

Technical Note

Project Mayfield Appointments 2020
Subject Information to Support Discharge of Condition 66 – Application Ref. 124972/FO/2019
Project no 0046688
Date 20 April 2021

Revision	Description	Issued by	Date	Approved (signature)
00	Issue to LPA	RG	18/12/2020	CB
01	Issue to LPA	JF	06/02/2021	CB
02	Update following EA approval of hydraulic modelling	JF	10/03/2021	CB
03	Update following EA review	JF	20/04/2021	CB

1 Introduction

The purpose of this Technical Note is to present the information required to discharge Condition 66 of planning application ref. 124972/FO/2019, relating to the restoration of the River Medlock at the Mayfield reach.

Rev. 01 of this note was updated in response to comments discussed with the Environment Agency (EA) on a conference call on the 15th January 2021, as well as additional EA comments dated 20th January 2021 provided within the planning conditions tracker spreadsheet received via email.

Rev. 02 of this note was updated following the approval of the hydraulic modelling of the Enabling Works and Full Build Out scenarios by the EA on 4th March 2021. Confirmation is included in Appendix A.

This revision (Rev. 03) has been updated in response to comments received from the EA on the 13th April 2021 and discussed on a conference call on the 14th April 2021. These updates include additional detail regarding the sizing and specification of gravel material, corrections to the construction sequence, and clarifications to the remedial actions provided in the Monitoring Plan. Clarifications have also been made to the drawings included in Appendix B1.

2 Planning Condition 66

The following planning condition has been set by the Environment Agency (EA) for the Mayfield development:

- 66) *Prior to Phases F (as detailed in condition 3 above) commencing details of the proposed open River Medlock channel re-sectioning shall be submitted to, and approved in writing by, the local planning authority. The scheme submitted shall include:*
- A hydromorphological survey of the channel, both at the reach to be restored and upstream catchment, to inform the development of any detailed plans.*
 - Long and cross sections showing compliance with the approved FRA (Buro-Happold ref 0042912 dated 13/9/2019) and be supported by river modelling as necessary.*

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- c) *Detailed proposals for any new channel toe protection and its installation.*
- d) *The timing in which watercourse works will be undertaken*
- e) *How access to the banks and channel will be achieved*
- f) *Site supervision requirements*
- g) *A pre and post construction monitoring plan for the River Medlock channel.*

Upon approval, the submitted scheme shall be fully implemented and subsequently maintained, in accordance with the scheme's timing/phasing arrangements, or within any other period as may subsequently be agreed, in writing, by the local planning authority.

3 Geomorphology

JBA has been employed to undertake a fluvial geomorphological assessment. The study has assessed the geomorphological conditions at the site and within the wider catchment using desk and site-based evidence and identified suitable morphological improvements for the River Medlock within the site extent, based on evidence from the wider catchment. The Mayfield Geomorphological Assessment and Appendix are included in the submission for the discharge of Condition 66. The conclusions and recommendations of the Geomorphological Assessment have been used to inform the design of the river channel, described in further detail in Section 4.

4 River Channel Design

4.1 Overview

This section provides further detail on the design of the following features of the river channel within Mayfield Park, informed by the recommendations of the Geomorphological Assessment:

- Gravel bars;
- Riffles;
- Rip-rap;
- Vegetated banks; and
- Rock rolls and coir rolls.

Low flow modelling has been undertaken to assess the existing river under normal flow conditions such as the Q5, Q50 and Q95 as well as higher order events such as the 1 in 2 (QMED), 1 in 5 and 1 in 10 year flood events. The model was also used to test the proposed interventions, such as increase of sinusoid in the main channel, introduction of gravel bars and riffles, reduction of bank levels, removal of river walls and introduction of vegetated banks.

Additional commentary to provide responses to the queries raised by the EA on 20/01/2021 within the Mayfield planning conditions tracker is provided in Section 4.7 of this Technical Note.

4.2 Gravel Bars

Gravel bars have been introduced to enhance the morphological diversity of the channel and provide a transition between the river bed and the vegetated bank. The gravel bars provide protection from erosion of the toe of the vegetated bank, and have been proposed in locations where there is an increased risk of lateral erosion.

The dimensions of the gravel bars are generally as follows, but vary in order to provide morphological diversity:

- Top level of gravel bar set between Q95 and Q50 water levels, in accordance with the recommendations of the Mayfield Geomorphological Assessment;

- Width of gravel bar varied between 0.5-1.5m; and
- Toe of the gravel bar extents to river bed at approximately 1 in 5 slope.

The specification of material to be used for the gravel bars is based on the flow conditions for the 1 in 2 year event, used to represent QMED which is defined as the morphologically effective flow, in accordance with the Mayfield Geomorphological Assessment.

The flow velocity and depth results of the 2D low flow hydraulic modelling have been used along with the roughness of the channel (Manning's n), to predict the mobile sediment sizes expected in the new channel, through the calculation of shear stress. The critical shear stress is defined as the shear stress that initiates movement of particles within the channel, and increases with higher velocity and roughness, and lower depths. Further details of the calculation of critical shear stress are given in the Mayfield Geomorphological Assessment.

Although the critical shear stress calculation indicates a particular particle size, it is recommended that a mix of coarser and finer material should be used in order to provide a more natural grading within the proposed features. Standard gradings of material, in accordance with BS EN 13383 and BS EN 13242 are therefore proposed throughout this Technical Note.

The results of the low flow modelling indicate that for the proposed gravel bars, the critical particle diameter is <50mm. It is therefore recommended that the Standard Aggregate Grading of 40/80 G_c80/20 is used, with a D_{n50} of 50mm. The particle size distribution is given in Table 4-1.

Table 4-1: Particle Size Distribution for Standard Aggregate Grading 40/80 G_c80/20 in accordance with BS EN 13242

Sieve Size (mm)	Percentage Passing (by mass)	
	From	To
125	98	100
80	80	99
63	20	70
40	0	20
20	0	5

The distribution shown in Table 4-1 provides a mix of coarser and finer material, some of which is greater than that which can be entrained, therefore providing some resilience against higher flow events. It is recognised that even under QMED flows, there may be some morphological change and movement of material within the channel. Recommendations for ongoing monitoring are therefore made in Section 7 of this Technical Note.

It is recommended that the gravel bars are formed of natural material, obtained from a local source in order to match the exiting natural material in appearance.

Rev. 01 update following EA review:

- Left bank, chainage 170m and 190m: To clarify, the gravel marked on the left bank on the cross-section drawings refers to the removal of material from the channel bed and addition of gravel at the newly formed toe, rather than a new addition of a gravel bar.
- Left bank, chainage 310m: The gravel bar shown on the left bank of the cross-section drawing is below the Q95 water level. This is a result of the location of the cross-section line, which is drawn through the most upstream part of the gravel bar, which is below the Q95 level as it begins. The majority of the gravel bar, further downstream of chainage 310m is above the Q95 level and therefore in accordance with the design intent.

4.3 Riffles

Riffles are present in the existing channel, where industrial waste and other debris within the channel cause variations in water depth. It is proposed that these riffle features are retained, but that the material forming them is replaced with natural gravel and crushed rock according to the recommendations of the Mayfield Geomorphological Assessment. The bed level will therefore remain as existing.

The location of the riffle features is as follows:

- Chainage 33-64m: Three sets of 4-5m long riffles and pools within Reach 1 of the channel; and
- Chainage 350-355m: One riffle at the downstream extent of the site, within Reach 6.

The specification of material for the riffles is based on the same methodology described in Section 4.2. Since the flow conditions for the riffles in Reach 1 and Reach 6 vary, the recommended sizing also differs, as presented in Table 4-2. The particle size distribution is given in Table 4-3. The depth of excavation required to form the riffles will depend on the volume of debris and waste material discovered during the excavation and removal.

Table 4-2: Recommended riffle material sizing

Riffle Type	Location		Recommended Sizing of Material
Type 1	Reach 1	Chainage 33-64m	Standard Coarse Grading CP 63/180 ($D_{n50} = 85\text{mm}$)
Type 2	Reach 2	Chainage 350-355m	Standard Coarse Grading CP 90/250 ($D_{n50} = 125\text{mm}$)

Table 4-3: Particle Size Distribution for Standard Coarse Grading in accordance with BS EN 13383

Sieve Size (mm)	Percentage Passing (by mass)			
	CP 63/180		C 90/250	
	From	From	From	To
360			98	100
250	98	100	90	100
180	90	100		
125			0	50
90	0	50	0	15
63	0	15		
45			0	5
31.5	0	5		

It is recommended that the riffles are formed of natural gravel material, obtained from a local source in order to match the exiting natural material in appearance.

4.4 Rip-rap

Rip-rap is proposed on the left bank at chainage 60-73m and the right bank at chainage 330-350, and is intended to serve two purposes:

- To provide scour protection to the outside bank of bends in the channel; and
- To provide visual interest within the landscape, driven by the architectural intent.

Flow velocities and depths for a range of events have been extracted from the low and high flow hydraulic modelling of the proposed scheme. The critical combinations of flow velocity and depth have been used to determine the minimum sizing of rock armourstone required to prevent erosion, in accordance with the guidance and calculation methodologies provided in The Rock Manual (CIRIA Report C683).

In order to achieve the architectural intent, the armourstone has been increased in size and grading. It is therefore recommended that the Standard Light Grading of LMA 40/200 is used, with a D_{n50} of 350mm. The particle size distribution is given in Table 4-4.

Table 4-4: Particle Size Distribution for Standard Light Grading LMA 40/200

Mass (kg)	Percentage (by mass) less than particle mass	
	From	To
300	97	100
200	70	100
40	0	10
15	0	2

4.5 Vegetated Banks

The vegetated banks will be formed of wetland and normal vegetation, based on the elevation of the vegetation relative to the Q95 water level. Specialist advice from Salix indicates that wetland vegetation is only suitable up to a level 150mm above the Q95 water level. Areas above the Q95+150mm level will be planted with non-wetland vegetation. These parameters are reflected in the landscape architects design, including the proposed vegetation species.

4.6 Rock Rolls and Coir Rolls

Rock rolls and coir rolls are proposed to provide toe protection to the vegetated banks where the bank slope is steep or where there is insufficient space for a gravel bar, as shown in Figure 4-1. It is recommended that a pyramid of three 300mm diameter rock rolls is anchored to the river bed or bank, and a single 300mm diameter coir roll installed immediately behind the pyramid of rock rolls, with the remaining space backfilled and planted with vegetation.

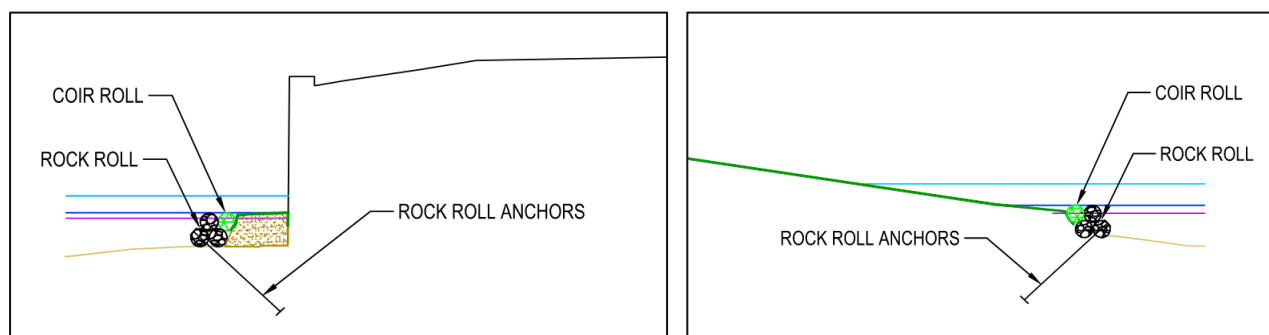


Figure 4-1: Typical detail of rock rolls and coir rolls

4.7 Responses to Environment Agency Comments dated 20/01/2021

This section contains additional commentary in response to the queries raised by the EA on 20/01/2021 within the Mayfield planning tracker, which are not covered elsewhere within this Technical Note.

The proposal for the left bank at chainage 230m is to retain the existing river wall as a feature, rather than remove and replace with a new wall or reinforced embankment. This proposal is made on the provision that structural investigations, to be carried out by others, indicate the existing river wall is suitable stable.

The hydraulic model indicates that lowering the bed level between chainage 270-330m, as suggested within the Mayfield Geomorphological Assessment, causes increases to water levels downstream of the Mayfield Park site. This proposal has therefore not been taken forward in order to avoid increasing the risk of flooding to areas downstream of the site.

Alterations to site levels / flood storage described within this Technical Note will be carried out primarily as part of Phases A and F of the Mayfield Park works, and are represented in the Full Build Out hydraulic modelling. There shall be no further alterations to site levels in other phases (as defined under Condition 3) which would result in an increase in flood risk elsewhere or off site.

4.8 Drawings

The following drawings have been prepared to present the final river design. These drawings are included in Appendix B.

Table 4-5: Buro Happold river design drawings

Drawing No.	Drawing Title	Rev.	Date Issued	Description / Updates
0046688-BHE-XX-XX-DR-W-0001	Existing Site Conditions General Arrangement Plan	C	19/03/2021	No change
0046688-BHE-XX-XX-DR-W-0002	Proposed General Arrangement Plan	C	19/03/2021	No change
0046688-BHE-XX-XX-DR-W-0003 to 0046688-BHE-XX-XX-DR-W-0006	Proposed Sections Sheet 1 to Sheet 4	D	19/04/2021	Cross-sections at 20m intervals or where there is a significant change in the geometry of the river. Correction to rip-rap on left bank at cross-section 19 (downstream extent).
0046688-BHE-XX-XX-DR-W-0007	Proposed Edge Treatment	E	19/04/2021	Addition of riffle detail, further information on specification of material sizing. Corrections to drawing and detail reference numbers.
0046688-BHE-XX-XX-DR-W-0008	Channel Bed Long Section	C	19/04/2021	Addition of riffle locations and specification of material sizing.

Table 4-6: Studio Egret West landscape drawings

Drawing No.	Drawing Title	Rev.	Date Issued
0345-SEW-ZZ-00-DR-L-007102	Overall General Arrangement	T10	29/01/2021
0345-SEW-ZZ-00-DR-L-007110	Gatehouse Entrance & The Poulton	T08	29/01/2021
0345-SEW-ZZ-00-DR-L-007111	May'Field' Lawn Space	T07	29/01/2021
0345-SEW-ZZ-00-DR-L-007112	Wildscape Area	T08	29/01/2021
0345-SEW-ZZ-00-DR-L-007113	Play Yard	T08	29/01/2021

Following the conference call with the EA on 15th January 2021 and subsequent correspondence via email, the following statement is provided:

Alterations to site levels / flood storage will be carried out in accordance with the SEW landscape drawings dated 29/01/2021, as represented in the Full Build Out Model. There shall be no further alterations to site levels in other phases (as defined under Condition 3) which would result in an increase in flood risk elsewhere or off site.

5 Timing of watercourse works

The works to the river channel and adjacent landscaping will be undertaken in stages according to the following:

- A. Enabling works Phase A:
 1. Removal of building slabs and earthwork within Plots O, N & M and the Mayfield lawn park area
 2. Removal of culvert roof
 3. Installation of new temporary bridge between Mayfield Lawn and Plot M.
- B. Enabling Works Phase B:
 1. Removal of buildings and earthworks at Wildscape area and Play area
- C. Park Full Build Out:
 1. Removal of debris and silt within river channel
 2. Installation of new gravel to form riffles
 3. Works to river walls, including lowering crest
 4. Installation of rock rolls, coir rolls and gravel bars
 5. Planting of riverside vegetation
 6. Replacement of bridges

Note: All landscaping works to areas outside river channel to be carried out concurrently with river channel works described above.

Further details of the above phasing and the hydraulic modelling carried out to support this sequence are provided in the following Technical Notes prepared by Buro Happold:

- Hydraulic Modelling – Mayfield Park Enabling Works (Rev. 01, dated 05/02/2021);
- Hydraulic Modelling – Mayfield Park Full Build Out (Rev. 02, dated 20/04/2021); and
- Information to Support Discharge of Condition 10 and Condition 22 (Rev. 03, dated 20/04/2021).

Rev. 02 update:

Following a series of technical reviews, the EA has approved the hydraulic modelling of the Enabling Works and Full Build Out scenarios, as described in the hydraulic modelling Technical Notes listed above. Confirmation of this approval is included in Appendix A.

Rev. 03 update:

The sequence provided for Stage C in the list above has been amended following the conference call with the EA, to more accurately reflect the anticipated order of construction activities on site.

5.1 Access to the Banks and Channel

The Enabling Works Phases A and B include works outside the river channel. Therefore, access to the river and its banks will not be required. The removal of the culvert roof will be done from top of banks.

Debris removal from the river bed will be undertaken by trained personnel standing on the river bed and banks, wearing appropriate PPE. Large items will be lifted using machinery from the top of river.

The river walls will be removed from the top of bank.

Once the river walls have been removed, level access can be provided to the majority of the river banks from the Wildscape, Mayfield Lawn or the Play area. In some stretches of the river and where river walls are maintained at high levels, material will be lowered from the top of the bank.

6 Site Supervision requirements

A suitably qualified geomorphologist will have a general overview of the river works during construction, including presence on site. Other than specific material placement, they will also provide supervision on a fortnightly basis during the works.

The placement of the gravel bars and construction of riffles will be carried out in the presence of a geomorphologist on site, to ensure the correct shape has been achieved. The gravel material will also be checked by the geomorphologist to ensure the right mixed is used.

A river works contractor will be appointed for the works within the river. The installation of the coir rolls and pallets will be carried out under the guidance of the suppliers or specialist contractor.

7 Monitoring Plan

A number of pre-construction inspections of the river have been carried out. Details of these inspections, including photographs and commentary on the condition of the river are provided within the following reports:

- Mayfield River Bed Debris Clearance Technical Note, Buro Happold (Rev. 01, dated 08/01/2021); and
- Mayfield Geomorphological Assessment, JBA (Rev. P02, dated December 2020).

It is recognised that while the material proposed to form the gravel bars and riffles described in this Technical Note has been sized based on the flow conditions anticipated during the QMED flow event, some degree of geomorphological change may still occur during lower flow events. In any given year, there is also a risk that the design flow event will be exceeded, which may also cause morphological change.

In addition, there is a chance of geomorphological change occurring as the river self-adjusts following the removal of the culvert and in general due to the other proposed changes to the channel.

It is therefore recommended that a programme of monitoring inspections is adopted, according to Table 7-1. These inspections should be carried out by a suitably qualified geomorphologist in order to determine whether the observed

condition requires any maintenance activities to be initiated. Typical monitoring, maintenance and remedial actions are included in, but not limited to, the summary provided in Table 7-2.

It is proposed that the results of the monitoring inspections are made available to the EA, for information and advice.

Table 7-1: Recommended post-construction monitoring frequency

Timeframe	Monitoring Frequency
During construction	- Daily during activities involving placement of material within river channel; - Weekly during general landscaping work; and - Following flow events greater than Q5.
Up to 1 year after completion	- Monthly; and - Following flow events greater than QMED
1 to 2 years after completion	- Once every 3 months; and - Following flow events greater than QMED
2 to 5 years after completion	- Once every 6 months; and - Following flow events greater than QMED
More than 5 years after completion	- Annually; and - Following flow events greater than QMED

Note: It is recommended that photos are taken during each monitoring inspection, from fixed locations, to allow direct visual comparison between inspections. The photo locations shall be agreed on site during the first monitoring period.

Table 7-2: Typical monitoring, maintenance and remedial actions within the river channel

Monitoring	Regular Maintenance	Remedial Actions
- Inspect gravel bars and riffles to check for geomorphological change according to frequency given in Table 7-1, determine remedial action according to the following classification: Red: Significant localised accumulation of material causing obstruction to flow; or Significant localised loss of material allowing increase to flow velocity; or Net loss of material forming gravel bars and riffles within Mayfield Park, indicating movement of material downstream without replenishment from upstream Amber: Minor geomorphological movement observed, but changes to channel profile do not affect flow conditions, and therefore considered acceptable Green: No geomorphological change observed	Regular maintenance of gravel bars and riffles not anticipated to be required	Red - Regrade gravel bars or riffles where high flows have caused accumulation of material, or where significant movement of material has occurred - Replace material forming gravel bars and riffles if loss or wash out has occurred Amber - Note location of minor geomorphological change for inspection at next monitoring period - No further remedial action required Green - No remedial action required

Monitoring	Regular Maintenance	Remedial Actions
- Inspect channel structures for accumulation of litter or debris - Inspect condition of rock rolls, and coir rolls, including anchors and fixings	Remove litter and debris from channel and banks	Repair rock rolls and coir rolls and / or fixings and anchors
Inspect condition of vegetation	Manage vegetation, cut grass, remove nuisance plants	Reseed / replant areas of poor vegetation growth

Appendix A – Environment Agency Correspondence

Jack Foster

From: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>
Sent: 04 March 2021 11:56
To: Jack Foster
Cc: Davies, Andy; Telfer, Helen; Ruckledge, John; Pankhurst, Catherine; Michael Percival; Colin Byrne; Harry Mansfield; Mike Harrison
Subject: RE: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue
Attachments: Non-Real Time Hydraulic Model Review Mayfield+FullBuilt_FINAL.xlsm
Categories: Important

****External Email. This email originated from outside Buro Happold.****

Hi,

I've checked over the Full Built Model files and updated the Review Spreadsheet – see attached. Everything now looks fine and we accept the model as fit for purpose.

Note – I believe in order to update the flood mapping, we need the 0.1% AEP (1000 year return period) event to be modelled.

John – can you confirm that this is the case? I'm not sure if flood map updates are part of the scope of this work.

Thanks,
Jenny



Jenny Kirwan-Evans

Pronouns: she/her/hers ([why is this here?](#))

Advisor, Service Delivery, Evidence and Risk
Incident Management and Resilience

☎ +447826 532407

✉ Currently working at home during the Covid-19 pandemic

From: Jack Foster [mailto:Jack.Foster@BuroHappold.com]
Sent: 24 February 2021 20:28
To: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>
Cc: Davies, Andy <Andy.Davies1@environment-agency.gov.uk>; Telfer, Helen <helen.telfer@environment-agency.gov.uk>; Ruckledge, John <john.ruckledge@environment-agency.gov.uk>; Pankhurst, Catherine <Catherine.Pankhurst@fgould.com>; Michael Percival <mipercival@deloitte.co.uk>; Colin Byrne <Colin.Byrne@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>; Mike Harrison <MikeHarrison@uandiplc.com>
Subject: RE: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue

Hi Jenny,

Further to my email below, the updated Technical Note, model files and completed Model Review spreadsheet for the Full Build Out model are available to download from the following link:

https://burohappold-my.sharepoint.com/:f/p/jack_foster/EhHBdjjFqNFKkaNZjGRy_WQBtMTH0VCNS_JBfWJ6LJDL4w?e=C6Y2iG

Best regards,

Jack

Jack Foster CEng MICE
Senior Engineer
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From: Jack Foster
Sent: 23 February 2021 12:21
To: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>
Cc: Davies, Andy <andy.davies1@environment-agency.gov.uk>; Telfer, Helen <helen.telfer@environment-agency.gov.uk>; Ruckledge, John <john.ruckledge@environment-agency.gov.uk>; Pankhurst, Catherine <Catherine.Pankhurst@fgould.com>; Michael Percival <mipercival@deloitte.co.uk>; Colin Byrne <Colin.Byrne@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>; Mike Harrison <MikeHarrison@uandiplc.com>
Subject: RE: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue

Hi Jenny,

Thanks very much for your email, and for confirming agreement with our approach to the mass balance error. We will update the Technical Note accordingly and plan to issue this tomorrow, along with the package of model files.

