

Technical Note

Project Mayfield 2020 Appointment
Subject Hydraulic Modelling – Mayfield Park Phase 1 Full Build Out
Project no 0046688
Date 20 April 2021

Revision	Description	Issued by	Date	Approved (signature)
00	Issue to Environment Agency	HM	22/01/2021	JF
01	Update following Environment Agency review	HM	24/02/2021	JF
02	Update following EA review of Condition 66 details	JF	20/04/2021	CB

1 Introduction

1.1 Purpose

Buro Happold has been commissioned by U+I to undertake hydraulic flood modelling to assess the impact of the proposed development for Mayfield Park Phase 1, regarding flood risk within the site and elsewhere in Manchester.

This note is intended to be used to partially discharge Condition 22 of planning application ref. 124972/FO/2019:

22) Prior to the commencement of Phase A of the development as detailed in condition 3 outputs of the hydrological model are required for the proposed phasing of the works. The phasing should include details of any temporary works necessary to maintain the agreed river flow rates and attenuation volumes provided within the proposed area of the Park so as not to change the flood risk upstream or downstream of the Park.

This note describes the hydraulic modelling of the Mayfield Park Phase 1 development in the case where all proposed landscaping works are complete, hereafter referred to as the Full Build Out model. A comparison of flood risk in terms of flood extents and depths between the Full Build Out model and the Baseline is presented in Section 3.5.3 of this report.

This note should be read in conjunction with the Buro Happold Technical Note which describes the hydraulic modelling of the phased construction of Mayfield Park, referred to as the Enabling Works phases.

1.2 Hydraulic Modelling Background

In 2009 the Environment Agency (EA) created a 1D hydraulic model as part of the River Medlock Strategic Flood Risk Mapping Study. The hydraulic model was subsequently updated in 2011 to include the 2D domain for the purpose of estimating flood extents from the River Medlock and Corn Brook to inform the Manchester Strategic Flood Risk Assessment (SFRA). The 1D model and the hydrology remained the same between both the 2009 and 2011 models.

Buro Happold has since updated the EA Model 2009 with a new hydrological analysis and updates to the hydraulic model to develop the BHE Baseline 2019 Model of the River Medlock, in line with comments received by the EA. The hydrological assessment and the updated hydraulic model were approved by the EA prior to submission of the planning

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application for Mayfield Park (Phase 1) and the wider Mayfield Masterplan in September 2019, under planning application ref. 124972/FO/2019. As part of the planning submission, a full Flood Risk Assessment (FRA) was also submitted. The planning application was granted in January 2020.

A number of documents and models relevant to the Mayfield project have been developed by Buro Happold and issued to and approved by the EA in the past two years. These are summarised in Table 1-1:

Table 1-1: Summary of previous Buro Happold hydraulic modelling work for Mayfield

Title / Description	Type	Revision	Date Issued	Short Reference
Mayfield Park Manchester Hydrology Analysis	Report	00	25/06/2019	2019 Hydrological Analysis
Mayfield Sitewide and Phase 1 Flood Risk Assessment	Report	00	13/09/2019	2019 FRA
Mayfield Park Manchester Hydraulic Modelling Report	Report	01	16/09/2019	2019 Hydraulic Modelling Report
BHE Baseline 2019 model of River Medlock, 1D-2D hydraulic model of baseline conditions	Model	N/A	15/08/2019	BHE Baseline 2019 Model
Mayfield 2019 model, 1D-2D hydraulic model of Mayfield proposals	Model	N/A	15/08/2019	Mayfield 2019 Model
Hydraulic Modelling Technical Note – Mayfield Park Enabling Works	Technical Note	01	05/02/2021	Enabling Works Modelling TN
BHE Baseline 2020 model of River Medlock, 1D-2D hydraulic model of baseline conditions	Model	N/A	21/10/2020	BHE Baseline 2020 Model
Mayfield Park Enabling Works Models, 1D-2D hydraulic models of phased construction of Mayfield Park	Model	N/A	18/12/2020	Mayfield Enabling Works Models
Hydraulic Modelling Technical Note – Mayfield Park Full Build Out *	Technical Note	02	20/04/2021	Full Build Out Modelling TN
Mayfield Park Full Build Out Model, 1D-2D hydraulic model of Mayfield proposals	Model	N/A	24/02/2021	Mayfield Full Build Out Model

* This report

A more detailed description of each of the current hydraulic models, including reference numbers, is given in Appendix A.

Since the planning submission in 2019, the Mayfield Park landscaping proposals have progressed, with changes to hydraulic structures (culverts and bridges), changes in proposed park levels and river edge details. The new Mayfield Park proposals have been tested hydraulically to satisfy the criteria set by the EA during the planning process. The changes to the masterplan model and results in terms of flood risk impacts are presented in this Technical Note.

1.3 Environment Agency Consultation

Two meetings have been held with the EA on the 2nd October 2020 and 16th November 2020 to discuss the hydraulic modelling for Mayfield Park. The following points have been agreed with the EA:

- Following a review of the BHE Baseline 2019 Model by the EA on 11/11/2020, and subsequent agreement via email correspondence between Buro Happold and the EA, the baseline model was updated and resubmitted along with the Enabling Works Models in December 2020. Further details are provided in the Enabling Works Modelling TN.

- The design flood event will be the 1 in 100 year plus 35 % climate change. Checks will also be undertaken for the 1 in 25 year and the 1 in 100 year return period events.

Rev. 01 of this report was updated in response to comments received from the EA following a review of the Full Build Out Modelling Technical Note (Rev. 00) and Full Build Out hydraulic models submitted on the 6th February 2021, provided within the EA Hydraulic Model Review spreadsheet, received via email on the 10th February 2021.

Correspondence via email was subsequently carried out between Buro Happold and the EA in order to confirm agreement with the proposed approach to responding to the comments regarding model stability. This correspondence is included in Appendix B of this Technical Note.

This revision (Rev. 02) has been updated following a review by the EA of the river engineering drawings included in Appendix C2, as part of the discharge of Condition 66. The comments from the EA geomorphologist were discussed on a conference call on the 14th April 2021. Minor amendments have been made to the drawings in response to the EA review, which include additional detail regarding the sizing and specification of gravel material and typographical corrections. There have been no changes to the hydraulic modelling, as the drawing amendments represent clarifications rather than design changes.

2 Proposed Development – Full Build Out

The Mayfield Park site overall GA can be seen in Figure 2-1. The development includes the following hydraulically significant developments:

- River wall works;
- Replacement of bridges;
- Landscaping works, including works within the flood plain; and
- In channel interventions.

A surface has been generated from the most recent frozen plans to replicate the proposed floodplain levels and has been read into the 2D hydraulic model alongside the proposed land use types. In channel representation has been updated in the 1D model to reflect the interventions, as well as any hydraulic structures and riverbanks that are proposed to be altered. Further details on the process will be covered in Section 3.5.

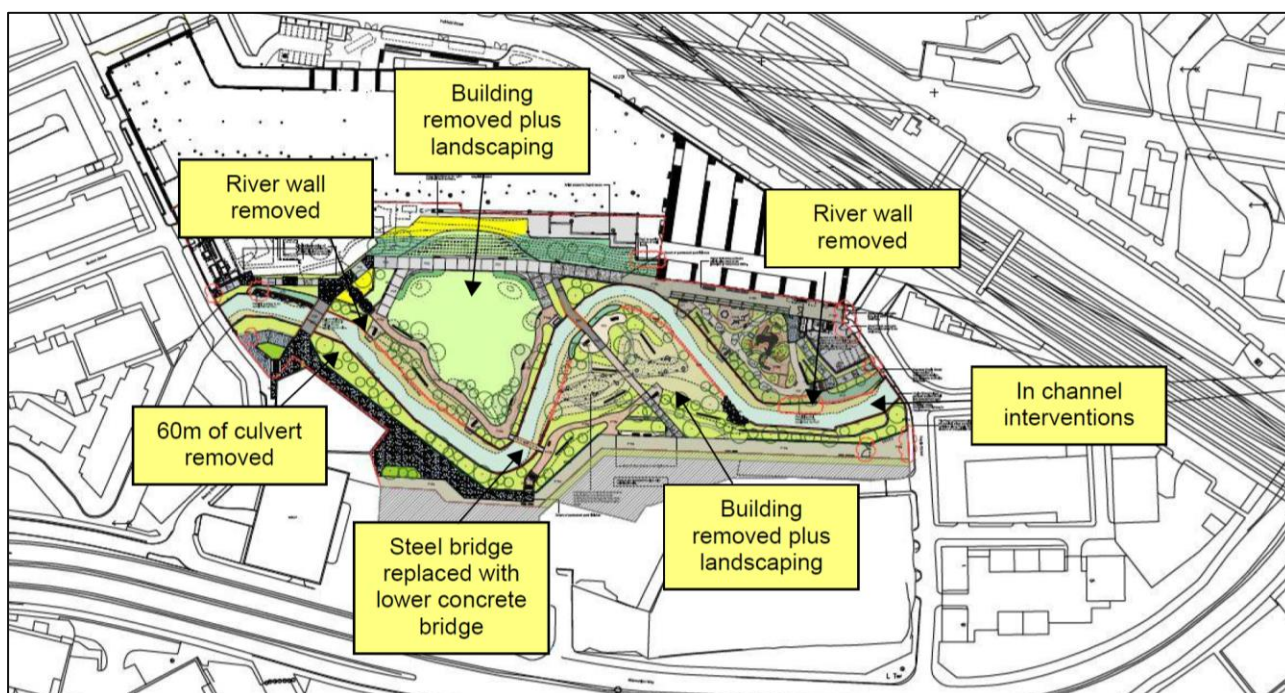


Figure 2-1: Mayfield Park site overall GA (0345-SEW-ZZ-00-DR-L-007102) 4th September 2020, with annotations.

3 Hydraulic Modelling

3.1 Hydrology

The upstream inflow of the model drains a catchment area of approximately 50km². The catchment drains both rural agricultural areas and some urban areas. An existing gauging station is located in the catchment at London Road. The gauging station is a non-standard short crested weir that records levels and calculates flows via a rating equation. There is no bypassing of the weir, however higher end flows are extrapolated from lower flow recordings.

The flows from the upstream catchment are applied as an FEH Inflow Boundary in Flood Modeller (previously ISIS software) at the upstream extent of the River Medlock model. The upstream inflow boundary is located 3km upstream the Mayfield site. Sewer outfalls to the river are represented as 15 lateral inflows, with 6 additional inflows representing surface water runoff inflows. It is understood that these inflows are estimated from the United Utilities' (UU) infoworks model which appears to have been adjusted for each modelled rainfall event.

An assessment of the hydrological calculation methodology and data used by the EA in the 2009 hydraulic model was undertaken by Buro Happold in June 2019. The assessment reviewed the estimation of flows from the upstream catchment of the River Medlock. Details of the hydrological assessment as well as comments made by a third-party reviewer and the EA's review were included in the Hydrology Analysis, 2019 report, previously issued to and approved by the EA.

The modelling of the Full Build Out scenario described in this Technical Note does not include any amendments to the hydrological inputs described in the 2019 Hydrological Analysis. The hydrological inputs are therefore consistent between the following hydraulic models developed by Buro Happold:

- BHE Baseline 2019 model;
- Mayfield 2019 model;
- BHE Baseline 2020 model;
- Mayfield Enabling Works models; and
- Mayfield Full Build Out model.

3.2 Updates to the Baseline Model

The EA approved baseline model is known as the BHE Baseline 2020 Model, contained within the MEDLOCK_SFRA_v0e_MM_BH_142.dat file. This model was updated following a review of the BHE Baseline 2019 Model by the EA and included amendments to the timestep and orifice settings. Further details of the baseline model are provided in the Enabling Works Modelling TN, submitted along with the BHE Baseline 2020 Model files.

Sensitivity testing of the BHE Baseline 2020 Model to the key hydraulic parameters of roughness, inflow and downstream slope has been carried out. The results of this sensitivity testing are provided within the Enabling Works Modelling TN. The BHE Baseline 2020 Model has been used as the baseline for comparing the impact of the Full Build Out described in this report.

3.3 Design Flood Event

The design flood events to assess the Phase 1 Full Build Out model was agreed in a meeting with the EA on 2nd October 2020 as the 1 in 25 year, the 1 in 100 year and the 1 in 100 year plus 35% allowance for climate change. The results for each return period have been assessed and are included in this note.

