

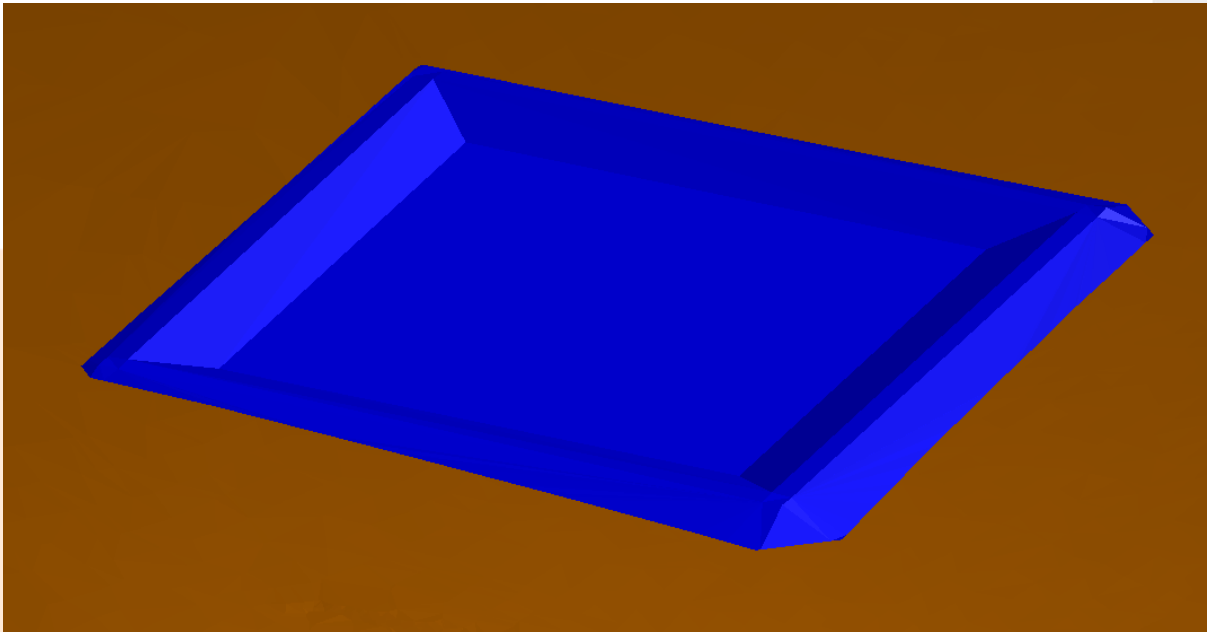


Conceptual Dam Design

Project: Blackgate Rd-Minya Lane Farm Dam
Report No: AGTE20249-5

| Geotechnical | Environmental | Residential | Pavements Investigation & Design |

Adelaide, Ballarat, Brisbane, Dingley Village, Warrnambool



Prepared for:

Charlie Santospirito

8 April 2021



Contents

1. Introduction	5
2. Regional Geology	6
3. Proposed Dam.....	7
3.1 Type of Dam.....	7
3.2 Embankment Geometry	7
3.3 Reservoir Liner	7
3.4 Embankment and Reservoir Volume	8
3.5 Rainfall Data.....	9
3.6 Dam CAD Models	9



Blackgate-Minya Lane Farm Dam: Proposed

General

Location	Corner of Minya Ln and Blackgate Rd Connewarre VIC 3227 (Torquay)
Nearest town	Torquay
River	Off river storage
Catchment Area	Approximately 1.7ha
Map Reference	-38.290589, 144.370211
Purpose	Irrigation for flower farm nearby
Hazard Category	Not rated
Proposed Design	Homogenous earth dam with 2.8H:1V slope, plastic/geomembrane lined inside the reservoir
proposed Owner and Operator	Landowner

Reservoir

Total Storage Capacity	Approximately 45ML
Surface Area at FSL	Approximately 1.62 hectares
Full Supply Level (FSL)	Design & Proposed: 9m AHD
Minimum Operating Level (MOL)	Not Known

Embankment

Type	Homogeneous earthfill, no filter, no cutoff with plastic liner inside reservoir
Maximum Height	Approximately 4m Downstream Approximately 4.5m Upstream
Crest Length	130m x 130m
Crest Width	4m
Minimum Freeboard	1m
Upstream Slope	2.8H:1V or flatter
Downstream Slope	2.8H:1V or flatter