We will also provide further commentary, including figures / diagrams, to respond to the comments regarding channel and bridge geometry. We will include references to the updated sections of the report within the model review spreadsheet.

Best regards,

Jack

Jack Foster CEng MICE
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From: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>
Sent: 22 February 2021 10:41
To: Jack Foster <Jack.Foster@BuroHappold.com>
Cc: Davies, Andy <andy.davies1@environment-agency.gov.uk>; Telfer, Helen <helen.telfer@environment-agency.gov.uk>; Ruckledge, John <john.ruckledge@environment-agency.gov.uk>; Pankhurst, Catherine <Catherine.Pankhurst@fgould.com>; Michael Percival <mipercival@deloitte.co.uk>; Colin Byrne <Colin.Byrne@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>; Mike Harrison <MikeHarrison@uandiplc.com>
Subject: RE: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue

****External Email. This email originated from outside Buro Happold.****

Hi Jack,

Thanks for your email and additional clarifications.

I'm happy with the approach you've undertaken to reduce the mass balance error and now that it is in line with the Baseline values, this is acceptable. Please go ahead and update the reporting to reflect this change.

With regards to the channel and bridge geometry, in order to be clear and ease my review, please add detail of how the elevations have been calculated including figures of channel/structure design within the reporting itself.

Please can you give a date for when I'll receive the updated reporting and model files?

Thanks,
Jenny



Jenny Kirwan-Evans

Pronouns: she/her/hers ([why is this here?](#))

Advisor, Service Delivery, Evidence and Risk
Incident Management and Resilience

☎ +447826 532407

✉ Currently working at home during the Covid-19 pandemic

From: Jack Foster [<mailto:Jack.Foster@BuroHappold.com>]

Sent: 18 February 2021 18:55

To: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>

Cc: Davies, Andy <Andy.Davies1@environment-agency.gov.uk>; Telfer, Helen <helen.telfer@environment-agency.gov.uk>; Ruckledge, John <john.ruckledge@environment-agency.gov.uk>; Pankhurst, Catherine <Catherine.Pankhurst@fgould.com>; Michael Percival <mipercival@deloitte.co.uk>; Colin Byrne <Colin.Byrne@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>; Mike Harrison <MikeHarrison@uandiplc.com>

Subject: RE: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue

Hi Jenny,

I understand from Andy (via Catherine) that you are happy for us to contact you directly for informal review.

We have been investigating the mass balance error with regard to Item 14.1 in the model review spreadsheet, and thought it would be helpful to provide an update in advance of reissuing our deliverables formally.

Cause

- Accumulation of mass error occurs between the hours of 0 and 2, when flow in the river is low, and in-channel water levels are very similar to the low point of the bank;
- This causes constant flux between the 1D and the 2D domains at the part of the Wildscape area circled in the image in Figure 1, with no clear dominant flow direction;
- Concluded that this flux is the cause of the peak in mass error, as cumulative mass error begins to reduce as water levels increase (Figure. 2).

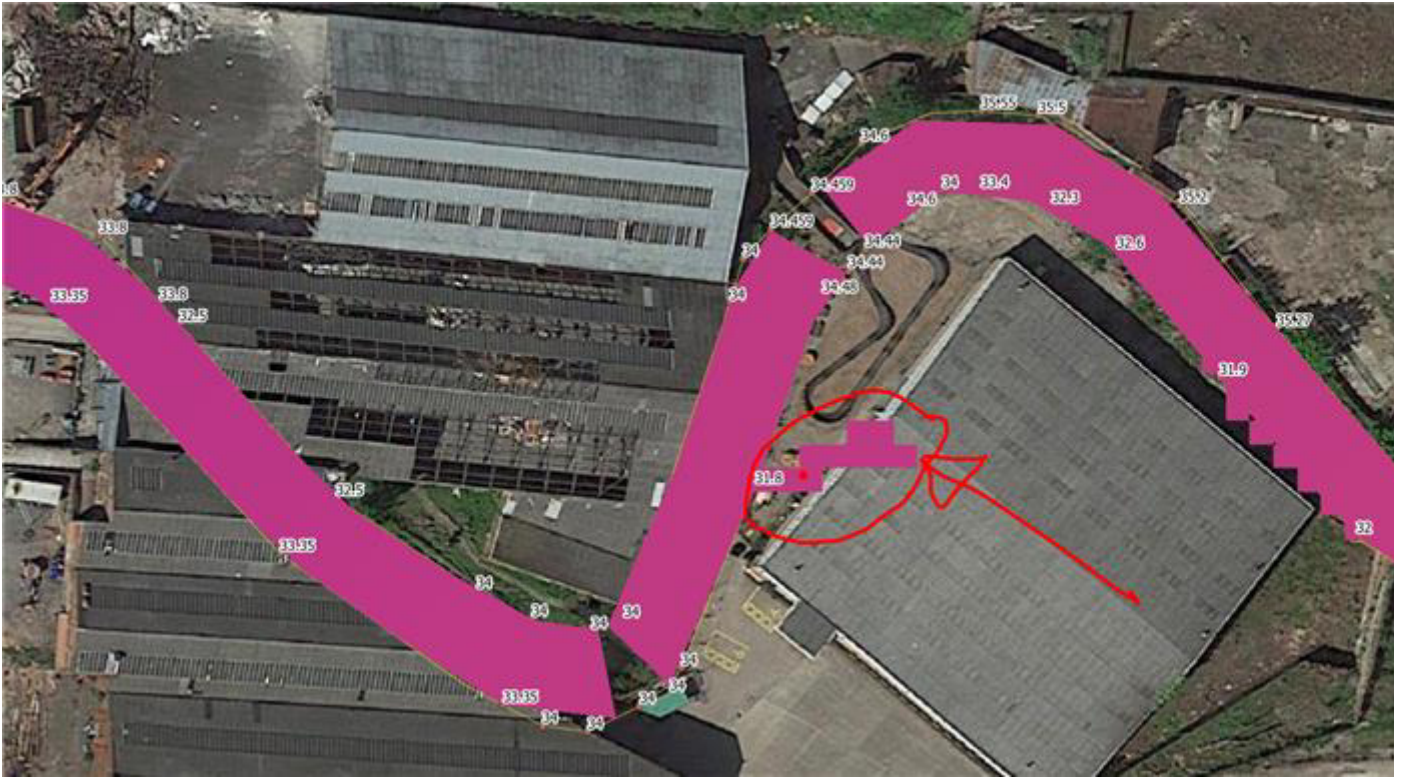


Figure 1: Baseline water level at the Wildscape area, annotated with location of cause of mass error

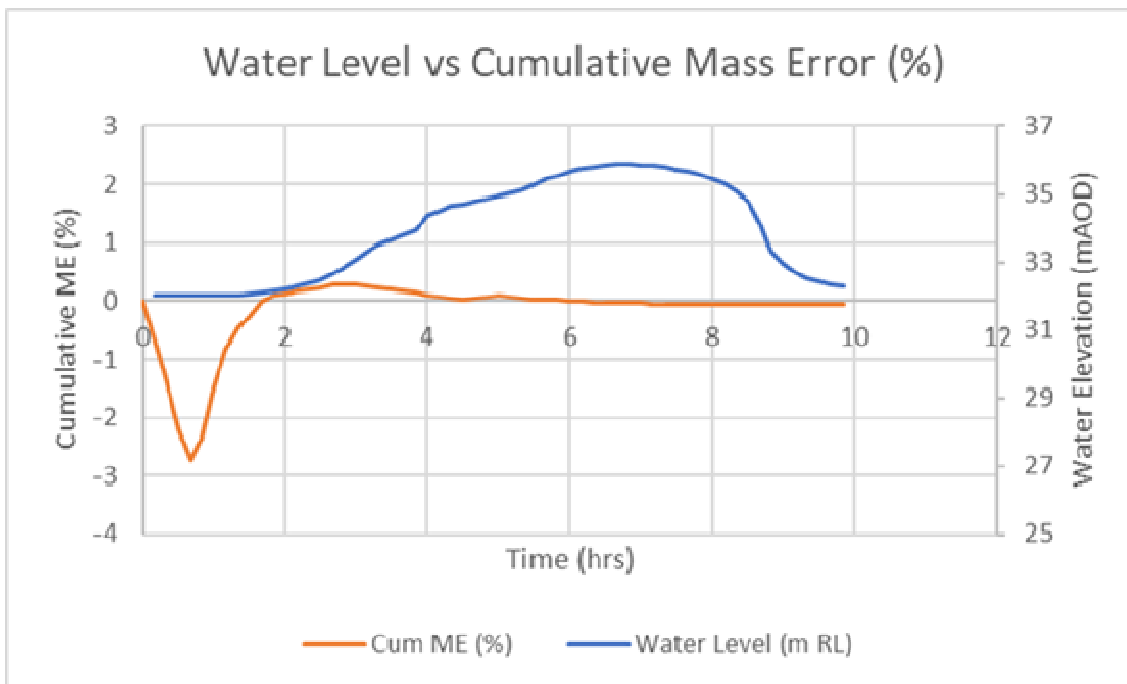


Figure 2: Comparison of cumulative mass error (%) against the water level recorded within the Wildscape Area 2D domain for the Full Build Out Model (192)

Solution

- Raise bank height from 31.8mAOD to 32mAOD locally, at inflow point from channel to Wildscape area, to match proposed level for low point of Wildscape area
- This prevents movement between 1D and 2D domain during low flow state (hours 0 to 2) and significantly reduces the mass error (Table 1 and Figure 3)
- This amendment is considered a more accurate representation of the proposed scheme, rather than a design change, and does not have an impact on water levels elsewhere within the model

Note: A test applying a roughness patch with localised increase in roughness to 1.00 was tested, but made negligible impact on mass error.

Table 1 provides a summary of the mass error for each run and return period, indicating that the amended Full Build Out model (197) has a maximum mass error of -1.19%, which matches the performance of the Baseline model (142). Although this exceeds the threshold of $\pm 1\%$, this is considered appropriate given the prior approval of the Baseline.

Table 1: Summary of absolute maximum cumulative mass error for Baseline and Full Build Out models

Event	Baseline (142)	Full Build Out (192)	Amended Full Build Out (197)	
25 year	1.19%	2.78%	1.19%	Matches baseline
100 year	0.95%	2.41%	0.98%	Less than 1%
100 year + 35% CC	1.19%	2.72%	1.16%	Less than baseline

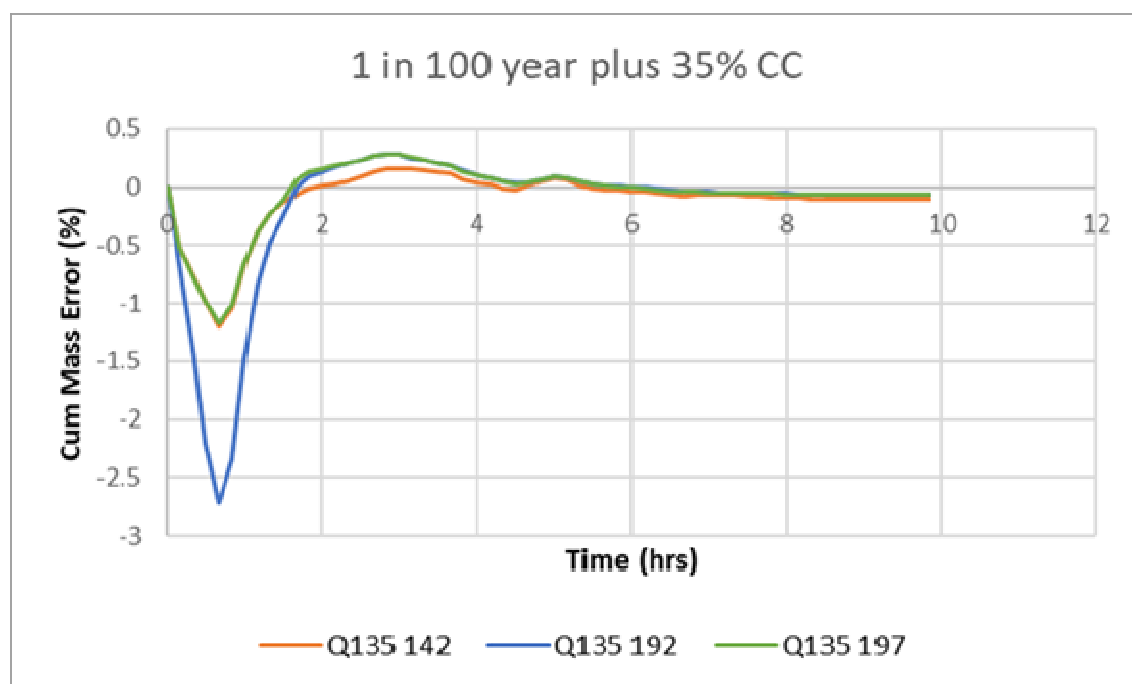


Figure 3: Comparison of cumulative mass error for the 100 year + 35% CC event for the Baseline and Full Build Out models

If you are in agreement with the approach outlined above, we will update our reporting, compile the relevant model files and submit along with the model review spreadsheet for formal review.

Regarding Items 3.5 and 5.2, we have checked the geometry of the model and are satisfied that it is an accurate representation of the latest set of drawings. We will update the Technical Note to provide additional commentary on the methodology used to represent the proposed scheme in the model, including sources of data.

Best regards,

Jack

Jack Foster CEng MICE
Senior Engineer
Buro Happold | Cities | Water
T: +44 (0)20 7927 9700
www.burohappold.com | [LinkedIn](#) | [Twitter](#) | [Instagram](#)

From: Colin Byrne <Colin.Byrne@BuroHappold.com>
Sent: 10 February 2021 18:26
To: Jack Foster <Jack.Foster@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>
Subject: FW: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue
Importance: High

FYI below

Colin Byrne
Associate Director
BuroHappold Engineering | Cities - Infrastructure
M: +44 7753461166

From: Davies, Andy <Andy.Davies1@environment-agency.gov.uk>
Sent: 10 February 2021 18:18
To: catherine.pankhurst@fgould.com; FOSTER, Kevin <Kevin.Foster@cheshireeast.gov.uk>
Cc: Kirwan-Evans, Jenny <jenny.kirwanevans@environment-agency.gov.uk>; Telfer, Helen <helen.telfer@environment-agency.gov.uk>; Colin Byrne <Colin.Byrne@BuroHappold.com>; Harry Mansfield <Harry.Mansfield@BuroHappold.com>; Michael Percival <mipercival@deloitte.co.uk>; Ruckledge, John <john.ruckledge@environment-agency.gov.uk>; Mike Harrison <MikeHarrison@uandiplc.com>
Subject: Mayfield - 124972/FO/2019 - ENVPAC/1/GMC/00284 -Full-Build Out Flood Modelling Issue
Importance: High

****External Email. This email originated from outside Buro Happold.****

Good evening Jack / Catherine,

As discussed earlier in the week my colleague Jenny has been progressing review of the final Mayfield Enabling Works Model (attached above). Unfortunately, as submitted, we are unable to recommend approval of the 'final build out' flood model as two significant issues (translating to three red modelling review classifications) have been identified. These issues are summarised briefly as follows:

- **The 1D channel cross sections and structures do not appear to match the plans provided.**
- **2D mass balance error is out of tolerance (+/-1%) indicating model instability. This should be reviewed and improved.**

To expand in part on the above, for the purpose of the modelling review Jenny has made comparison of the model submissions made by B-H to the masterplan drawings and cross sectional drawings that are currently submitted under discharge of condition applications CDN/20/0689 and CDN/20/0866 (uploaded to MCC planning portal between December 21-23 2020) aiming to address the requirements of conditions 11 (park levels) and 66 (long/cross sections).

Further to the above, I have this morning been made aware by Manchester City Council (see attached email) on the submission of a series of updated level drawings regarding condition 11 (park levels). These revised drawings, on quick check, are dated 09.02.21 and consequently supersede in time the modelling submissions made to the EA on the 6th February and 8th February (see chargeable email attached for reference). Additionally no comment is made as part of these latest submissions confirming that the revised drawings are in conformity with the final build out flood modelling.

For clarity, it should be ensured the plans and drawings presented as part of planning submissions are informed and in conformity with the flood modelling (once approved). It is concerning that revised drawings have been submitted to planning post-flood modelling submission.

Please can B-H/ the Mayfield Project Team address the comments made with EA modelling review spreadsheet attached and as part of the response provide clear clarification on which plans/drawings/cross-sections which are considered to represent the final development intended for advancement / approval and have been informed by the modelling. Any reference to final drawings within relevant technical documents/reporting forming part of the planning submissions/ applications should also be ensured/updated.

As discussed previously it will not be possible for the EA to sign-off on conditions 11, 22 and 66 attached to planning permission 124972/FO/2019 until all elements of the flood modelling have been approved.

Happy to discuss further.

Regards,

Andy

Andy Davies

Planning Advisor, Sustainable Places Team | Greater Manchester, Merseyside, Cheshire

Environment Agency | Richard Fairclough House, Knutsford Road, Latchford, Warrington WA4 1HT

Email: SPPlanning.RFH@environment-agency.gov.uk

Mobile: 0739 379 8325



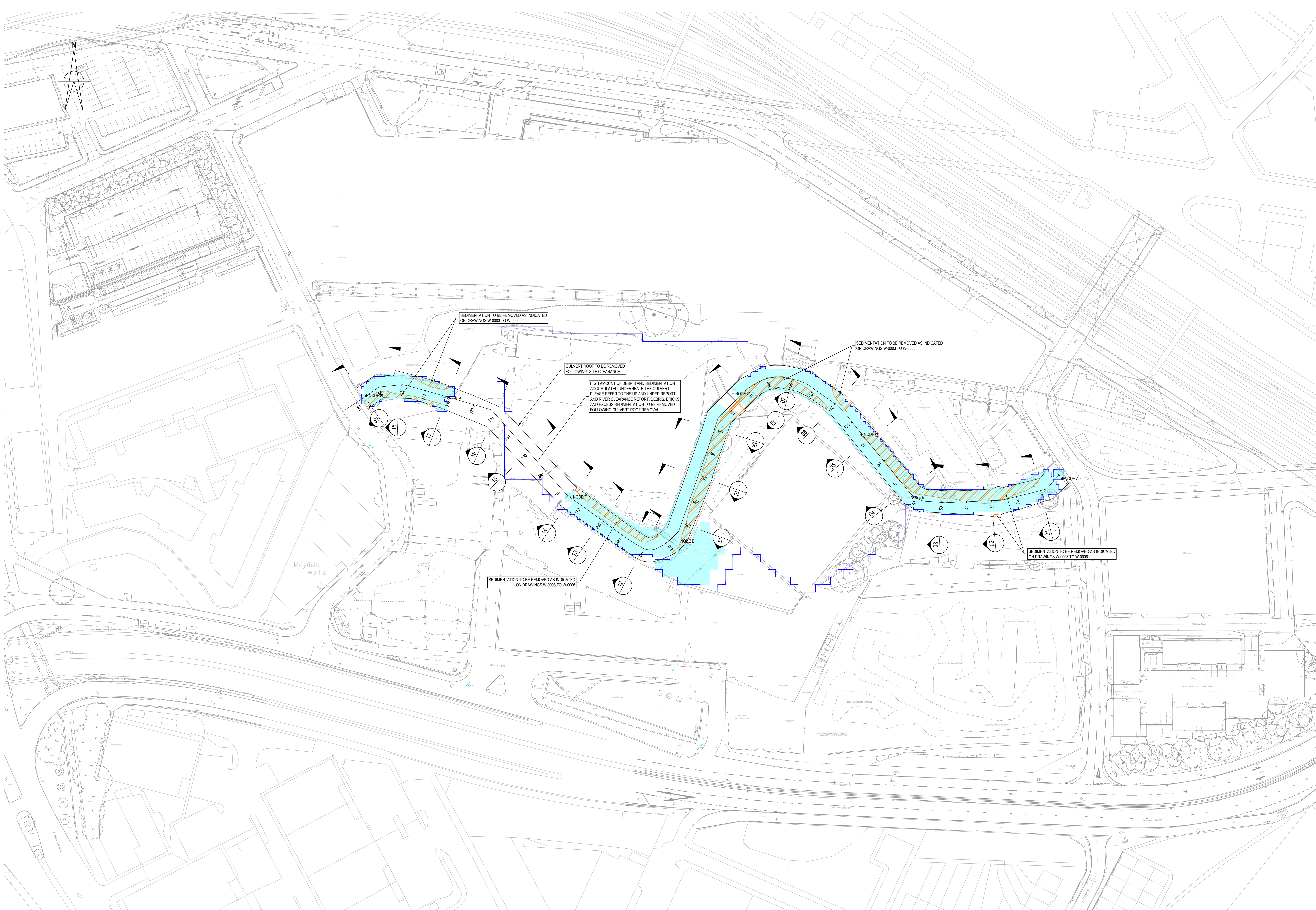
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Appendix B1 – Buro Happold Drawings



Existing estimated flood levels across site								
Flood event	Node A	Node B	Node C	Node D	Node E	Node F	Node G	Node H
Rivel level during surveys	NA	31.95	31.8	31.7	31.8	31.7	NA	31.35
1 in 5 year	34.41	34.15	33.99	33.66	33.56	33.31	33.24	32.99
1 in 25 year	34.9	34.64	34.49	34.2	34.11	33.89	33.75	33.46
1 in 100 year	35.2	34.93	34.85	34.63	34.57	34.35	33.89	33.76

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Drawing No: 0046688-BHE-XX-XX-DR-W-0001

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- BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
- UNCERTAIN STABILITY OF EXISTING RIVER WALLS
- WORKING ADJACENT TO WATER AND POTENTIALLY AT HEIGHT
- SITE WIDE FLOOD RISK - FLOOD EXTENTS AND LEVELS SHOWN ARE WITH CULVERT AND RIVER WALLS IN PLACE. REFER TO THE MAYFIELD FLOOD RISK ASSESSMENT AND CONSULT WITH PRINCIPAL CONTRACTOR, OBSERVE WEATHER FORECAST AND THE ENVIRONMENT AGENCY FLOOD WARNINGS. A FLOOD RISK MANAGEMENT PLAN DURING CONSTRUCTION SHALL BE PUT IN PLACE PRIOR TO COMMENCEMENT OF WORKS.
- REMOVAL OF THE CULVERT OR RIVER WALLS SHALL NOT RESULT IN INCREASE IN FLOOD RISK TO DOWNSTREAM SITES. THE DEMOLITION METHOD STATEMENT IS TO BE DEVELOPED IN COLLABORATION WITH FLOOD RISK ENGINEERS TO TAKE INTO ACCOUNT FLOOD RISK. TEMPORARY MITIGATION MEASURES SHALL BE PUT IN PLACE AS NECESSARY.

MAINTENANCE/OPERATION/DEMOLITION:

- A MAINTENANCE AND MANAGEMENT PLAN IS TO BE PUT IN PLACE PRIOR TO OCCUPATION. PERSONNEL TO BE MADE AWARE OF THE PLAN AND FLOOD RISK TRIGGER POINTS PRIOR TO OPERATION AND MAINTENANCE.
- WORKS IN THE PROXIMITY OF DYNAMIC RIVER. LEVELS CAN CHANGE RAPIDLY.
- CONSULT THE ENVIRONMENT AGENCY FLOOD WARNINGS AND OBSERVE WEATHER CONDITIONS PRIOR TO ANY MAINTENANCE OF AREAS AT HIGH FLOOD RISK (WITHIN THE 1 IN 25 YEAR FLOOD EVENT).
- DEBRIS DEPOSITION POTENTIALLY EXPECTED WITHIN FLOODED AREAS FOLLOWING A FLOOD EVENT, INCLUDING DILUTED SEWAGE WASTE.

