows. Some of the remaining lots (64 to 75) will also be able to be drained to WLRB_G. The remaining 39 lots will be able to have peak flows collected in drainage pipes and after treatment of low flows will discharge to Cowies Creek. A 10 to 15 minute duration storm will produce the peak flows from these lots. Due to the rural catchment and the storage effects of the retarding basins for the rest of the C395 development area I expect that the critical storm duration for peak flow in the tributary and Cowies Creek will be at least 2 hours and possibly closer to 9 hours. Therefore peaks from the extra lots that don't drain through WLRB_G and from the rest of the catchment will not coincide with the peak flows in the creeks and therefore my opinion is that the proposed extent of development as shown in **Appendix E** should not increase downstream peak flows. I would expect that the Council's consultants RORB model could be updated to show that peak flows in the catchment are acceptable with the waterway corridors as shown in the plan in Appendix E.

5.3 Stormwater Management

Lots 1 to 24 and 64 to 75 on the plan in **Appendix E** can have treatment flows drained to WLRB G as generally proposed in the Water Technology report (see layout plan in Water Technology's Figure 3-7 as provided in **Appendix D**).

The remainder of lots could comply with Clause 56.07-4 of the Planning Scheme in relation to Best Practice management of stormwater runoff. This could be done by a combination of:

- Stormwater treatment within the Cowies Creek corridor on the subject site. This could consist of two systems that could incorporate sediment ponds, wetlands and/or bioretention systems.

- Roofwater harvesting and reuse.

- Streetscape stormwater treatment and/or passive watering.

In my opinion there is sufficient space in the revised draft 75 lot subdivision plan in **Appendix E** to allow for a combination of these options to be designed and built to satisfy the Planning Scheme requirements for stormwater treatment. Given that there is sufficient space and options for stormwater treatment for the subject site I would expect that the design of the system can take place at the Planning Permit / subdivision design stages of development as per usual practice.

6. CONCLUSIONS

From this report I make the following conclusions:

1. I have reviewed the exhibited waterway corridors for amendment C395 and have found that they are wider than they would need to be when applying the criteria proposed by Water Technology for the C395 amendment.
2. I have attached a draft plan of subdivision for the subject site (**Appendix E**) that shows proposed waterway corridors that comply with the requirements proposed by Water Technology for the C395 amendment and that comply with the Melbourne Water Waterway Corridor Guideline.
3. The extent of development in the revised draft subdivision plan in **Appendix E** is unlikely to increase flooding compared with the exhibited plan due to differences in the timing of peak flows.
4. The extent of development in the revised draft subdivision plan in **Appendix E** will be able to have its runoff treated to meet Best Practice targets as required by Clause 56.07-4 of the Planning Scheme.
5. I would suggest that the Panel consider replacing the exhibited waterway corridors through the subject site with those shown on the plan in **Appendix E.**

7. STATEMENT

I have made all the inquiries that I believe are desirable and appropriate at this time and that no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.

I have read the *Guide to Expert Evidence – Planning Panels Victoria* and agree to be bound by it.

Andrew Prout

8. QUALIFICATIONS

a. In preparing this document, including all relevant calculation and modelling, Engeny Water Management (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.

b. Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.

c. Engeny reserves the right to review and amend any aspect of the works performed including any opinions and recommendations from the works included or referred to in the works if:

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   (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.

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e. This document is for the use of the party to whom it is addressed and for no other persons. No responsibility is accepted to any third party for the whole or part of the contents of this report.

f. If any claim or demand is made by any person against Engeny on the basis of detriment sustained or alleged to have been sustained as a result of reliance upon the report or information therein, Engeny will rely upon this provision as a defence to any such claim or demand.

g. This report does not provide legal advice.

APPENDIX A

Andrew Prout CV

Andrew Prout

Senior Principal Water Resources Engineer

BE(Civil), PDMS, MIEAust

SUMMARY

Andrew established Engeny Water Management in Victoria and has gained more than 35 years professional experience both in the consulting engineering field and with government and semi-government authorities. Andrew is a leader in the surface water management field, having updated Melbourne Water's Drainage Design Guide and having lectured at university level. He has undertaken a number of drainage and flood studies as well as water conservation studies and projects to minimise the overall environmental footprints of projects. This included being Project Director for the Werribee Plains Urban Water Conservation Study for the Australian Conservation Foundation.

Andrew has undertaken projects for a wide range of clients, including Councils, Melbourne Water, Catchment Management Authorities, Water Authorities, VicRoads, VicTrack and many public companies and land owners. He has also done work related to water issues for numerous major projects including Principal Surface Water designer or Peer Reviewer for Eastlink, Peninsula Link, Monash Upgrade, City Link as well as work on Federation Square, various windfarms, landfills, quarries and mines. His work has taken projects through all stages from studies to designs and construction.

Andrew has done a significant amount of work for local Councils over the last 20 years. This has included strategic drainage studies, preparation of drainage design guides, expert witness services, preparation of Development Contribution Plans and flood mapping. This work has covered most of the municipalities in Greater Melbourne, as well as a number of rural Victorian Councils, including Ballarat, Geelong, Corangamite, Warrnambool, Moyne, Moira, Bass Coast, Surf Coast and South Gippsland and some Councils in New South Wales and Queensland. He has spoken at conferences, made a number of professional presentations and been active in debates in the industry on topics such as water conservation, climate change impacts on water systems, urban flooding and catchment management.

Andrew started his career at the Dandenong Valley Authority in the early 1980s and also worked for Melbourne Water before entering consulting in the early 1990s.

Andrew has extensive experience with Melbourne Water work and contributed to Engeny obtaining positions on two select panels for Melbourne Water work. Andrew has prepared and / or reviewed numerous Melbourne Water Development Services Schemes. He has also undertaken flood studies, detailed designs and construction superintendence for many Melbourne Water surface water projects. His work for Melbourne Water has included expert advice, reports and evidence.

Andrew has provided professional advice to a wide variety of clients in a range of forums, including VCAT, Panel Hearings and court proceedings. His work in this area and in regional Victoria is summarised on the following pages

KEY AREAS OF EXPERTISE

- Flood mapping and Flood Mitigation
- Flood hazards and impacts on developments
- Coastal flooding and climate change impacts
- Wetlands and waterways
- Stormwater harvesting and water reuse
- Stormwater management and Water Sensitive Urban Design
- Drainage and stormwater treatment master planning and drainage schemes
- Drainage, wetlands and retarding basin detailed design
- Drainage, wetlands and retarding basin construction superintendence
- Surface water management for quarries and landfills
- EES and EIS work in relation to surface water, erosion and catchments

EXPERIENCE

Advice regarding Australian Rainfall and Runoff 2016 – VicRoads: In 2017 Andrew and his colleague Glenn Ottrey provided high level advice to VicRoads regarding the implications of the 2016 release of Australian Rainfall and Runoff and how this would impact on the AustRoads Design Guide in relation to drainage and flooding.

