


## TECHNICAL MEMORANDUM

PLANS AND DOCUMENTS  
referred to in the PDA  
DEVELOPMENT APPROVAL



Approval no: DEV2019/1074  
Date: 26 March 2020

To: Richard Bender - EDQ  
From: Ralph Williams / Shaun Leinster  
DesignFlow  
Date: 24 February 2020  
Subject: Carseldine Urban Village - Addendum to Carseldine Urban Village – Local flood assessment to support Stage 1 development

Attachments 1. Flood barrier works for Stage 1

### 1 INTRODUCTION

This technical memorandum provides recommended outcomes for stormwater related items for Carseldine Urban Village Stage 1 development, based on 3<sup>rd</sup> party reviews by BMT of the Stage 1 flood impact assessments and subsequent discussions with EDQ.

### 2 BACKGROUND

In support of the Carseldine Urban Village Stage 1 application, DesignFlow completed a detailed local flood assessment, as detailed in *Carseldine Urban Village – Local flood assessment to support Stage 1 development (DesignFlow 10 October 2019)*. This shall be referred to as the *Stage 1 Local Flood Assessment* in this technical memorandum.

The flood modelling presented in the *Stage 1 Local Flood Assessment* was completed to inform detail drainage design for Stage 1 development to manage local impacts and demonstrate no flood impacts external to the site as a result of Stage 1 development. The local modelling was completed using the a WBNM rainfall runoff model that feeds local catchment hydrographs into a 1D/2D TUFLOW hydraulic model. Full details of the model setup are provided in the *Stage 1 Local Flood Assessment*. A summary of the model setup is reproduced here in Figure 1.

Local modelling for Stage 1 did not include the flood bund along the eastern boundary of the site as this was not originally intended to be included with Stage 1 works.

Outcomes from the flood impact assessments included:

- Flood level reductions at Beams Rd and areas north of Beams Rd for all events modelled
- Flood level reductions along the rail corridor for all events modelled.



Figure 1 – Local TUFLOW model setup

### 3 3<sup>RD</sup> PARTY REVIEW

BMT completed a 3rd party review of the flood modelling associated with Stage 1 development (BMT – *Carseldine Urban Village – Dev 2017/864 – Stage 1 Drainage Peer Review – 21<sup>st</sup> October 2019*). Formal responses to the 3rd party review were provided by DesignFlow to EDQ (refer to DesignFlow letter response *Carseldine Urban Village Development – Stage 1 drainage peer review – 1st November, 2019*). BMT provided a subsequent letter response (*Carseldine Urban Village – Dev 2017/864 Stage 1 Drainage Peer Review – 11<sup>th</sup> November 2019*) and following this a telecom meeting with EDQ, BMT and DesignFlow occurred on the 28th November, 2019 to resolve an agreed outcome for Stage 1 approval. The agreed remaining items to be resolved for Stage 1 development included:

- Item 1 - Flood barrier along the eastern boundary of the site – consultation be held with TMR/QR
- Item 2 - Testing the requirement of the proposed flap valve on the 1200mm pipe culvert
- Item 3 - Review flood storage volumes within the BCC waterway corridor extent
- Item 4 - Model updates and sensitivity testing – post Stage 1

The following provides a summary of the actions completed for each item above and the recommendations relevant to Stage 1 approval.

### 3.1 ITEM 1 – FLOOD BARRIER ALONG EASTERN BOUNDARY

Since the Stage 1 3<sup>rd</sup> party review, EDQ have had discussions with TMR regarding flood impacts along the rail corridor zone. TMR have stated that they will not accept any impact in this zone. Although local modelling for Stage 1 had indicated no impacts along the rail corridor with no flood barrier included, there remains a risk in the regional flood case that impacts could occur in this corridor with no flood barrier in place. Whilst this does not cause flooding of the rail line, EDQ have advised that the flood bund is to be constructed as part of Stage 1 works to eliminate the risk of flooding along the rail corridor zone.

**Attachment 1** provides details of the proposed flood barrier works. This flood barrier will be combined with the acoustic fence, where applicable. This is consistent with what was previously proposed to eliminate impacts along the rail corridor zone, as detailed in the Carseldine Urban Village - Updated Stormwater Management Plan (DesignFlow October 2019). The top flood barrier levels are based on predicted 100 year flood levels associated with ultimate development conditions, with a minimum 300mm freeboard applied. These flood barrier levels are insensitive to the flap valve on the 1200mm RCP and are related to regional flood effects.