DECOMMISSIONING/DEMOLITION:
REFER TO CONSTRUCTION ABOVE

Notes:

- WORKS WITHIN 8M FROM THE RIVER BANK, INCLUDING DEMOLITION MAY REQUIRE A FLOOD RISK ACTIVITY PERMIT FROM THE ENVIRONMENT AGENCY.
- SEDIMENTATION INFORMATION BASED ON RIVER CHANNEL SURVEY COMPLETED NOVEMBER 2020.
- DEBRIS AND JAPANESE KNOTWEED TO BE REMOVED THROUGHOUT RIVER CHANNEL. SEDIMENTATION WILL BE REMOVED FROM RIVER BANKS AS PER DRAWINGS NO. W-0003 TO W-0006. DEBRIS AND SEDIMENTATION REMOVAL UNDERNEATH THE CULVERT TO BE UNDERTAKEN FOLLOWING REMOVAL OF THE CULVERT ROOF.
- FLOOD EXTENT AND LEVEL INFORMATION BASED ON BURO HAPPOLD FLOOD RISK MODELLING, COMPLETED SEPTEMBER 2019. EXTENTS AND LEVELS SHOWN ARE DURING EXISTING CONDITIONS (WITH CULVERT AND RIVER WALLS IN PLACE).
- FOR PROPOSED GENERAL ARRANGEMENT INFORMATION REFER TO DRAWING NO. W-0002.
- FOR CROSS SECTION DETAILS OF THE RIVER WORKS REFER TO DRAWINGS NO. W-0003, W-0004, W-0005 & W-0006.
- FOR PROPOSED EDGE DETAILS REFER TO DRAWING NO. W-0007.
- RIVER FLOW DIRECTION IS FROM EAST TO WEST. REFERENCE TO RIGHT BANK OR LEFT BANK IS FACING DOWNSTREAM. CROSS SECTIONS FACING DOWNSTREAM.
- THE MAIN SEDIMENT AND DEBRIS ACCUMULATION AREAS FOR CLEARANCE ARE INDICATED, BUT OTHER GENERAL CHANNEL BED CLEARANCE OF DEBRIS (NON-NATURALLY OCCURRING RIVERINE MATERIAL) SHOULD BE ANTICIPATED AND ALLOWED FOR.

LEGEND:

- 1:25 YEAR FLOOD EXTENT
- 1:100 YEAR FLOOD EXTENT
- SEDIMENT AND DEBRIS ACCUMULATION EXTENT
- MODELING NODES

C	STAGE 4	19.03.21	NG	JF
B	STAGE 3 FINAL	18.12.20	NG	RG
A	STAGE 3 PRELIMINARY INFORMATION	12.10.20	NG	RG
Rev	Description	Date	Dim	CHKD

STAGE 4

Status of drawing

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Web: www.burolhappold.com

Architect: SEW

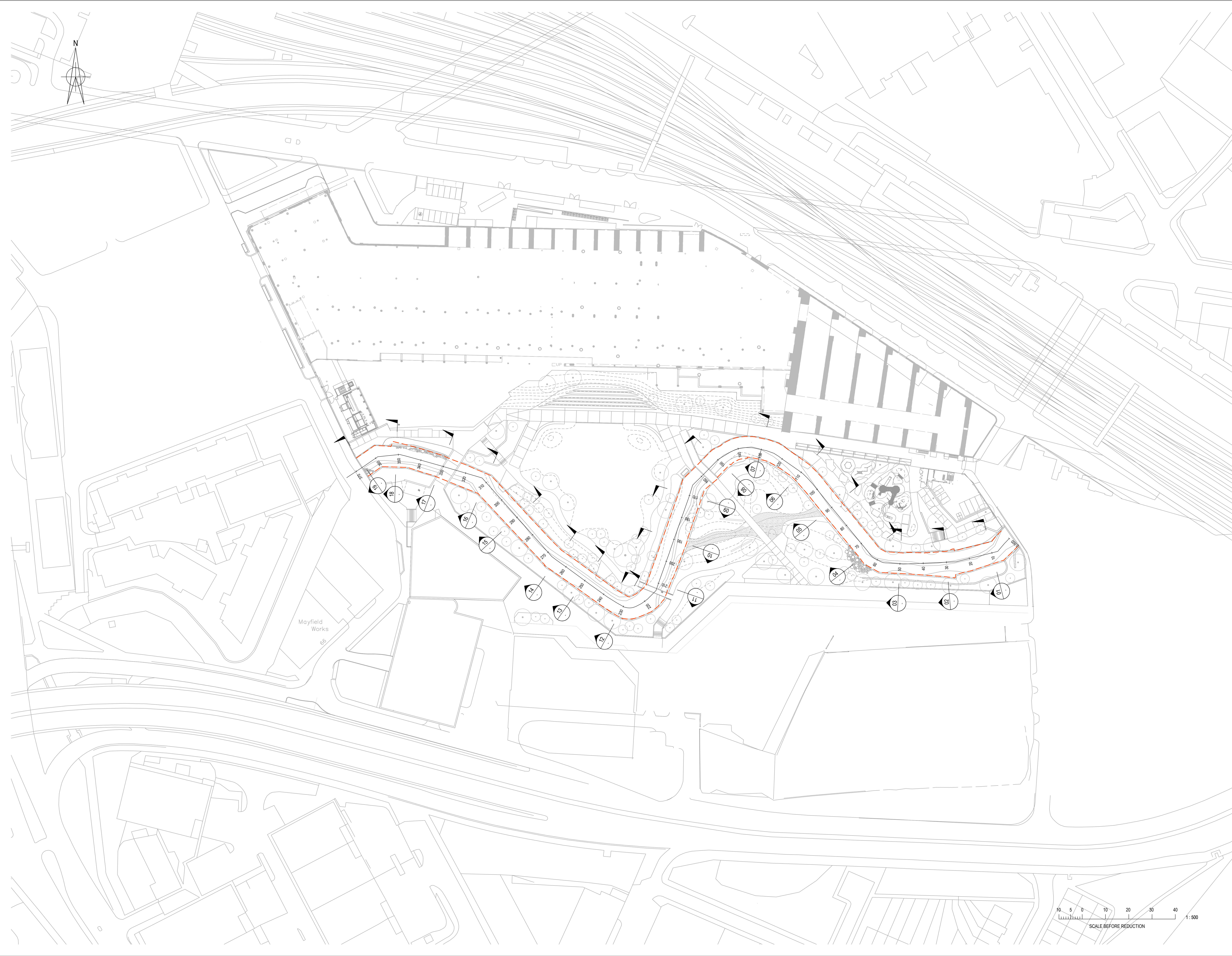
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Org Title: **EXISTING SITE CONDITIONS
GENERAL ARRANGEMENT
PLAN**

Scales: A3: 1:500
Drawn by: NG
Checked by: RG

Job No: **0046688**
Date: **10/01/2021**
Rev: **C**

Drawing No: **0046688-BHE-XX-XX-DR-W-0001**



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2. UNCERTAIN STABILITY OF EXISTING RIVER WALLS.
3. WORKING ADJACENT TO WATER AND POTENTIALLY AT HEIGHT. REFER TO THE MAYFIELD FLOOD RISK ASSESSMENT AND CONSULT WITH PRINCIPAL CONTRACTOR. OBSERVE WEATHER FORECAST AND THE ENVIRONMENT AGENCY FLOOD WARNINGS. A FLOOD RISK MANAGEMENT PLAN DURING CONSTRUCTION SHALL BE PUT IN PLACE PRIOR TO COMMENCEMENT OF WORKS.
4. REMOVAL OF THE CULVERT OR RIVER WALLS SHALL NOT RESULT IN INCREASE IN FLOOD RISK TO DOWNSTREAM SITES. THE DEMOLITION METHOD STATEMENT IS TO BE DEVELOPED IN COLLABORATION WITH FLOOD RISK ENGINEERS TO TAKE INTO ACCOUNT FLOOD RISK. TEMPORARY MITIGATION MEASURES SHALL BE PUT IN PLACE AS NECESSARY.

MAINTENANCE/CLEANING/OPERATION:

1. A MAINTENANCE AND MANAGEMENT PLAN IS TO BE PUT IN PLACE PRIOR TO OCCUPATION. PERSONNEL TO BE MADE AWARE OF THE PLAN AND FLOOD RISK TRIGGER POINTS PRIOR TO OPERATION AND MAINTENANCE.
2. WORKS IN THE PROXIMITY OF DYNAMIC RIVER. LEVELS CAN CHANGE RAPIDLY.
3. CONSULT THE ENVIRONMENT AGENCY FLOOD WARNINGS AND OBSERVE WEATHER CONDITIONS PRIOR TO ANY MAINTENANCE OF AREAS AT HIGH FLOOD RISK (WITHIN THE 1 IN 25 YEAR FLOOD EVENT).
4. DEBRIS DEPOSITION POTENTIALLY EXPECTED WITHIN FLOODED AREAS FOLLOWING A FLOOD EVENT, INCLUDING POLLUTED SEWAGE WASTE.

DECOMMISSIONING/DEMOLITION:
REFER TO CONSTRUCTION ABOVE.

Notes:

1. WORKS WITHIN 8M FROM THE RIVER BANK MAY REQUIRE A FLOOD RISK ACTIVITY PERMIT FROM THE ENVIRONMENT AGENCY.
2. FOR EXISTING SITE CONDITIONS REFER TO DRAWING NO W-0001.
3. FOR CROSS SECTION DETAILS OF THE RIVER REFER TO DRAWINGS NO. W-0003, W-0004, W-0005 & W-0006.
4. FOR PROPOSED EDGE TREATMENT REFER TO DRAWING NO. W-0007.
5. FOR LONG SECTION SEE DRAWING NO. W-0008.

LEGEND:

- EXISTING RIVER EDGE
- - - - - PROPOSED PARK CONTOURS - DESIGN BY OTHERS

C STAGE 4	19.03.21	NG	JF	
B STAGE 3 FINAL	18.12.20	NG	RG	
A STAGE 3 PRELIMINARY INFORMATION	12.10.20	NG	RG	
Rev	Description	Date	Dim	CHKD

STAGE 4

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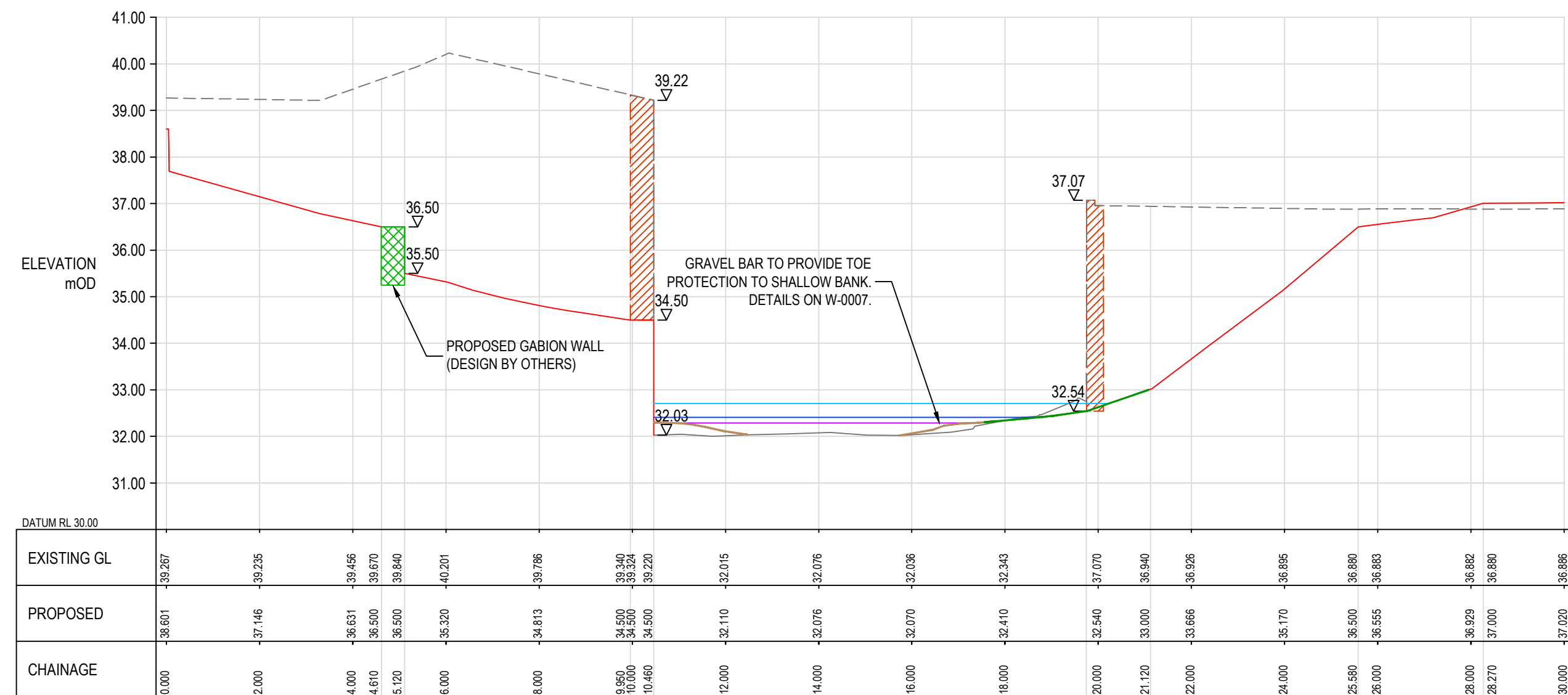
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UK

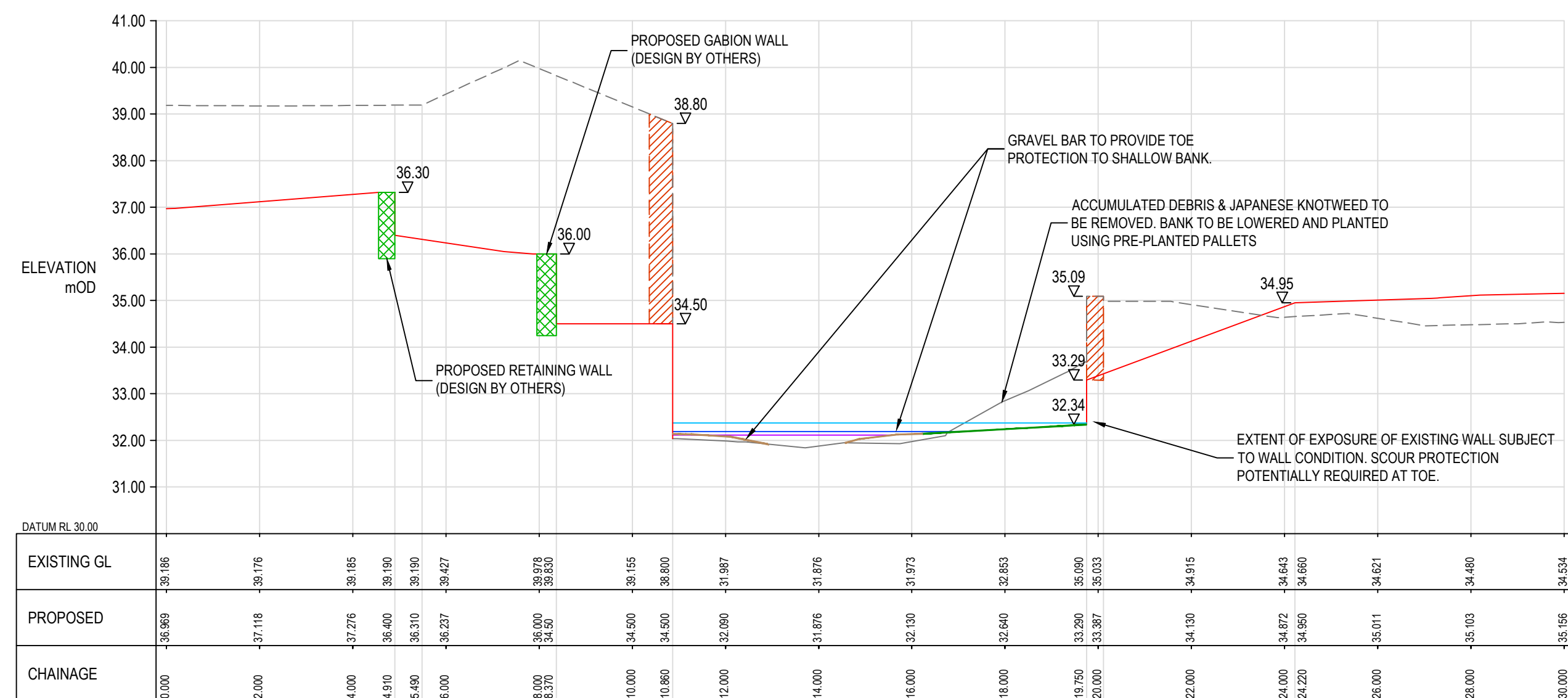
Tel: +44 (0)113 204 2000
Fax: +44 (0)670 787 4164
Email: 0046688@burohappold.com
Web: www.burohappold.com

Architect: SEW
Project: **MAYFIELD DEVELOPMENT PARTNERSHIP**
Prog Title: **PROPOSED GENERAL ARRANGEMENT PLAN**