Nell Street, Greensborough - expert drainage report for City of Banyule via Minter Ellison: Andrew prepared a detailed expert report related to flooding and on site drainage for this project. The work included a site assessment and review of numerous documents in relation to the existing buildings, Council drainage, flood damage and the applicants Statement of Claim. Engeny reviewed witness reports, rainfall data, flood modelling, the design and construction of on-site works and photographs.

Victorian Flood Review, Melbourne Water: Andrew was engaged by Melbourne Water in 2015 / 16 to prepare a report that documented the roles of Melbourne Water and the Bureau of Meteorology in flood prediction and forecasting. The work involved liaison with Melbourne Water, Bureau of Meteorology, VicSES and production of a report in response to a recommendation from the Victorian Flood Review prepared by Neil Comrie.

Kohinoor Place Drainage and Flood Assessment for City of Ballarat: Andrew assessed local Council and private drainage systems and issues associated with the construction of a house in Kohinoor Place in Redan for the City of Ballarat in 2015. The work included a site visit, assessment of storm events, calculations and provision of advice on the adequacy of drainage systems and the effectiveness of recent works. Engeny produced an expert witness report that assisted the parties to resolve the issues.

Banyule Flood Mapping and Special Building Overlays, City of Banyule: Andrew and his colleague Paul Clemson have provided the City of Banyule with detailed advice regarding flood mapping of the flow paths associated with all of Councils drainage system. In addition to the flood mapping done by Paul and the team, detailed written advice in 2014 regarding how to determine process flood mapping results and options for using the results to control building and planning processes. Andrew presented the outcome of Engeny's work to a Planning Panel, which approved the introduction of the SBOs.

Ballarat West PSP and DCP: City of Ballarat: Andrew and the team at Engeny were part of a large team that produced the Ballarat West Precinct Structure Plan and Development Contributions Plan for 1000 hectares in Ballarat. The work included catchment modelling for flooding and water quality and development of a master plan for development of the area. Andrew also prepared cost estimates for the works and produced an Expert Witness report for the Panel hearing for the Development Contributions Plan.

Marchington Avenue, Mornington, Flooding Related Expert Witness Report, Melbourne Water: In 2012 Andrew and his colleague Maria Verrocchi prepared a report related to a proposed residential development adjacent to Tanti Creek in Mornington. The report clearly described the flood hazards related to one of the proposed dwellings in terms of the Land Subject to Inundation and Floodway Overlays. Andrew presented the report at VCAT and Melbourne Water obtained a successful outcome.

Kerang / Dingwall Flooding Expert Witness project – Goulburn Murray Water: In 2013 Andrew undertook a detailed assessment of complex flooding patterns that occurred in 2011. The flooding was related to the catchments of the Loddon River and Wandella Creek and the interaction of the flood with the large floodplains and various infrastructure including roads, bridges, embankments, irrigation channels and syphons. Andrew also oversaw complex 2D flood modelling of the actual flood behaviour undertaken by his colleague Scott Dunn.

Toora Coastal Flood Risk Report, South Gippsland Shire. Andrew undertook a site review and prepared an Expert report for the South Gippsland Shire for a VCAT hearing in relation to six proposed dwellings in the Grip Road area in Toora. The report covered issues including local drainage and flooding, coastal flooding, sea level rise, climate change, wastewater disposal and related issues. Andrew gave evidence at VCAT which contributed to a successful outcome for the Shire and a report that has been referenced in various hearings and publications since the hearing.

Maribyrnong River Flood Hazard Report, Melbourne Water: In 2009 Andrew was engaged by Melbourne Water to provide a comprehensive report on flood hazards in the Maribyrnong Township in response to a development application. Andrew prepared a detailed report that covered historic flooding since 1870, flood warning systems and flood hazards and also provided expert witness services at a VCAT hearing. The work undertaken by Andrew was influential in a successful outcome for Melbourne Water.

Lockerbie Property Kalkallo, Surface Water Master Plan, Stockland. Andrew has been working with Stockland and National Pacific on a significant master planning project for the future urban development of over 1100 hectares in the Kalkallo area. The work involved consultation with the landowners, the Growth Area Authority, Melbourne Water, Council and other consultants. The master planning focussed on the drainage, wetlands and retarding basin components of a Structure Plan for the overall development as well as a creek corridor master plan for Merri Creek.

Powling Street Wetland, Port Fairy, community group: In 2013 / 14 Andrew represented a local community group in relation to a proposed residential subdivision adjacent to a sensitive wetland. Andrew provided advice, undertook a site visit and prepared a report regarding local flooding, coastal inundation and water quality issues. Andrew represented the community group at a VCAT hearing and the hearing resulted in a reduction in the subdivision that had been proposed.

Botanic Ridge Estate, City of Casey: In 2013 / 14 Andrew represented the City of Casey in relation to the Botanic Ridge Estate in Cranbourne. Andrew assessed the effectiveness of construction control measures, stormwater harvesting, stormwater treatment and flood control works for the Estate and impacts on the downstream property. Andrew produced a detailed report that considered reports from other parties and made recommendations to resolve the issues.

Sunshine North Industrial Estate Drainage review, Brimbank City Council: In 2013 / 14 Andrew undertook a review of the constructed drainage systems in this estate. A number of the drainage pipes were found to be damaged prior to handover to Council. Andrew reviewed CCTV footage, drainage design plans, contracts and specifications and provided an Expert Report to Council on the issues and how to manage them.

Bungower Road Kennels, Moorooduc for landowner: In 2013 / 14 Andrew prepared a report related to the suitability of the site for a proposed kennel development in relation to the land capability for wastewater disposal as well as stormwater harvesting and drainage requirements. Andrew prepared a report and made a presentation at VCAT that assisted the applicant to obtain a permit.

Maribyrnong River LSIO rezoning, Keilor, Melbourne Water: In 2012 Andrew undertook an independent review of a proposed Land Subject to Inundation Overlay for Melbourne Water along the Maribyrnong River in Keilor and Calder Park. Andrew's report assisted Melbourne Water to effectively negotiate all issues with an adjacent landowner.

O'Gradys Ridge Road Dam Break Expert Report, Southern Rural Water: In 2013 Andrew investigated the circumstances related to the failure of a large licensed farm dam. Andrew visited the site, assessed the role of Southern Rural Water, documented the downstream consequences of the dam failure and completed a risk assessment and a report.

Werribee Flood Expert Report, Southern Rural Water: In 2012 / 13 Andrew studied flooding patterns in the Werribee East area associated with a severe storm in February 2011. Andrew oversaw work by his colleague Glenn Ottrey that included detailed hydrologic and 2D hydraulic modelling of the flooding behaviour for a range of scenarios. Andrew and Glenn's work was able to demonstrate how recent works had effected flooding in some locations and not in others. Andrew produced reports that assisted all parties to reach agreement where recent works had worsened flooding patterns and to defend claims where there has been no change in flooding.