**RECOMMENDED ACTION RELEVANT TO STAGE 1: INSTALL THE FLOOD BARRIER ALONG EASTERN BOUNDARY OF THE SITE AS PART OF STAGE 1 WORKS AS PER ATTACHMENT 1**

### 3.2 ITEM 2 – FLAP VALVE

Previous Stage 1 local modelling was completed without the inclusion of the flood barrier along the eastern boundary. This required the inclusion of a flap valve on the 1200mm RCP to avoid impacts within the rail corridor as a result of backwatering from Cabbage Tree Creek, particularly during more frequent local storm events. Given the rail bund will now be completed as part of Stage 1 works to avoid impacts in the rail corridor, the requirement for the flap valve will be tested with the rail bund included. Should a flap valve be required this will be installed prior to plan sealing for Stage 1.

Please note that the current design of the 1200mm RCP has taken into consideration the possibility of installing a flap at a future date. Refer to Calibre plans for details.

**RECOMMENDED ACTION RELEVANT TO STAGE 1: ENSURE THE DESIGN OF THE CULVERT CROSSING CAN ACCOMMODATE A FLAP VALVE AND TEST THE REQUIREMENT FOR THE FLAP VALVE AND INSTALL IF REQUIRED PRIOR TO STAGE 1 PLAN SEALING**

### 3.3 ITEM 3 – FLOOD STORAGE

Previous flood storage volume calculations presented in the Carseldine Urban Village Updated Stormwater Management Plan (DesignFlow, October 2019) indicated a loss of storage as a result of development. This value was based on the full extent of flooding within the development site for pre and post conditions.

Compliance with BCC flood overlays for loss of flood plain storage is only required within the waterway extents defined for Cabbage Tree Creek. Revised flood storage calculations within the development were completed for flood storage volumes within the BCC waterway extent only. The following volumes were determined under ultimate development conditions, with the influence of the pedestrian bridge crossing Cabbage Tree Creek included:

- Existing flood storage: 99,276 m<sup>3</sup>
- Ultimate developed case flood storage: 99,608 m<sup>3</sup>

- Overall gain in flood storage = 332 m<sup>3</sup>

**RECOMMENDED ACTION FOR STAGE 1: NO FURTHER ACTION REQUIRED – COMPLIANCE WITH BCC FLOOD OVERLAY DEMONSTRATED FOR ULTIMATED DEVELOPMENT CONDITIONS**

### 3.4 MODEL UPDATES AND SENSITIVITY TESTING – POST STAGE 1

Model updates and sensitivity testing scenarios were recommended as part of the 3<sup>rd</sup> party review. The agreed model updates and sensitivity testing to occur as part of future modelling exercises include:

- Remove Cabbage Tree Creek from the local model and adopt a fixed tailwater based on a 5 year flood regional level
- Sensitivity testing of local modelling results using ARR 1987 procedures
- Sensitivity testing of blockage of the 1200mm RCP

It was agreed with BMT that the above be completed post Stage 1 and be included with necessary model updates required to support Stage 2 application.

**RECOMMENDED ACTION FOR STAGE 1: NO FURTHER ACTION REQUIRED – MODEL UPDATES AND SCENARIO TESTING TO OCCUR POST STAGE 1 AS AGREED WITH BMT**

Based on 3<sup>rd</sup> party reviews and subsequent discussions with EDQ no further stormwater related items remain outstanding for Stage 1 development.

Prepared by:

Ralph Williams

Reviewed/Certified by:



Shaun Leinster

RPEQ 15637

**DesignFlow**

Attachments:

