Environmental Impact Assessment

Wye River & Separation Creek Stormwater Design

V170115

Prepared for
Colac Otway Shire

16 October 2017

Cardno
Shaping the Future

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1 Introduction

Cardno Victoria was engaged by Colac Otway Shire Council to develop a holistic stormwater drainage design for the entire townships of Wye River and Separation Creek.

As part of the Bushfire Recovery efforts, the State Government provided Colac Otway Shire $5.94million for stormwater, retaining walls, cadastral survey and temporary drainage, erosion and sediment control. Of that $5.94 million, $3.5 million has been budgeted for a stormwater drainage system for the townships of Wye River and Separation Creek.

The key project design aims are to:

- Reduce the impacts of uncontrolled stormwater runoff on unstable slopes – due to loss of vegetation from the bushfire
- Improve erosion and sediment control issues.
- Minimise the impact of stormwater runoff through private property
- Increase drainage capacity of existing road drains
- Provide Legal Point of Discharge to properties
- Upgrade driveways to reduce impacts of stormwater runoff, erosion and sediment control
- Keep the rural feel of the towns
- Improve environmental impacts on vegetation and stormwater quality.

This Environmental Impact Assessment (EIS) summarises the impacts on the environment that the project will have. The EIS should be read in conjunction with the stormwater design plans – V170115 – CI – 1000 to 10000.

2 Environmental Impacts

2.1 Vegetation

2.1.1 Vegetation removal

No mature trees will be removed for the construction of the drainage. Alignments have been chosen to avoid trees and in some cases, section of drainage removed from the design to protect stands of mature trees.

There will be areas disturbed to trench pipes however with the exception of the alignments south of Paddys Path the majority of the areas are already disturbed and do not contain significant vegetation.