Keysborough Expert Witness Report, landowner: In 2011 / 12 Andrew investigated the drainage issues associated with an industrial development in Keysborough South. This work included review of recent developments, Melbourne Water Drainage Scheme, temporary retarding and stormwater treatment works and the downstream system. Andrew produced a comprehensive report and appeared at hearings at VCAT.

Sheyna Drive Subdivision, Numurkah, Shire of Moira: In 2013 Andrew prepared a report regarding a proposed residential subdivision on flood prone land in Numurkah. Andrew reviewed the flooding of the site in 2012 and flood mapping of the area, as well as drainage patterns, the effect of irrigation infrastructure and the potential risks and issues associated with the proposed subdivision. Andrew obtained information from the Goulburn Broken CMA and Council. Andrew presented his report at VCAT and his evidence assisted Council in having the subdivision refused.

Modella Poultry Farm surface water report, landowner: In 2012 Andrew and his colleague Maria Verrocchi prepared a report related to surface water issues for a proposed poultry farm in Modella in the Koo Wee Rup district. Andrew presented the report at VCAT.

Tyers Street, Portland, Drainage Expert Witness Report, multiple parties: Andrew was engaged by a number of briefing parties to investigate urban flooding in Portland in Victoria and to recommend flood alleviation works to mitigate the flood risk for commercial properties in Portland. This 2010 report recommended a highly efficient, cost effective solution to the existing flooding problem, which was adopted by all parties.

Melbourne Water Drainage Scheme Reviews, Melbourne Water. Andrew has been project director for a number of drainage scheme reviews for Melbourne Water, including hydrologic modelling, stormwater quality modelling and development and costing for drainage infrastructure for proposed urban areas.

City of Knox, City wide drainage strategy: Andrew was Project Director for this municipality wide study into all aspects of the Council drainage system. The study assessed flooding risks, drain capacities and opportunities for Water Sensitive Design. Outputs included overland flow maps, capital works program and recommended planning scheme amendments and funding scheme.

City of Maribyrnong and City of Moreland Drainage Strategies: Responsible for management of these projects which involved preparation of a comprehensive strategy to enable Council to identify drainage problems and prioritise a capital works program to resolve all problems, including flooding and water quality related works. Information was supplied in MapInfo format including maps, reports, calculations and photographs.

Stormwater Drainage Strategies for Councils: Andrew developed methodologies and undertook comprehensive municipality wide strategies for a number of councils in greater Melbourne. The strategies included risk based drainage flooding mapping and works programs as well as water sensitive design programs of works, funding advice, design guides and planning advice. Andrew has done studies of this type for many Councils including Darebin, Glen Eira, Manningham, Monash, Whitehorse and Stonnington.

Monash Flood Management Plan, Melbourne Water. Andrew was responsible for overseeing this project. The work included workshops, identifying flooding hot spots and developing a detailed action plan for Council, Melbourne Water and VicSES. Andrew brought his decades of experience in the area and working relationships to the project and contributed to a comprehensive plan for managing flood risks in the City of Monash.

Geelong Racecourse stormwater harvesting, Racing Victoria: Andrew developed this project with Racing Victoria and was Project Director for the completed study that identified a low cost and viable source of water for the racecourse by harvesting stormwater. Andrew then followed up with the detailed design and implementation of the works that provide over 70ML/annum of water to irrigate the racecourse. Major regional racecourses are important employers and are required for a viable training and racing industry. The Geelong project led to similar studies that Andrew undertook at Ballarat and Bendigo Racecourses.

Water Sensitive Road Drainage Scheme, Bandiana Link Road, VicRoads: Andrew has undertaken work for VicRoads in Wodonga to develop a water sensitive road design system for the Bandiana Link Road and to prepare a cost apportionment scheme to obtain contributions from all benefiting landowners. The results of the study have been used in negotiations with benefitting landowners to offset the value of the works built by VicRoads against the land acquisition compensation.

Surface Water assessment, Crowlands Windfarm: Andrew undertook a detailed surface water assessment of the proposed Crowlands windfarm in the Pyrenees in north western Victoria. His work included a site assessment, input to the windfarm design, assessment of erosion risks, concept design of waterway crossings (including the Wimmera River) and erosion control works and a detailed report.

Merri River and Russell Creek flood studies, Warrnambool, Glenelg Hopkins CMA and Shire of Warrnambool: Andrew was project manager for this flood study and undertook hydrologic modelling and hydraulic modelling, as well as producing the flood study report and recommendations.

Moyne River Flood Study, Port Fairy, Glenelg Hopkins CMA and Shire of Moyne: Andrew was project manager for this flood study and undertook hydrologic modelling and hydraulic modelling, as well as producing the flood study report and recommendations.

Shire of Moira Drainage Strategy: Andrew was project manager for a comprehensive drainage strategy for Council that included consideration of drainage patterns and urban pollutant loads and management for towns including Numurkah, Nathalia, Cobram, Katamatite, Katunga and Waaia.

Blackburn Creek rehabilitation, Melbourne Water: Andrew was Project Director for the design and superintendent for the construction of two stages of waterway rehabilitation works on Blackburn Creek

Surface Water study for Nowingi waste facility EES, Office of Major Projects: Andrew was project manager for the surface water study for the proposed long term waste facility at Nowingi. Andrew prepared the EES specialist report and an Expert witness statement and gave evidence to the Panel hearing. The study covered issues including flooding risk, water balance and risk of surface water discharges from the site.

Baddaginnie Flood Study, Office of Major Projects: Andrew was Project Manager for this flood study in central Victoria. The project involved hydrology and hydraulic modelling for four creeks north of Violet Town and south of Baddaginnie. Andrew also undertook significant public consultation, including presentations at public meetings and briefing of Ministerial advisers and his work was central to Government decisions that the site was not appropriate for use for a long term waste facility due to flooding risks.

Dickson and Lyneham Wetlands, ACT Government: Andrew was Project Director for the design, approvals and then construction of two major wetlands in the northern suburbs of Canberra in 2009 and 2010. The wetlands will play a vital role in stormwater treatment and harvesting approximately 400 ML/annum of stormwater for use in open space irrigation. Andrew has overseen the preparation of the Final Sketch Plans, flood study, water treatment and water harvesting modelling and has developed a number of the technical solutions for this project. Andrew has also had a leading role in the agency and public consultation for the projects and the approval process.

Surface Water Study for Environmental Effects Statement for Mount Shamrock Quarry Extension: Andrew completed the surface water EES report and made an Expert Witness statement and presentation to the panel assessing the EES. Andrew's work related to the site water balance, surface water quality, interaction of surface water and groundwater, discharge licensing and flooding risks.

Ruffey Creek rehabilitation, Melbourne Water: Andrew was Project Director for the design and superintendent for the construction of works on Ruffey Creek in Doncaster in 2007/08. The creek was deeply incised and in poor condition. The works included rock work, batter works, planting and an off stream wetland.