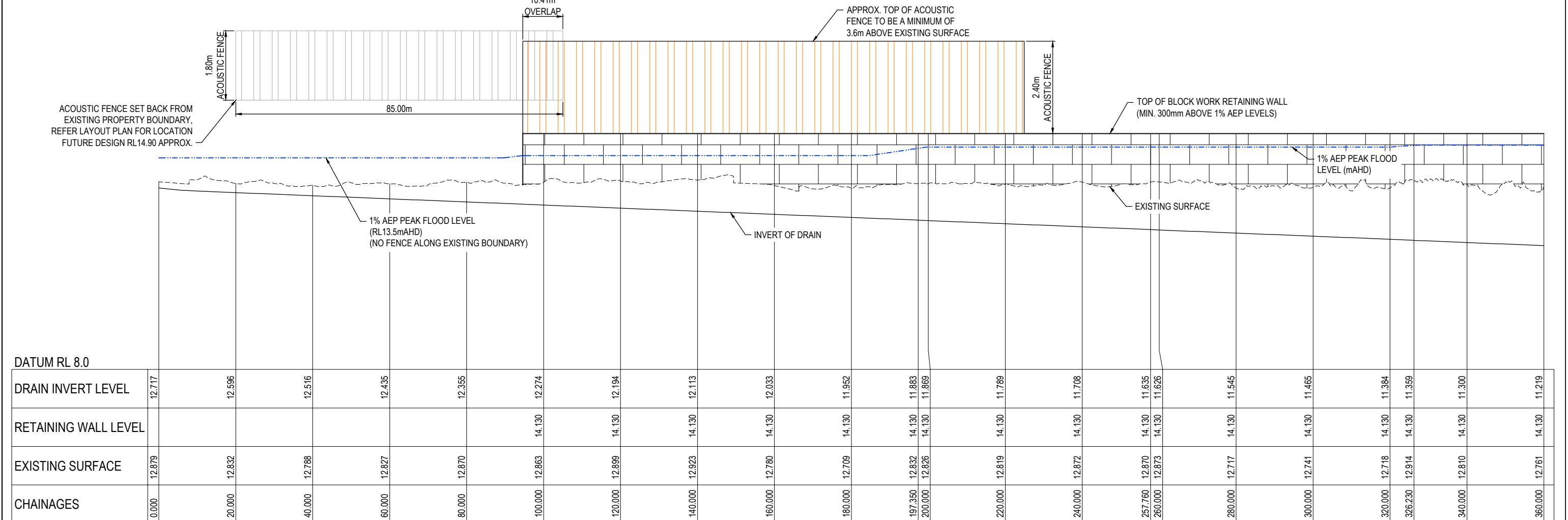
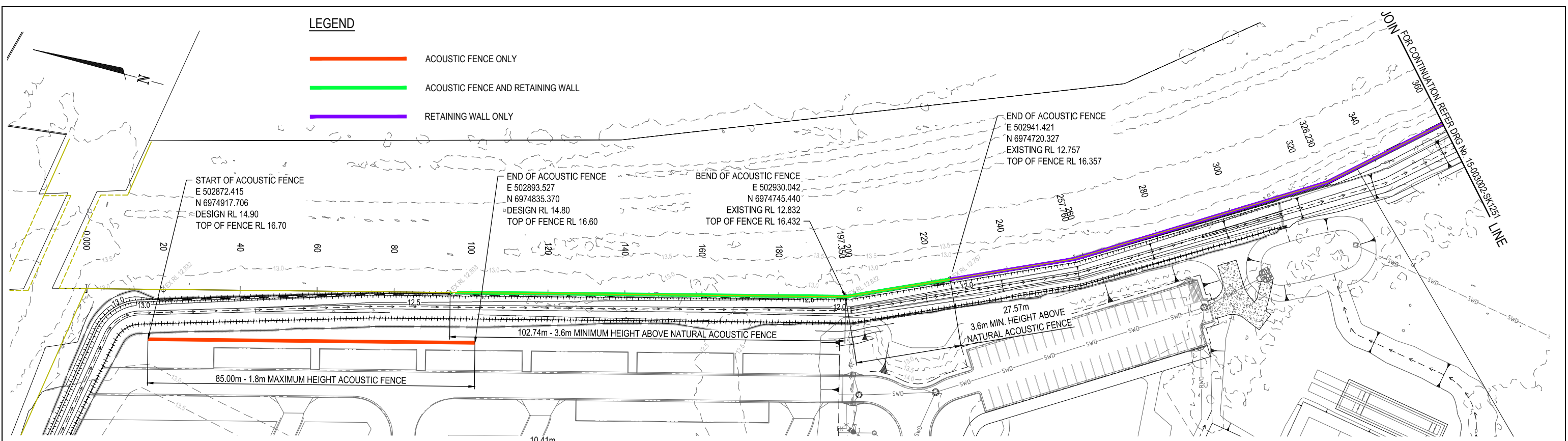
1. Flood barrier works for Stage 1

ATTACHMENT 1 – FLOOD BARRIER WORKS FOR STAGE 1

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**LEGEND**

- ACOUSTIC FENCE ONLY
- ACOUSTIC FENCE AND RETAINING WALL
- RETAINING WALL ONLY



DATUM RL 8.0

	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	197.350	200.000	220.000	240.000	257.760	260.000	280.000	300.000	320.000	326.230	340.000	360.000
DRAIN INVERT LEVEL	12.717	12.596	12.516	12.435	12.355	12.274	12.194	12.113	12.033	11.952	11.883	11.869	11.789	11.708	11.635	11.626	11.545	11.465	11.384	11.359	11.300	11.219
RETAINING WALL LEVEL						14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130	14.130
EXISTING SURFACE	12.879	12.832	12.788	12.827	12.870	12.863	12.899	12.923	12.780	12.709	12.832	12.826	12.819	12.872	12.870	12.873	12.717	12.741	12.718	12.914	12.810	12.761
CHAINAGES	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	197.350	200.000	220.000	240.000	257.760	260.000	280.000	300.000	320.000	326.230	340.000	360.000

**LONGITUDINAL SECTION - EXISTING RAIL BOUNDARY**

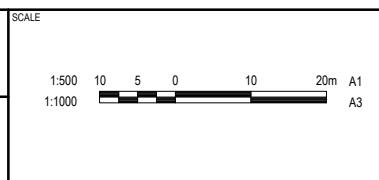
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VERTICAL SCALE: 50