Foundation

Foundation Description	Likely Clay /sandy clay
Foundation Origin	Torquay Group Marlstone, limestone, mudstone, sandstone, minor lignite

Spillway

Type	Pipe
Acceptable Flood Capacity (<i>ANCOLD 2000</i>)	1 in 1000 AEP

Inlet Works

Inlet Pipe:	150-250mm diameter pipeline over the embankment
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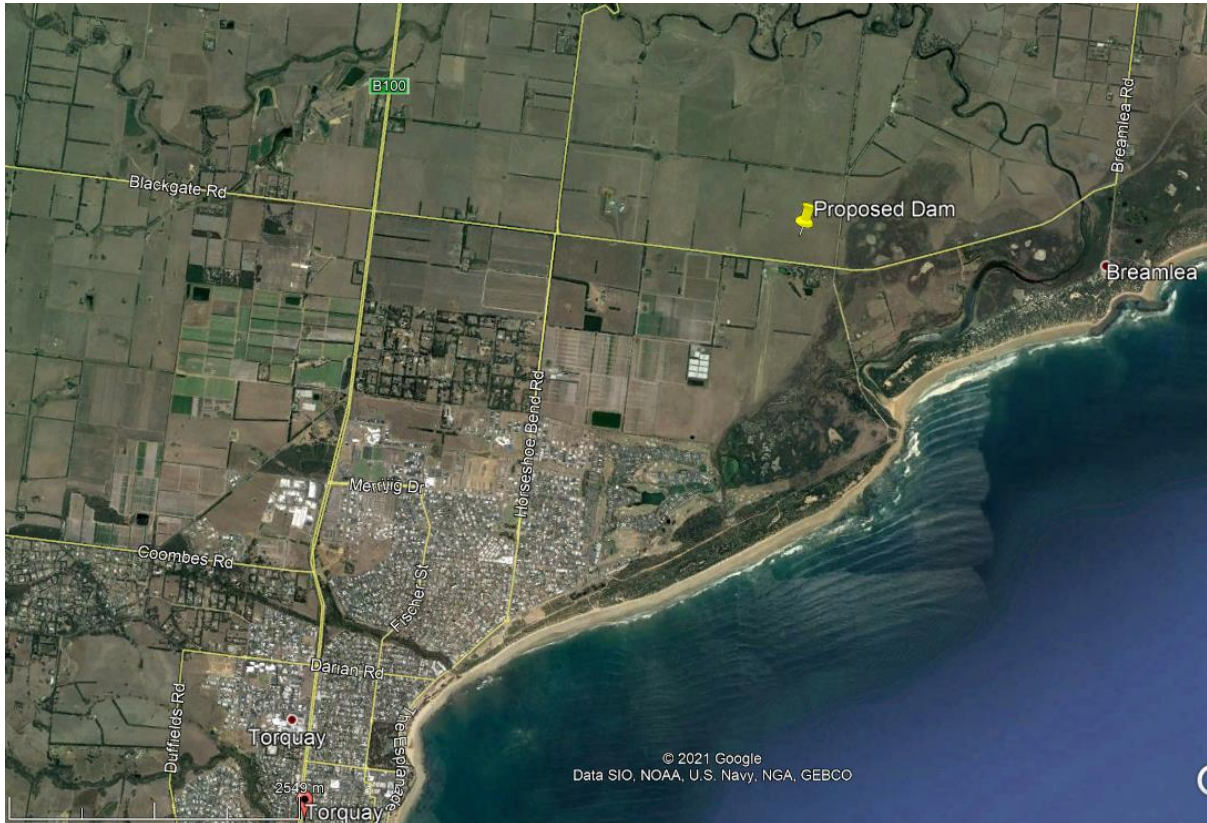
Outlet Works

Arrangement:	150-250mm diameter pipeline over the embankment
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1. Introduction

Australian Geotechnical Testing (AGT) was engaged to provide a conceptual dam design for Mr Charlie Santospirito. The proposed dam geometry is provided in the previous section with further details and design drawings provided in the following sections. **Figure 1** shows the proposed dam location.

Figure 1 – Dam Location Plan



2. Regional Geology

The following regional geology summary is based on the Anglesea 1:63,360 geological mapsheet and accompanying geological notes.

- The main geological unit is the Torquay Group which includes marlstone, limestone, mudstone, sandstone and minor lignite.