Dollar Wind Farm Expert Witness Report and Presentation, Southern Hydro: Andrew was peer reviewer for the civil design study for the Dollar Wind Farm in South Gippsland for Southern Hydro. His report related to surface water management and erosion control for the proposed development of the wind turbine project. Andrew made a presentation and was cross examined at the panel hearing in Foster in 2005.

Spindrift Avenue waterway impact report, landowner: In 2010 Andrew prepared an expert witness report and assisted a landowner in mediation in relation to development and works on a property in Spindrift Avenue, Flinders.

Lower Stony Creek VCAT report, Melbourne Water. Andrew represented Melbourne Water in relation to filling and realignment of Lower Stony Creek in Tottenham. Andrew's role included briefing of Melbourne Water's barrister on technical issues, preparation of reports and maps and appearances at VCAT hearings.

Lower Stony Creek Flood Impact Study, Melbourne Water. Andrew was project manager for a flood study that analysed the flooding impact of recent fill and creek alignment works on Stony Creek in Tottenham.

Lower Stony Creek Waterway Design, Melbourne Water. To mitigate the effects of recent filling and realignment of the creek a design was prepared to reduce the flooding impact, stabilise the creek, improve the creek environment and to allow for access across the creek.

Yarra River Flood Risk report, City of Boroondara: Andrew investigated the flooding risks associated with a property in Coppin Grove, Hawthorn. The property is adjacent to the Yarra River and the owner had made an application to Council for a Planning Permit for dwellings on the high part of the site. Andrew prepared a flood risk report in accordance with the Planning and Environment Act to assist Council in deciding on the limit of residential development, the location of a path and the extent of Council's Public Acquisition Overlay.

Flood Risk Report, Jacksons Creek: In 2002 Andrew prepared a flood risk report in relation to a proposed supermarket adjacent to Jacksons Creek in Gisborne. The report was prepared for the owner of a nearby supermarket as part of their submission to VCAT.

Drainage Design Guide, Melbourne Water: Andrew was personally responsible for reviewing the previous design guides and rewriting them to produce the current Melbourne Water Drainage Design Guide. This guide is the industry standard for drainage throughout the greater Melbourne area.

Development Contributions Plan, City of Monash: Andrew prepared the City of Monash's Development Contribution Plan (DCP) for drainage works and worked with Council manager's to obtain approval from the Department of Infrastructure (now DPCD) to the DCP. The DCP meets all of the requirements of the Planning and Environment Act and could provide Council with substantial funds every year towards the cost of drainage improvement works.

Porter Street Retarding Basin, Manningham City Council: Andrew analysed the drainage in the catchment in relation to a proposed subdivision on land in Porter Street, Templestowe. Part of the site was low lying and flood prone. Andrew made a presentation to VCAT that resulted in a retarding basin being set aside as part of the subdivision.

Wensleydale Coal Mine, Winchelsea, Victoria: The project involved risk assessment and design of stabilisation works for this disused mine in south-west Victoria. Severe erosion of the creek through the site occurred following a flood in 1995. Andrew developed a site management plan and detailed design of major stabilisation works.

Waterway Condition Assessment, Melbourne Water: Manager of waterway condition assessment studies for the Bunyip River, Tarago River, King Parrot Creek and Woori Yallock Creek catchments.

Dromana Flood Study: Andrew was project director for this project for the Mornington Peninsula Shire in Victoria. The flood mapping was done with the 2D flood model TUFLOW. Scenarios modelled included a range of storms as well as potential climate change scenarios considering sea level rise and increases in rainfall intensity. Andrew provided a report and policy advice on the implications of the study results.

Gunbower Forest Watering, Goulburn Broken CMA and Goulburn Murray Water: Andrew undertook technical and peer reviews for the design of the water diversion scheme to provide additional environmental water for the Gunbower Forest.

Racecourse Lake / Murray Valley Highway irrigation channel technical review, Goulburn Murray Water: Andrew oversaw hydraulic analysis and recommendations to improve channel capacity without impacting on flooding patterns for this irrigation system between Kerang and Swan Hill.

Lake Mokoan alternative water supply, Goulburn Murray Water: Andrew undertook technical reviews of proposed channel and pipe works to provide irrigation water to customers following the decommissioning of Lake Mokoan near Benalla.

Hattah Lakes environmental watering, Mallee CMA: Andrew developed concepts for water diversions for Hattah Lakes including channel works and regulating structures to provide environmental watering that would closely replicate flow patterns prior to regulation of flows in the Murray River catchment.

Surface Water Study for Learmonth Saleyards and abattoir for the City of Ballarat. This work included a flood study, drainage study and design of surface water quality management systems. Andrew's work included an expert report and appearance at a Panel Hearing.

PROFESSIONAL HISTORY

2010 - present	Senior Principal Engineer, Engeny Water Management, Melbourne
2003 - 2010	Principal Water Surface Engineer, URS Australia Pty Ltd
2002 - 2003	Business Development Manager, Waterways & Water Resources, GHD Pty Ltd
2001 - 2002	Manager of Water Resources, Egis Consulting Australia Southern Region
1997 - 2001	Principal Engineer, Hyder Consulting
1994 - 1996	Senior Project Manager, Sinclair Knight Merz
1992 - 1994	Consulting Engineer, AGP Consulting
1993 - 1994, 1999 - 2001	Part-time Lecturer, Swinburne University
1990 - 1992	Works Program Engineer, Dandenong Valley and Western Port Authority
1986 - 1989	Planning and Investigation Engineer, Dandenong Valley Authority
1984 - 1986	Planning Engineer, Port of Melbourne Authority
1982 - 1984	Dandenong Valley Authority

EDUCATION

1992	Postgraduate Diploma in Management Studies, Melbourne University
1984	Bachelor of Engineering (Civil), Swinburne Institute of Technology

REGISTRATIONS / AFFILIATION

Member, Institution of Engineers, Australia

APPENDIX B

Instructions

MEMORANDUM TO ANDREW PROUT

1 Thank you for confirming your availability to accept instructions in this matter.

2 Counsel's instructing solicitors (**ABL**) act for L.Bisinella Developments Pty Ltd (**Bisinella**).

3 This matter relates to Geelong Planning Scheme Amendment C395 (**Amendment**).

4 The Amendment proposes to implement the City of Greater Geelong's Settlement Strategy 2018 and Northern and Western Geelong Growth Areas Framework Plan 2019. The amendment includes policy changes to the Municipal Strategic Statement and rezones land in the Northern and Western Geelong Growth Areas to the Urban Growth Zone.

5 Bisinella owns land at 35 Avonlea Road, Bell Post Hill (**Bisinella Land**) and is entitled to become the registered owner of the land at 165 Bluestone Bridge Road, Bell Post Hill[1] (**Barwon Water Land**), which is affected by the Amendment.

6 At its meeting on 24 September 2019, the City of Greater Geelong (**Council**) resolved to refer the Amendment to a panel hearing.