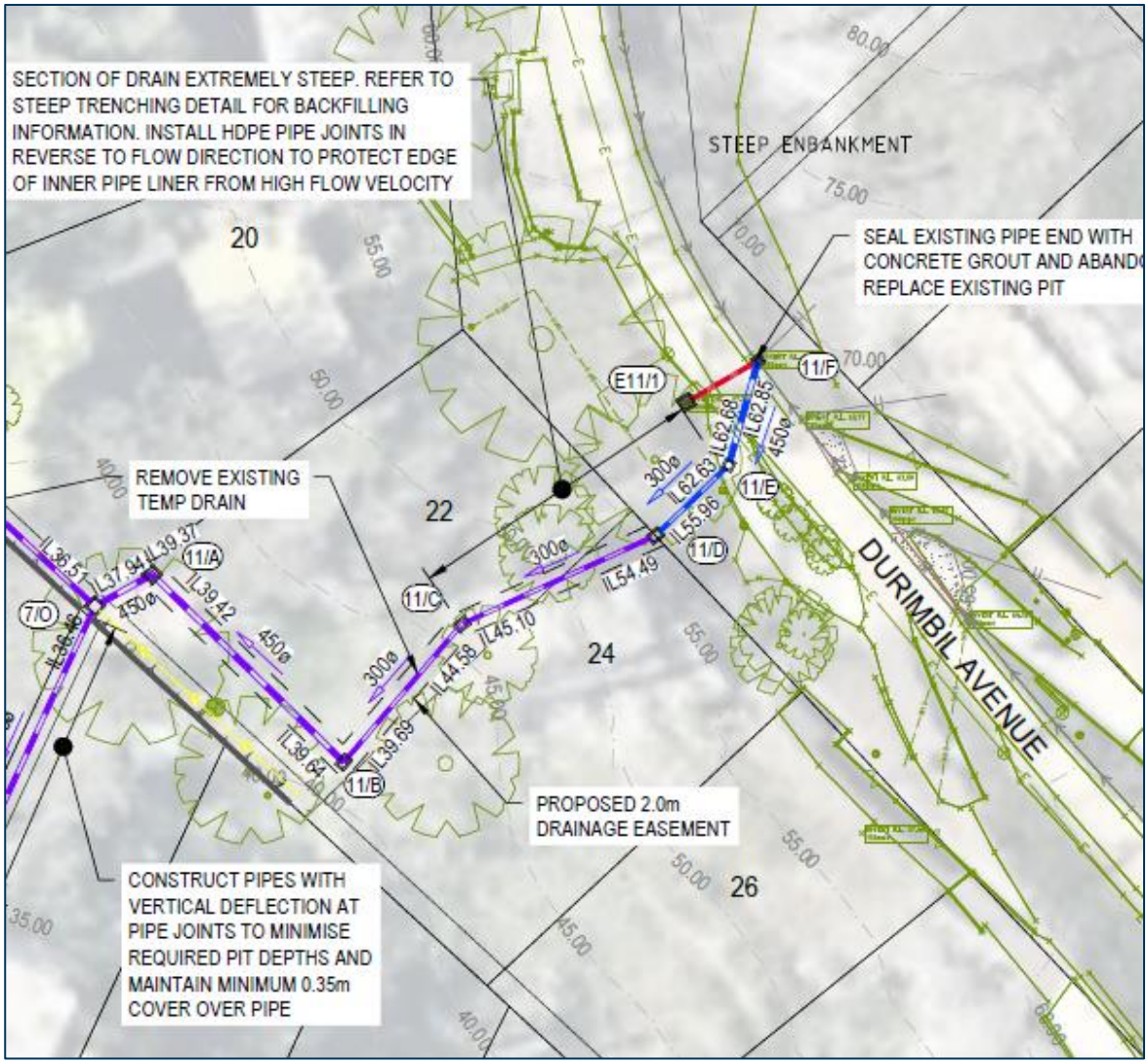

Figure 2-1 Example of Pipe Alignment to Avoid Trees

2.1.2 Revegetation

There are some areas of revegetation associated with the project. These areas are:

- Pipe trenching on slopes greater than 1 in 2 (see section 2.2.1)
- Outlet protection (see section 2.2.2)
- Wetland/Billabong on The Boulevard (see section 3.2)
- Drain between Olive St and Sarsfield St

2.2 Erosion and Sedimentation

2.2.1 Impacts of improved stormwater Drainage

One of the drivers for the project is to “Reduce the impacts of uncontrolled stormwater runoff on unstable slopes – due to loss of vegetation from the bushfire”. This is being achieved through the following:

- Increasing drainage capacity of existing road drains
- Providing Legal Point of Discharge to properties
- Upgrading driveways to reduce impacts of stormwater runoff

These design measures are aimed at confining stormwater to designated flow paths which will reduce the erosion associated with the current overland flow scenarios.

2.2.2 Pipe Trenching

The pipe trenches on steep slopes have been identified as areas of potential erosion. To mitigate this, the pipe trenching backfill has been designed as per Figure 2-1 with the following features:

- Cement treated crushed rock backfill
- 150mm thick Geoweb backfilled with topsoil to be planted with the species detailed in Appendix A.