3. Proposed Dam

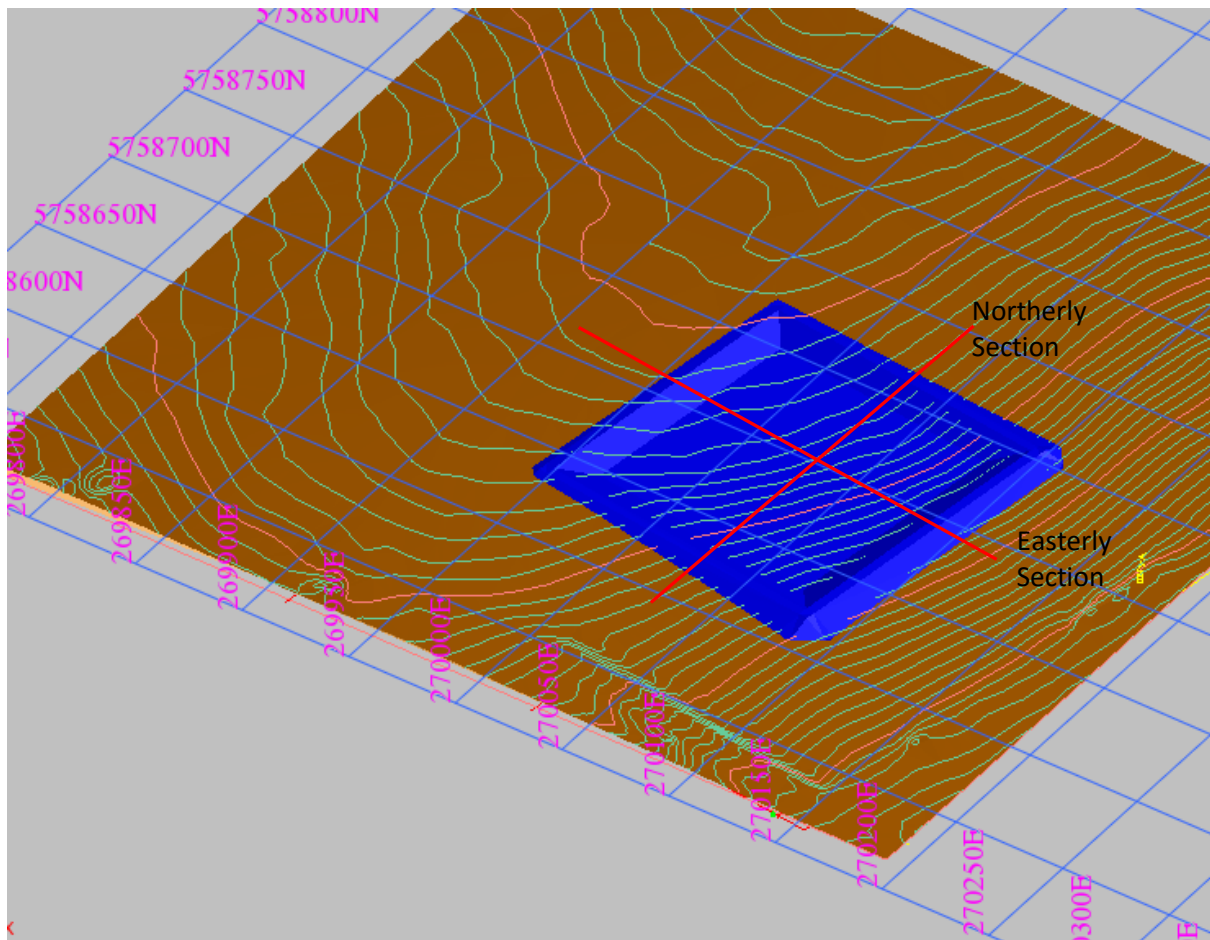
3.1 Type of Dam

The proposed dam will be in a rectangular excavated tank shape with the wall raised above the natural surface preventing any surface runoff entering the dam. The embankments will be constructed using materials excavated from the reservoir to approximately 2.5m below ground. The water may be pumped from the Black Rock treatment plant and other sources into the reservoir. Minimal water will be obtained from rainfall over the dam due to its small catchment.

3.2 Embankment Geometry

The dam and embankment geometries are presented in the following Figures.

Figure 2 – Proposed Dam 3D Model



3.3 Reservoir Liner

An HDPE geomembrane liner of 2.0mm thickness (Dam Liner Atarfil) is proposed with a 315mm PE PN16 suction to line the reservoir preventing seepage into the embankment.