7 A directions hearing has been listed for a directions hearing at 11:00am on Monday, 14 October 2019. .

8 The dates and venue for the panel hearing will be finalised at the directions hearing. Council have indicated that:

(a) a Panel Hearing of up to four weeks is anticipated;

(b) Council has tentatively scheduled venues in Geelong for the following dates:

(i) the week of Monday, 11 November 2019 to Friday, 15 November 2019;

(ii) Monday, 18 November 2019; and

(iii) Tuesday, 19 November 2019.

(c) the remaining days of the panel hearing will likely be held at Planning Panels in Melbourne.

9 Expert witness reports must generally be submitted five working days prior to the commencement of the panel hearing (unless a later date is directed by the panel).

Instructions

10 You are instructed to:

(a) act as Bisinella's drainage expert;

(b) prepare a statement of evidence, in accordance with the requirements of the *'Guide to Expert Evidence – Planning Panels Victoria'* (attached as **Attachment A**);

(c) attend a strategy conference with Adrian Finanzio SC and Robert Forrester of Counsel (date to be confirmed);

(d) present your evidence at the panel hearing and be available for cross-examination (if required); and

[1] Barwon Region Water Corporation is the current registered owner of this land.

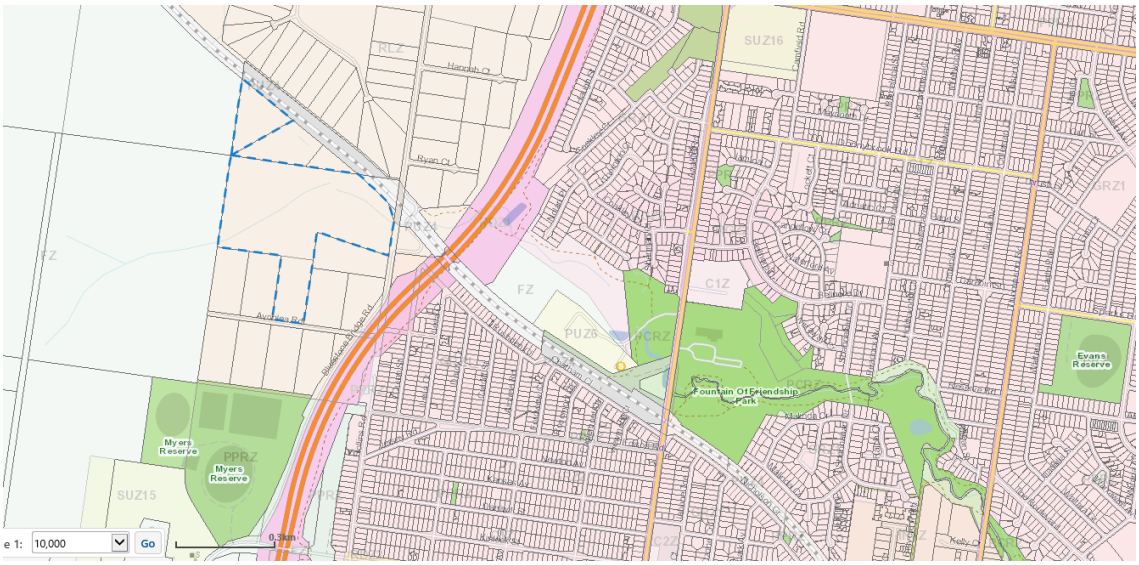
(e) confer as required with Counsel and ABL.

Bisinella Land

11 The Bisinella Land and adjoining Barwon Water Land comprises of the land contained in the following certificates of title:

Street Address	Vol / Fol	Land Description	Lot Area (Approx.)	Registered Proprietor
Bisinella Land 30 Avonlea Road, Bell Post Hill 3215	Vol 11104 Fol 092	Lot 1 on TP 942858Q	2.02 hectares	L.Bisinella Developments Pty Ltd
	Vol 10561 Fol 175	Land in PC 357077K	13.02 hectares	L.Bisinella Developments Pty Ltd
	Vol 05733 Fol 446	Crown Allotments 103A, 103B and 103C Parish of Moorpanyal	Not specified on title plan	L.Bisinella Developments Pty Ltd
Barwon Water Land 165 Bluestone Bridge Road, Bell Post Hill 3125	Vol 09888 Fol 697	Lot 1 on TP 219253M	401m²	Barwon Region Water Corporation

12 The title boundaries of the Bisinella Land are marked in blue in the map below[2]:



13 The Barwon Water Land immediately adjoins the Bisinella Land and is marked in red on the map below[3]:

[2] Sourced from https://mapshare.vic.gov.au/vicplan/
[3] Sourced from https://mapshare.vic.gov.au/vicplan/

Current Planning Controls – Bisinella Land

14 The Bisinella Land is currently included in the Rural Living Zone (**RLZ**) under the Geelong Planning Scheme (**Scheme**) and is in the Lara West Growth Area.

15 The Bisinella Land is not affected by any overlays under the Scheme.

16 The primary purposes of the RLZ[4] are to:

> ...
>
> *To provide for residential use in a rural environment.*
>
> *To provide for agricultural land uses which do not affect the amenity of surrounding land uses.*
>
> *To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area.*
>
> *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.*

17 Schedule 1 to the RLZ, imposes the following minimum subdivision area (hectares) restriction on the Bisinella Land:

30/01/2014
C294

SCHEDULE TO CLAUSE 35.03 RURAL LIVING ZONE

Shown on the planning scheme map as **RLZ**

1.0
30/01/2014
C294

Subdivision and other requirements

	Land	Area/Dimensions/Distance
Minimum subdivision area (hectares).	All land	1 hectare with the average area of lots in a subdivision being at least 1.5 hectares. For the purpose of calculating average area, all lots exceeding 3.0 hectares must be considered as 3.0 hectares (and the balance of a staged subdivision should be excluded).

18 A planning property report for the Bisinella Land, as well as the relevant Scheme provisions are contained in **Tabs 3 and 5** of your brief.

Existing Planning Permit over Bisinella Land

19 The Bisinella Land and Barwon Water Land has the benefit of planning permit no. PP-1137-2011/A (**Existing Permit**), issued on 24 October 2014.

[4] Se clause 35.03 of the Scheme

20 The Existing Permit allows a *"nine (9) lot subdivision generally in accordance with the endorsed plans"*. This subdivision is consistent with and reflects the existing RLZ of the Bisinella Land.

21 The Existing Permit is contained in **Tab 6** of your brief.

22 Plan of Subdivision 737852L (**Certified Plan**) was certified by Council on 9 March 2017.

23 Condition 58(b) of the Existing Permit, states that the Existing Permit will expire if a statement of compliance for the Certified Plan has not been issued within five (5) years of the date of certification – that is, by 9 March 2022.

24 As you would expect, Bisinella does not intend to progress the nine (9) lot subdivision allowed under the Existing Permit, until the outcome of the Amendment is known – particularly as the Amendment may ultimately allow additional subdivision (in the range of 90 lots) on the Bisinella Land.