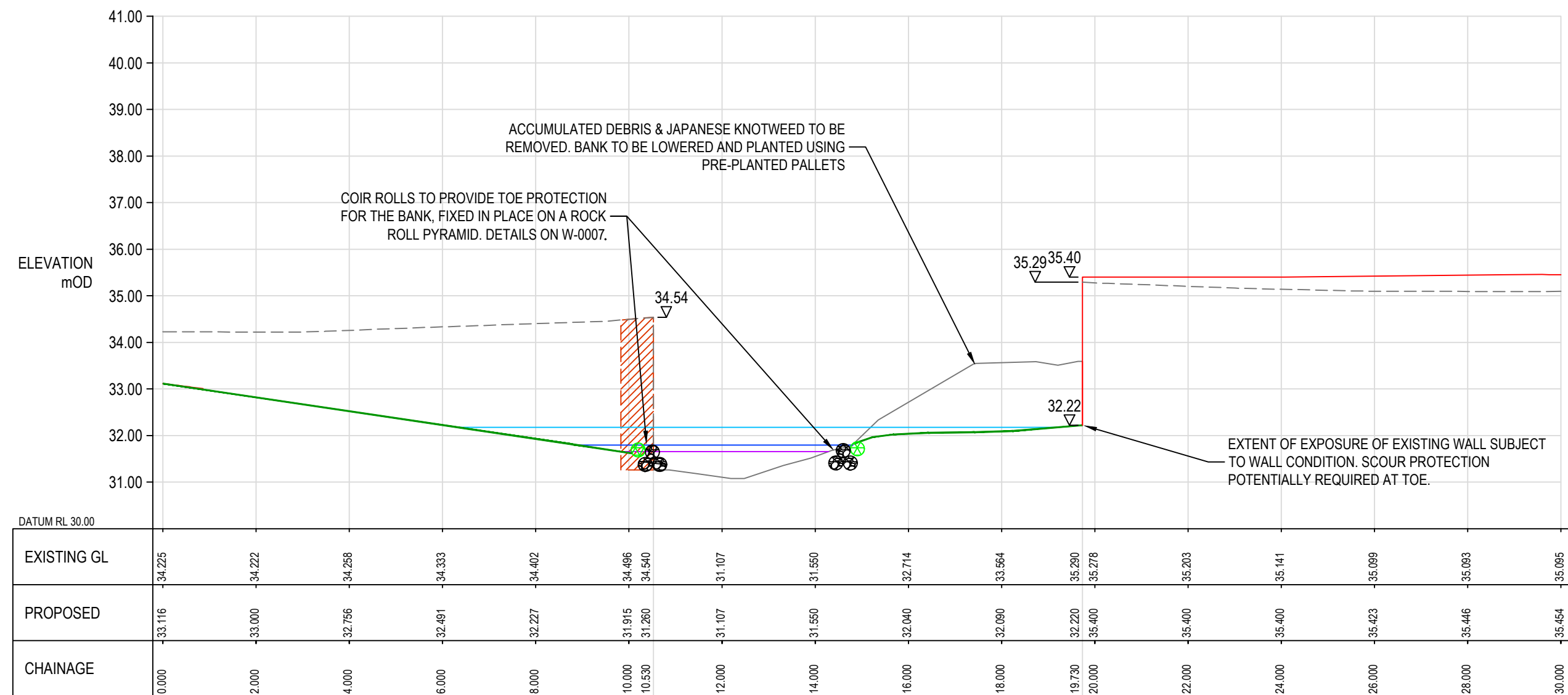
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Checked by: RG	Rev: C
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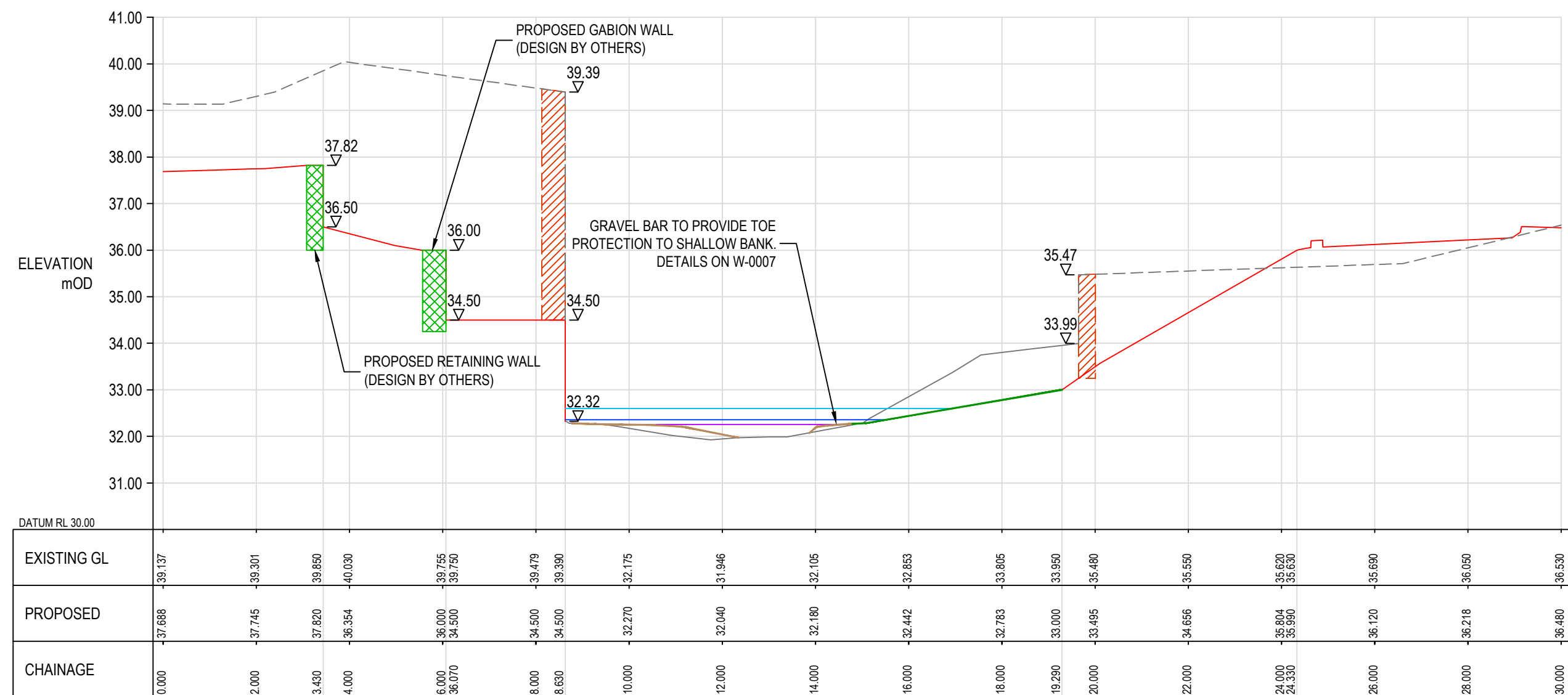
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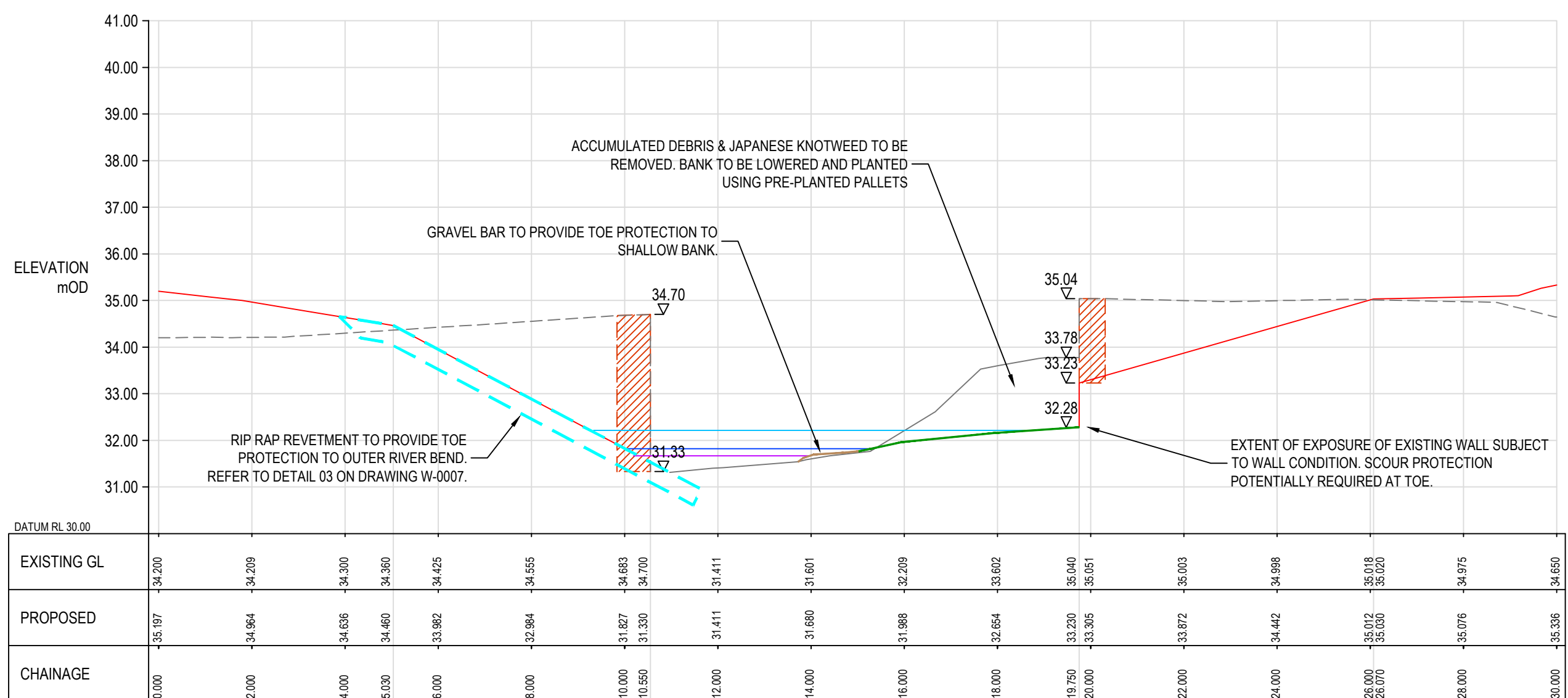
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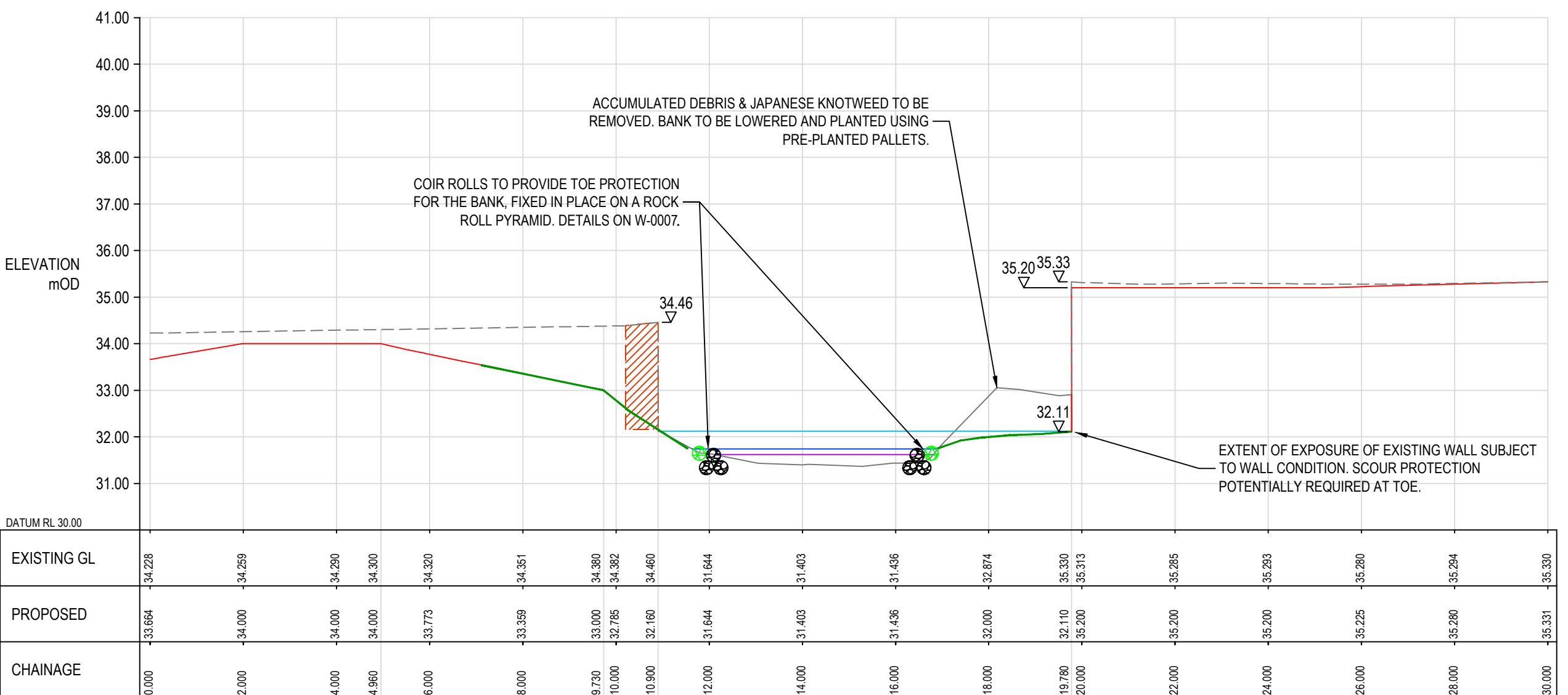
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SCALE 1:100 VERTICAL.



SECTION 02 CHAINAGE 30
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SCALE 1:100 VERTICAL.



SECTION 04 CHAINAGE 65
SCALE 1:100 HORIZONTAL.
SCALE 1:100 VERTICAL.



SECTION 06 CHAINAGE 110
SCALE 1:100 HORIZONTAL.
SCALE 1:100 VERTICAL.

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3. WORKING ADJACENT TO WATER AND POTENTIALLY AT HEIGHT.
4. REFER TO THE MAYFIELD FLOOD RISK ASSESSMENT AND CONSULT WITH PRINCIPAL CONTRACTOR. OBSERVE WEATHER FORECASTS AND THE ENVIRONMENT AGENCY FLOOD WARNINGS. A FLOOD RISK MANAGEMENT PLAN DURING CONSTRUCTION SHALL BE PUT IN PLACE PRIOR TO COMMENCEMENT OF WORKS
5. REMOVAL OF THE CULVERT OR RIVER WALLS SHALL NOT RESULT IN INCREASE IN FLOOD RISK TO DOWNSTREAM SITES. DEMOLITION METHOD STATEMENT SHALL TAKE INTO ACCOUNT FLOOD RISK. TEMPORARY MITIGATION MEASURES SHALL BE PUT IN PLACE AS NECESSARY.

MAINTENANCE/CLEANING/OPERATION

1. A MAINTENANCE AND MANAGEMENT PLAN IS TO BE PUT IN PLACE PRIOR TO OCCUPATION. PERSONNEL TO BE MADE AWARE OF THE PLAN AND FLOOD RISK TRIGGER POINTS PRIOR TO OPERATION AND MAINTENANCE.
2. WORKS IN THE PROXIMITY OF DYNAMIC RIVER. LEVELS CAN CHANGE RAPIDLY.
3. CONSULT THE ENVIRONMENT AGENCY FLOOD WARNINGS AND ADVISE ON WEATHER CONDITIONS PRIOR TO ANY MAINTENANCE OF AREAS AT HIGH FLOOD RISK (WITHIN THE 1 IN 25 YEAR FLOOD EVENT).
4. DEBRIS DEPOSITION POTENTIALLY EXPECTED WITHIN FLOODED AREAS FOLLOWING A FLOOD EVENT, INCLUDING DILUTED SEWAGE WASTE.

DECOMMISSIONING/DEMOLITION

REFER TO CONSTRUCTION ABOVE

Notes

1. WORKS WITHIN 8M FROM THE RIVER BANK MAY REQUIRE A FLOOD RISK ACTIVITY PERMIT FROM THE ENVIRONMENT AGENCY
2. THE EXISTING CROSS SECTIONS ARE INDICATED IN DASHED LINE AND ARE BASED ON A RIVER CHANNEL SURVEY CONDUCTED BY SURVEY OPERATIONS IN OCTOBER 2020.
3. FOR EXISTING SITE CONDITIONS REFER TO DRAWING NO.W-0001.
4. FOR PROPOSED GENERAL ARRANGEMENT INFORMATION AND CROSS SECTION LOCATIONS REFER TO DRAWING NO.W-0002.
5. FOR PROPOSED EDGE TREATMENT REFER TO DRAWING NO.W-0007.
6. FOR LONG SECTION ALONG THE LOWER CENTRELINE OF THE RIVER REFER TO DRAWING W-0008.
7. EXISTING AND PROPOSED RETAINING WALLS ARE SHOWN INDICATIVELY. CONTRACTOR TO CONFIRM SIZE OF EXISTING WALLS. THIS DRAWING SHOULD NOT BE USED FOR SETTING OUT OR SIZING CONSTRUCTION ELEMENTS.
8. RIVER FLOW DIRECTION IS FROM EAST TO WEST. REFERENCE TO RIGHT BANK OR LEFT BANK IS BEING DONE DOWNSTREAM.
9. WALL STABILITY CHECKS WILL BE FACED PRIOR TO REMOVAL OF MATERIAL IN FRONT OF WALLS.
10. JAPANESE KNOWTIEED TO BE REMOVED BY SPECIALIST. CONTRACTOR TO COORDINATE WITH SPECIALIST.
11. A SUITABLY QUALIFIED GEOMORPHOLOGIST SHALL SUPERVISE THE PLACEMENT AND SHAPING OF GRAVEL BARS AND RIFFLES

LEGEND:

- EXISTING SITE LEVELS
 --- PROPOSED LEVELS
 --- Q95 WATER LEVEL (EXCEEDED 95% OF THE TIME)
 --- Q50 WATER LEVEL (EXCEEDED 50% OF THE TIME)
 --- Q5 WATER LEVEL (EXCEEDED 5% OF THE TIME)
 --- PROPOSED GRAVEL BAR
 --- PROPOSED PRE-PLANTED COIR PALLET
 --- RIP RAP
 [Red Hatched Box] EXISTING WALL TO BE REMOVED - THICKNESS AND EXTENTS UNKNOWN
 [Green Checkered Box] PROPOSED RETAINING WALL DESIGN T.B.C.

D	UPDATE FOLLOWING EA REVIEW	19.04.21	NG	JF
C	STAGE 4	19.03.21	NG	JF
B	STAGE 3 FINAL	18.12.20	NG	RG
A	PRELIMINARY STAGE 3 INFORMATION	12.10.20	NG	RG
Rev	Description	Date	Drn	Chd

1104	Description	Rate	Unit	Price
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STAGE 4

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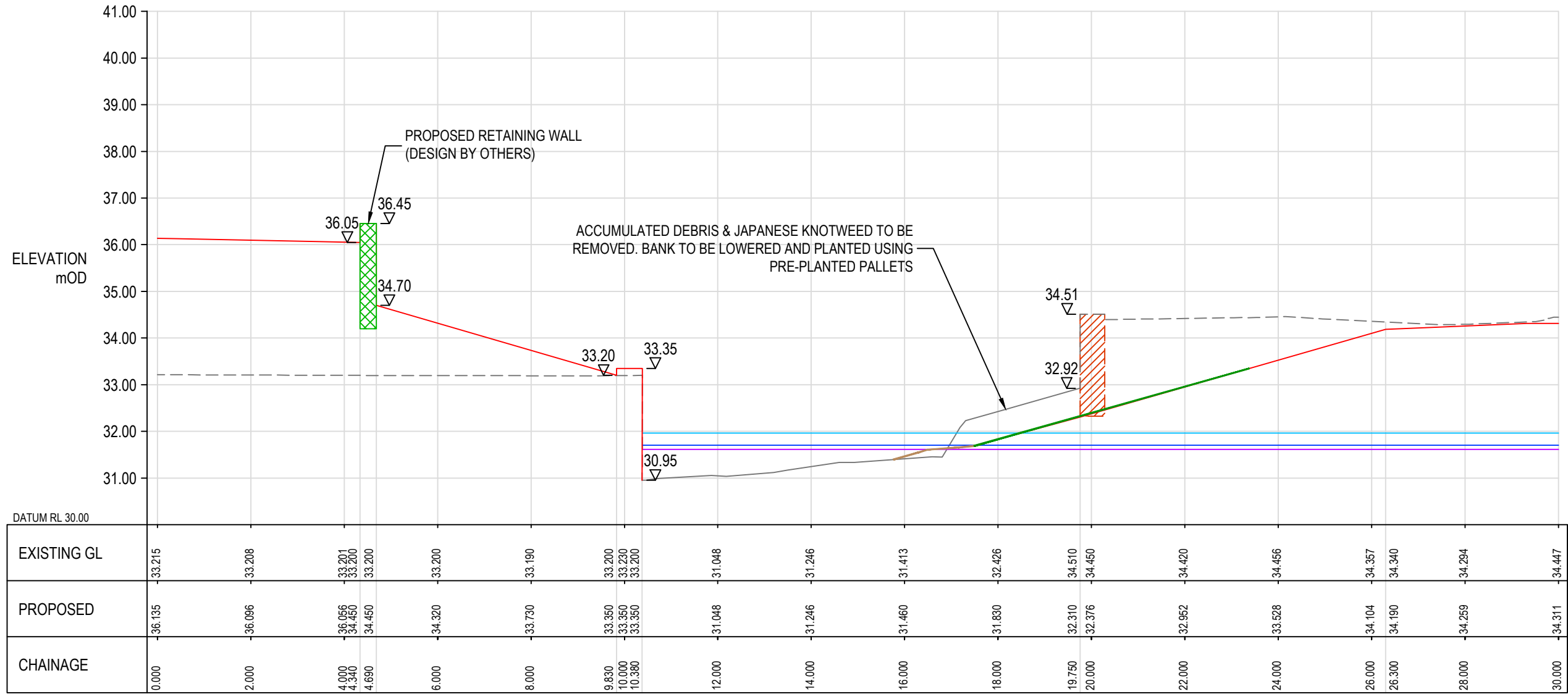
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
Email: 0046688@burohappold.com
Web: www.burohappold.com

Architect	SEW
Project	MAYFIELD DEVELOPMENT PARTNERSHIP
Org Title	PROPOSED SECTIONS SHEET 1

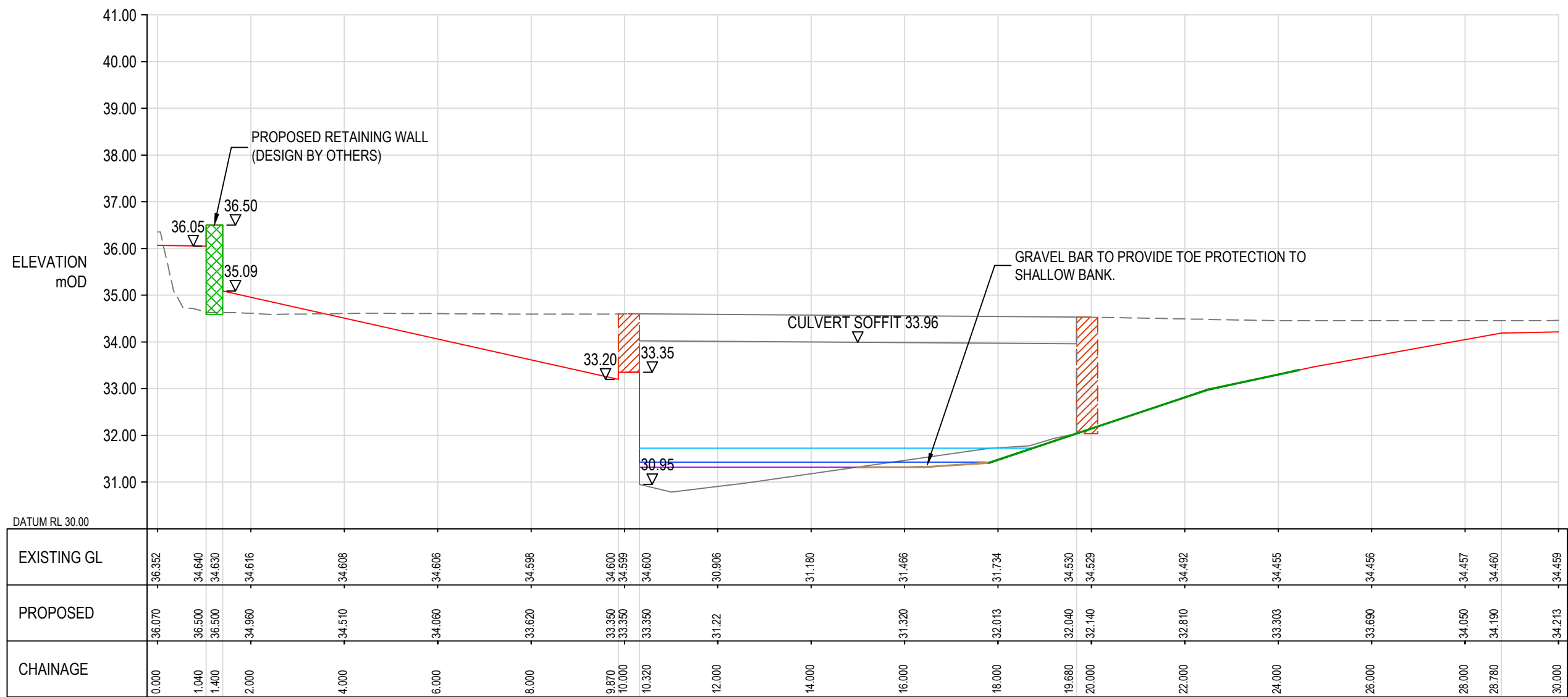
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Drawn by NG	Date APRIL 2021
Checked by RG	Rev D