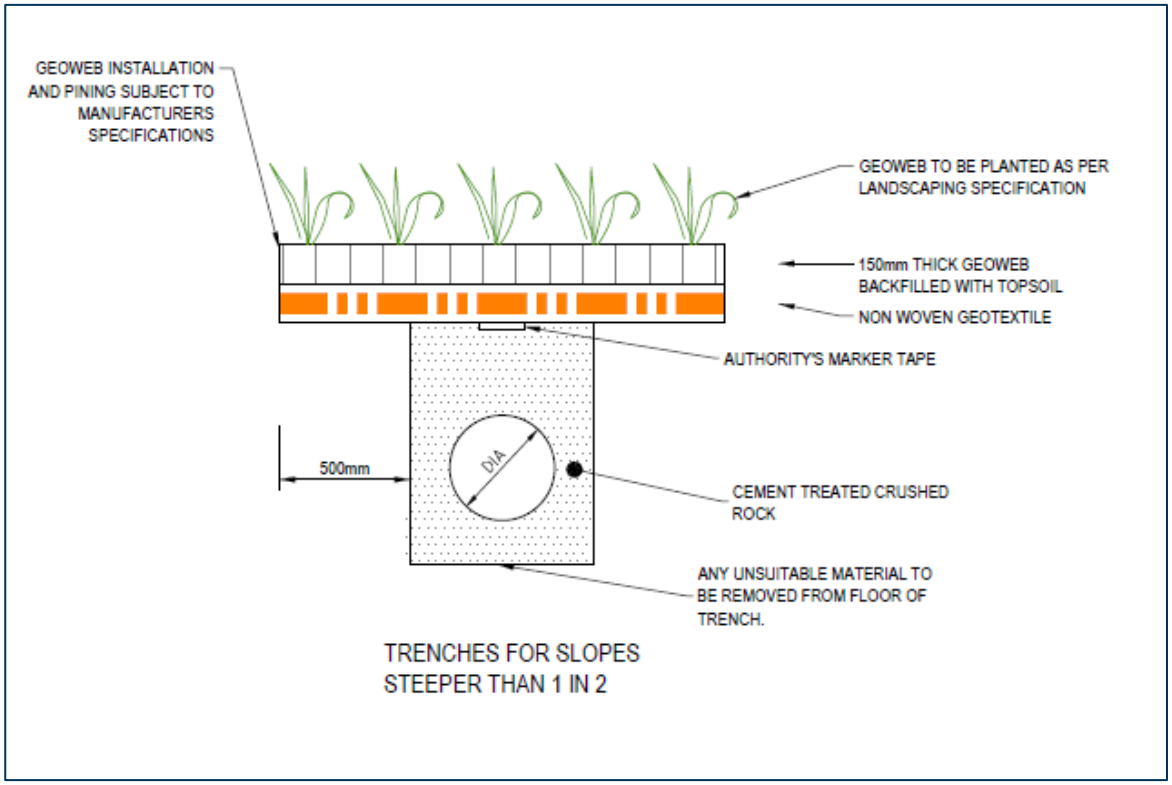

Figure 2-2 Pipe Trenching Detail for Slopes Steeper than 1 in 2

2.2.3 Outlet Protection

Stormwater outlets into the natural gullies was identified as a potential erosion risk with a rock and vegetated outlet identified as a solution. Outlets identified as having a high risk of erosion have been extended to outlet closer to the bottom of the receiving gully.