25 As such, Bisinella made a further request to extend the Existing Permit – in accordance with its previous advice from Minter Ellison dated 15 July 2019 (**ME Letter**). A copy of the ME Letter is contained in **Tab 11** of your brief.

26 On 30 July 2019, the Existing Permit was extended by Council. The subdivision must now be completed by 9 March 2024. Consistent with the ME Letter, if required, Bisinella will arrange for a fresh plan of subdivision (consistent with the Certified Plan) to be re-certified by Council, if required before 9 March 2022 to preserve the currency of the Existing Permit.

Northern and Western Geelong Growth Area Project

27 At a meeting with Council in April 2017, Bisinella was first made aware of the Northern and Western Geelong Growth Area Project (**Growth Area Project**), being the two-year strategic planning project, which sits behind the Amendment,

28 A chronology which summarises Bisinella's dealings with Council in respect of the Growth Area Project and Amendment is contained in **Tab 12** of your brief.

What does the Amendment seek to do?

29 In October 2018, Council adopted the City of Greater Geelong Settlement Strategy. In March 2019, Council adopted the Northern and Western Geelong Growth Areas Framework Plan (**Framework Plan**). The Amendment seeks to implement both of these documents into the Scheme.

30 Electronic copies of the Amendment documents can be accessed via the link below and hard copies of the documents have been included in your brief at **Tabs 23 to 33**:

LINK TO AMENDMENT DOCUMENTS:
https://www.planning.vic.gov.au/amendments/greater-geelong/d2100c3e-b025-e911-a86b-000d3ad11a22

31 The Framework Plan can be accessed via the link below and a hard copy has been included in your brief at **Tab 22:**

LINK TO FRAMEWORK PLAN:

https://www.geelongaustralia.com.au/futuregrowth/default.aspx

32 Most relevantly to Bisinella, the Amendment proposes to rezone the land in the Northern and Western Growth Areas (including the Bisinella Land) from RLZ to the Urban Growth Zone (**UGZ**).

Bisinella's concerns with the Amendment

33 A copy of Bisinella's submission to the Amendment dated 29 July 2019 (**Bisinella Submission**) is contained in **Tab 24** of your brief.

34 Bisinella supports the Amendment in-principle, as if the Bisinella Land was rezoned from RLZ to UGZ it has received advice from TGM that it could develop a premium residential development of up to 88 lots[5] on the Bisinella Land. A preliminary plan which shows this 88-lot layout is contained in **Tab 34** of your brief.

35 Bisinella's primary concern with the Amendment is that the exhibited Framework Plan shows that approximately 75% of the Bisinella Land has been designated as public open space and waterways.

36 Paragraph 6 of the Bisinella Submission, reads as follows:

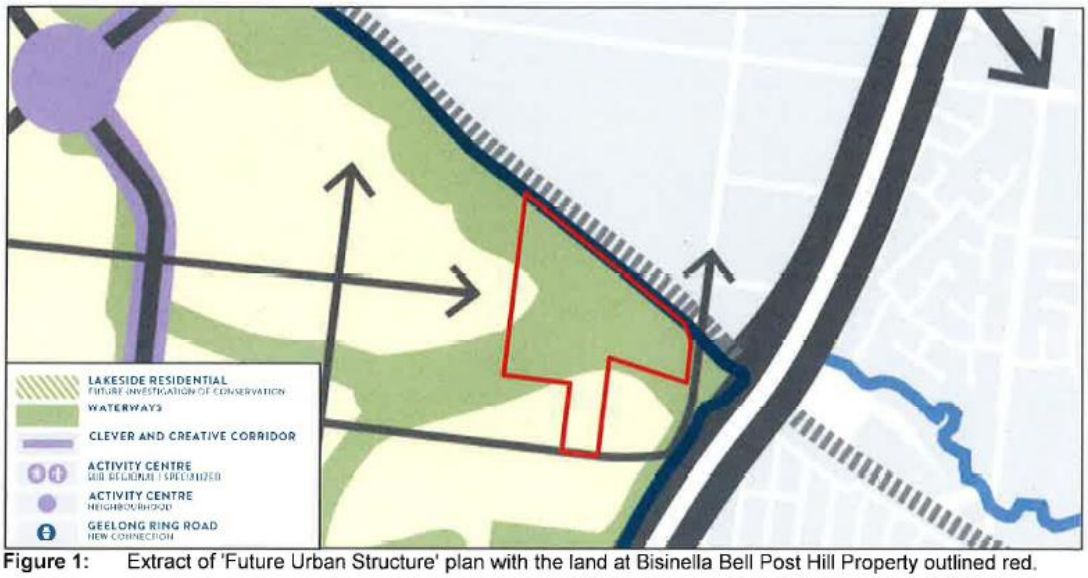


Figure 1: Extract of 'Future Urban Structure' plan with the land at Bisinella Bell Post Hill Property outlined red.

> As can be seen from Figure 1, a significant portion (approximately 80%) of the Bisinella Bell Post Hill Property has been illustrated as a "waterway" in the 'Future Urban Structure' plan. The basis of this mapping is unclear and it is submitted that it is not justified.
>
> Further work must be undertaken before the appropriate extent and alignment of waterways and public open space areas can be determined. Indeed, the need for further work is recognised on Plan 14 (page 88) of the Framework Plan, which states that a complex geotechnical investigation is required to confirm the landform stability of the area of the Bisinella Bell Post Hill Property which is illustrated as a "waterway" in the 'Future Urban Structure' plan.
>
> Until further work has been undertaken it is not appropriate for these areas to be mapped on a plan.

37 Bisinella is concerned that if the Framework Plan is approved in its current form it will not be able to develop the Bisinella Land in accordance with its proposed UGZ (i.e. as an 88 lot premium rural residential subdivision estate).

38 Such a restriction is:

[5] TGM have advised that given the very steep topography of the Bisinella Land, a conventional subdivision layout which would result in a development yield of 150 lots cannot be achieved. A premium, rural residential development in the range of 90 lots can be achieved.

(a) contrary to the purpose and intent of the Framework Plan, which is intended to guide urban growth in the municipality and accommodate 110,000 new residents in the northern and western Geelong Growth areas (which includes the Bisinella Land); and

(b) not justified at this early stage, given that the required geotechnical, ecological and hydraulic assessments have not been carried out over the Bisinella Land.

39 To determine whether this waterways / public open space restriction is justified, Bisinella would like you to:

(a) undertake a peer review of the stormwater management and flood impact assessments and integrated water cycle management reports exhibited as part of the Amendment (see Tab 33 of your Brief) and identify:

(i) any errors (including any incorrect assumptions);

(ii) provide your general commentary, with a view to this information being used to inform the legal submissions and cross-examination of the Council drainage experts; and

(b) complete your own independent assessment and prepare an independent statement of expert evidence. As part of this exercise, can you please consider if the Bisinella Land is not the appropriate location for the waterways / public open space as currently mapped in the Framework Plan, where would the appropriate location be?