Drawing No. 0046688-BHE-XX-XX-DR-W-0003

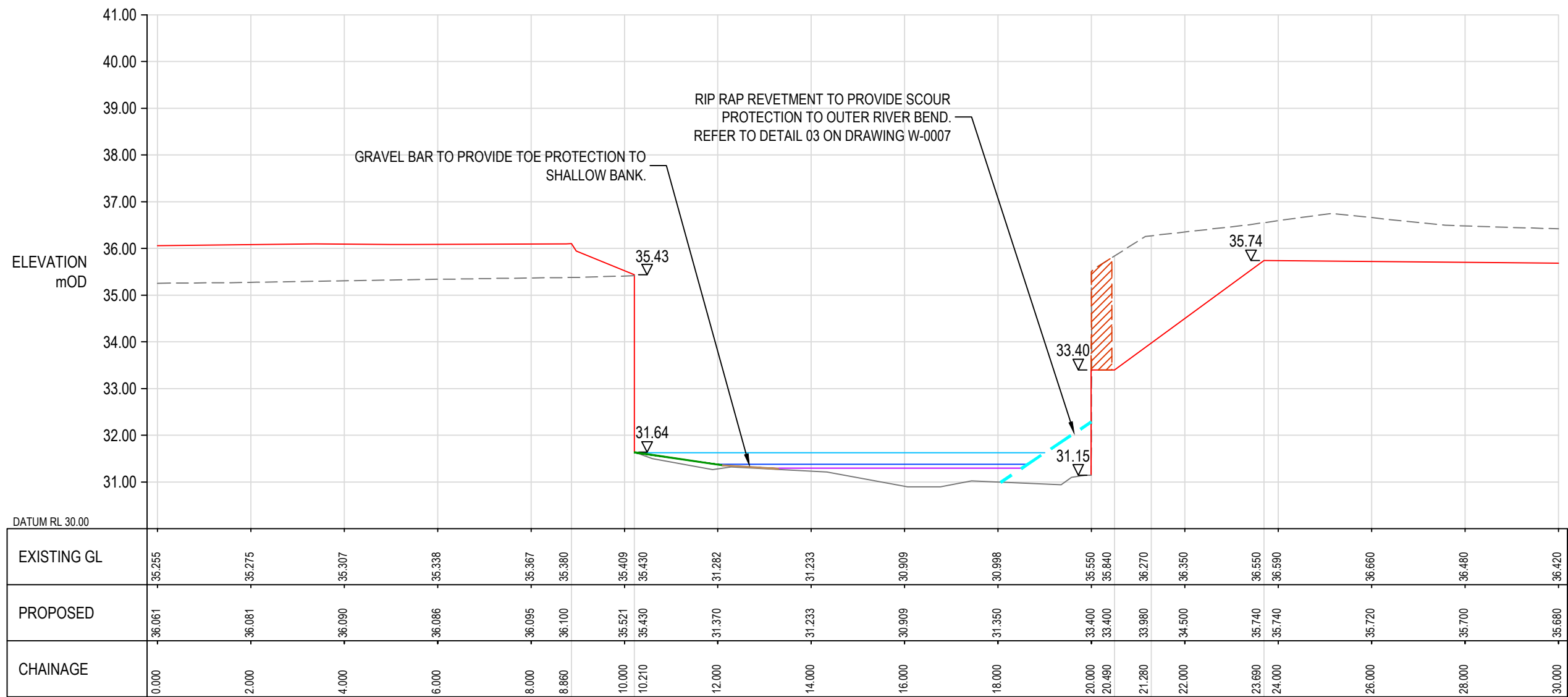
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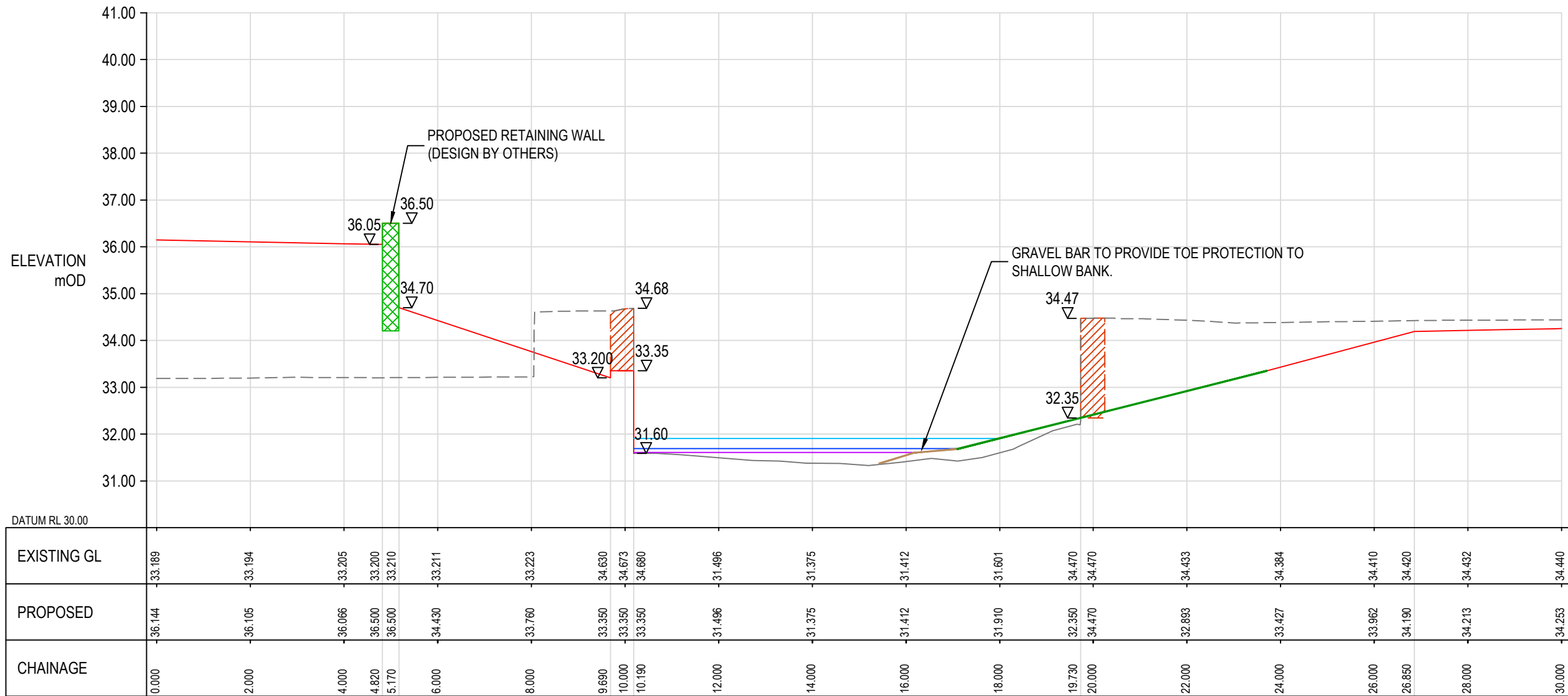
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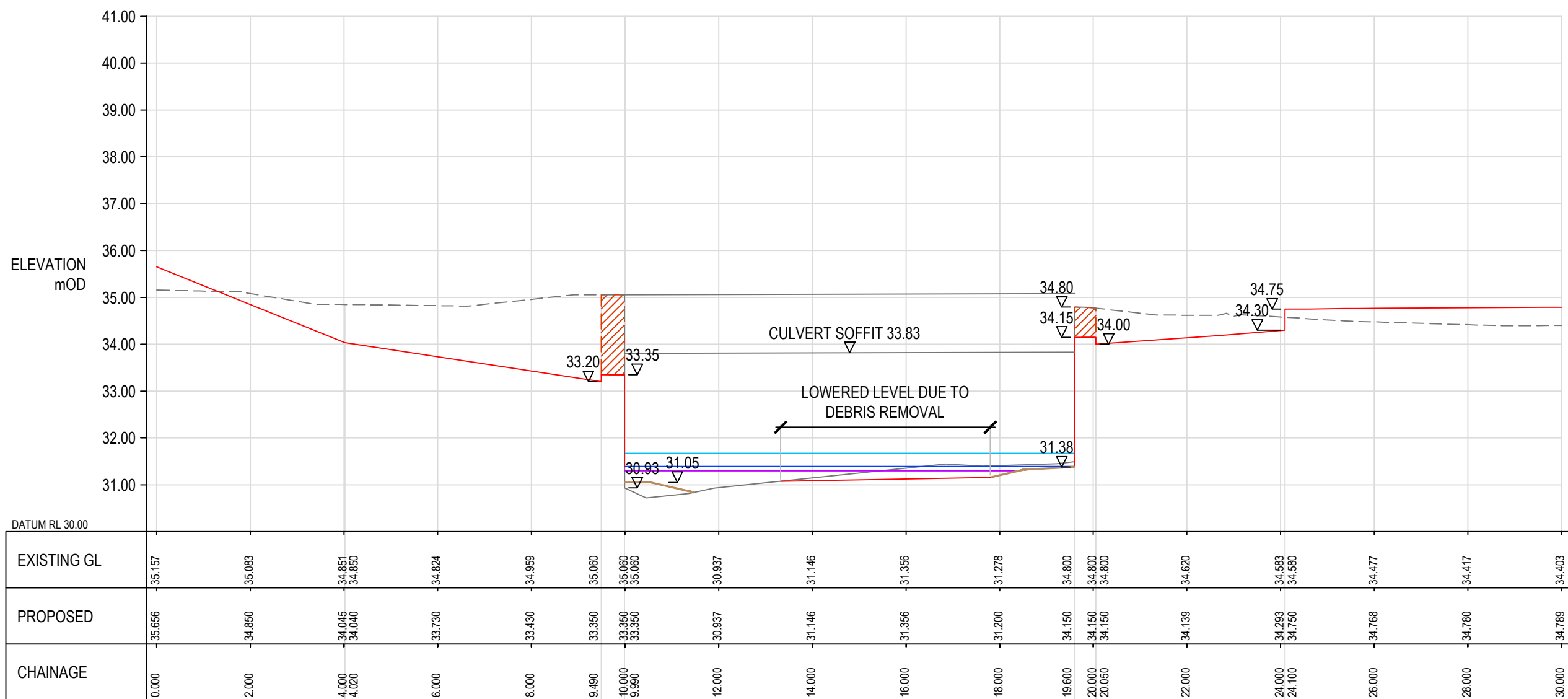
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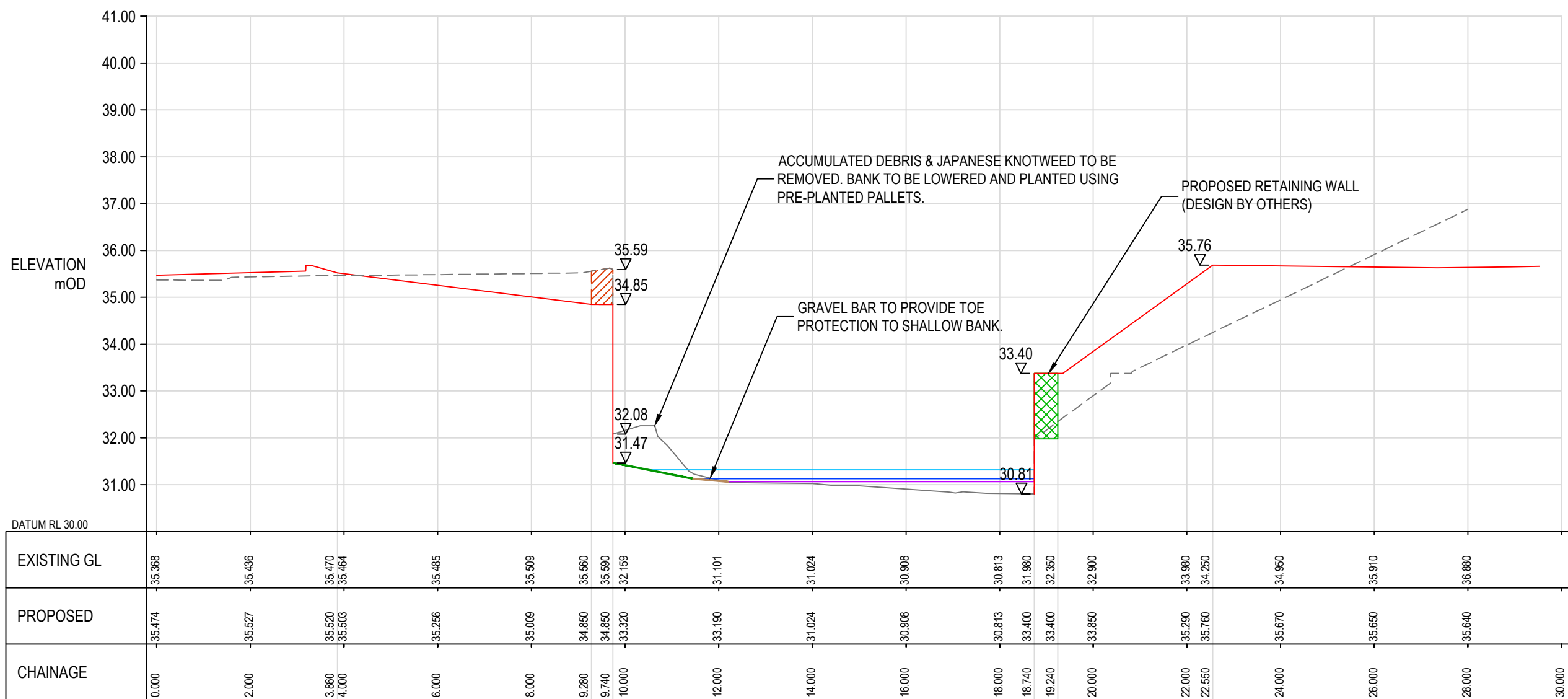
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SCALE 1:100 VERTICAL



SECTION 14 CHAINAGE 265
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



SECTION 16 CHAINAGE 310
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



SECTION 18 CHAINAGE 350
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL

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6. FOR LONG SECTION ALONG THE LOWER CENTRELINE OF THE RIVER REFER TO DRAWING W-0008.
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- PROPOSED PRE-PLANTED COIR PALLET
- RIP RAP
- EXISTING WALL TO BE REMOVED - THICKNESS AND EXTENTS UNKNOWN
- PROPOSED RETAINING WALL DESIGN T.B.C.

D UPDATE FOLLOWING EA REVIEW 19.04.21 NG JF

C STAGE 4 19.03.21 NG JF

B STAGE 3 FINAL 18.12.20 NG RG

A STAGE 3 PRELIMINARY INFORMATION 12.10.20 NG RG

Rev	Description	Date	Drn	Chd
1				

STAGE 4

Status of drawing

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Web: www.burohappold.com

Architect **SEW**

Project **MAYFIELD DEVELOPMENT PARTNERSHIP**

Dwg Title **PROPOSED SECTIONS
SHEET 3**

Scales@A1 1:50

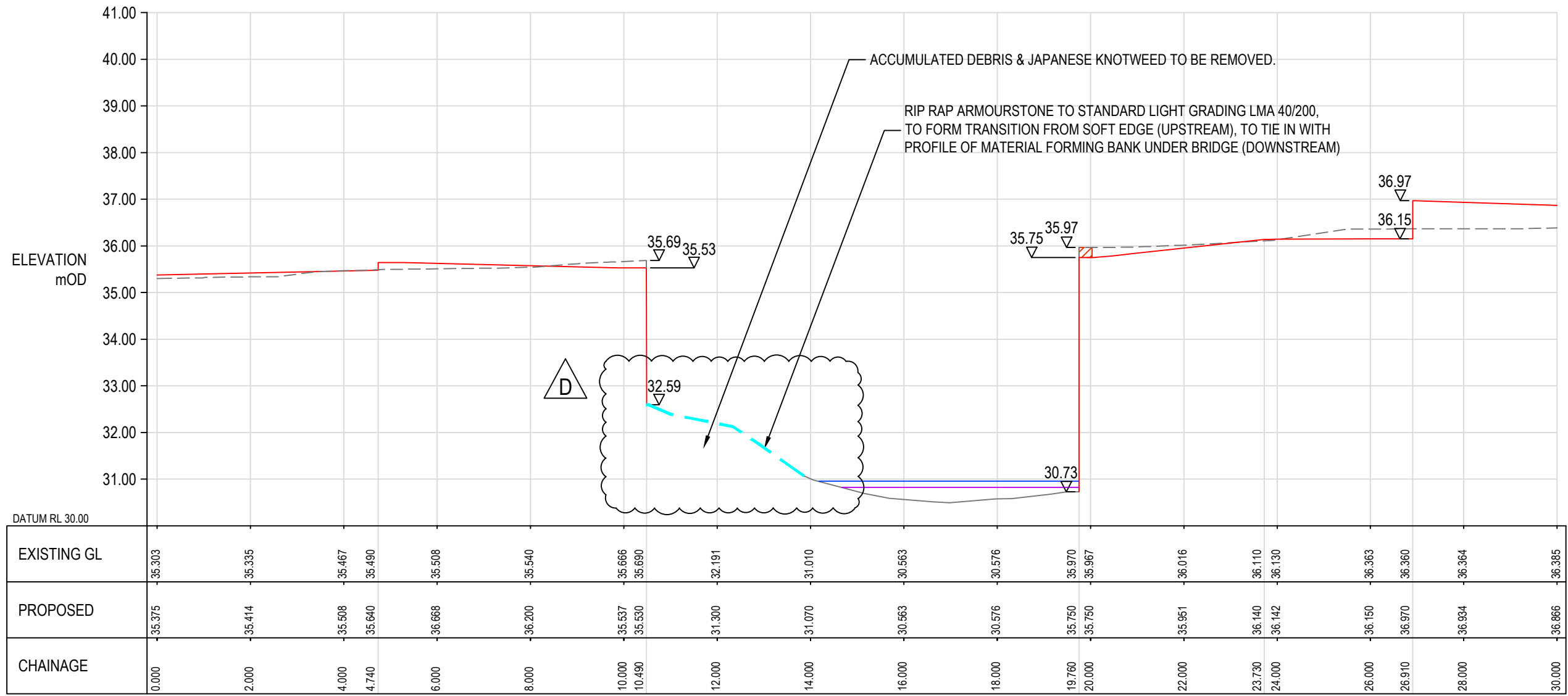
Job No. **0046688**

Drawn by JZ
Checked by RG

Date **APRIL 2021**

Rev **D**

Drawing No. **0046688-BHE-XX-XX-DR-W-0005**



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- PROPOSED PRE-PLANTED COIR PALLETS
- RIP RAP
- EXISTING WALL TO BE REMOVED - THICKNESS AND EXTENTS UNKNOWN
- PROPOSED RETAINING WALL DESIGN T.B.C.

D	UPDATE FOLLOWING EA REVIEW	19.04.21	NG	JF
C	STAGE 4	19.03.21	NG	JF
B	STAGE 3 FINAL	18.12.20	NG	RG
A	STAGE 3 PRELIMINARY INFORMATION	12.10.20	NG	RG

Rev	Description	Date	Dm	Ch'd
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STAGE 4

Status of drawing

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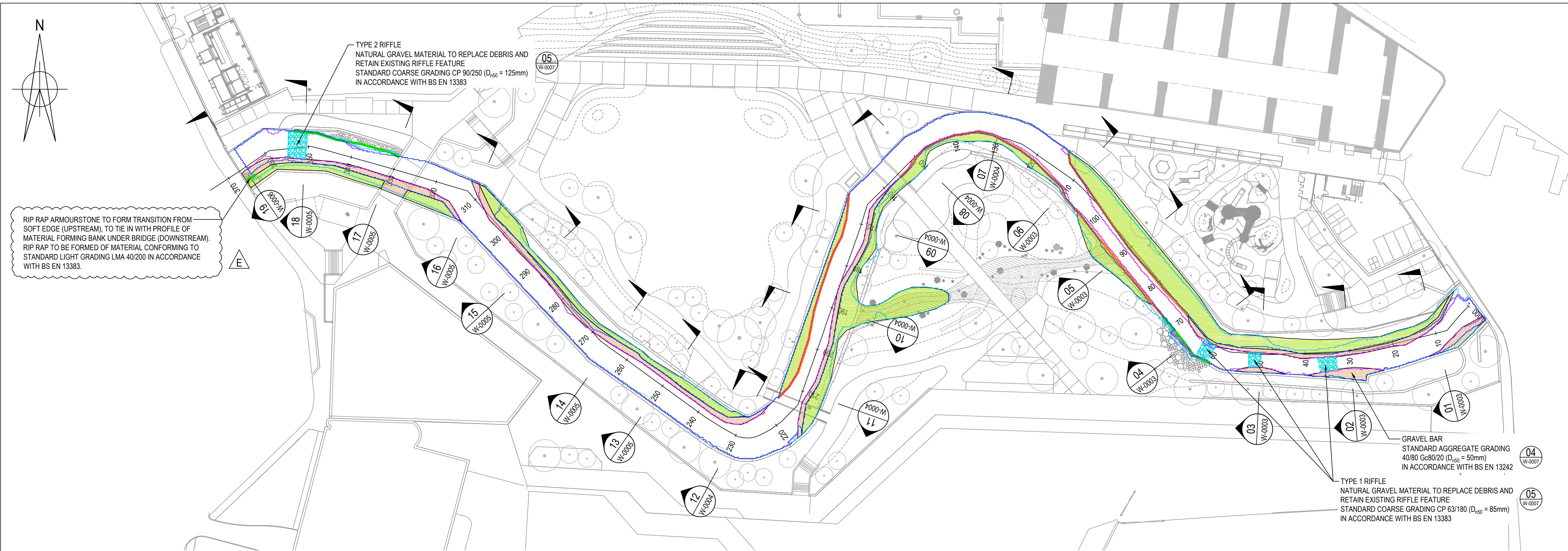
Architect **SEW**

Project **MAYFIELD DEVELOPMENT PARTNERSHIP**

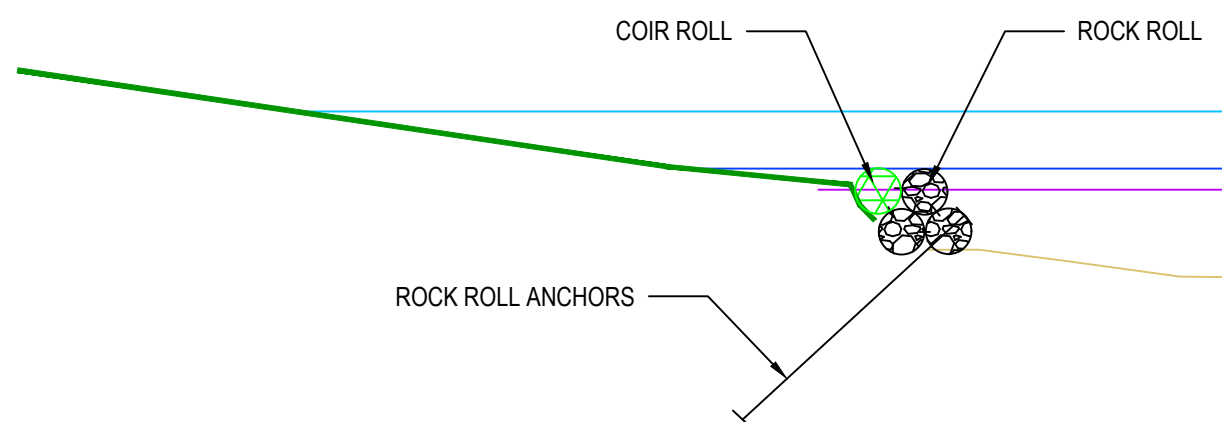
Dwg Title **PROPOSED SECTIONS
SHEET 4**

Scales@A1 1:50	Job No. 0046688
Drawn by JZ	Date APRIL 2021
Checked by RG	Rev D

Drawing No. **0046688-BHE-XX-XX-DR-W-0006**



TYPICAL EDGE DETAILS



01 'SOFT' EDGE
SCALE 1:50

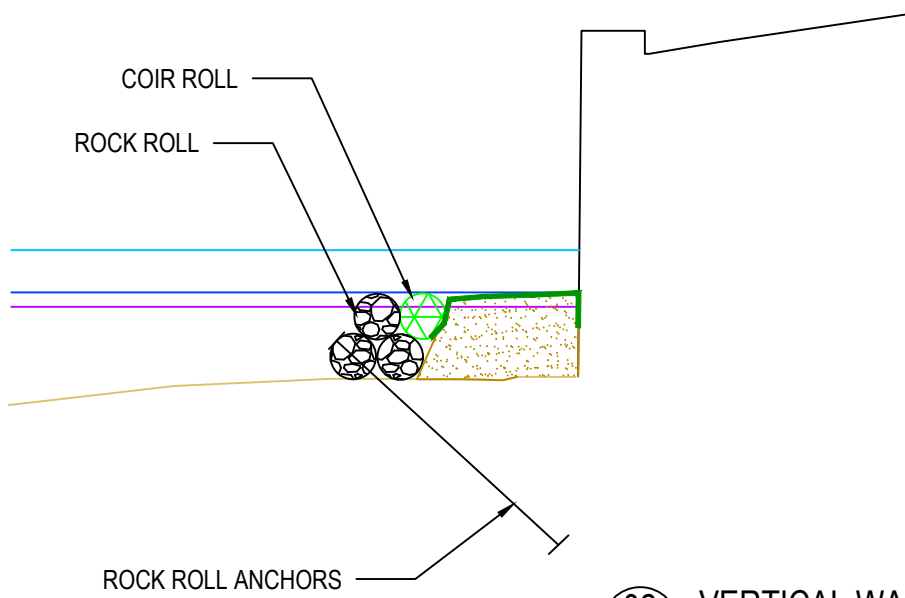
COIR ROLLS TO BE FIXED IN PLACE ON A ROCK ROLL PYRAMID OF THREE ROCK ROLLS (APPROX. 250 - 300MM DIAMETER).

GROUND ANCHORS TO BE USED TO FIX ROCK ROLLS TO THE RIVER BED OR BANK.

PRE-PLANTED PALLETTS WITH MARGINAL/WETLAND AND OTHER VEGETATION TO BE INSTALLED BEHIND COIR ROLLS ON APPROPRIATE TOP SOIL LAYER.

PALLET EDGE TO BE BURIED UNDER COIR ROLLS AND OVERLAP WITH NEXT PALLET. PALLETTS TO BE FIXED TO SLOPE WITH PEGS. INSTALLATION AS PER MANUFACTURERS INSTRUCTIONS.

PALLETTS SHALL BE VEGETATED ON INSTALLATION TO ENSURE RAPID ESTABLISHMENT OF THE RIVER BANKS AND PREVENT JAPANESE KNOTWEED COLONISATION.