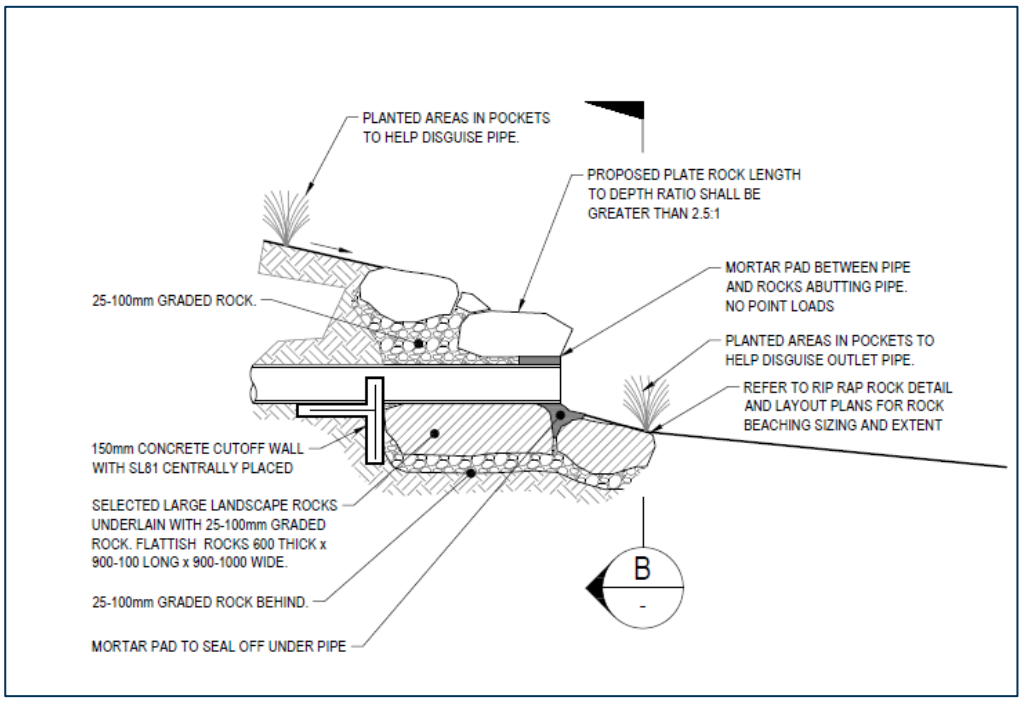

Figure 2-3 Standard Outlet Detail

3 Water Quality

3.1 Impact on Water Quality

One of the key project aims was to provide the majority of properties with a Legal Point of Discharge (LPD) for the overflow from rainwater tanks. Currently, only a few properties have LPD which results in a few scenarios where the overflow from the rainwater tanks flows through the effluent fields for septic tanks.

The provision of the majority of properties with a LPD will improve the water quality of stormwater flowing into the drainage system by reducing the flow of water over septic tank effluent fields.

3.2 The Boulevard Wetland/Billabong

To improve water quality and reduce flow velocities in the main drainage reserve that crosses the Boulevard, a wetland/billabong is being constructed.

The emergent and semi-submerged zones as shown in Figure 3-2 will contain the species outlined in Table 3-1.

Table 3-1 Wetland/Billabong Species

Emergent Zone	Semi-submerged zone
eleocharis acuta	Carex Apressa
carex fascicularis	Findinia Nodosa
carex tereticaulis	Swamp Wallaby Grass
	Juncas Bufonius

The wetland species will be complimented with the following species of plants to enhance the visual aspect of the wetland/Billabong:

- Melaleuca ericifolia – Swamp Melaleuca
- Cyathea australis – Rough Tree Fern
- Rhagodia candolleana - Seaberry saltbush
- Enchylaena tomentose – Ruby Saltbush

Figure 3-1 The Boulevard Wetland/Billabong Location

Figure 3-2 The Boulevard Wetland/Billabong Landscape Sketch

4 Summary

The Wye River and Separation Creek Stormwater Project main goal is to “reduce the impacts of uncontrolled stormwater runoff on unstable slopes – due to loss of vegetation from the bushfire”.

The project has taken into account the following environmental considerations:

- New easement drains alignments avoiding trees
- Drainage outfalls to natural gullies will be designed with erosion protection and revegetation
- Reduction in rainwater tank overflows across septic tank fields improving water quality
- Increasing drainage capacity of existing road drains minimising roadside erosion
- Upgrading driveways to reduce impacts of stormwater runoff running over roads

In addition to this the following revegetation is included in the project:

- Pipe trenching on slopes greater than 1 in 2
- Outlet protection
- Wetland/Billabong on The Boulevard
- Drain between Olive St and Sarsfield St

APPENDIX A

Pipe Trenching Revegetation

Plant Schedule for Slopes Steeper than 1 in 2

Botanical Name	Common Name	Plant Density	Notes
Goodenia Ovata	Hop Goodenia	1 -2 plants per 50m^2	Dispersed planting and Plant at top of banks/transition between road and pipe trench
Correa Alba	white correa	1 -2 plants per 50m^2	Dispersed planting and immediately upstream of pits
Poa Poaformis	coast tussock-grass	5 plants per 5m^2	Plant in clumps of 5
Lomandra Longfolia	Mat rush	1 -2 plants per 50m^2	Dispersed planting
enchylaena tomentosa	Ruby Saltbush	1 -2 plants per 50m^2	Dispersed planting
Microlaena stipoides	Weeping Grass	10g/m^2	Begin with a weed free seed bed. Sow seed 10-15 mm below the soil surface

Goodenia Ovata

Correa Alba

Poa Poaformis

Lomandra Longfolia

enchylaena tomentose

Microlaena stipoides