The peak inflows for the return periods used in the BHE Baseline 2020 model, as estimated in the 2019 Hydrological Analysis report have been used in the Full Build Out model, given in Table 3-1

Table 3-1: Peak flood flow estimates from the 2019 Hydrological Analysis applied to the FEH inflow boundary at the upstream extent of the model

Return period	Peak flood flow (m ³ /s)
1 in 25 year	49.92
1 in 100 year	63.09
1 in 100 year plus 35% Climate Change	85.17

3.4 Summary of modelling elements and surveys

The following modelling elements were used for the BHE Baseline 2020 Model and the Phase 1 Full Build Out model.

Table 3-2: Summary of modelling elements in Baseline and Full Build Out models

Model element	BHE Baseline 2020 Model	Full Build Out Model
Model reference	Medlock_SFRA_v0e_MM_002_BH_142	Medlock_SFRA_v0e_MM_002_BH_197
Software	Flood Modeller 4.4.1 combined with TUFLOW 2018-03-AD-ISP	
2D grid cell size	3m x 3m	
Digital terrain model	Updated 1m resolution LiDAR data for Manchester, provided by the EA in 2019. Mayfield site topographic survey completed by Malcom Hughes in July 2017.	As per baseline. Final landscaping and topography of the Mayfield site updated as per the latest masterplan drawings.
Information on hydraulic structures	Hydraulic structure information according to a survey completed by Atkins Consultants Ltd in July 2008.	As per baseline. Modelling of altered bridges included in the masterplan based on bridge design drawings.

3.5 Methodology

The BHE Baseline 2020 Model has been used as the baseline model (numbered 142) to assess changes to flood risk due to the Phase 1 Full Build Out.

The Phase 1 Full Build Out model includes the following alterations from the baseline:

1D space:

- Updates to the Flood Modeller 1D in channel cross section profiles to reflect the proposed interventions;
- Amendments to bank heights throughout the site;
- Alterations to the hydraulic structure at the culvert (MEDL01_2380C);
- Adding in a new hydraulic structure at (MEDL01_2429A).

2D space:

- Existing buildings removed;
- Finished floor levels and landscaping edited as per the latest design drawings;
- Land use edited as per the latest design drawings.

3.5.1 1D model alterations

Table 3-3 details the changes that have been made in the Mayfield Park Full Build Out 1D Flood Modeller model and how these changes relate to the BHE Baseline 2020 Model.

Table 3-3: Mayfield Park Flood Modeller 1D model amendments for the Full Build Out Model, from upstream to downstream

Flood Modeller Node	Unit Type	Edited / Added	Description
MEDL01_2647	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions.
MEDL01_2587	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions.
MEDL01_2561	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions.
MEDL01_2492A	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions.
MEDL01_2429A	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions, renamed from the baseline node MEDL01_2429.
MEDL01_2429D	USBPR1978 Bridge Unit	Added	New bridge unit added using the cross section data from MEDL01_2429 and the design soffit and spill height levels.
MEDL01_2429H	Spill	Added	Spill over the new bridge unit.
MEDL01_2429B	River Unit	Added	New unit duplicating MEDL01_2429A for the downstream face of the new bridge.
MEDL01_2380	River Unit	Edited	Cross section profile amended to reflect the proposed in channel interventions, renamed from the baseline node MEDL01_2380L.
MEDL01_2320A	River Unit	Added	New river unit to represent the upstream face of the new bridge unit at MEDL01_2320D. This river unit is based on the cross sectional profile of the baseline node at MEDL01_2315 amended to reflect the proposed channel interventions.
MEDL01_2320D	USBPR1978 Bridge Unit	Added	New bridge unit added to represent the remaining 5 metres of the culvert. The cross sectional profile of the bridge unit is a duplicate of MEDL01_2320A.
MEDL01_2320B	River Unit	Added	New unit duplicating MEDL01_2320A for the downstream face of the new bridge.
MEDL01_2279D	River Unit	Edited	Cross section profile maintained from baseline, manning's n adjusted to reflect proposed in channel interventions.
MEDL01_2279D	USBPR1978 Bridge Unit	Edited	Cross section profile maintained from baseline, manning's n adjusted to reflect proposed in channel interventions.

Cross-Sectional Profile

The majority of the river units in the Mayfield Park development site include alterations to the in-channel profile and bank top height in order to reflect the in-channel interventions proposed in the following drawings, included in Appendix C2:

- 0046688-BHE-XX-XX-DR-W-0001 (Rev. C, dated 19/03/2021)
- 0046688-BHE-XX-XX-DR-W-0002 (Rev. C, dated 19/03/2021)
- 0046688-BHE-XX-XX-DR-W-0003 (Rev. D, dated 19/04/2021)
- 0046688-BHE-XX-XX-DR-W-0004 (Rev. D, dated 19/04/2021)

- 0046688-BHE-XX-XX-DR-W-0005 (Rev. D, dated 19/04/2021)
- 0046688-BHE-XX-XX-DR-W-0006 (Rev. D, dated 19/04/2021)
- 0046688-BHE-XX-XX-DR-W-0007 (Rev. E, dated 19/04/2021)
- 0046688-BHE-XX-XX-DR-W-0008 (Rev. C, dated 19/04/2021)

Rev. 01 update following EA review:

The geometry of the Full Build Out model has been amended from the BHE Baseline 2020 model according to the *impact* of the change in bed and bank level caused by the proposed interventions, rather than the absolute elevation in metres above ordnance datum (mAOD) of the proposed interventions.

Since the baseline hydraulic model was established, the existing river channel within the Mayfield site has been re-surveyed. This survey was carried out in 2020 as part of the detailed design of the landscaping proposals, to provide accurate drawings for construction.

The 2020 survey indicates minor differences in bed level of the channel compared to the baseline hydraulic model, however the BHE Baseline 2020 model has not been updated to include the 2020 survey, for the following reasons:

- Updating the BHE Baseline 2020 model was considered to be too disruptive on preceding analysis and reports, given the minor differences in level; and
- The 2020 survey was carried out within the Mayfield Park site only, and therefore does not include the full extent of the Medlock model.

Therefore, in order to determine the impact of the proposed interventions on flood levels and extent, the cross-sectional profiles of the Full Build Out model have been altered to reflect the *change* in level between the 2020 surveyed levels and the proposed interventions. This approach can be summarised as follows and is shown diagrammatically in Figure 3-1.

Change in level within hydraulic model = Proposed cross-sectional profile – existing cross-sectional profile (2020 survey)

where: positive value for change in level indicates proposed fill (green)

negative value for change in level indicates proposed cut (red)

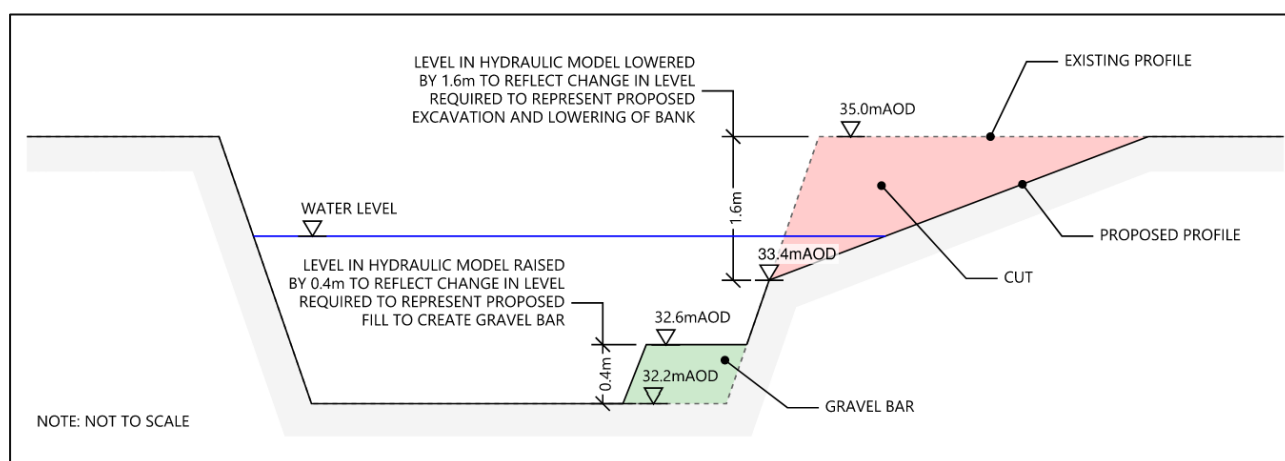


Figure 3-1: Representation of proposed channel interventions within hydraulic model

It should be noted that the locations of the cross-sections in the engineering drawings included in Appendix C2 do not correspond to the exact location of the cross-sections that form the hydraulic model and are therefore not directly comparable by inspection.

For clarity, the levels shown in the engineering cross-sections drawings (Appendix C2) are based on the 2020 survey and therefore represent the absolute level of the existing features and proposed interventions in mAOD.

Bridges

The bridge unit at node MEDL01_2429D is a new hydraulic structure in the model that has been included to represent the proposed new bridge at that location. The proposed bridge will replace an existing steel bridge that is not included in the baseline model due to its low hydraulic impact.

The new bridge at node MEDL01_2429D is based on the following drawings included in Appendix C3:

- 0345-SEW-ZZ-00-DR-L-007111 (Rev. T07, dated 29/01/2021); and
- 0345-SEW-ZZ-ZZ-DR-L-003405 (Rev. T03, dated 29/01/2021)

Figure 3-2 shows the key dimensions and details of the bridge. For the purpose of hydraulic modelling, it is assumed that the balustrade infill is solid. This reflects the potential scenario where the mesh balustrade is blocked by debris during a high flow event, preventing the flow of water through the balustrade. This is therefore considered to be the most conservative approach and is in line with the approach adopted for the Enabling Works modelling.

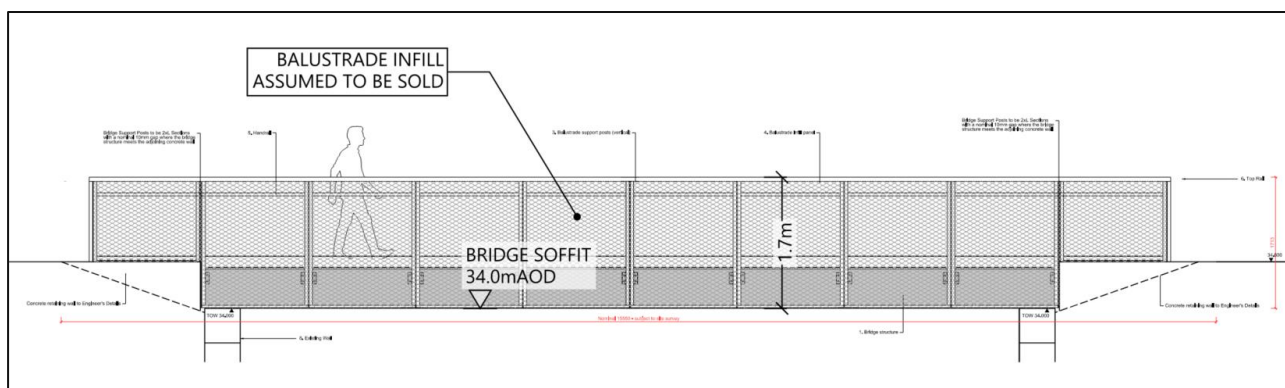


Figure 3-2: Extract from drawing 0345-SEW-ZZ-ZZ-DR-L-003405, showing key dimensions of new bridge at node MEDL01_2429D

The bridge unit at node MEDL01_2320D is a hydraulic structure that is proposed to replace the conduit unit at nodes MEDL01_2380C and MEDL01_2315C in the baseline model. It is considered that the bridge unit more accurately represents the proposed alterations to the culverted section of the Medlock in the proposed masterplan, which involves removing the majority of the top slab to open up the culvert. The new bridge structure is proposed to be located directly above the existing culvert top slab, with the existing girders that form the culvert soffit to be retained, as is shown on the following drawings:

- 0345-SEW-ZZ-00-DR-L-007110 (Rev. T08, dated 29/01/2021); and
- 0345-SEW-ZZ-ZZ-DR-L-003403 (Rev. T02, dated 29/01/2021)

The dimensions of the bridge unit have been set according to the following:

- Invert level: Set to 30.798m AOD in order to maintain the bed slope of the existing culvert, shown by point 'B' in Figure 3-3; and
- Soffit level: Set to 33.688m AOD to reflect 2.89m height of existing culvert, and therefore maintain existing cross-sectional flow area.