Administration

40 Please provide us with your fee estimate for this matter at your earliest convenience.

41 If you require anything further, please contact Andrea Towson on (03) 9229 9642 or atowson@abl.com.au.

Date: 8 October 2019

Arnold Bloch Leibler

APPENDIX C

List of Reference Documents

INDEX TO BRIEF

Tab No.	Document Description	Date
Title Documents and Plans		
1	Title search statements and plans – Bisinella Land	19.07.2019
2	Title search statements and plans – Barwon Water Land	19.07.2019
Existing Planning Scheme Controls		
3	Planning Property Report – Bisinella Land	02.10.2019
4	Geelong Planning Scheme provisions which apply to Bisinella Land: (a) Clause 35.03: Rural Living Zone (b) Schedule to Rural Living Zone	Various
5	Planning Property Report – Barwon Water Land	02.10.2019
Existing Permit Documents		
6	Planning Permit No. PP-1137-2011/A (**Existing Permit**)	24.10.2014
7	Letter Council to Bisinella – extension of time	13.10.2016
8	Certified Plan of Subdivision 737852L	09.03.2017 (certification date)
9	Cultural Heritage Management Plan No. 11980, prepared by Terra Culture	21.05.2012
10	Vegetation Net Gain Assessment, prepared by Mark Trengove Ecological Services	06.02.2012
11	Letter Minter Ellison to Bisinella – advice on expiry of Existing Permit	15.07.2019
Growth Area Project – Background Documents to Amendment		
12	Chronology setting out dealings between Bisinella and Council since April 2017 on Growth Area Project and Amendment	Undated
13	Letter Council to Bisinella	17.07.2017
14	Letter Bisinella to Council	10.08.2017
15	Letter Council to Bisinella (as affected land owner) – Open House Session	28.09.2017
16	Letter Bisinella to Council – confirming support of indicative Northern and Western Geelong Growth Areas plan	28.05.2018

Tab No.	Document Description	Date
17	Email Jessica Potas, Council to Richard Bisinella, Bisinella – confirming receipt of submission in relation to the draft future urban structure plans for Northern and Western Geelong Growth Areas	04.07.2018
18	Email 'managing growth', Council to Richard Bisinella, Bisinella – progress of the Growth Area Project	23.03.2019
19	Council Meeting Agenda – Ordinary Meeting of Council, 26 March 2019: *Northern and Western Growth Area – Adoption of Framework Plan*	26.03.2019
20	Letter Bisinella to Council	28.03.2019
21	Series of emails Council and Bisinella – funding of Northern and Western Geelong Growth Ares Biodiversity Assessment Report	04.09.2019 to 06.09.2019
Exhibited Amendment Documents		
22	Northern and Western Geelong Growth Areas Framework Plan	March 2019
23	C395 Information Sheet	Undated
24	Bisinella submission in response to Amendment	29.07.2019
25	C395 Explanatory Report	Undated
26	C395 Gazette Notice	Undated
27	C395 Instruction Sheet	Undated
28	C395: Proposed Amendments to Scheme (a) Clause 21.03 Objectives – Strategies – Implementation (b) Clause 21.04 Municipal Planning Framework (c) Clause 21.06 Settlement and Housing (d) Clause 21.08 Development and Community Infrastructure (e) Clause 21.11 Armstrong Creek Urban Growth Area (f) Clause 21.14 The Bellarine Peninsula (g) Clause 21.16 Anakie (h) Clause 21.20 Northern and Western Geelong Growth Areas (i) Clause 72.08 Background Documents	Various

Tab No.	Document Description	Date
29	C395: Proposed Maps (a) Zone Map 16 (b) Zone Map 17 (c) Zone Map 23 (d) Zone Map 24 (e) Zone Map 25 (f) Zone Map 31 (g) Zone Map 32 (h) Zone Map 36 (i) Zone Map 47	Various
30	Council Meeting Agenda – Ordinary Meeting of Council, 24 September 2019: *Amendment C395 – Consideration of Submissions (pages 11-119)*	24.09.2019
31	Summary of submissions received by Council	Undated
32	List of Technical Reports for C395	Undated
33	Technical Reports relating to C395 – Separate USB Drive (electronic copies only) ******NB:** Please advise if any hard copies required of any technical reports*	Various
34	Indicative UGZ Lot Layout on Bisinella Land – 88 Lots	Undated