Figure 3 – Proposed Dam Section Along South East

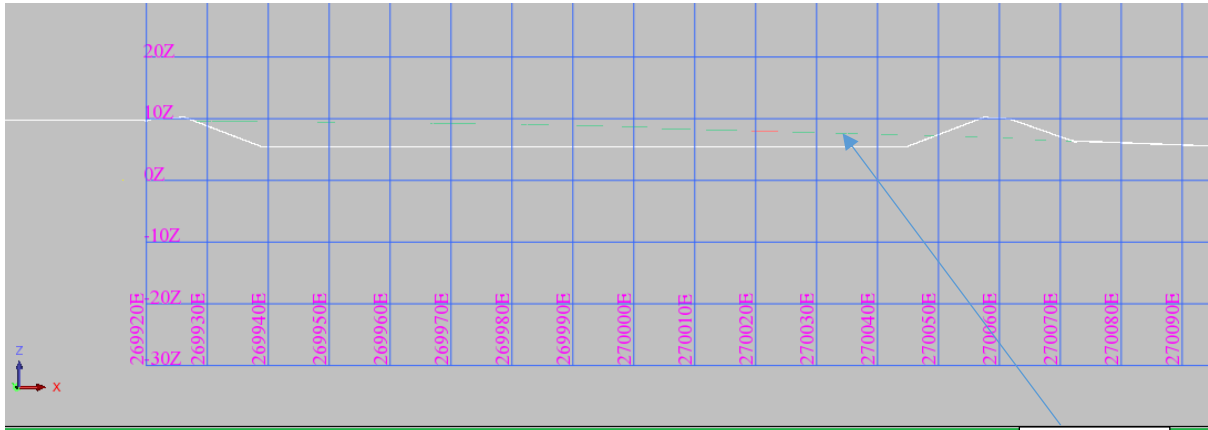
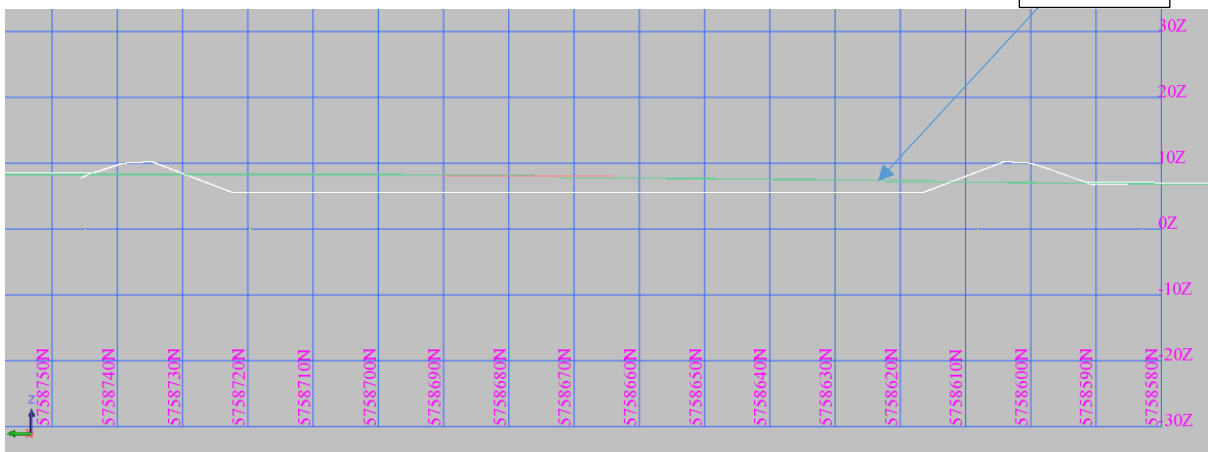


Figure 4 – Proposed Dam Section Along East West



3.4 Embankment and Reservoir Volume

Item	Volume
Excavation	40,800 m ³
Embankment Fill	10,400 m ³
Reservoir	48300 Mega Litres at FSL 9 mAHD

3.5 Rainfall Data

The average annual rainfall in Torquay is 522mm.

3.6 Dam CAD Models

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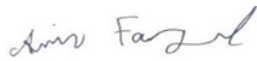
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Dam 3D Model: damRL10.dwg

Embankment Footprint: toe.dwg

Embankment Section: section.dwg

Topography Model: Contours and DCMB.dwg



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