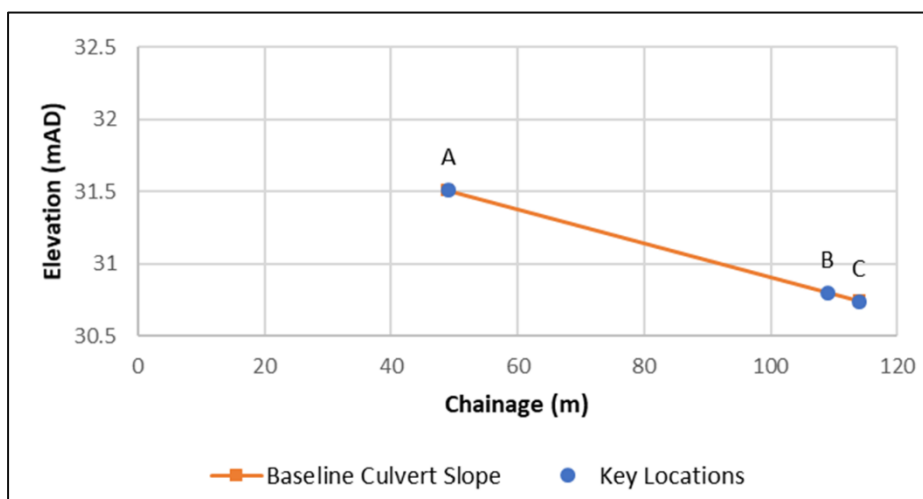


Figure 3-3: Bed slope of channel within existing culvert, with the existing upstream opening of the culvert marked A, the upstream face of the proposed bridge marked B, and the downstream opening of the culvert marked C

3.5.2 2D Model Alterations

Table 3-4 details the changes that have been made in the Mayfield Park Full Build Out model to the 2D TUFLOW model and how these changes relate to the BHE Baseline 2020 model. The 2D flood domain topography and the 2D land use proposals have been based on the following drawings, included in Appendix C3:

- 0345-SEW-ZZ-00-DR-L-007102 (Rev. T10, dated 29/01/2021)
- 0345-SEW-ZZ-00-DR-L-007110 (Rev. T08, dated 29/01/2021)
- 0345-SEW-ZZ-00-DR-L-007111 (Rev. T07, dated 29/01/2021)
- 0345-SEW-ZZ-00-DR-L-007112 (Rev. T08, dated 29/01/2021)
- 0345-SEW-ZZ-00-DR-L-007113 (Rev. T08, dated 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.

Table 3-4: Mayfield Park TUFLOW 2D model amendments for the Full Build Out Model

TUFLOW Control File	Based on	Files Added	Files Removed	Description
Medlock_ER_Q100_35CC_MM_001_BH_197.tcf	Medlock_ER_Q100_35CC_MM_001_BH_142.tcf	Medlock_Common_Commands_BH_179.trd Medlock_ER_3m_BH_197.tgc	Medlock_Common_Commands_BH_303.trd Medlock_ER_3m_BH_303.tgc	The TufLOW Control file (tcf) is updated with a new TUFLOW Geometry Control (tgc) file and a TUFLOW Read File (trd) file.
Medlock_Common_Commands_BH_179.trd	Medlock_Common_Commands_BH_303.trd	1d_isis_nodes_Medlock_BH_179.shp 1d_nwk_Medlock_BH_179.shp 1d_WLL_Medlock_BH_151.shp Medlock_BH_151.tbc Manchester_Roughness_156.tmf	1d_isis_nodes_Medlock_BH_072.shp 1d_nwk_Medlock_BH_072.shp 1d_WLL_Medlock_BH_303.shp Medlock_BH_303.tbc Manchester_Roughness.tmf	The trd file is amended to include updated 1D connections (1d_isis_nodes... and 1d_nwk...) to reflect the changes in the 1D Flood Modeller DAT file. The trd file also includes an updated water level file (1D_WLL) so that the file also receives water level data from the new de-culverted section. The trd file is updated with a new TUFLOW Boundary Control (tbc) file and a new TUFLOW Materials File (tmf).
Medlock_BH_151.tbc	Medlock_BH_303.tbc	2d_bc_Medlock_HX_BH_151.shp	2d_bc_Medlock_HX_BH_303.shp	The tbc file includes an updated boundary control HX line to reflect the new boundary orientations along the river reach as well as the new boundaries in the de-culverted section.
Manchester_Roughness_156.tmf	Manchester_Roughness.tmf	12, 0.060 ! Riverside vegetation 13, 0.0700 ! Boulders		The tmf file includes additional Manning's n roughness definition to reflect the increased diversity of materials on site.

TUFLOW Control File	Based on	Files Added	Files Removed	Description
Medlock_ER_3m_BH_197.tgc	Medlock_ER_3m_BH_303.tgc	2d_bc_inactive_Medlock_BH_151.shp SEW Masterplan.dem 2d_zpt_DEMFix_156.shp 2d_zpt_mean_building_elevation_156.shp 2d_zpt_building_threshold_156.shp 2d_zsh_DEMFix_CulvertTop_R_002.shp 2d_zsh_DEMFix_CulvertTop_P_002.shp 2d_zlr_bank_heights_156_L.shp 2d_zlr_bank_heights_156_P.shp 2d_mat_Medlock_BH_151.shp 2d_mat_Medlock_SEWMayfieldPark_156.shp	2d_bc_inactive_Medlock_BH_303.shp 2d_zpt_mean_building_elevation_074.shp 2d_zpt_building_threshold_074.shp 2d_zlr_bank_heights_303_L.shp 2d_zlr_bank_heights_303_P.shp 2d_mat_Medlock_BH_074.shp	The tgc file includes an updated 2D inactive layer (2d_bc_inactive...) to reflect the de-culverted section of the channel. The tgc file also includes the latest proposed flood plain surface as well as two DEM adjustments made to the surface post-production in order to more closely represent the design (SEW Masterplan. DEM, 2d_zpt_DEMFix_156, 2d_zsh_DEMFix_CulvertTop...) The tgc file includes updated building threshold and building elevation levels (2d_zpt_mean_building_elevation and 2d_zpt_building_threshold) to reflect the removal of existing buildings within the floodplain. The tgc file includes updated bank heights (2d_zlr_bank_heights...) to reflect masterplan proposals at the river edge. Bank heights have been updated based on model stability improvements described in Section 3.5.3. The tgc file also includes updated materials files (2d_mat...) to reflect the proposed land uses within the flood plain.

3.5.3 Model Stability

Improvements have been made to improve the stability of the Full Build Out model following a review carried out by the EA, received via email on the 10th February 2021. With reference to Item 14.1 of the EA Model Review spreadsheet, the aim of these improvements is to reduce the cumulative mass error to within the limits recommended by the EA ($\pm 1\%$).

In the version of the Full Build Out model submitted along with Rev. 00 of this report (model no. 192), the mass error peaked at approximately -2.5%. It was identified that the accumulation of mass error occurred 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 left bank adjacent to the Wildscape area, circled in red in Figure 3-4. This causes constant flux between the 1D and the 2D domains, with no clear dominant flow direction. It is concluded that this flux is the cause of the peak in mass error.

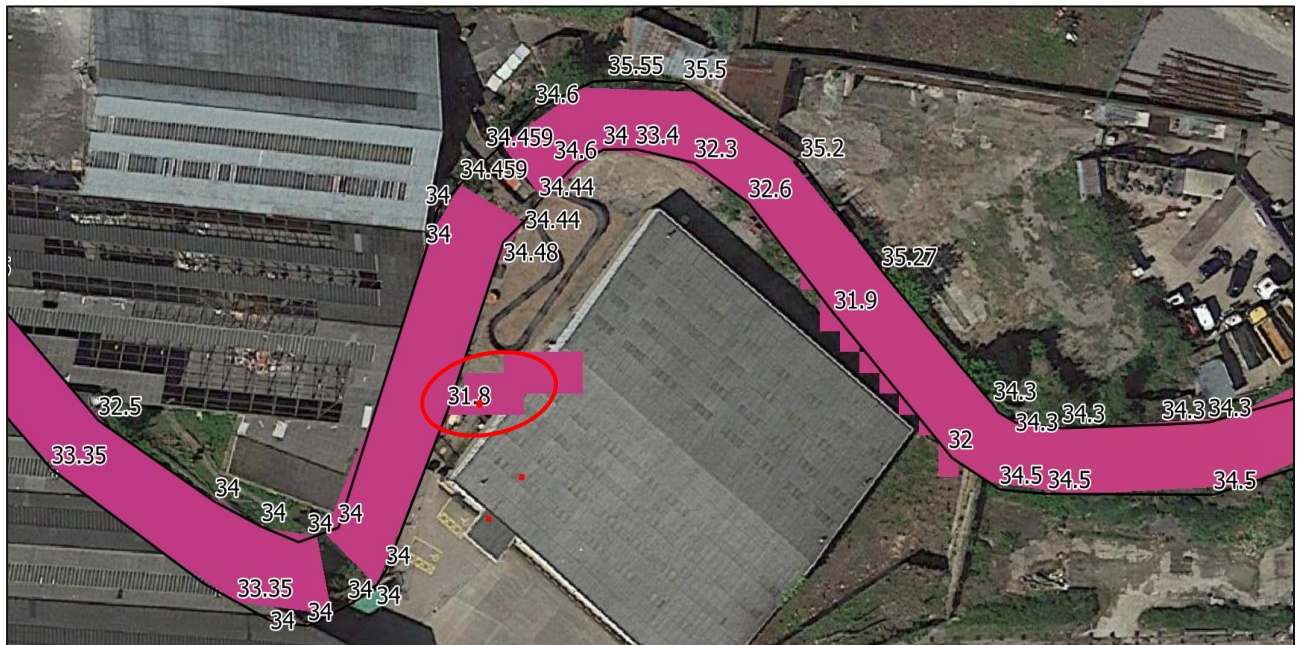


Figure 3-4: Bank heights and baseline water level at the Wildscape area at timestep 00:10, before the main event hydrograph begins

In order to prevent the constant movement between 1D and 2D domain during low flow state (hours 0 to 2), the bank height was raised from 31.8mAOD to 32mAOD within the 2D domain, at the inflow point from channel to Wildscape area (circled in red), to match proposed level for low point of Wildscape area.

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.

Table 3-5 provides a summary of the mass error for each run and return period, indicating that the amended Full Build Out model (no. 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 performance of the Baseline model. The EA has confirmed agreement with this approach via email, included in Appendix B.

Figure 3-5 provides a graphical comparison of the performance of the amended Full Build Out model (197) against the BHE Baseline 2020 model (142) and the previous iteration of the Full Build Out model (192) for each of the return periods tested.

It should be noted that although no changes were made to the 1D elements of the model as part of the stability improvements described above, the number of the .dat file has been amended from 192 to 197 for consistency with the 2D elements.

Table 3-5: Summary of absolute maximum cumulative mass error for Baseline and Full Build Out models

Event	Baseline (Model no. 142)	Model no. 192 *	Amended Full Build Out (Model no. 197)	
1 in 25 year	1.19%	2.78%	1.19%	Matches baseline
1 in 100 year	0.95%	2.41%	0.98%	Less than 1%
1 in 100 year + 35% Climate Change	1.19%	2.72%	1.16%	Less than baseline