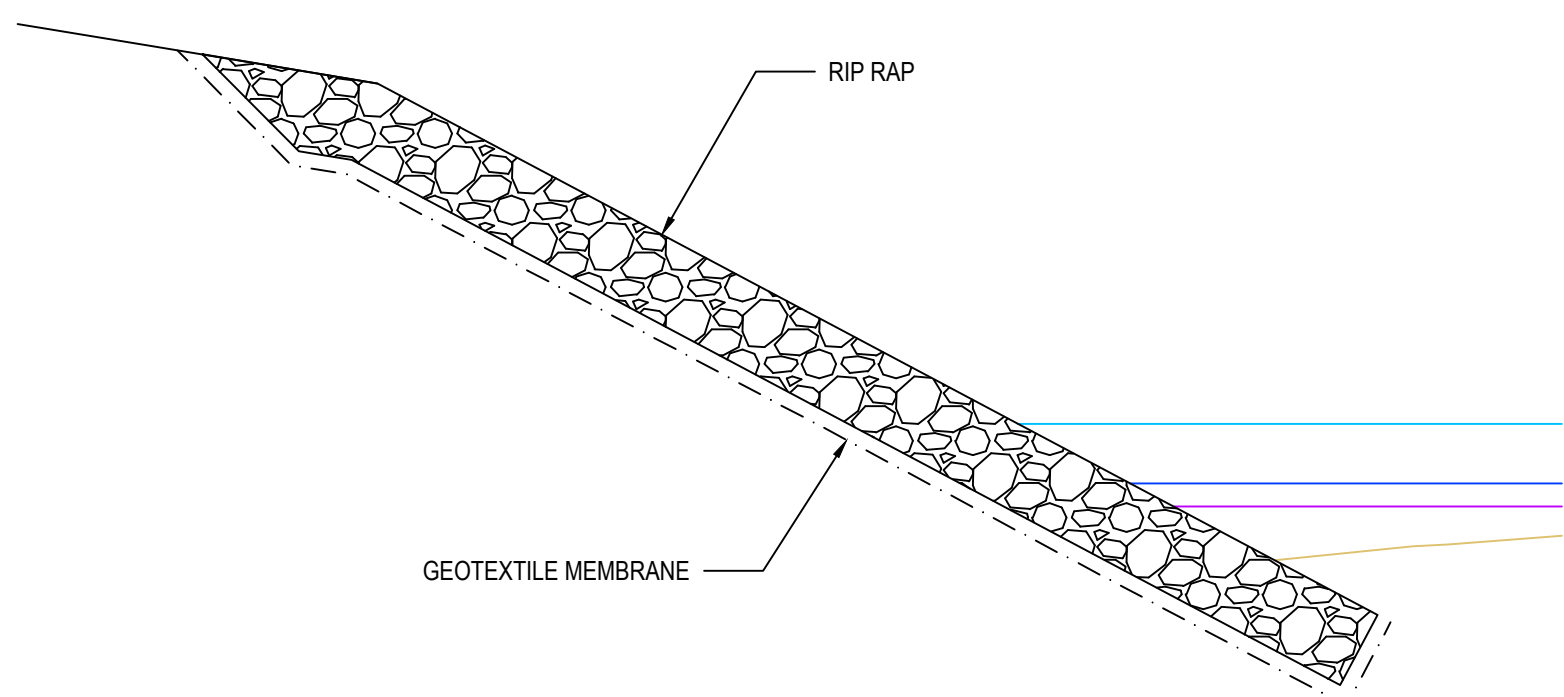
02 VERTICAL WALL
SCALE 1:50

COIR ROLLS ON PYRAMID OF ROCK ROLLS WITH BACKFILLING ALONG THE RIGHT BANK OF CHAINAGE 165 TO 215 TO CREATE RIVER SINUSOID.

GROUND ANCHORS TO BE USED TO FIX ROCK ROLLS TO THE RIVER BED.

PRE-PLANTED PALLETTS BEHIND COIR ROLLS TO SUPPORT MARGINAL VEGETATION.

BACK FILLING MATERIAL CAN CONSIST OF A SUB SOIL LAYER OVER NATURAL CRUSHED MATERIAL FOUND ON SITE TO SUPPORT PRE-PLANTED PALLETTS.

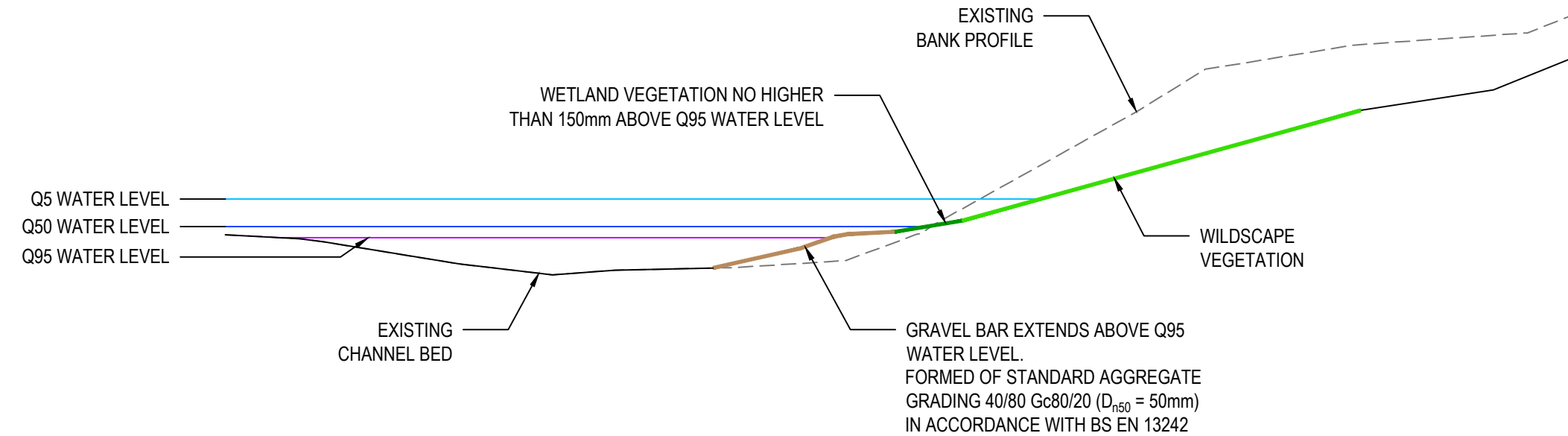


03 RIP RAP REVETMENT
SCALE 1:50

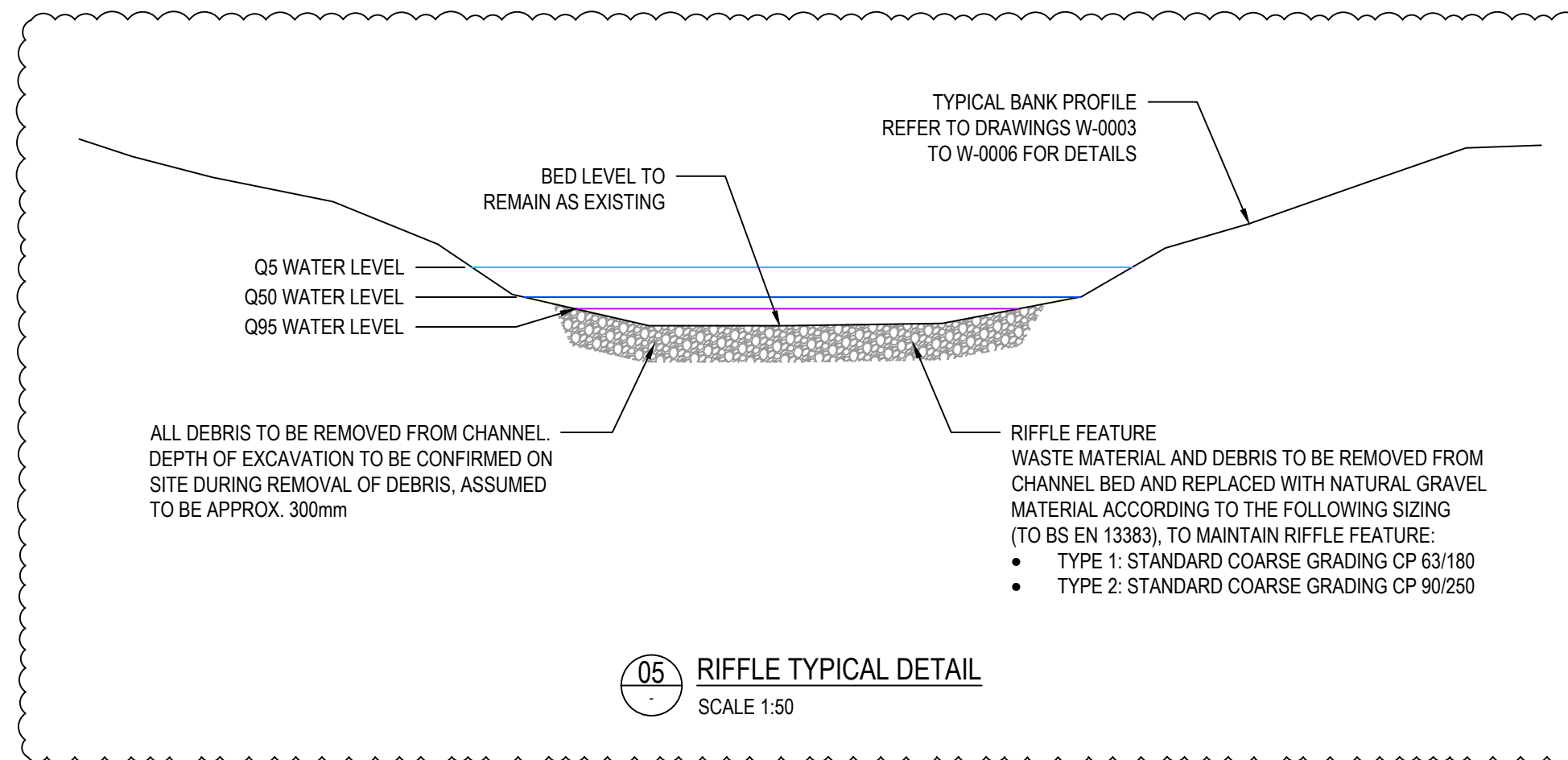
RIP RAP REVETMENT TO PROVIDE TOE AND BANK PROTECTION BETWEEN CHAINAGE 60-72M AND 330-353M, AND TIE IN WITH EXISTING BANK AT DOWNSTREAM EXTENT (CHAINAGE 366M)

ROCK DENSITY: 2500 KG/M3
MINIMUM RIP RAP ARMOUR SIZE DN50: 350MM
STANDARD ARMOURSTONE GRADING: LMA 40/200 IN ACCORDANCE WITH BS EN 13383
THICKNESS OF ARMOURSTONE: 525MM
TOE TO BE BURIED IN RIVER BED BY MIN. OF 500MM

GEOTEXTILE TO BE PLACED UNDERNEATH RIP RAP TO PREVENT WASHING OUT OF UNDERLYING MATERIAL.



04 GRAVEL BAR TYPICAL DETAIL
SCALE 1:50



05 RIFFLE TYPICAL DETAIL
SCALE 1:50

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- COIR ROLLS ON ROCK ROLLS
- RIP RAP REVETMENT
- PROPOSED PRE-PLANTED COIR PALLETTS
- GRAVEL BAR
- RIFFLE GRAVEL FEATURE
- Q95 LEVEL (RIVER LEVEL EXCEEDED 95% OF THE TIME)
- Q50 LEVEL (RIVER LEVEL EXCEEDED 50% OF THE TIME)
- Q5 LEVEL (RIVER LEVEL EXCEEDED 5% OF THE TIME)

E	UPDATE FOLLOWING EA REVIEW	19.04.21	NG	JF
D	TYPOGRAPHICAL CORRECTIONS	19.02.21	NG	JF
C	STAGE 4	29.01.21	NG	JF
B	STAGE 3 FINAL	18.12.20	NG	RG
A	STAGE 3 PRELIMINARY INFORMATION	12.10.20	NG	RG

Rev	Description	Date	Dm	Ch'd
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STAGE 4

Status of drawing

**BUROHAPPOLD
ENGINEERING**

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

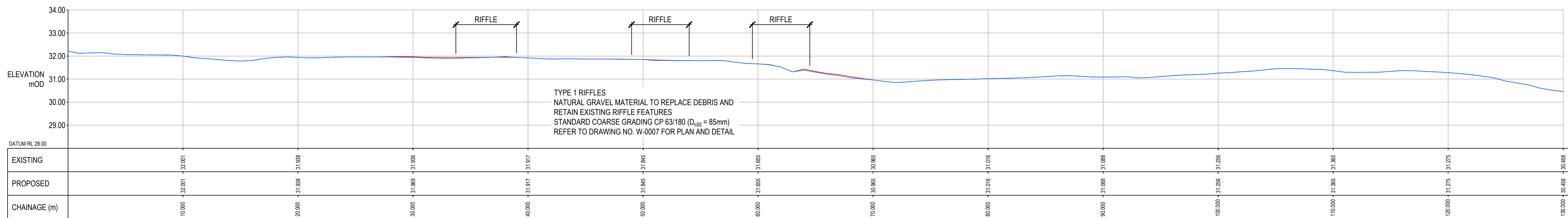
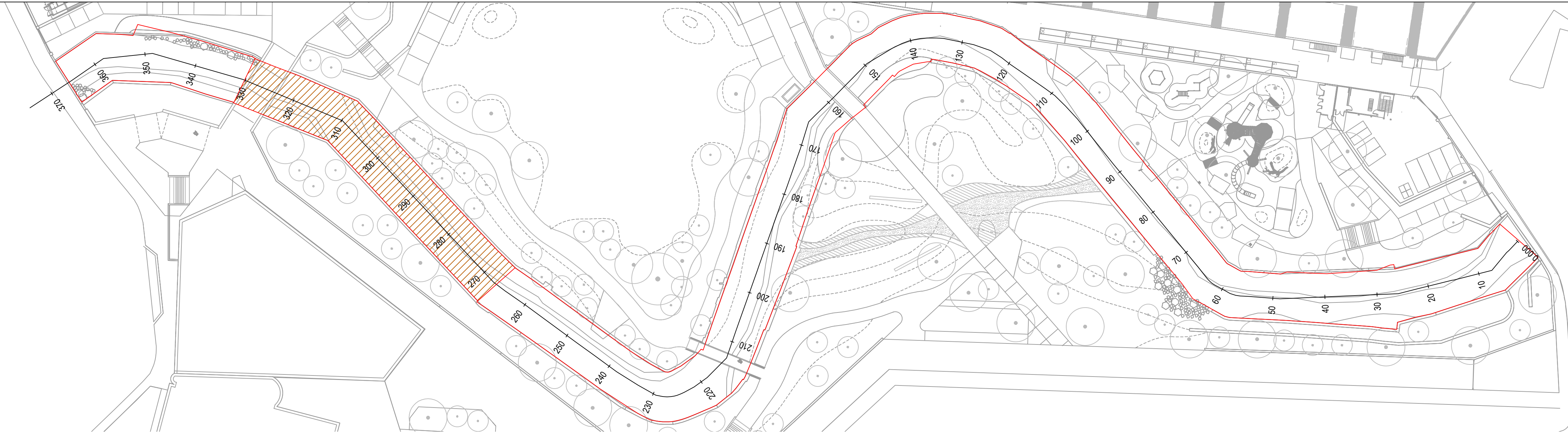
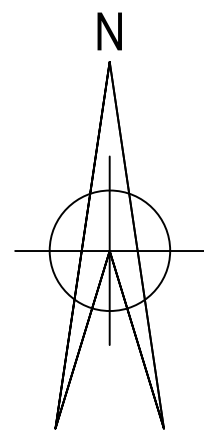
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
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Architect **SEW**
Project **MAYFIELD DEVELOPMENT PARTNERSHIP**
Dwg Title **PROPOSED EDGE TREATMENT**

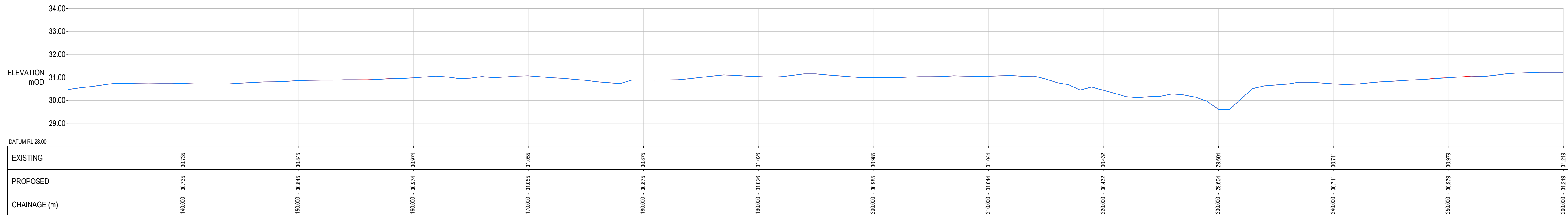
Scales@A1 1:50
Drawn by NG
Checked by RG

Job No. **0046688**
Date **APRIL 2021**
Rev **E**

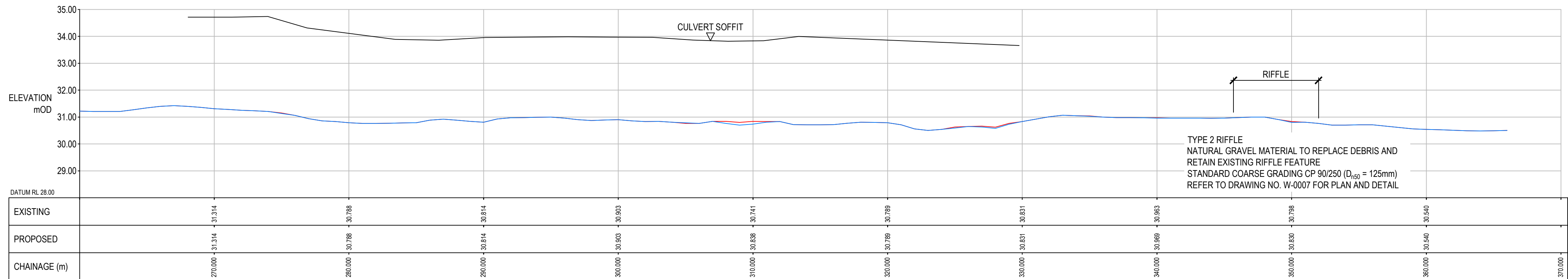
Drawing No. **0046688-BHE-XX-XX-DR-W-0007**



CHAINAGE 0 - 130
SCALE 1:200 HORIZONTAL
SCALE 1:100 VERTICAL



CHAINAGE 130 - 260
SCALE 1:200 HORIZONTAL
SCALE 1:100 VERTICAL



CHAINAGE 260 - 370
SCALE 1:200 HORIZONTAL
SCALE 1:100 VERTICAL

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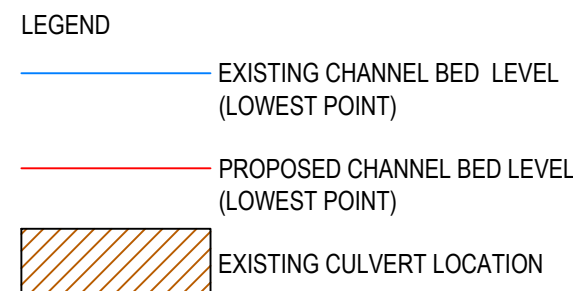
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Rev	Description	Date	Dm	Ch'd

STAGE 4

Status of drawing

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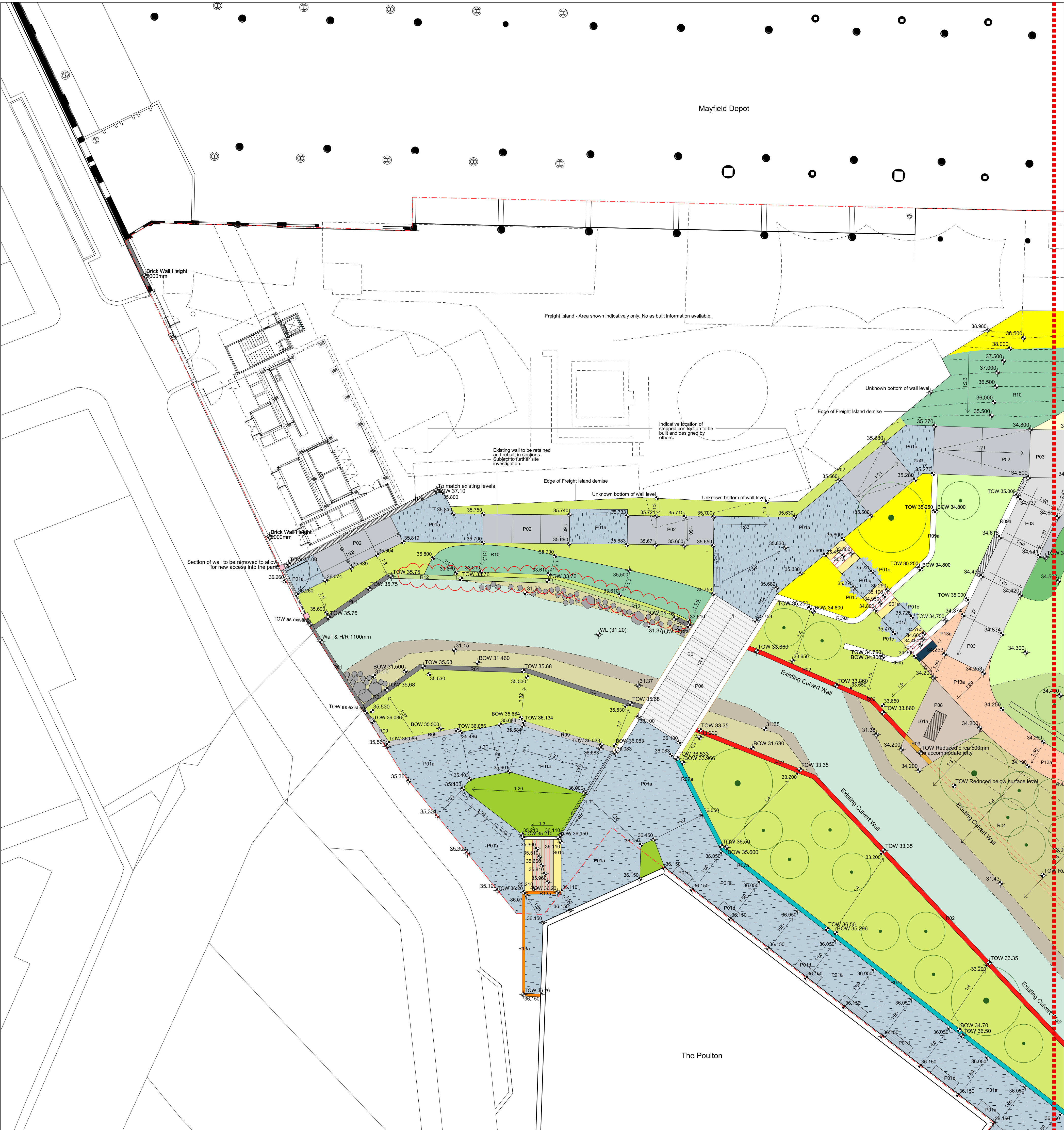
Architect **SEW**
Project **MAYFIELD DEVELOPMENT PARTNERSHIP**
Dwg Title **CHANNEL BED LONG SECTION**

Scales@A1 AS SHOWN
Drawn by NG
Checked by RG

Job No. **0046688**
Date **APRIL 2021**
Rev **C**

Drawing No. **0046688-BHE-XX-XX-DR-W-0008**

Appendix B2 – Studio Egret West (SEW) Drawings



KEY

Boundaries

Park Boundary

Levels

Proposed Levels

Existing Levels

Top of Wall

Bottom of Wall

Paving Types

P01a Paving Type 01a Description: Vehicular Clay Paving Bricks Please refer to spec clause Q24/120A

P01c Paving Type 01c Description: Staggered Pedestrian Clay Paving Brick edge. Please refer to spec clause Q23/325A

P01d Paving Type 01d Description: Clay Quarry Tiles within recessed cover. Please refer to spec clause Q25/133A