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN	DRAWN CHECK	STATUS
1	21.02.20	ISSUED FOR INFORMATION	AA	AA		

**FOR APPROVAL  
NOT FOR CONSTRUCTION**

APPROVED  
**DANIEL COLLINS** RPEQ 18631

FOR & ON BEHALF OF CALIBRE CONSULTING (QLD) PTY LTD



CLIENT

**ECONOMIC DEVELOPMENT  
QUEENSLAND**



PROJECT

**CARSELDINE URBAN VILLAGE  
STAGE 1**

DISCLAIMER  
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

PDA. REF NO. DEV----/---

DRAWING TITLE

**ACOUSTIC FENCE  
LAYOUT PLAN  
SHEET 1 OF 2**

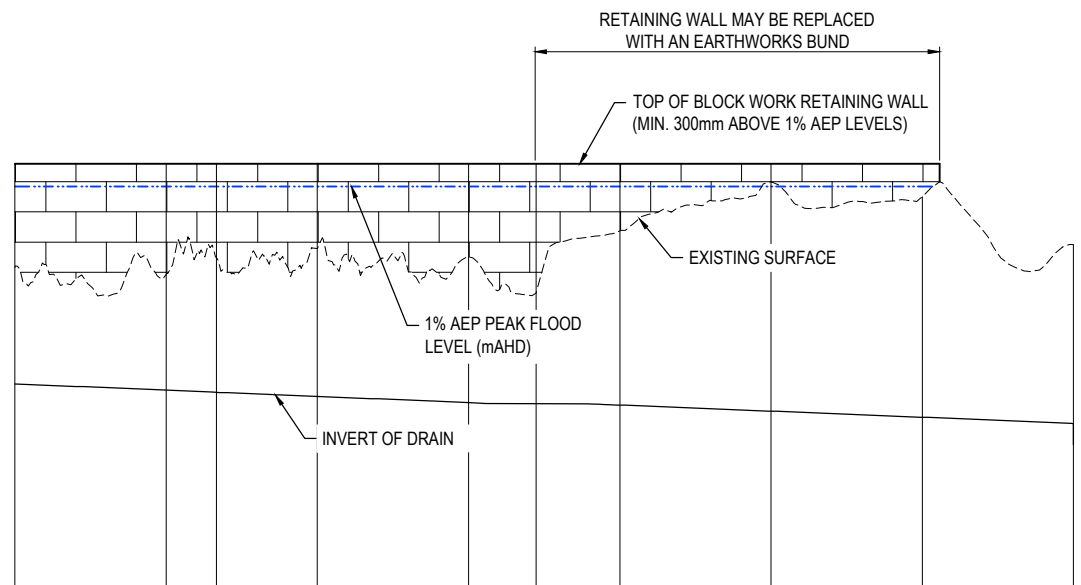
PROJECT No.	DRAWING No.	REVISION
15-003002.01	SK1250	1



**LEGEND**

- ACOUSTIC FENCE ONLY
- ACOUSTIC FENCE AND RETAINING WALL
- RETAINING WALL ONLY

JOIN FOR CONTINUATION REFER DRG No. 15-003002-SK1250 LINE



DATUM RL 8.0	
DRAIN INVERT LEVEL	11.219
RETAINING WALL LEVEL	14.130
EXISTING SURFACE	12.761
CHAINAGES	360.000
	380.000
	386.640
	400.000
	420.000
	428.930
	440.000
	460.000
	480.000
	500.000

**LONGITUDINAL SECTION - EXISTING RAIL BOUNDARY (CONTINUED)**

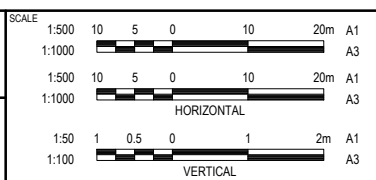
HORIZ SCALE: 500  
VERTICAL SCALE: 50

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN	DRAWN CHECK	STATUS
1	21.02.20	ISSUED FOR INFORMATION	AA	AA		

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APPROVED  
**DANIEL COLLINS** RPEQ 18631

FOR & ON BEHALF OF CALIBRE CONSULTING (QLD) PTY LTD



CLIENT  
**ECONOMIC DEVELOPMENT QUEENSLAND**



PROJECT  
**CARSELDINE URBAN VILLAGE STAGE 1**

DISCLAIMER  
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE		
<b>ACOUSTIC FENCE LAYOUT PLAN SHEET 2 OF 2</b>		
PROJECT No. 15-003002.01	DRAWING No. SK1251	REVISION 1

PDA. REF NO. DEV-/-/-