* Previous iteration of Full Build Out model, superseded by model no. 197

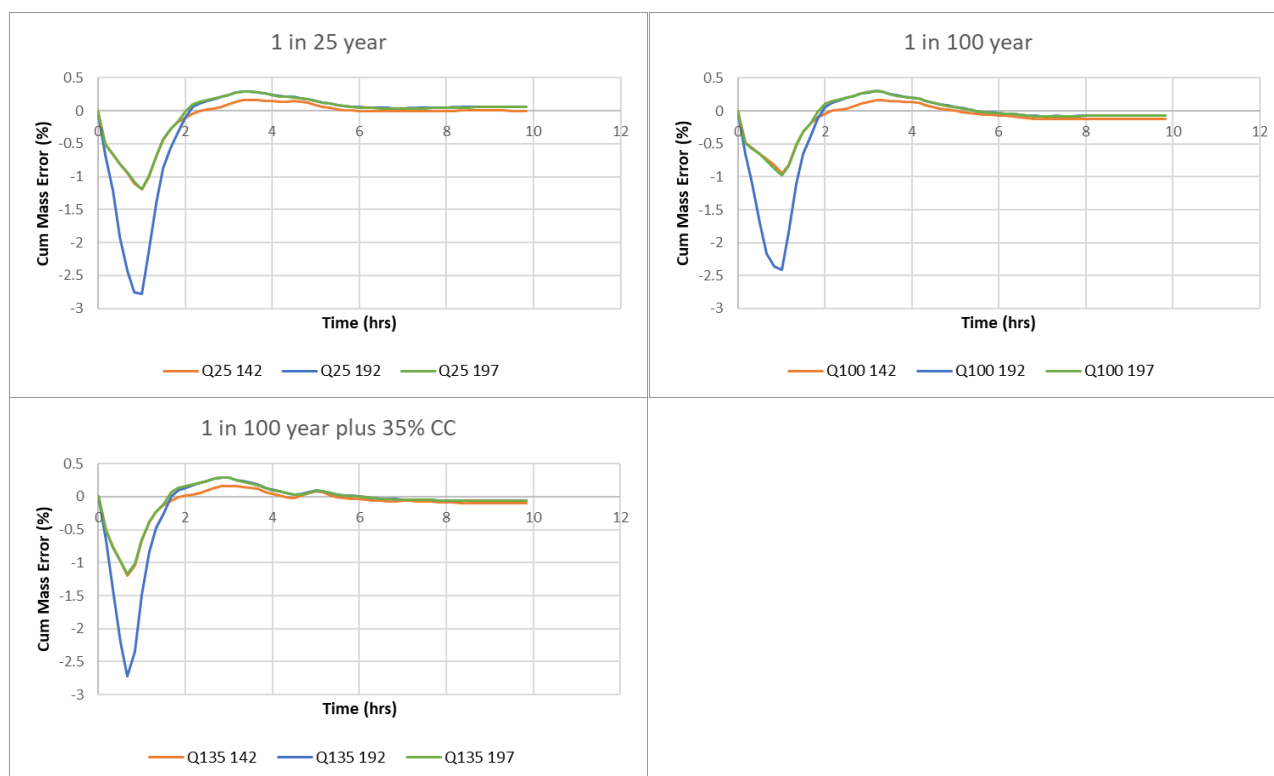


Figure 3-5: Plots of cumulative mass error against time for the 25 year, 100 year and 100 year + 35% CC events, showing relative performance of the amended Full Build Out model (197) compared to the BHE Baseline 2020 model (142) and the previous Full Build Out model (192)

A comparison between the results of the amended Full Build Out model (197) and the previous version of the Full Build Out model (192) has been carried out in order to confirm that the amendments made to improve model stability do not cause an increase in flood levels or extent elsewhere. This comparison indicates that the amended Full Build Out model results in a minor improvement in performance. Water levels downstream of the site decrease by ~1mm. There are no increases in water level upstream or downstream.

Further details of the results of the amended Full Build Out model, including a comparison against the BHE Baseline 2020 model, are provided in Section 3.6.

3.6 Results

3.6.1 Baseline

Figure 3-6 below shows the BHE Baseline 2020 model flood depths at the Mayfield Site for the 1 in 25 year, the 1 in 100 year and the 1 in 100 year plus 35% climate change event.

Notably the 1 in 25 year return period event overtops the left bank of the Medlock upstream of the high iron bridge in the proximity of Plot M. Refer to Appendix B for a plan showing the plot names and references.

The 1 in 100 year return period event and the 1 in 100 year plus 35% climate change event overtop both sides of the Medlock flooding the Wildscape area, parts of plot M and Mayfield lawn area. The flood water extent in the 1 in 100 year return period event includes part of the 2D domain on top of the culverted section of the channel. In the 1 in 100 year plus 35% climate change flood water overtops the culverted section of the channel and continues to the south west re-joining the Medlock downstream of the site at Baring Street Bridge.

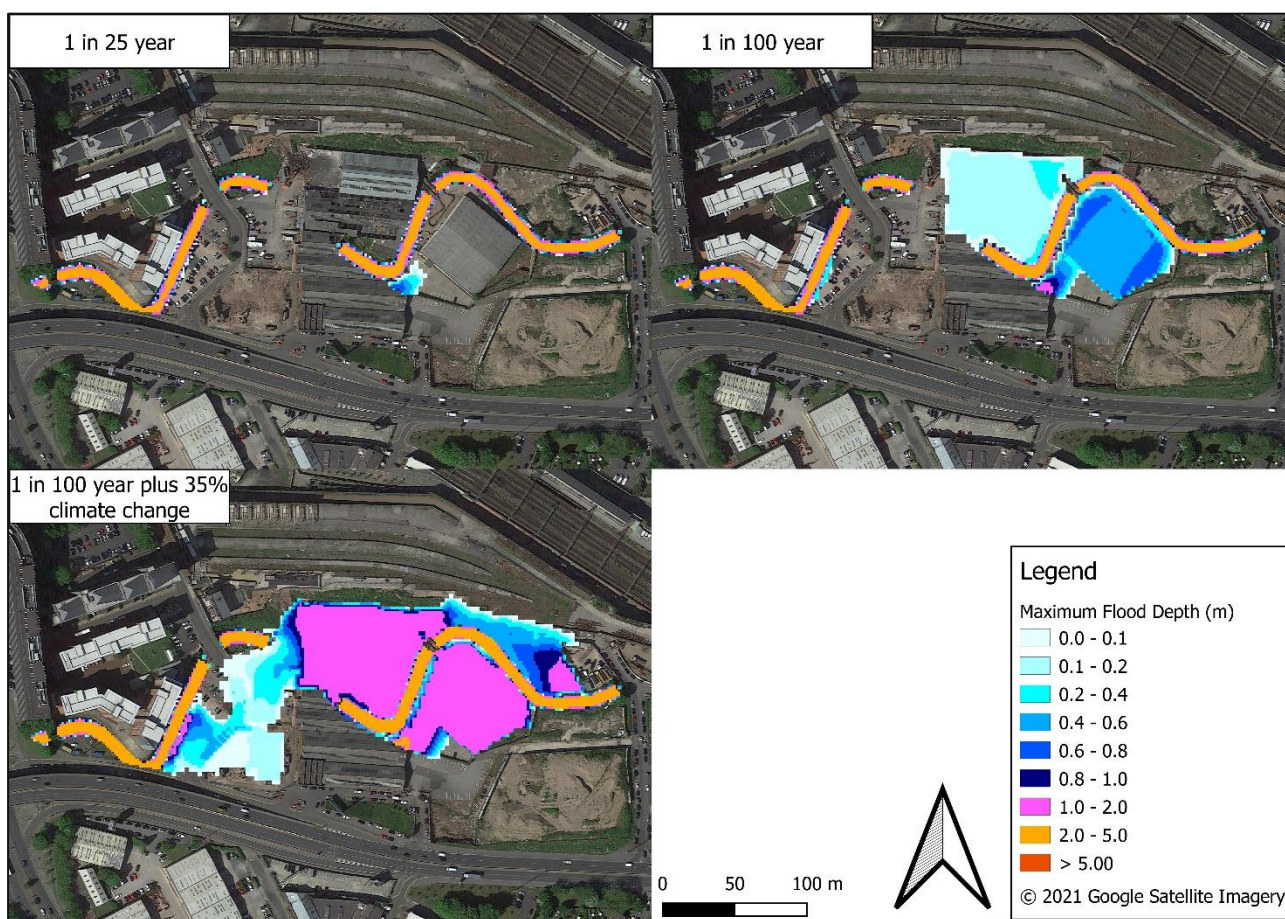


Figure 3-6: Baseline model flood depths for the 1 in 25 year, 1 in 100 year and 1 in 100 year plus 35% climate change events

3.6.2 Full Build Out

The onsite flood depths resulting from the Full Build Out model are shown in Figure 3-7. These depths can be compared against the baseline onsite flood depths shown in Figure 3-6 in the section above. The key changes are:

- The Q25 flood extent is extended on site across the Wildscape area;
- The flood depths for the Q100 and the Q100 plus 35% climate change are increased in the Wildscape area;
- The overland flow route shown in the baseline results that bypasses the baring street bridge is now blocked.

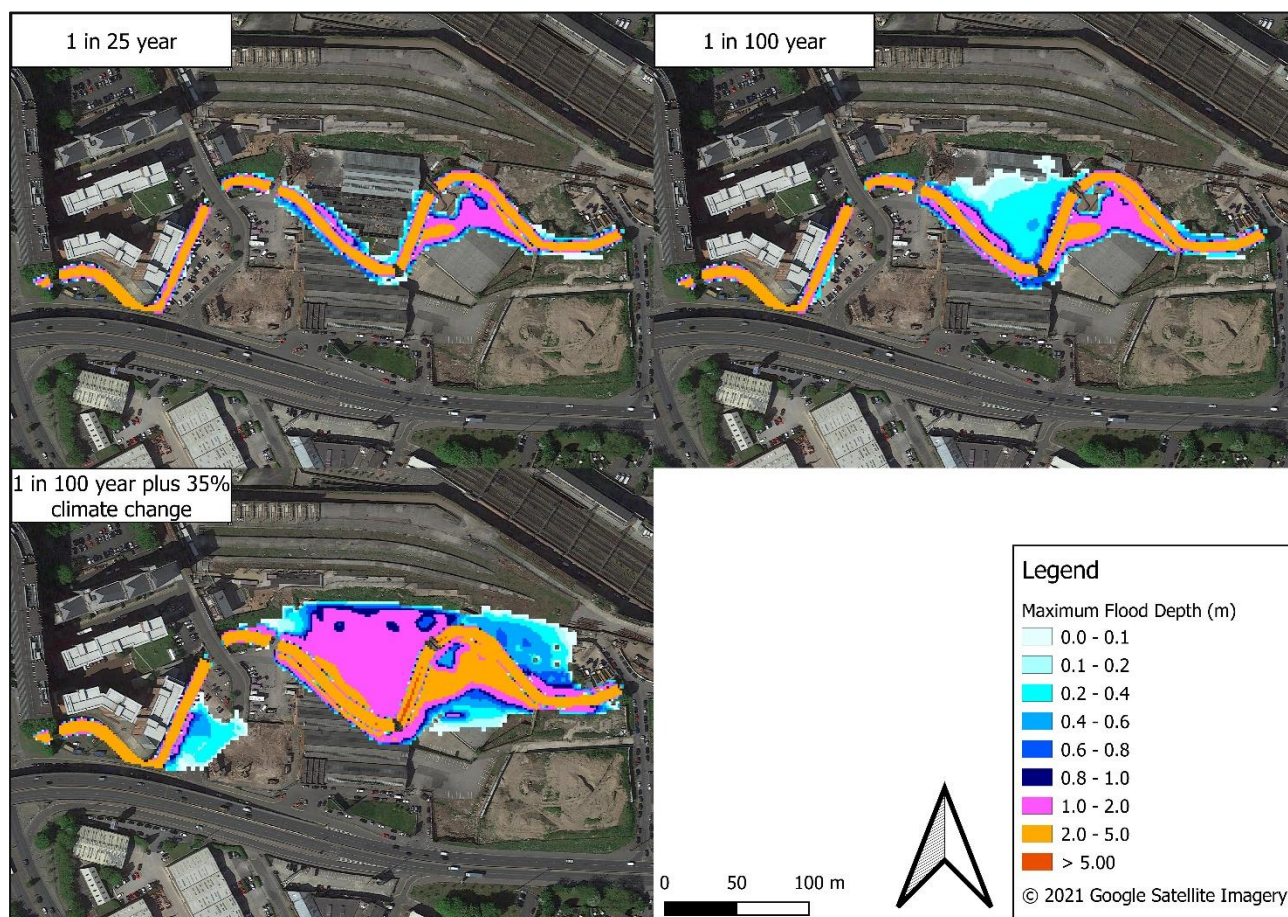


Figure 3-7: Phase 1 Full Build Out model flood depths for the 1 in 25 year, 1 in 100 year and 1 in 100 year plus 35% climate change events

Figure 3-8, Figure 3-9 and Figure 3-10 show the impact of the Full Build Out model on the flood water levels both upstream and downstream of the site for the 1 in 25 year, the 1 in 100 year and the 1 in 100 year plus 35% climate change return period event respectively. The key changes are:

- No changes greater than 15mm upstream nor downstream of the site for the 1 in 25 year return period event
- No changes greater than 15mm upstream nor downstream of the site for the 1 in 100 year return period event, barring two localised areas ~1.5km downstream of the site.
- Decreases in water level downstream of the site for the 1 in 100 year return period event plus 35% climate change event, otherwise no change greater than 15mm elsewhere upstream and downstream of the site.