P02 Paving Type 02 Description: In situ reinforced concrete surface 01. Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P03 Paving Type 03 Description: In situ reinforced concrete surface 02. Please refer to drawing 0345-SEW-ZZ-00-DR-L-003204 for typical details

P06 Paving Type 06 Description: In situ reinforced concrete surface 05. Please refer to drawing 0345-SEW-ZZ-00-DR-L-003213 for typical details

P07 Paving Type 07 Description: Self-binding gravel. Please refer to spec clause Q23/135A

P08 Paving Type 08 Description: Steel Grating Refer to boardwalks and jetties design intent 0345-SEW-ZZ-00-DR-L-003402

P13a Paving Type 13a Description: Vehicular Loaded Resin bound gravel. Please refer to spec clause Q23/320a

Tactile Paving Type 01 Description: Tactile Hazard Corduroy Warning Paving at the top and bottom of steps. Please refer to spec clause Q25/320

Tactile Paving Type 02 Description: Tactile Hazard Corduroy Warning Paving at the top and bottom of steps. Please refer to spec clause Q25/322

For typical details of paving types Refer to drawings:

Paving Type 01: 0345-SEW-ZZ-00-DR-L-003201 and 0345-SEW-ZZ-00-DR-L-003202

Paving Type 02: 0345-SEW-ZZ-00-DR-L-003203

Paving Type 03: 0345-SEW-ZZ-00-DR-L-003203

Paving Type 06: 0345-SEW-ZZ-00-DR-L-003213

Paving Type 07: 0345-SEW-ZZ-00-DR-L-003204

Paving Type 08: 0345-SEW-ZZ-00-DR-L-003402

Paving Type 13: 0345-SEW-ZZ-00-DR-L-003204

Steps

S01 Step Type 01 Description: Pre cast or In situ concrete steps Refer to typical size detail drawing 0345-SEW-ZZ-00-DR-L-003209 For S01c refer to 0345-SEW-ZZ-00-DR-L-003211

Retaining Structures

R01 Retaining Wall Type 01 - Existing River Wall Description: Wall retained at full height and new coping added Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R02 Retaining Wall Type 02 - Existing River Wall Description: Wall to be reduced in height and new coping added Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R03 Retaining Wall Type 03 - Existing River Wall Description: Wall height lowered to accommodate jetties Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R04 Retaining Wall Type 04 - Existing River Wall Description: Wall to be lowered to below surface level and vegetated bank Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R05 Retaining Wall Type 05 - Proposed Rock Wall Description: Proposed Rock rip-rap river edge Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R06 Retaining Wall Type 06 - Proposed Gabion Wall Description: Proposed concrete retaining wall to form low level terraces Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R07a Retaining Wall Type 07 - Proposed Concrete Wall Description: Low concrete wall to form informal seating plinth Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R09 Retaining Wall Type 09 - Proposed Concrete Wall Description: Low concrete wall to form informal seating plinth Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R10 Retaining Wall Type 10 - Proposed Retaining Bank Description: Vegetated retaining structure Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R12 Retaining Wall Type 12 - Existing River Wall Description: Existing wall to be rebuilt Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R13 Retaining Wall Type 13 - Proposed Concrete Wall Description: Proposed Concrete Retaining Wall Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R16 Retaining Wall Type 16 - Proposed Steel Sheet Piling Description: Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

Landscape Structures & Bridges

L01 Landscape Structure Type 01 Description: Proposed riverside jetty. Please refer to design intent drawings. For typical refer to 0345-SEW-ZZ-00-DR-L-003401 For L01a refer to SEW-ZZ-00-DR-L-003404

B01 Bridge 01 Description: Culvert Bridge Please refer to Culvert Bridge design intent drawing SEW-ZZ-00-DR-L-003403 and SEW-ZZ-00-DR-L-003404

Street Furniture

For Street Furniture GA Refer to drawing 0345-SEW-ZZ-00-DR-L-007105

Play & Exercise Equipment

For all Play & Exercise Equipment GA Refer to drawing 0345-SEW-ZZ-00-DR-L-007114

Boundaries, Balustrade & Handrails

For all Boundaries, Balustrades & Handrails GA Refer to drawing 0345-SEW-ZZ-00-DR-L-007115

Lighting

Please refer to Studio Fractal's drawing 4292_00_01 and 4292_00_02 for lighting proposals.

River Edge Treatments

Please refer to Burr Haggard river engineering drawing 0046088-BHE-XX-XX-DR-W-2007 for plan and surface W-0003 to W-0006 for cross sections.

Trees

Soft Landscaping package to form separate contract of works.

Tree Specimen 01 Rootball & gully

Planting

Soft Landscaping package to form separate contract of works.

Planting Type 01 Description: Street Planting

Planting Type 02 Description: Railway Wildflower Meadow & Alpine Steppe Meadow

Planting Type 03 Description: Grassland

Planting Type 04 Description: Wetland Riverside Mosaic

Planting Type 05 Description: Native Habitat Managed for Wildlife

Planting Type 06 Description: Rain Garden

General Notes

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Notes

General Notes

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- All dimensions are to finished surface levels

Stage 4 Status:

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Rev	Date	Description	CHK
T08	20.01.21	Stage 4 DRAFT	SEW
T07	15.01.21	Stage 4 DRAFT	SEW
T06	14.12.20	Stage 4 DRAFT	SEW
T05	16.11.20	TENDER UPDATES	SEW
T04	04.11.20	TENDER	SEW
T03	01.10.20	TENDER	SEW
T02	02.10.20	Design amendment	SEW
T01	18.09.20	Design amendment	SEW
T00	04.09.20	DRAFT	SEW

Keyplan

Scale Bar

North Arrow

sew Studio Egrat West

3 Brewhouse Yard
London
EC3N 4JQ
0207 549 1730

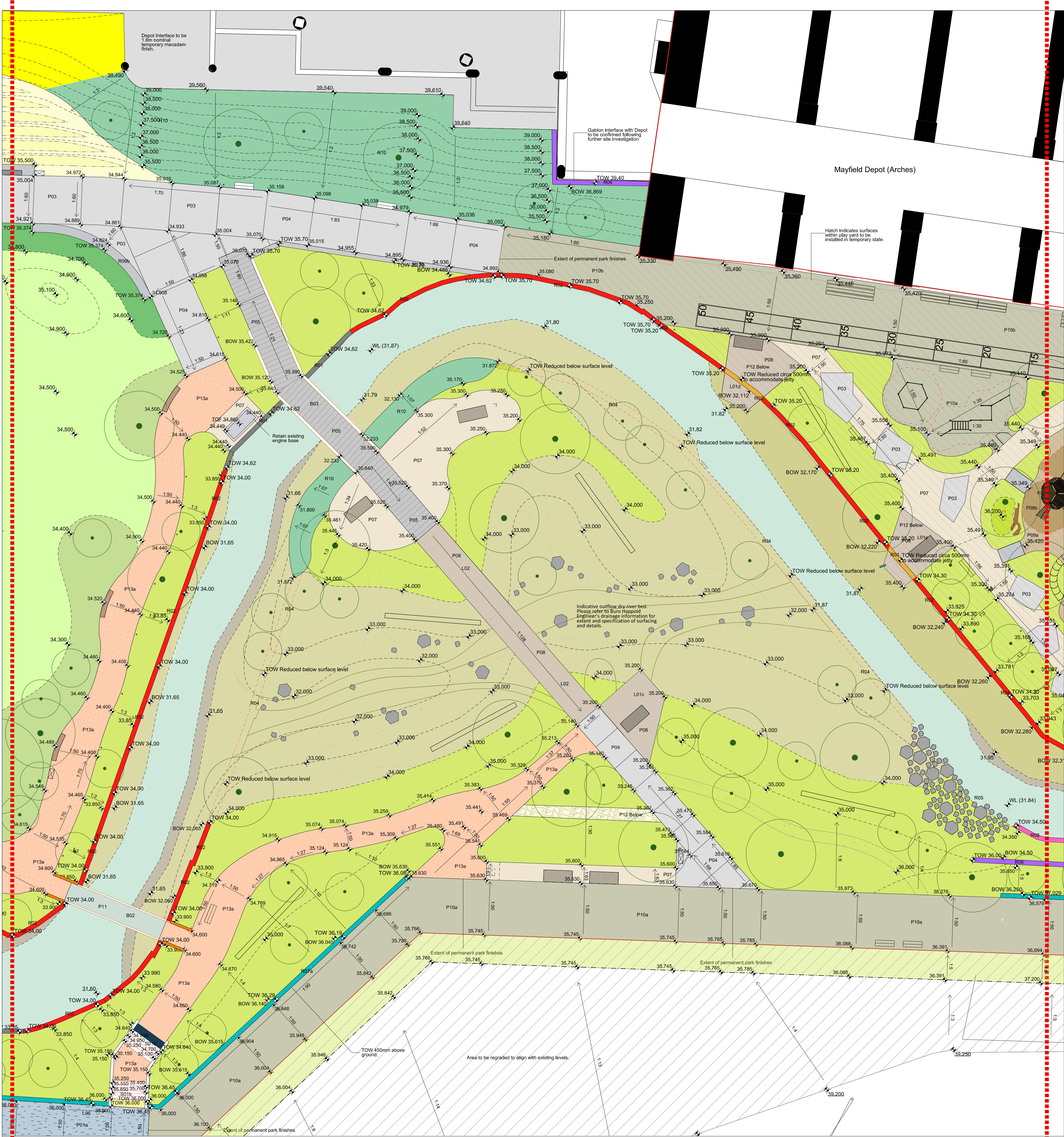
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egrestwest.com
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Client
Mayfield Partnership

Project
Mayfield Park

Drawing Title
Gatehouse Entrance & The Poulton

Project Number	Status
0345	TENDER
Scale at A1	Date
1:200	04.09.20
Drawn by	Checked by
MA	SEW
Drawing Number	Revision
0345-SEW-ZZ-00-DR-L-007110	T08



Please refer to Drawing 0345-SEW-ZZ-00-DR-L-007111 for 1:200 scale drawing of Mayfield Lawn Space

KEY

Boundaries

Park Boundary

Levels

Proposed Levels

Existing Levels

Top of Wall

Bottom of Wall

Top of Feature

Paving Types

P01a

Paving Type 01a

Description: Vehicular Clay Paving Bricks

Please refer to spec clause Q24/120A

P03

Paving Type 03

Description: In situ reinforced Concrete surface 02

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P04

Paving Type 04

Description: In situ reinforced Concrete surface 03

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P05

Paving Type 05

Description: In situ reinforced Concrete surface 04

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003213 for typical details

P07

Paving Type 07

Description: Self-binding gravel. Please refer to spec clause Q23/135A

P08

Paving Type 08

Description: Steel Grating

Please refer to design intent drawing 0345-SEW-ZZ-00-DR-L-003402

P09a

Paving Type 09a

Description: Play Safety Surface 01

Please refer to spec clause Q26/365A

P09b

Paving Type 09b

Description: Play Safety Surface 02

Please refer to spec clause Q26/367A

P10a

Paving Type 10a

Description: Temporary asphalt footpath surface with occasional vehicular traffic. Please refer to spec clause Q22/140a

P10b

Paving Type 10b

Description: Temporary asphalt footpath surface with occasional vehicular traffic and graphical road markings. Please refer to spec clause Q22/140b

P11

Paving Type 11

Description: Steel Grating

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-003405

P12

Paving Type 12

Description: Gravel Layer

Please refer to spec clause Q23/160a

P13a

Paving Type 13a

Description: Vehicular Loaded Resin bound gravel. Please refer to spec clause Q23/25A

Tactile Paving Type 01

Description: Tactile Hazard Corduroy Warning

Paving at the top and bottom of steps

Please refer to spec clause Q25/320a

Tactile Paving Type 02

Description: Tactile Hazard Corduroy Warning

Paving at the top and bottom of steps

Please refer to spec clause Q25/322

Hatch indicates surfaces within play yard to be installed in temporary state

For typical details of paving types Refer to drawings:

Paving Type 01:

0345-SEW-ZZ-00-DR-L-003201 and

0345-SEW-ZZ-00-DR-L-003202

Paving Type 02:

0345-SEW-ZZ-00-DR-L-003203

Paving Type 03:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 04:

0345-SEW-ZZ-00-DR-L-003205

Paving Type 05:

0345-SEW-ZZ-00-DR-L-003206

Paving Type 06:

0345-SEW-ZZ-00-DR-L-003207

Paving Type 07:

0345-SEW-ZZ-00-DR-L-003208

Paving Type 08:

0345-SEW-ZZ-00-DR-L-003209

Paving Type 09:

0345-SEW-ZZ-00-DR-L-003210

Paving Type 10:

0345-SEW-ZZ-00-DR-L-003211

Paving Type 11:

0345-SEW-ZZ-00-DR-L-003212

Paving Type 12:

0345-SEW-ZZ-00-DR-L-003213

Paving Type 13:

0345-SEW-ZZ-00-DR-L-003214

Paving Type 14:

0345-SEW-ZZ-00-DR-L-003215

Paving Type 15:

0345-SEW-ZZ-00-DR-L-003216

Retaining Structures

R01

Retaining Wall Type 01 - Existing River Wall

Description: Wall retained at full height and new coping added

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R02

Retaining Wall Type 02 - Existing River Wall

Description: Wall to be reduced in height and new coping added

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R03

Retaining Wall Type 03 - Existing River Wall

Description: Wall height lowered to accommodate jetties

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R04

Retaining Wall Type 04 - Existing River Wall

Description: Wall to be lowered to below surface level and vegetated bank

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R05

Retaining Wall Type 05 - Proposed Rock Wall

Description: Proposed Rock Rip-rap river edge

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R06

Retaining Wall Type 06 - Proposed Gabion Wall

Description: Gabion retaining edge to form low level terraces

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R07a

Retaining Wall Type 07 - Proposed Concrete Wall

Description: Proposed concrete retaining wall

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-003608

R08

Existing River Wall - Type 05

Description: Wall to be reduced in height and clad in weathered sheet steel

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R09

Retaining Wall Type 09 - Proposed Concrete Wall

Description: Low concrete wall to form informal seating

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-003608

R10

Retaining Wall Type 10 - Proposed Retaining Bank

Description: Vegetated retaining structure

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

Steps

S01

Step Type 01

Description: Pre cast or in situ concrete steps

Refer to typical step detail drawing 0345-SEW-ZZ-00-DR-L-003208

For S01b refer to 0345-SEW-ZZ-00-DR-L-003210

Landscape Structures & Bridges

L01

Landscape Structure Type 01

Description: Proposed Riverside Jetty. Please refer to design intent drawings

Refer to Jetty Design Intent drawing 0345-SEW-ZZ-00-DR-L-003401 and

SEW-ZZ-00-DR-L-003402

For L01a refer to SEW-ZZ-00-DR-L-003410

For L01b refer to SEW-ZZ-00-DR-L-003412

For L01c refer to SEW-ZZ-00-DR-L-003411

L02

Landscape Structure Type 02

Description: Proposed Raised Walkway

Please refer to Steel Bridge design intent drawing 0345-SEW-ZZ-00-DR-L-003401 and

SEW-ZZ-00-DR-L-003402

B02

Bridge 02

Description: Proposed Steel Bridge

Please refer to Steel Bridge design intent drawing 0345-SEW-ZZ-00-DR-L-003401

B03

Bridge 03

Description: Northern Bridge

Please refer to Northern Bridge design intent drawing 0345-SEW-ZZ-00-DR-L-003406 and

SEW-ZZ-00-DR-L-003407

Street Furniture

For Street Furniture GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007105

Play & Exercise Equipment

For all Play & Exercise Equipment GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007114

Boundaries, Balustrades & Handrails

For all Boundaries, Balustrades & Handrails GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007116

River Edge Treatments

Please refer to Drawing 0345-SEW-ZZ-00-DR-L-007113 for 1:200 scale drawing of Play Yard

Soft landscape package to form separate contract of works.

Trees

Tree Specimen 01

Rootball & guyed

Planting

Soft landscape package to form separate contract of works

Planting Type 01

Description: Street Planting

Planting Type 02

Description: Railway Wildflower Meadow & Alpine Steppe Meadow

Planting Type 03

Description: Grassland

Planting Type 04

Description: Wetland Riverside Mosaic

Planting Type 05

Description: Native Habitat Managed for Wildlife

Planting Type 06

Description: Rain Garden

Lighting

Please refer to Studio Fractal's drawing 4292_05_001 and 4292_05_002 for lighting proposals.

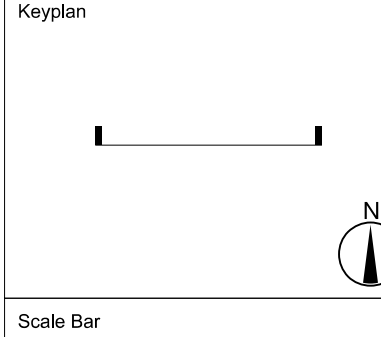
General Notes
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Notes
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-All structural concrete building work to Engineer's details & dwgs
-All dimensions are to finished surface levels

-All sub-surface build-ups to Engineer's details
-Dwgs not to be scaled. Used dimensional measurements only. Contractor to check and confirm.
-All discrepancies must be reported to and resolved by the Architect before works commence
-All works and materials to be in accordance with current applicable statutory legislation and to comply with all relevant Codes of Practice & British Standards.
Stage 4 Status:
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-Final co-ordinated Stage 4 Issue to be provided once all design team work packages are completed and reviewed by lead designer.
All annotations in italics are provided by the Project Engineers

Paving Type 09:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 10:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 11:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 12:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 13:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 14:
0345-SEW-ZZ-00-DR-L-003204
Paving Type 15:
0345-SEW-ZZ-00-DR-L-003204

Rev	Date	Description	CHK
T08	20.01.21	Stage 4 DRAFT	SEW
T07	15.01.21	Stage 4 DRAFT	SEW
T06	14.12.20	Stage 4 DRAFT	SEW
T05	16.11.20	TENDER UPDATES	SEW
T04	04.11.20	TENDER	SEW
T03	12.10.20	TENDER	SEW
T02	02.10.20	Design amendment	SEW
T01	18.09.20	Design amendment	SEW
T00	04.09.20	DRAFT	SEW
Rev	Date	Description	CHK



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Drawing Title	
Wildscape Area	
Project Number	Status
0345	TENDER
Scale at A1	Date
1:200	04.09.20
Drawn by	Checked by
MA	SEW
Drawing Number	Revision
0345-SEW-ZZ-00-DR-L-007112	T08



Please refer to Drawing 0345-SEW-ZZ-00-DR-L-007112 for 1:200 scale drawing of Wildlife Area

KEY

Boundaries

Park Boundary

Proposed Levels

Existing Levels

Top of Wall

Bottom of Wall

Paving Types

P01a

Description: Vehicular Clay Paving Bricks

Please refer to spec clause Q24/120A

P02

Description: In situ reinforced Concrete surface 01.

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P03

Description: In situ reinforced Concrete surface 02.

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P04

Description: In situ reinforced Concrete surface 03.

Please refer to drawing 0345-SEW-ZZ-00-DR-L-003203 for typical details

P07

Description: Self-binding gravel. Please refer to spec clause Q23/135A

P08

Description: Steel Grating

Refer to footbridge and jetty's design intent 0345-SEW-ZZ-00-DR-L-003402

P09a

Description: Play Safety Surface 01.

Please refer to spec clause Q26/365A

P09b

Description: Play Safety Surface 02.

Please refer to spec clause Q26/367A

P10a

Description: Temporary asphalt footpath surface with occasional vehicular traffic. Please refer to spec clause Q22/140a

P10b

Description: Temporary asphalt footpath surface with occasional vehicular traffic and graphical road markings. Please refer to spec clause Q22/140b

P12

Description: Gravel Layer.

Please refer to spec clause Q23/160

P14

Description: In situ Service Yard Concrete Surface

Please refer to spec clause Q21/110a

Tactile Paving Type 01

Description: Tactile Hazard Corduroy Warning Paving at the top and bottom of steps.

Please refer to spec clause Q25/160a

Tactile Paving Type 02

Description: Tactile Hazard Corduroy Warning Paving at the top and bottom of steps.

Please refer to spec clause Q25/322

Hatch indicates surfaces within play yard to be installed in temporary state.

For typical details of paving types Refer to drawings:

Paving Type 01:

0345-SEW-ZZ-00-DR-L-003201

Paving Type 02:

0345-SEW-ZZ-00-DR-L-003203

Paving Type 03:

0345-SEW-ZZ-00-DR-L-003203

Paving Type 04:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 05:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 06:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 07:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 08:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 09:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 10:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 11:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 12:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 13:

0345-SEW-ZZ-00-DR-L-003204

Paving Type 14:

0345-SEW-ZZ-00-DR-L-003204

Retaining Structures

R01

Retaining Wall Type 01 - Existing River Wall

Description: Wall retained at full height and new coping added

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R02

Retaining Wall Type 02 - Existing River Wall

Description: Wall to be reduced in height and new coping added

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R03

Retaining Wall Type 03 - Existing River Wall

Description: Wall height lowered to accommodate jetties

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R04

Retaining Wall Type 04 - Existing River Wall

Description: Gabion retaining edge to form low level terraces

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R05

Retaining Wall Type 05 - Proposed Rock Wall

Description: Proposed Rock riprap river edge

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R06

Retaining Wall Type 06 - Proposed Gabion Wall

Description: Gabion retaining edge to form low level terraces

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R07a

Retaining Wall Type 07 - Proposed Concrete Wall

Description: Proposed concrete retaining wall

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R08

Retaining Wall Type 08 - Existing River Wall

Description: Wall to be reduced in height and clad in weathered sheet steel

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R09

Retaining Wall Type 09 - Proposed Concrete Wall

Description: Low concrete wall to form informal seating plinths

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-003612

R10

Retaining Wall Type 10 - Proposed Retaining Bank

Description: Vegetated retaining structure

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R11

Retaining Wall Type 11 - Existing Wall

Description: Existing wall to be painted in colour TBC

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R14

Retaining Wall Type 14 - Proposed River Wall

Description: Proposed Staffordshire Blue Brick Wall and new coping

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R15

Retaining Wall Type 15 - Proposed Brick wall to match

Hoyle Street bridge wall

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

R16

Retaining Wall Type 16 - Proposed Steel Sheet Piling

Refer to Retaining Wall GA drawing 0345-SEW-ZZ-00-DR-L-007115

Steps

S01

Step Type 01

Description: Pre cast or in situ concrete steps

Refer to typical step detail drawing 0345-SEW-ZZ-00-DR-L-003232

For S01 refer to 0345-SEW-ZZ-00-DR-L-003212

Landscape Structures & Bridges

L01

Landscape Structure Type 01

Description: Proposed riverside jetty. Please refer to design intent drawings

Refer to Jetty Design Intent drawing 0345-SEW-ZZ-00-DR-L-003401 and 0345-SEW-ZZ-00-DR-L-003402

For S01 refer to 0345-SEW-ZZ-00-DR-L-003212

River Edge Treatments

Please refer to Buro Happold river engineering drawing 0046988-BHE-XX-XX-DR-W-0007 for plan and sections

0003 to W-0006 for cross sections.

Tree Specimen 01

Rootball & guyed

Soft landscape package to form separate contract of works.

Planting Type 01

Description: Street Planting

Planting Type 02

Description: Railway Wildflower Meadow & Alpine Steppe Meadow

Planting Type 03

Description: Grassland

Planting Type 04

Description: Wetland Riverside Mosaic

Planting Type 05

Description: Native Habitat Managed for Wildlife

Street Furniture

Refer to Street Furniture GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007105

Play & Exercise Equipment

For all Play & Exercise Equipment GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007114

Boundaries, Balustrades & Handrails

Refer to drawing 0345-SEW-ZZ-00-DR-L-007116

Lighting

For all Boundaries, Balustrades & Handrails GA

Refer to drawing 0345-SEW-ZZ-00-DR-L-007116

Please refer to Studio Fractal's drawing 4292_05_001 and 4292_05_002 for lighting proposals.