APPENDIX D

Water Technology Plans

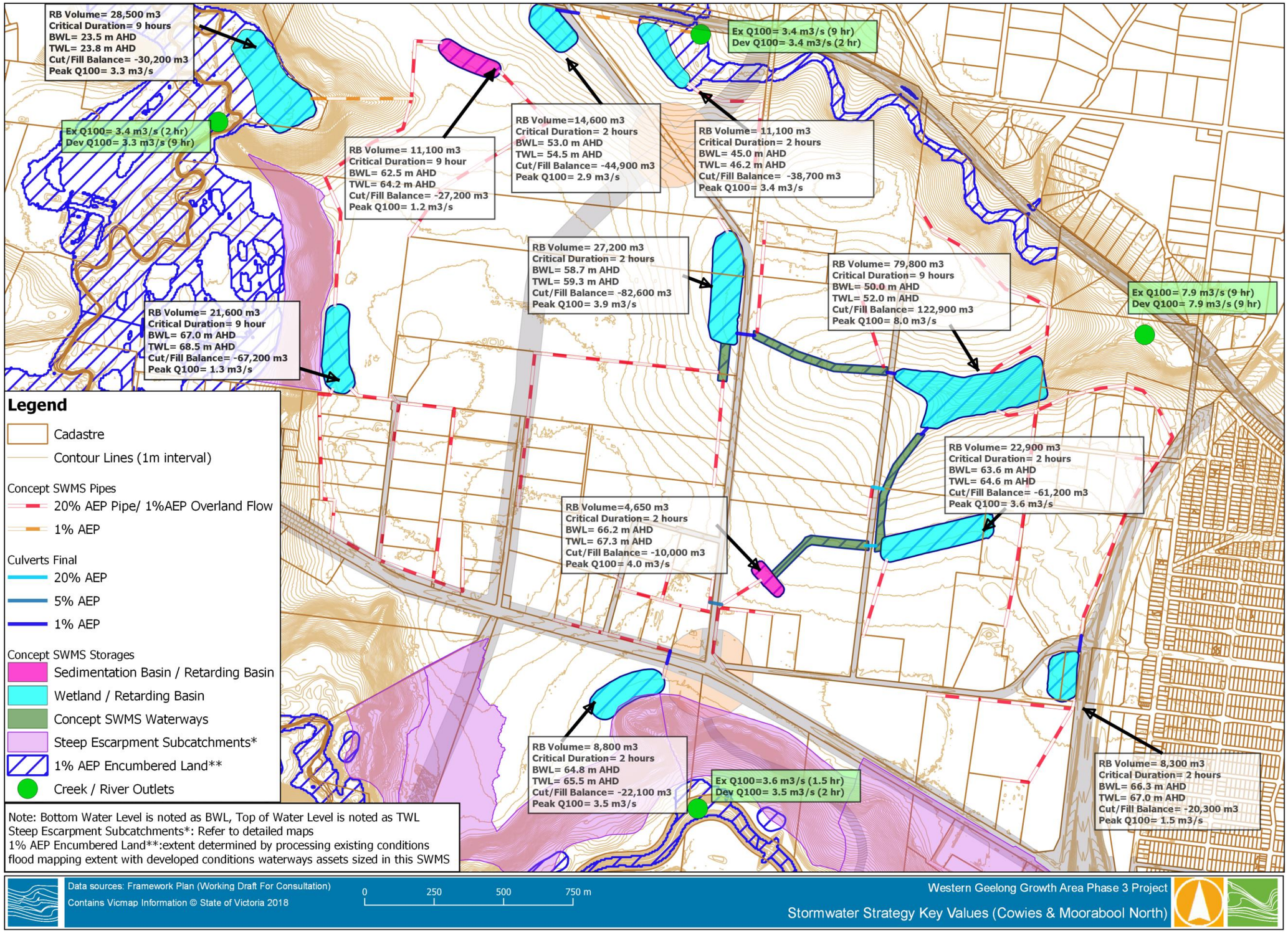


Figure 3-2 Stormwater Strategy Peak Flows and Flood Storage Key Values (Cowies & Moorabool North)

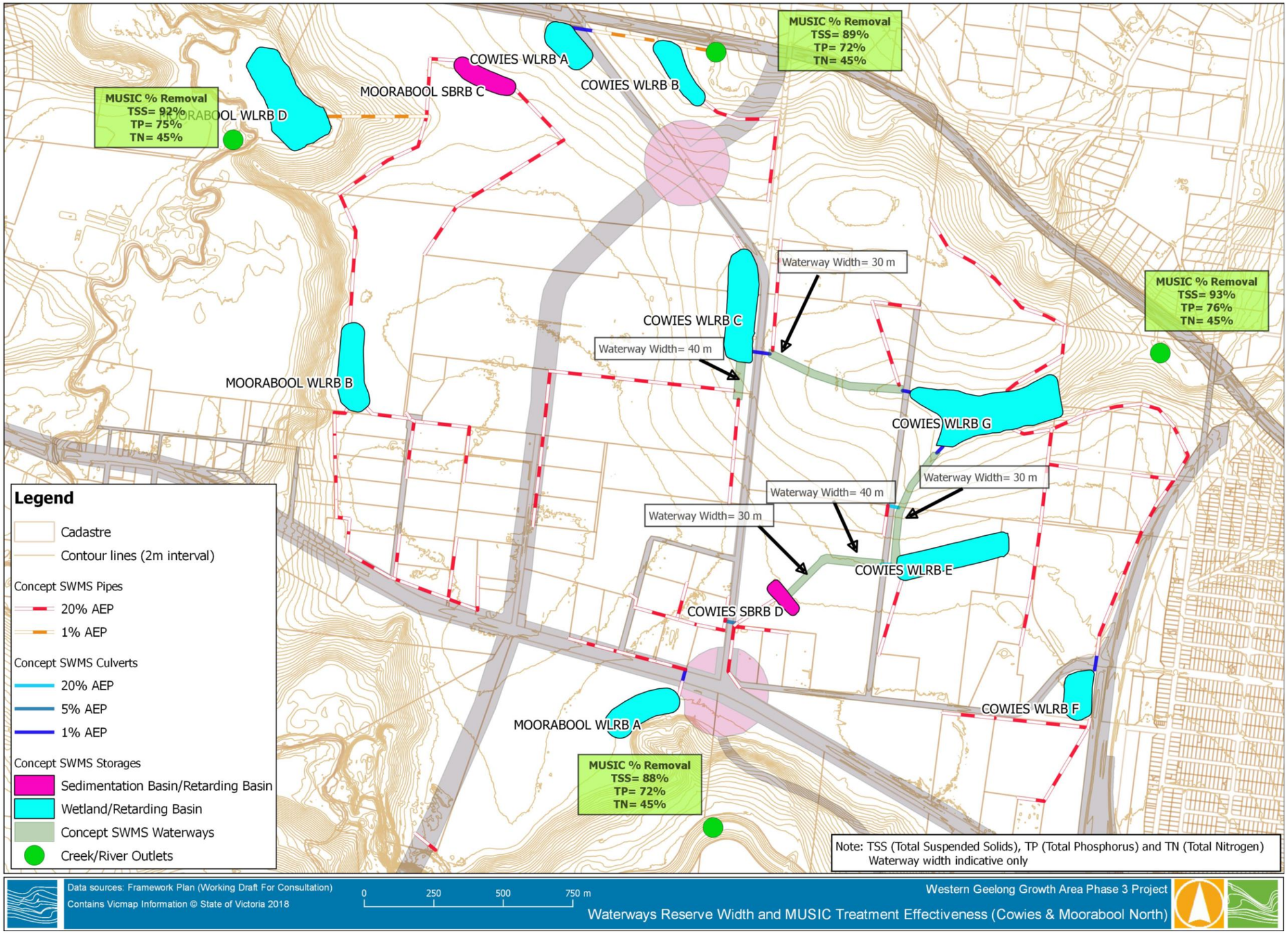


Figure 3-7 Waterways Width & MUSIC Treatment Effectiveness (Cowies Ck & Moorabool River North)

APPENDIX E

Bisinella Draft 75 lot Subdivision Plan

DRAFT

APPROX.
M.G.A.94
ZONE 55

POTENTIAL FUTURE CONNECTION

RESERVE No.1 FOR MUNICIPAL PURPOSES 23925m

RESERVE No.2 FOR MUNICIPAL PURPOSES 56291m

R-1

BLUESTONE BRIDGE ROAD

MOORPANYAL PM 468
RL 49.30

AVONLEA ROAD

ROAD RESERVE

Rev.	Revision	Date
-	-	-

TGM Group Geelong
1/27-31 Myers Street (PO Box 1137)
Geelong Vic 3220
T 03 5202 4600
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ABN 11 125 568 461
www.tgmgroup.com

Melbourne I Ballarat I Ballina

JAS-ANZ Accredited: Quality ISO 9001 - OH&S AS/NZS 4801 - Environment ISO 14001

PLAN OF PROPOSED SUBDIVISION

30 AVONLEA ROAD,
BELL POST HILL, 3215.

L.BISINELLA DEVELOPMENTS

Job Number: 10173-101
Sheet: 1 of 1
Date of Survey: -

Date of Issue 30/10/19

LENGTHS ARE IN METRES
25 0 25 50 75 100 125
1:2500

At Size A3

Survey: - **Drawn:** AD **Checked:** DRR

DWG: **10173-100-OPTION 4** REV: **1**