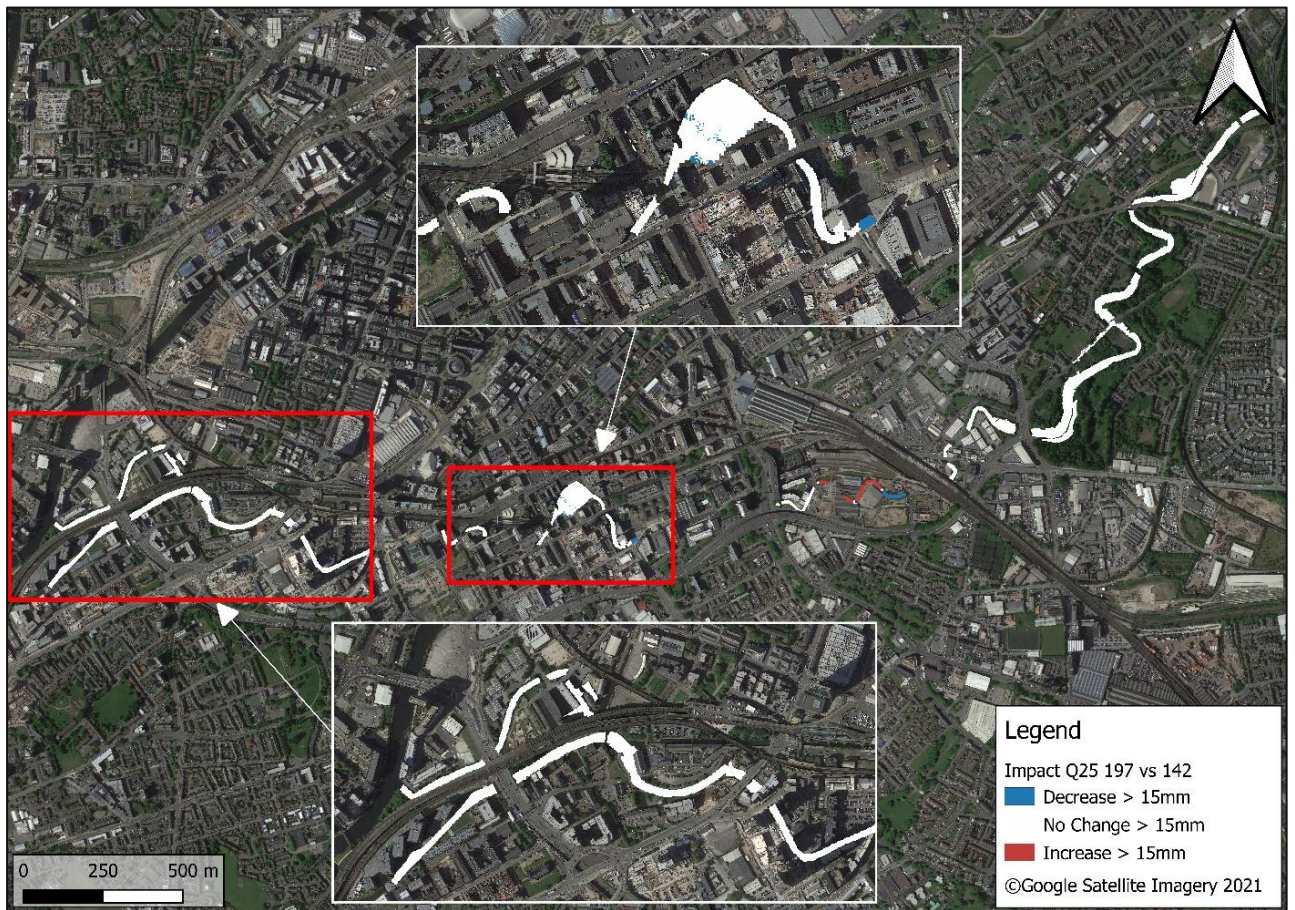


Figure 3-8: Impact on flood water levels as a result of the amended Full Build Out Model (197) for the 1 in 25 year return period event

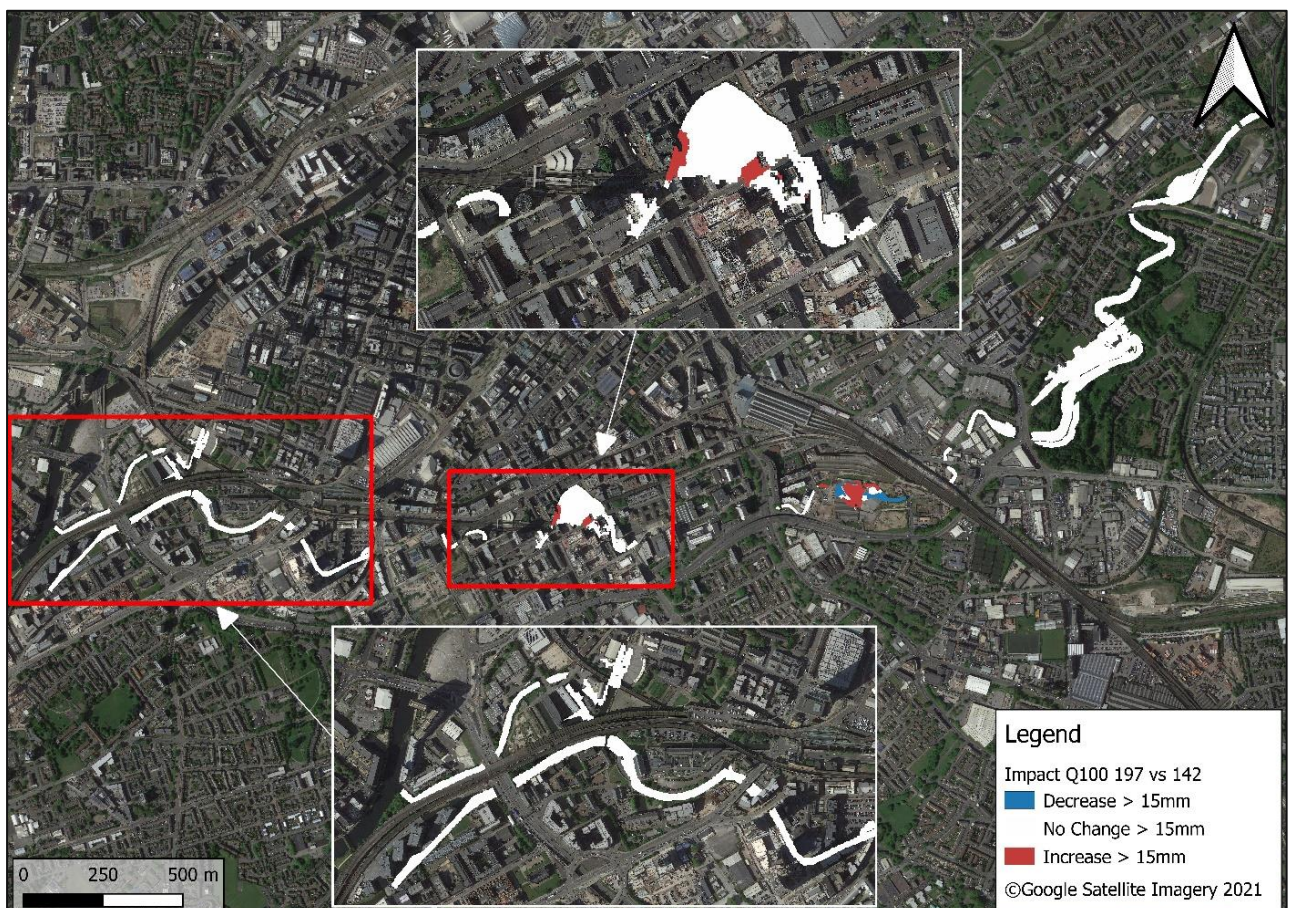


Figure 3-9: Impact on flood water levels as a result of the amended Full Build Out Model (197) for the 1 in 100 year return period event

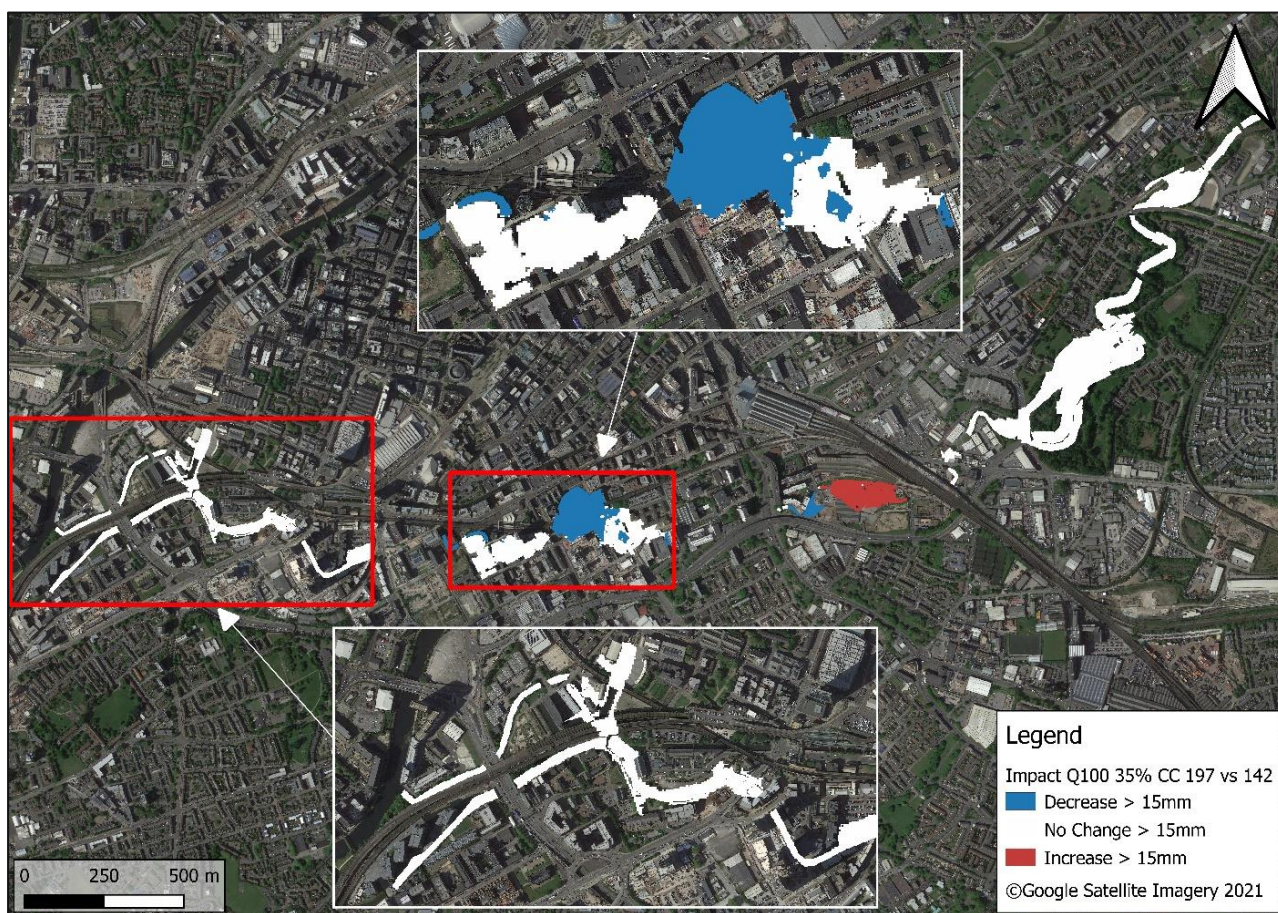


Figure 3-10: Impact on flood water levels as a result of the amended Full Build Out Model (197) for the 1 in 100 year plus 35% climate change return period event

Table 3-6 summarises the impact of the Full Build out model on the maximum recorded 1D water levels both upstream, immediately downstream and further downstream of the site. The locations that the data is summarised from is shown in Figure 3-11.

Table 3-6: Impact of the Full Build Out Model on the maximum recorded 1D water levels

Model Run	Change in level compared to BHE Baseline 2020 (142)								
	Upstream of site			160m downstream of site			>700m downstream of site		
	Q25	Q100	Q100 +35% CC	Q25	Q100	Q100 +35% CC	Q25	Q100	Q100 +35% CC
Amended Full Build Out Model (197)	<1mm	<1mm	<9mm	<0mm	<7mm	<0mm	<0mm	<15mm	<0mm

Rev. 01 update: The values shown in Table 3-6 remain unchanged from the previous revision of this Technical Note, as the amendments to improve model stability have a negligible impact on water levels.