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-All dimensions are to finished surface levels

-All sub-surface build-ups to Engineer's details
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All annotations in italics are provided by the Project Engineers

Keyplan

T08 20.01.21 Stage 4 DRAFT SEW
T09 15.01.21 Stage 4 DRAFT SEW
T06 14.12.20 Stage 4 DRAFT SEW
T05 16.11.20 TENDER UPDATES SEW
T04 04.11.20 TENDER SEW
T03 12.10.20 TENDER SEW
T02 02.10.20 Design amendments SEW
T01 18.09.20 Design amendments SEW
T00 04.09.20 DRAFT SEW
Rev Date Description CHN

Scale Bar

0 10m

sew Studio Egret West

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Drawing Title

Play Yard

Project Number Status

0345 TENDER

Scale at A1 Date

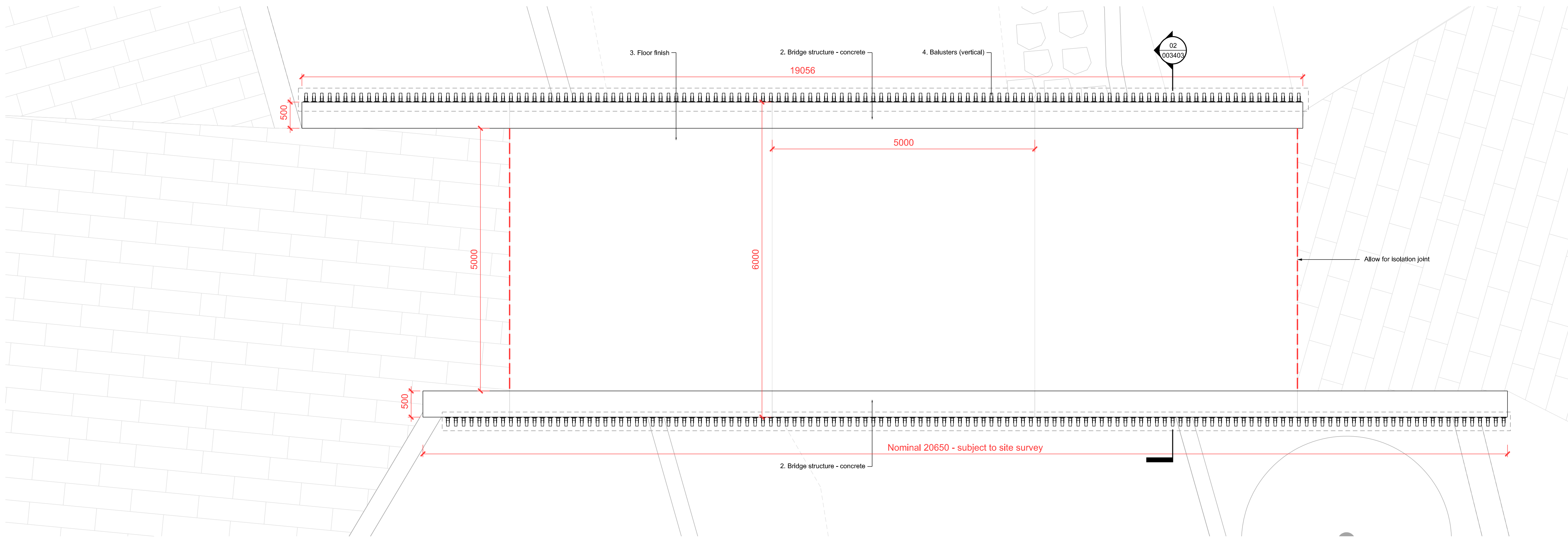
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Drawn by Checked by

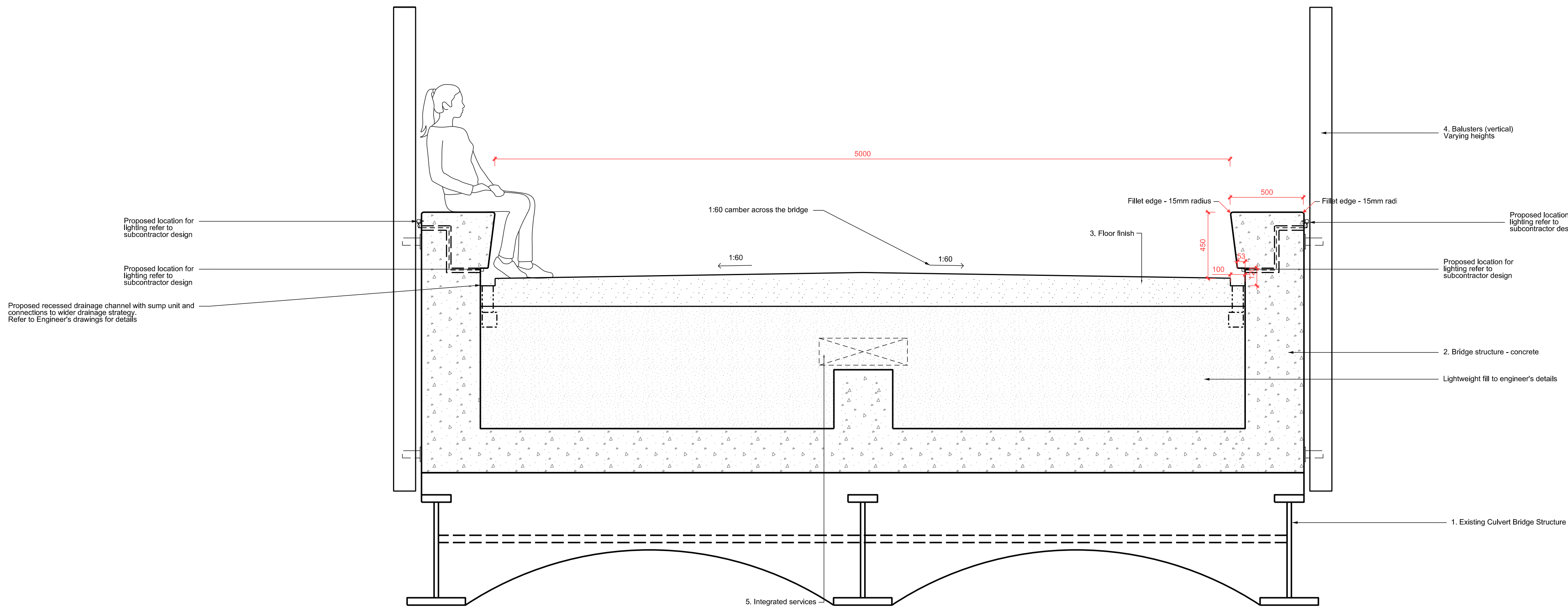
MA SEW

Drawing Number Revision

0345-SEW-ZZ-00-DR-L-007113 T08



01 Culvert Bridge - Plan
1:50 @A1



02 Culvert Bridge - Section
1:20 @A1

Culvert Bridge: External concrete bridge supported on retained steel jack arches. Size and configuration: Refer to design drawings To comply with Structural Engineer's specification Please refer to Lighting Consultant's drawing: 4292_05_005	1. EXISTING CULVERT BRIDGE STRUCTURE: a. Retained steel jack arches b. Condition: Requirement for survey by structural engineer and / or specialist subcontractor. Existing beams to be cleaned and made good for painting. c. Finish: Polyester Powder Coated (In-situ), RAL 70C allow for custom RAL		4. BALUSTERS (VERTICAL): a. Manufacturer: N / A to specialist subcontractor design b. Profile: Refer to design drawings. c. Material: Weathering Steel (Cor-ten) d. Thickness: Nominal 20mm shown. To be confirmed by structural engineer and / or specialist subcontractor. e. Finish: Oxidised patina. Requirement for additional protective coating to be confirmed by structural engineer and / or specialist subcontractor. f. Colour: N/A g. Setting out: Vertical profiles set at 50mm centres, spacing between inner faces not to exceed 100mm. h. Fixing: Refer to Engineer's drawings
	2. BRIDGE STRUCTURE - CONCRETE: To Engineer's Specification a. Concrete bridge structure with integrated seating b. Profile: refer to Engineer's design drawings c. Material: Reinforced concrete to Structural Engineer's design and specification d. Finish: Exposed aggregate finish to vertical face and smooth finish to the top surface. Refer to SEW concrete specification for low walls e. Joints: Movement joints to be provided where specified by Structural Engineer f. 450mm concrete profiled concrete upstand to form bench / seating with a finished level 450mm above FFL 3. FLOOR FINISH: a. Material: Insitu-concrete surface. b. Thickness: To Structural Engineer design and specification. c. Finish: Exposed aggregate and combed finish Paving Type 06 refer to drawing 0345-SEW-ZZ-00-DR-L-003213 for detailed specification d. Joints: Movement joints to be provided where specified by Structural Engineer. e. Performance requirements: Non-slip finish required. f. Slip/ Skid resistance: PTV to BS 7976-2 of 45 wet/ dry		5. INTEGRATED SERVICES a. Allow for integrated service runs to supply power and drivers for integrated light fittings. All services to be hidden. Requirements subject to Lighting Designer's specialist design and specification.

General Notes

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All structural concrete/ building work to Engineer's details & dwgs

All dimensions are to finished surface levels

All sub-surface build-ups to Engineer's details

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Design Intent

All proposals on this drawings represent design intent.

For the design intent information the general contractor responsibilities are as follows:

- Complete the Design of the Works maintaining the function, visual requirements, performance and design intent set out in these proposals.
- In addition to the performance and design intent requirements indicated in the Specification or on the Design Drawings, design the Works to take into account any additional criteria which an experienced designer with specialist knowledge would deem to be relevant.
- The design and visual character of the project is important and shall be maintained. There shall be no variation in the final surface finish of similar materials, which shall remain visually consistent, including colour and texture, regardless of orientation or natural grain within agreed tolerances and agreed samples.
- Submit Working Drawings and technical information to demonstrate compliance with the Design Intent Drawings and the Specification. The Contractor's final Detailed Design shall be based on the Design Intent Drawings which indicate generic solutions and may not cover all conditions. A design risk assessment shall be submitted as part of the documentation.
- Where proprietary products are to be installed, be responsible for providing any modification, additional bracing, reinforcing, suitable fixings, etc. so that the products achieve the requirements of the Specification. Convey any concerns that the manufacturers may have expressed regarding the suitability of products for the purpose intended.
- Be responsible for fixings and other aspects not fully detailed or specified on the Design Intent Drawings and/or Outline Specification.

Rev	Date	Reason for Issue	CHK
T02	29.01.21	Stage 4 DRAFT	SEW
T01	18.12.20	Stage 4 DRAFT	SEW
T00	12.10.20	TENDER	SEW

Keyplan
Scale Bar

sew Studio Egret West

3 Brewhouse Yard
London
EC1V 4JG
0207 549 1730

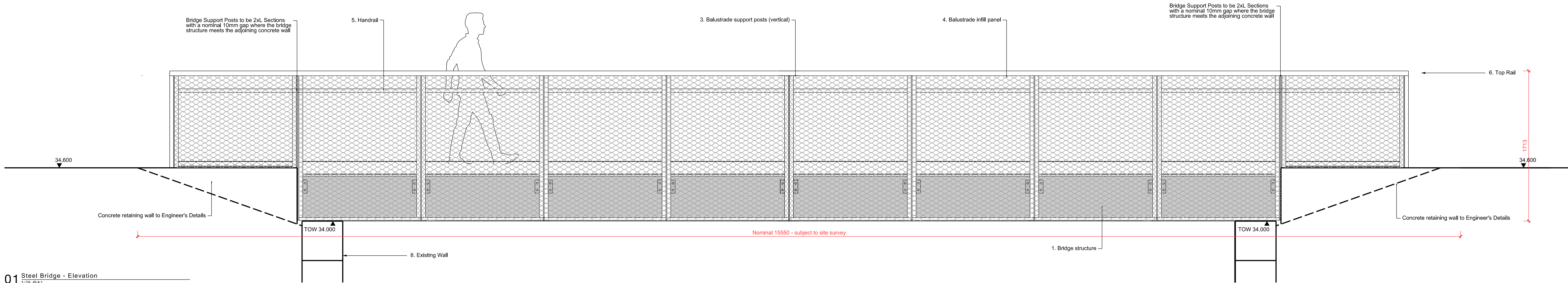
hello@egretwest.com
egretwest.com
©2015 SEW Ltd

Client
Mayfield Partnership

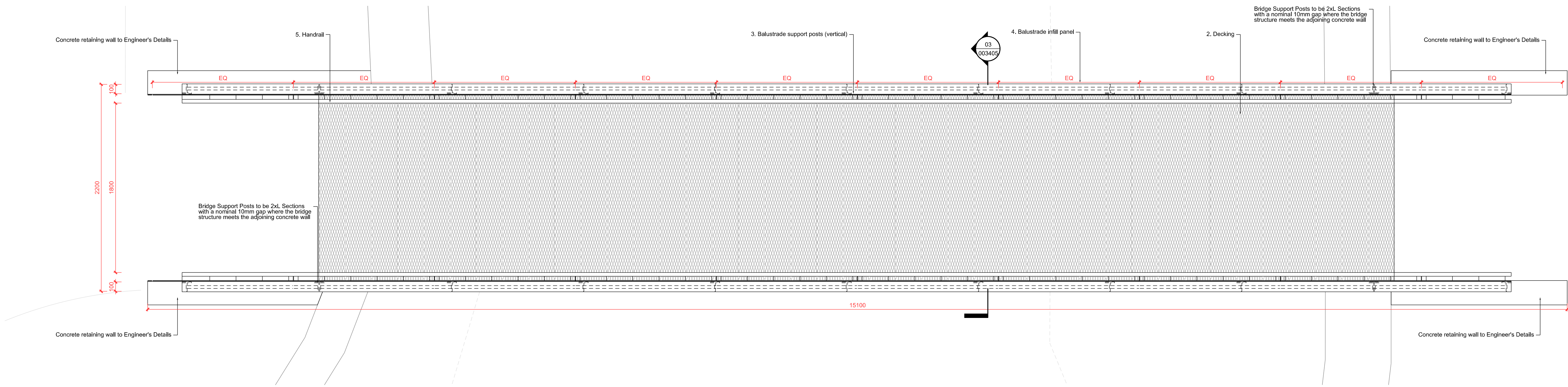
Project
Mayfield Park

Drawing Title
Culvert Bridge
Plan/Section (Sheet 1 of 2)

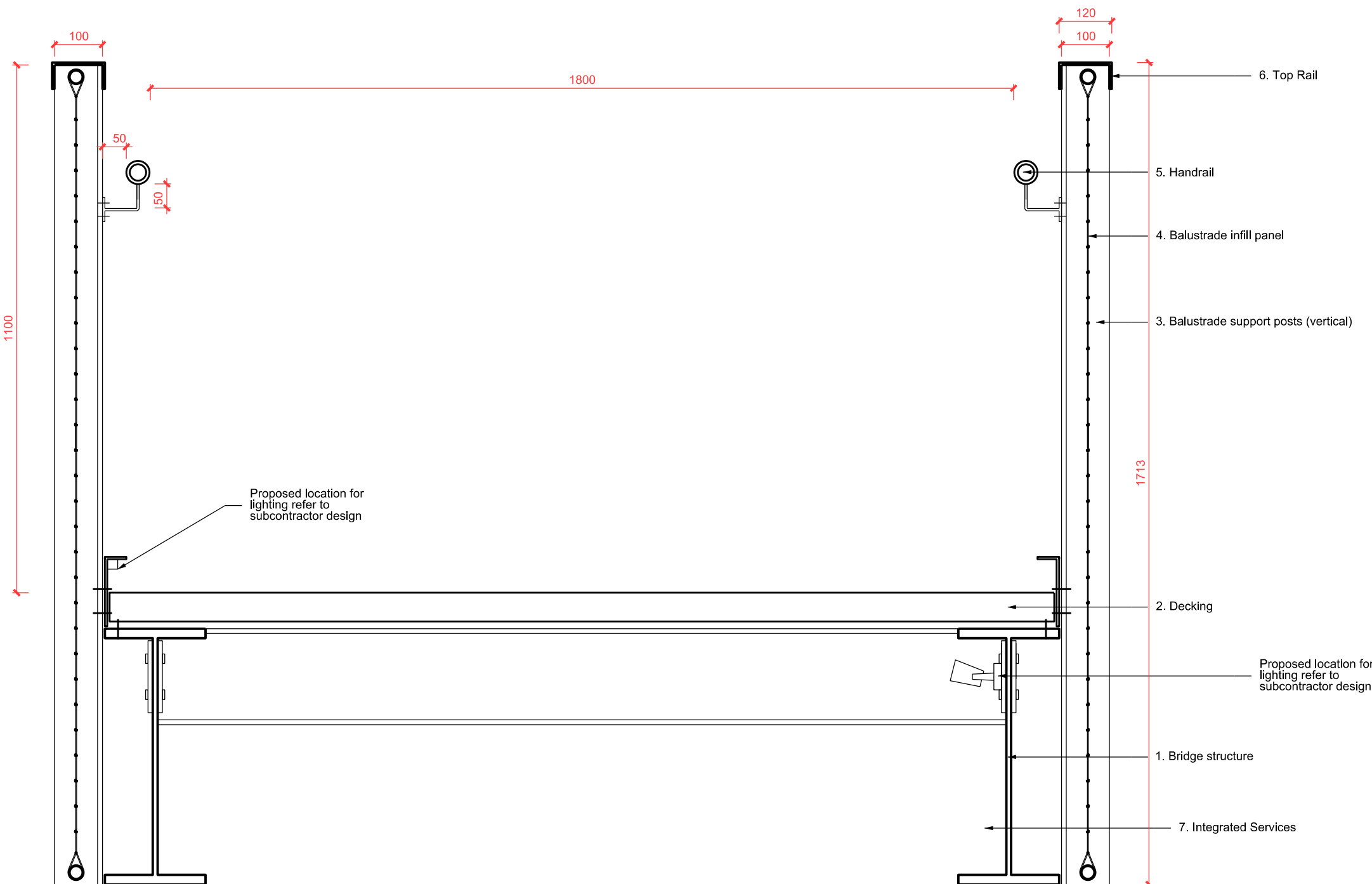
Project Number 0345	Status TENDER
Scale at A1 (A3) 1:50/1:20	Date 12.10.20
Drawn by FK	Checked by SEW
Drawing Number 0345-SEW-ZZ-00-DR-L-003403	Revision T02



01 Steel Bridge - Elevation
1:25 @A1



02 Steel Bridge - Plan
1:25 @A1



03 Steel Bridge - Section
1:10 @A1

Steel Bridge:
External metal bridge with decking, balustrade and handrail.
Size and configuration: Refer to design drawings
To comply with Structural Engineer's specification

To be read in conjunction with Structural Engineer's drawings:
4153-ROC-S2-FN-DT-S-CB01
4153-ROC-S2-00-DT-S-BD01
4153-ROC-S2-XX-DT-S-DT01
4153-ROC-S2-XX-DT-S-LL01
4153-ROC-S2-XX-DT-S-3D01

Please refer to Lighting Consultant's drawing:
4292_05_006

- BRIDGE STRUCTURE:** To Engineer's Specification
 - Material: Weathering Steel (Cor-ten)
 - Size: TBC by Structural Engineer indicative sizes shown on design drawings.
 - Protective coating: Note where aggressive air pollution exists, surface protection is recommended. When installed in regular contact with water or permanently in a damp environment, a secondary coating is essential. Requirement for additional protective coating to be confirmed by structural engineer and / or specialist subcontractor.
 - Finish: Oxidised patina. Note where aggressive air pollution exists, surface protection is recommended. When installed in regular contact with water or permanently in a damp environment, a secondary coating is essential. Requirement for additional protective coating to be confirmed by structural engineer and / or specialist subcontractor.
 - All areas in contact with ground to be protected with a suitable barrier.
 - Refer to BS EN 10025-2
 - Fixing: Weathering Steel brackets, and weathering grade bolts, butts and washers concealed and securely fixed to substrate. Subject to structural engineer and / or specialised subcontractor design and specification.

- DECKING:**
 - Manufacturer: The Expanded Metal Company
 - Material: SKU Range P07478 Expanded Steel Mesh
 - Pattern: N7478
 - Profile: Supagrip
 - Protective coating: Hot dip galvanized.
 - Colour: TBC
 - Joints: Butt jointed
 - Performance requirements: Heel-proof, anti-vertigo and non-slip profile required
 - Slip/ Skid resistance: PTV to BS 7976-2 of 45 wet/ dry

- BALUSTRADE SUPPORT POSTS (VERTICAL):**
 - Manufacturer: N / A to specialist subcontractor design
 - Material: Weathering Steel (Cor-ten)
 - Profile: 100x100 T-section - Refer to design drawings.
 - Thickness: Nominal 12mm T-section shown. To be confirmed by structural engineer and / or specialist subcontractor.
 - Finish: Oxidised patina. Requirement for additional protective coating to be confirmed by structural engineer and / or specialist subcontractor.
 - Colour: N/A
 - Joints: N/A
 - Fixing: Weathering Steel brackets, and weathering grade bolts, butts and washers concealed and securely fixed to substrate. Subject to structural engineer and / or specialised subcontractor design and specification.

- BALUSTRADE INFILL PANEL:**
 - Manufacturer: Jakob rope systems INOX LINE Webnet
 - Material: Stainless Steel structural wire-rope
 - Thickness: Webnet rope 1.5mm and at 40mm aperture with micro sleeves
 - Finish: 316 Stainless steel
 - Horizontal fixing between balustrade support posts: Horizontal fully strung 10mm tubular frame located at top (fixed to the C section top rail over 500mm) and 40mm at the bottom and spanning between balustrade support posts.
 - Vertical fixing between balustrade support posts: Vertical 6mm holding rope face fixed to the opposing face of each balustrade support post.
 - System to include all necessary fastenings, bracketing and accessories required to complete the installation.
 - All fixings to manufacturers details and specifications

- HANDRAIL:**
 - Manufacturer: N / A to specialist subcontractor design
 - Material: Galvanized Steel
 - Size: 48mm diameter
 - Finish: Galvanized
 - Corners and connections: mitred and welded with matching end caps.
 - Fixing: stem brackets, with concealed fixings securely fixed to substrate.
 - Galvanized steel where visible. Wall fixings to be secured in place with galvanized steel countersunk allen head fixings.
 - System to include all necessary fastenings, bracketing and accessories required to complete the installation.

- TOP RAIL (HORIZONTAL):**
 - Manufacturer: N / A to specialist subcontractor design
 - Profile: Refer to design drawings.
 - Material: Weathering Steel (Cor-ten)
 - Thickness: 50x120x8mm c-section. To be confirmed by structural engineer and / or specialist subcontractor.
 - Finish: Oxidised patina. Requirement for additional protective coating to be confirmed by structural engineer and / or specialist subcontractor.
 - Colour: N/A
 - Joints: N/A
 - Fixing: Weathering Steel brackets, and weathering grade bolts, butts and washers concealed and securely fixed to substrate. Subject to structural engineer and / or specialised subcontractor design and specification.

- INTEGRATED SERVICES**
 - Allow for integrated service runs to supply power and drivers for integrated light fittings. All services to be hidden. Requirements subject to Lighting Designer's specialist design and specification.

- RIVER WALL:**
 - New RC capping beam located on existing river wall. Refer to engineers drawing for specification.

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