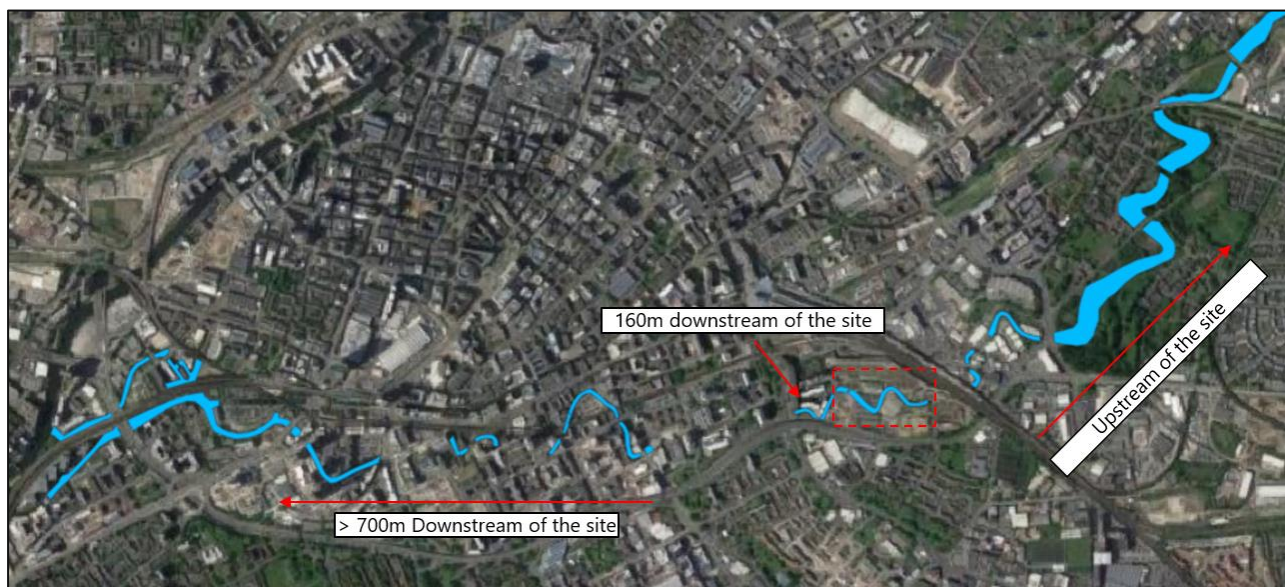


Figure 3-11: Key locations summarised in Table 3-6

Figure 3-12, Figure 3-13 and Figure 3-14 show the impact of the Full Build Out model on the flood extent both upstream and downstream of the site for the 1 in 25 year, the 1 in 100 year and the 1 in 100 year plus 35% climate change return period event respectively. The key changes are:

- No changes in extent upstream nor downstream of the site for the 1 in 25 year return period event;
- No changes in extent upstream nor downstream of the site for the 1 in 100 year return period event;
- No changes in extent upstream nor downstream of the site for the 1 in 100 year plus 35% climate change return period event.



Figure 3-12: Impact on flood extent as a result of the amended Full Build Out Model (197) for the 1 in 25 year return period event



Figure 3-13: Impact on flood extent as a result of the amended Full Build Out Model (197) for the 1 in 100 year return period event

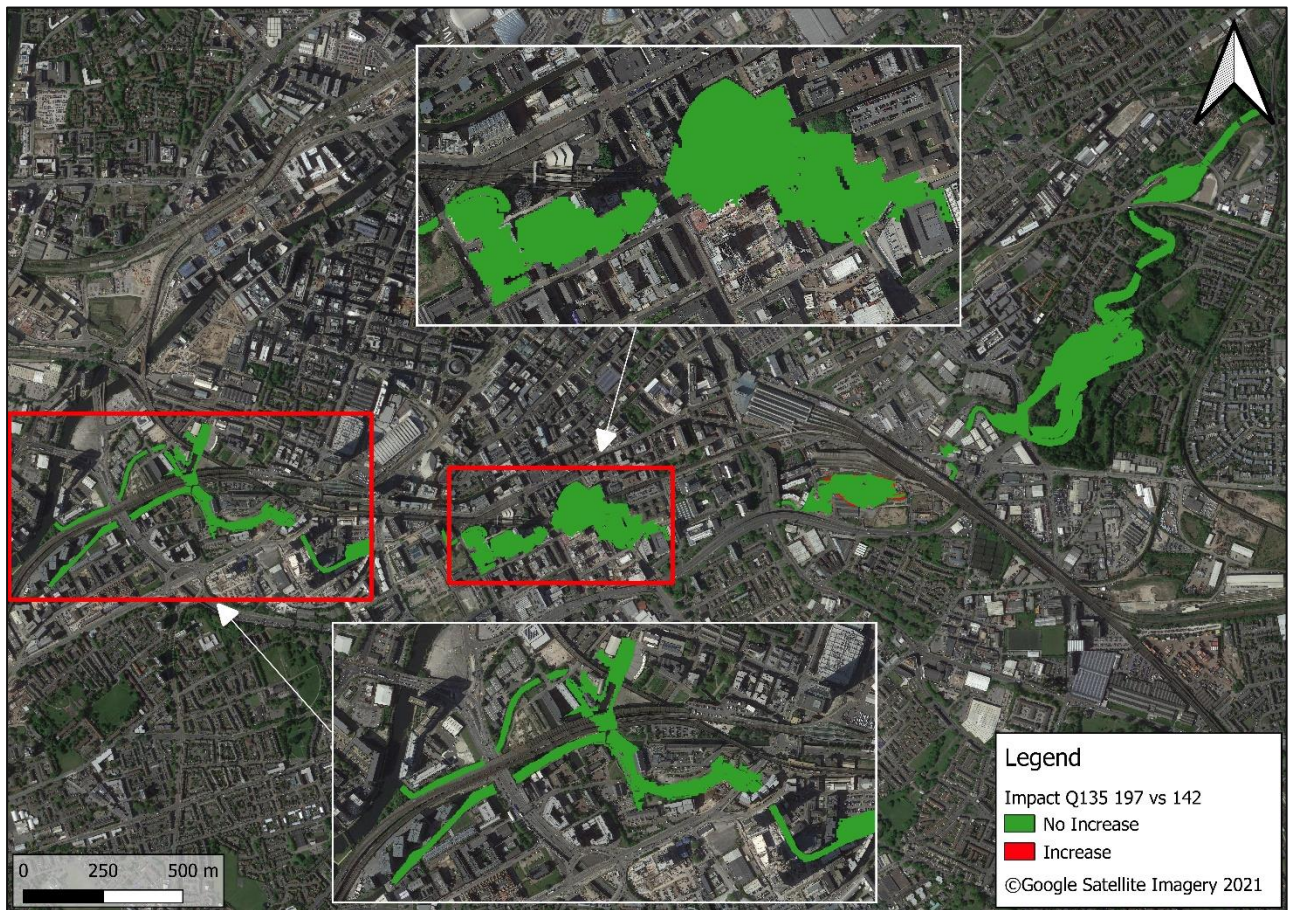


Figure 3-14: Impact on flood extent as a result of the amended Full Build Out Model (197) for the 1 in 100 year plus 35% climate change return period event

4 Summary and Conclusion

This Technical Note provides a description of the hydraulic modelling of the Mayfield Park Phase 1 development in the case where all proposed landscaping works are complete, referred to as the Full Build Out model. This note should be read in conjunction with the Enabling Works Modelling Technical Note which describes the hydraulic modelling of the phased construction of Mayfield Park, referred to as the Enabling Works phases.

Rev. 01 of this note was updated in response to the comments received from the EA on the 10th February 2021, to provide additional commentary on the representation of the proposed channel and bridge geometry within the model, and to describe improvements that have been made to the model stability.

This revision (Rev. 02) has been updated to include the latest set of river engineering drawings in Appendix C2, following a review by the EA geomorphology team as part of the discharge of Condition 66. The updates to the drawings reflect clarifications rather than design changes. There have therefore been no changes to the hydraulic modelling.

The Mayfield Park development includes amendments to the river walls and channel, replacement of bridges and general landscaping works, including works within the flood plain. The Full Build Out model represents the most recent frozen architectural plans.

The BHE Baseline 2020 Model has been used as the baseline model (numbered 142) to assess changes to flood risk caused by the introduction of the proposed development.

The design flood event for the Full Build Out model is the 1 in 100 year plus 35 % climate change, however the 1 in 25 year and the 1 in 100 year return period events have also been tested.

The results of the Full Build Out modelling (numbered 197) show that the Mayfield Park development does not cause an increase in flood extent, either upstream or downstream of the site.

The impact on flood levels provided in this note has focused on locations previously reported and known to be of concern, both upstream and downstream of the site. The results of the Full Build Out modelling indicate that for all three events tested, the Mayfield Park development does not cause a change in water level from the baseline of greater than 15mm, and in the majority of locations, this difference is less than 1mm.

These results are considered to be in line with the conclusions reported in the 2019 FRA which accompanied the original planning application, and demonstrate that the complete Mayfield Park does not cause an adverse impact on flood levels or extent, either upstream or downstream of the site.

Appendix A – Hydraulic Model Summary

Phase	Description	Model Reference
BHE Baseline 2020	BHE Baseline 2020 model. Used to compare the flood levels and extents caused by the proposed development, both onsite and offsite.	142
Enabling Works A.1	Removal of slab and earthworks at Mayfield Lawn area, removal of slabs and earthworks at Plots O, N & M	143
Enabling Works A.2	Removal of 60m of the culvert lid	144
Enabling Works A.3	Installation of new temporary crossing bridge to plot M	145
Enabling Works B	Removal of existing built environment at the Wildscape and play areas, and subsequent earthworks.	146
Full Build Out	Full flood plain build out as per masterplan, including proposed finished floor levels, land use types and structures. Inclusion of in channel interventions as well as riverbank alterations. Installation of the permanent bridge at plot M.	197

Appendix B – Environment Agency Correspondence

Jack Foster

From: Kirwan-Evans, Jenny <Jenny.KirwanEvans@environment-agency.gov.uk>
Sent: 22 February 2021 10:41
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

Follow Up Flag: Follow up
Flag Status: Completed

****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).

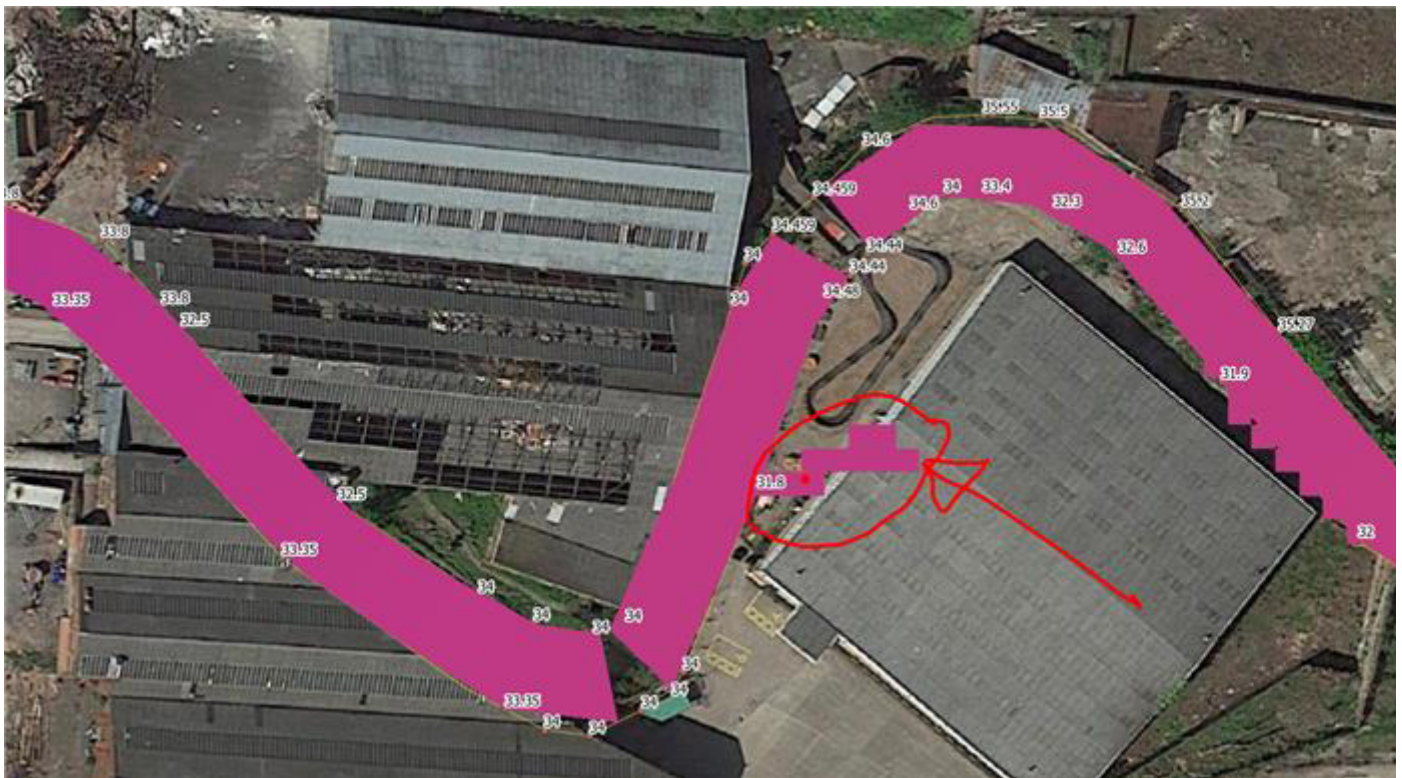


Figure 1: Baseline water level at the Wildscape area, annotated with location of cause of mass error

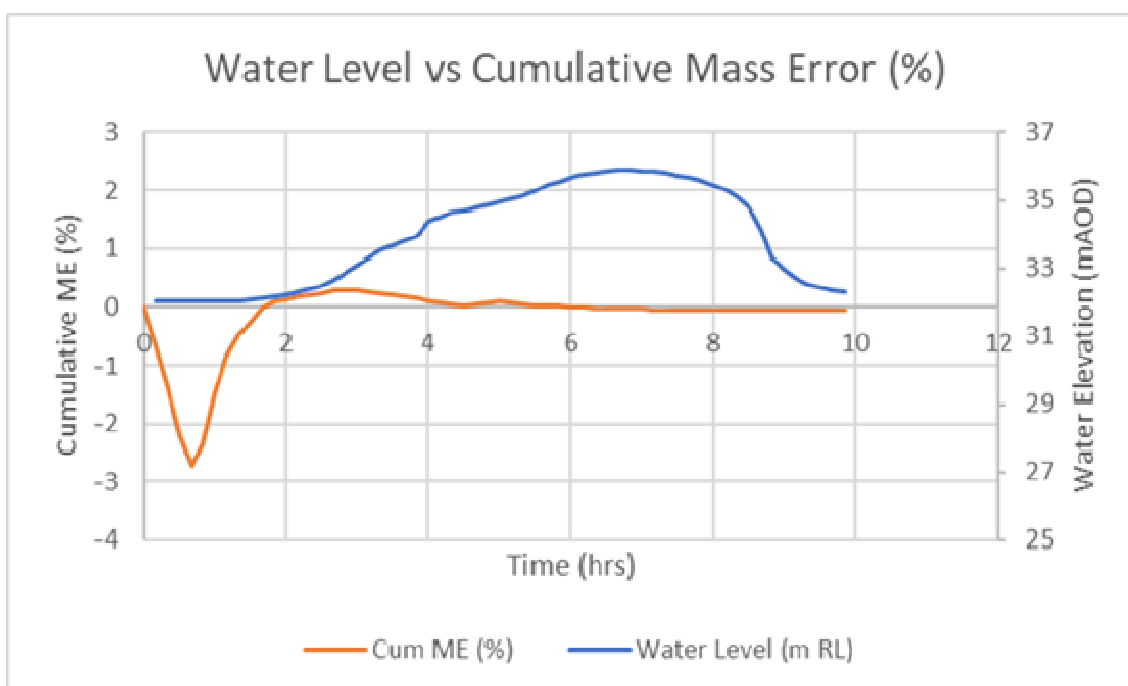


Figure 2: Comparison of cumulative mass error (%) against the water level recorded within the Wildscape Area 2D domain for the Full Build Out Model (192)

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

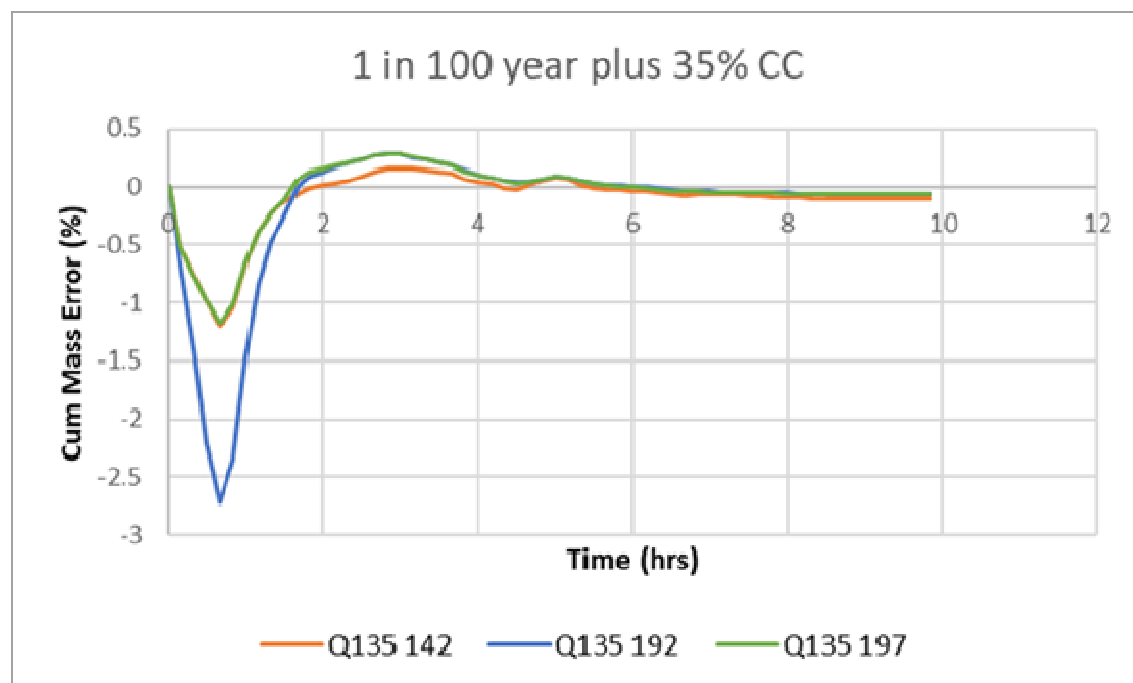


Figure 3: Comparison of cumulative mass error for the 100 year + 35% CC event for the Baseline and Full Build Out models

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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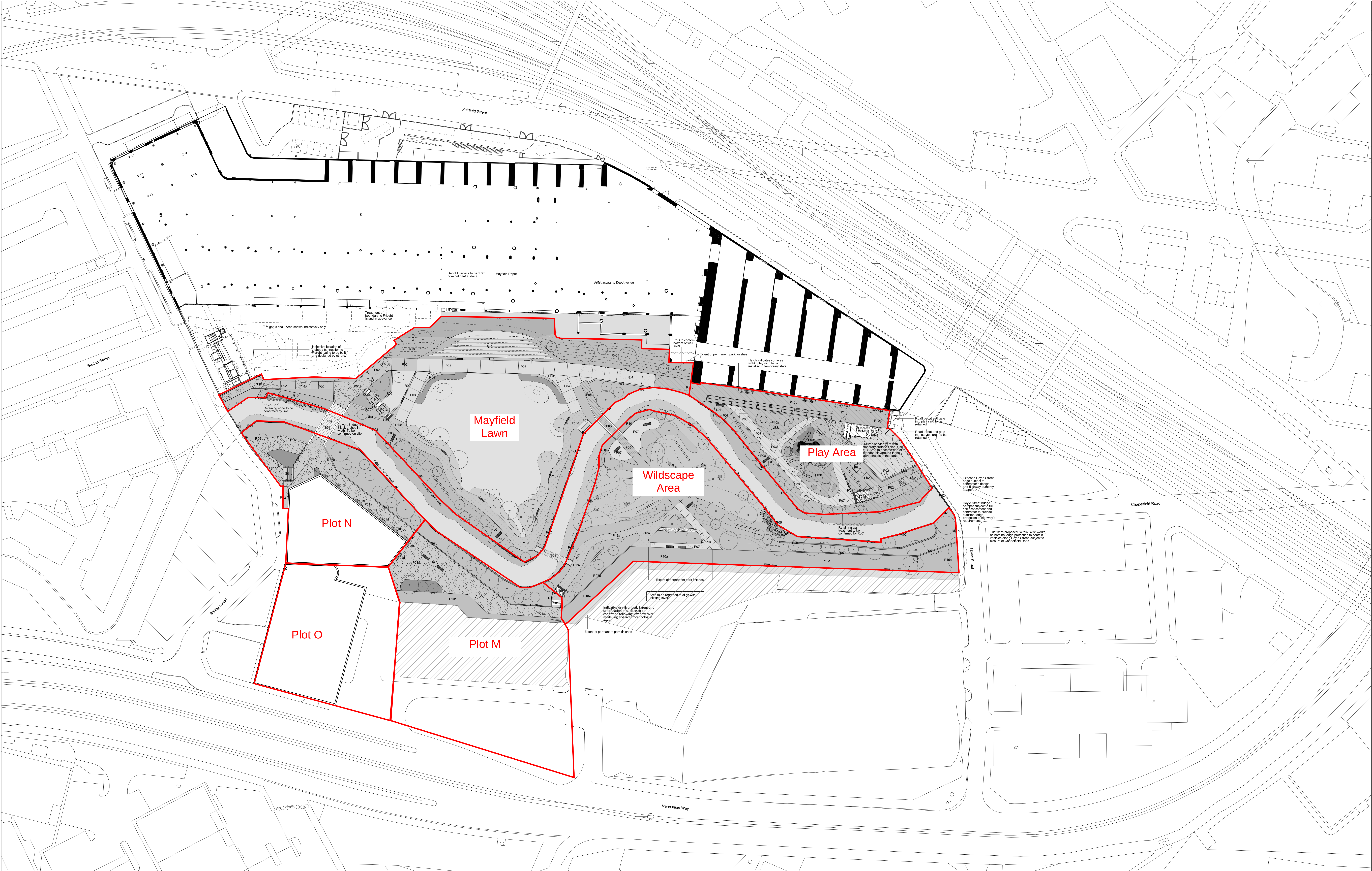
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Appendix C1 – Location Plan



General Notes

1. All dimensions are to the centre of the work unless otherwise stated.

2. All dimensions are to the centre of the work unless otherwise stated.

3. All dimensions are to the centre of the work unless otherwise stated.

4. All dimensions are to the centre of the work unless otherwise stated.

5. All dimensions are to the centre of the work unless otherwise stated.

6. All dimensions are to the centre of the work unless otherwise stated.

7. All dimensions are to the centre of the work unless otherwise stated.

8. All dimensions are to the centre of the work unless otherwise stated.

9. All dimensions are to the centre of the work unless otherwise stated.

10. All dimensions are to the centre of the work unless otherwise stated.

Notes

Please note this information is not fully co-ordinated. Final co-ordination stage & issue to be provided once all design team work packages are completed and reviewed by lead designer.

Rev	Date	Reason for Issue	CHK
1	14.12.20	Stage 4 DRAFT	SEW
2	14.12.20	TENDER UPDATE	SEW
3	14.12.20	TENDER	SEW
4	14.12.20	TENDER	SEW
5	14.12.20	Design Update	SEW
6	14.12.20	Design Update	SEW
7	14.12.20	Design Update	SEW
8	14.12.20	Design Update	SEW
9	14.12.20	Design Update	SEW
10	14.12.20	Design Update	SEW

Keyplan

Scale Bar

North Arrow

sew Studio
Egret West
2 Broomhouse Yard
Lancaster
LA1 1YU
01524 887700
info@sewest.com
www.sewest.com

Mayfield Partnership

Project
Mayfield Park

Drawing Title
Site Overall GA

Project Number
0345

Status
TENDER

Scale
Scale as A0

Date
04.09.20

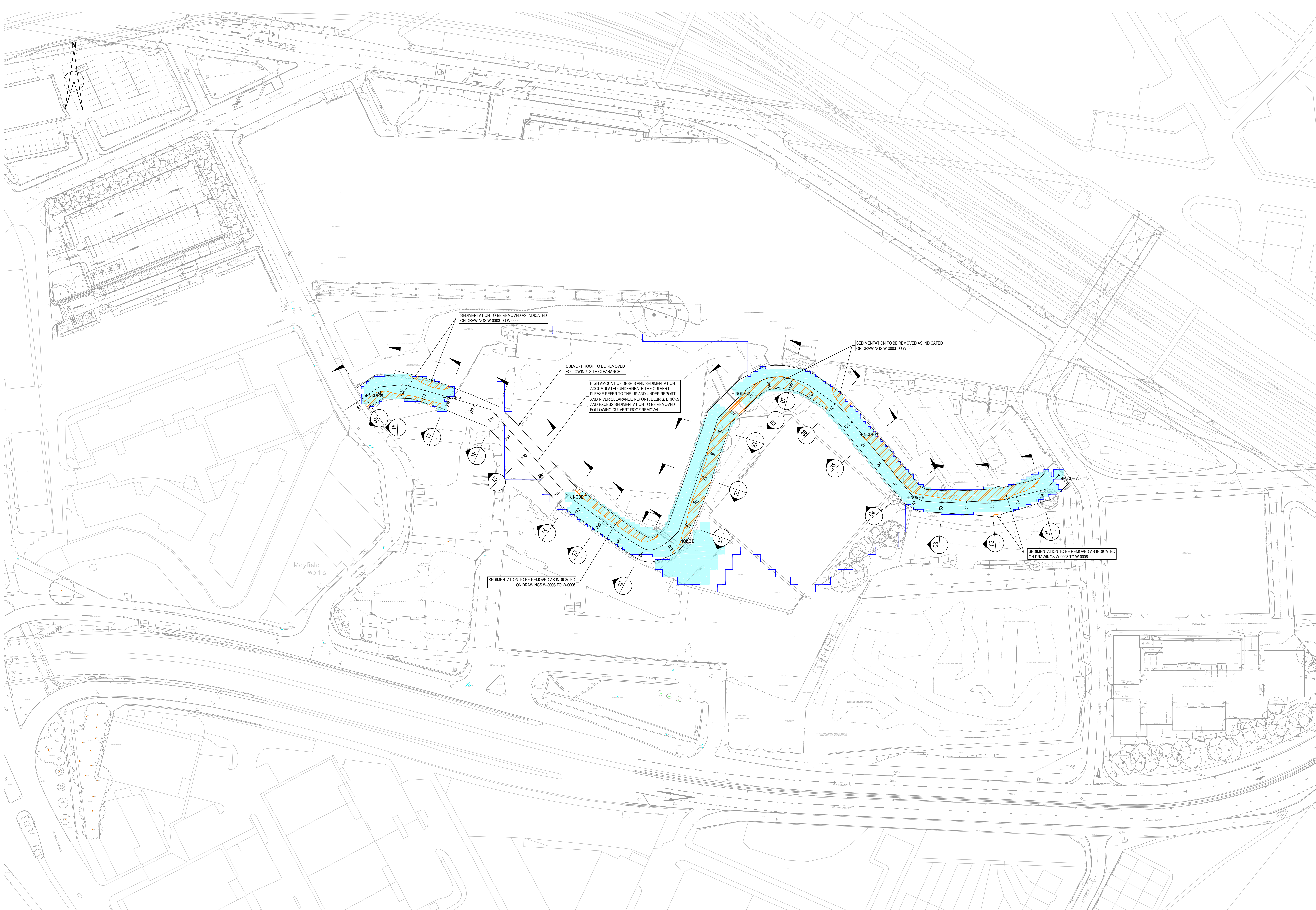
Drawn by
MAW

Checked by
SEW

Revision Number
0345-SEW-22-00-DR-007102

Revision
T08

Appendix C2 – 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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HEALTH AND SAFETY INFORMATION

PLACEMENT TO THE HAZARDOUSLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION:

1. BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
2. UNCERTAIN STABILITY OF EXISTING RIVER WALLS
3. WORKING ADJACENT TO WATER AND POTENTIALLY AT HEIGHT
4. 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.
5. 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:

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 DILUTED SEWAGE WASTE.

DECOMMISSIONING/DEMOLITION:

REFER TO CONSTRUCTION ABOVE

Notes:

1. WORKS WITHIN 8M FROM THE RIVER BANK, INCLUDING DEMOLITION MAY REQUIRE A FLOOD RISK ACTIVITY PERMIT FROM THE ENVIRONMENT AGENCY.
2. SEDIMENTATION INFORMATION BASED ON RIVER CHANNEL SURVEY COMPLETED NOVEMBER 2020.
3. 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.
4. 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).
5. FOR PROPOSED GENERAL ARRANGEMENT INFORMATION REFER TO DRAWING NO. W-0002.
6. FOR CROSS SECTION DETAILS OF THE RIVER WORKS REFER TO DRAWINGS NO. W-0003, W-0004, W-0005 & W-0006.
7. FOR PROPOSED EDGE DETAILS REFER TO DRAWING NO. W-0007.
8. RIVER FLOW DIRECTION IS FROM EAST TO WEST. REFERENCE TO RIGHT BANK OR LEFT BANK IS FACING DOWNSTREAM. CROSS SECTIONS FACING DOWNSTREAM.
9. 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	CHK

STAGE 4

Status of drawing

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UK

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Web: www.burohappold.com

Architect
Project
Prog Title

SEW
MAYFIELD DEVELOPMENT PARTNERSHIP
EXISTING SITE CONDITIONS
GENERAL ARRANGEMENT
PLAN

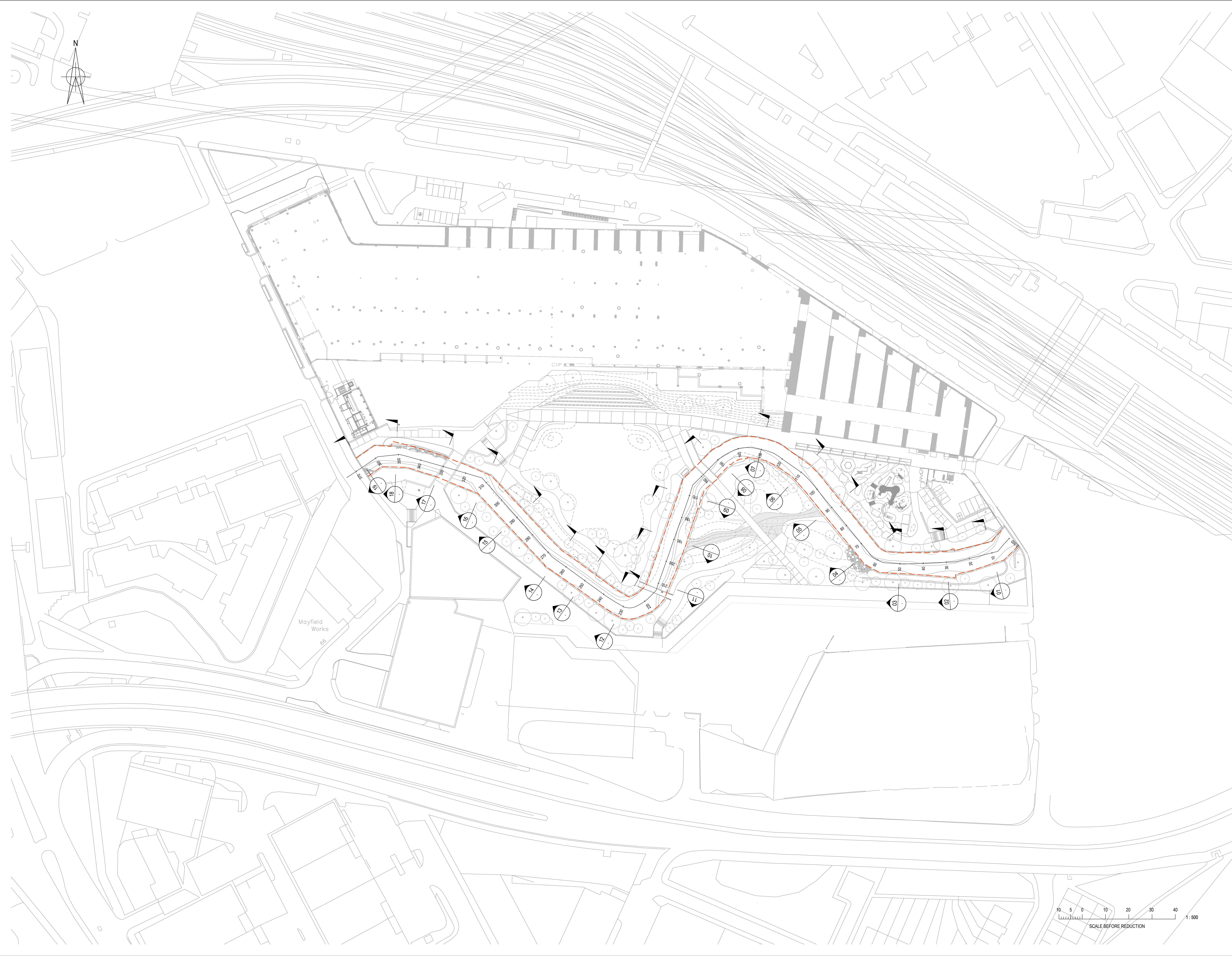
Scales: A3: 1:500
Drawn by: NG
Checked by: RG

Job No.:
Date: 10/01/2021
Rev: C

0046688

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

Scale: BEFORE REDUCTION
10 5 0 10 20 30 40
1:500



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HEALTH AND SAFETY INFORMATION
IN ADDITION TO THE HAZARDOUSNESS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION:

1. BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS.
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

Status of drawing

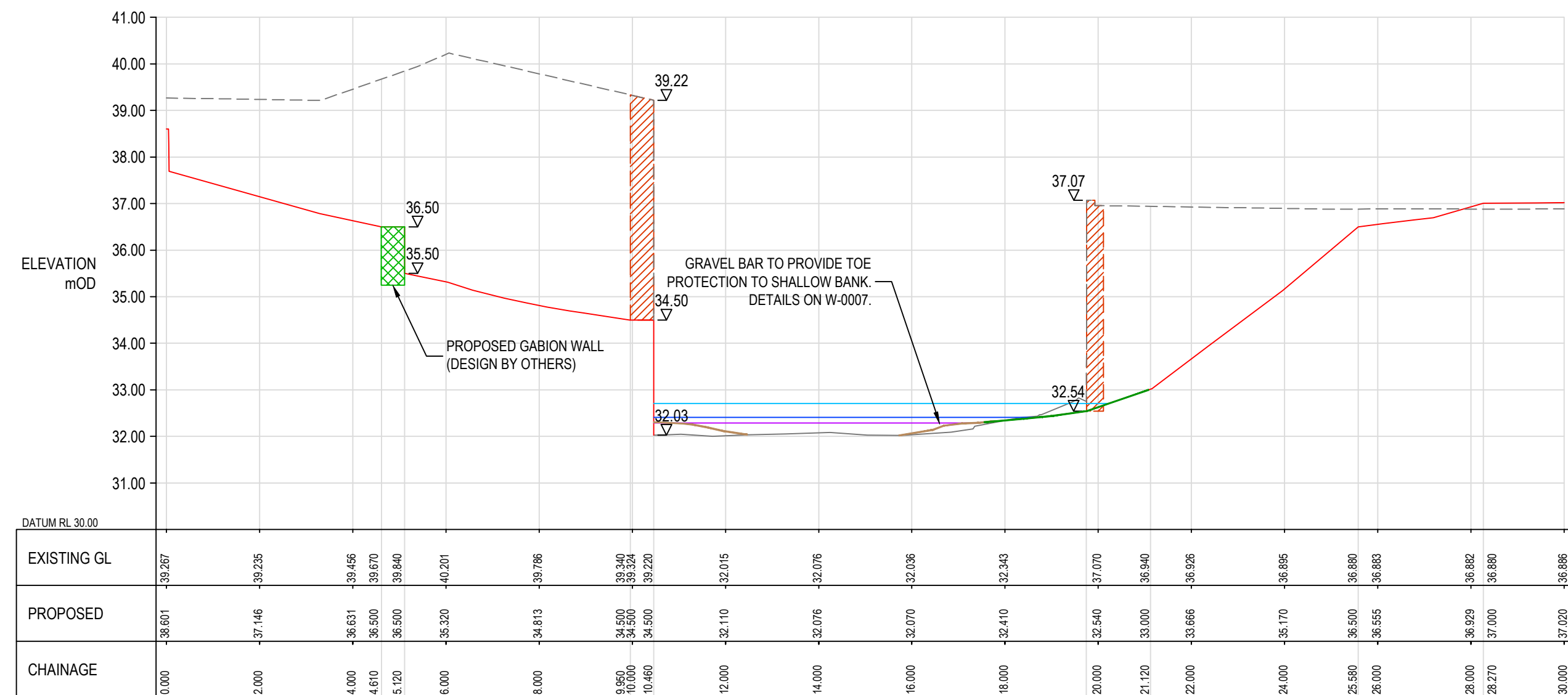
**BUROHAPPOLD
ENGINEERING**

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

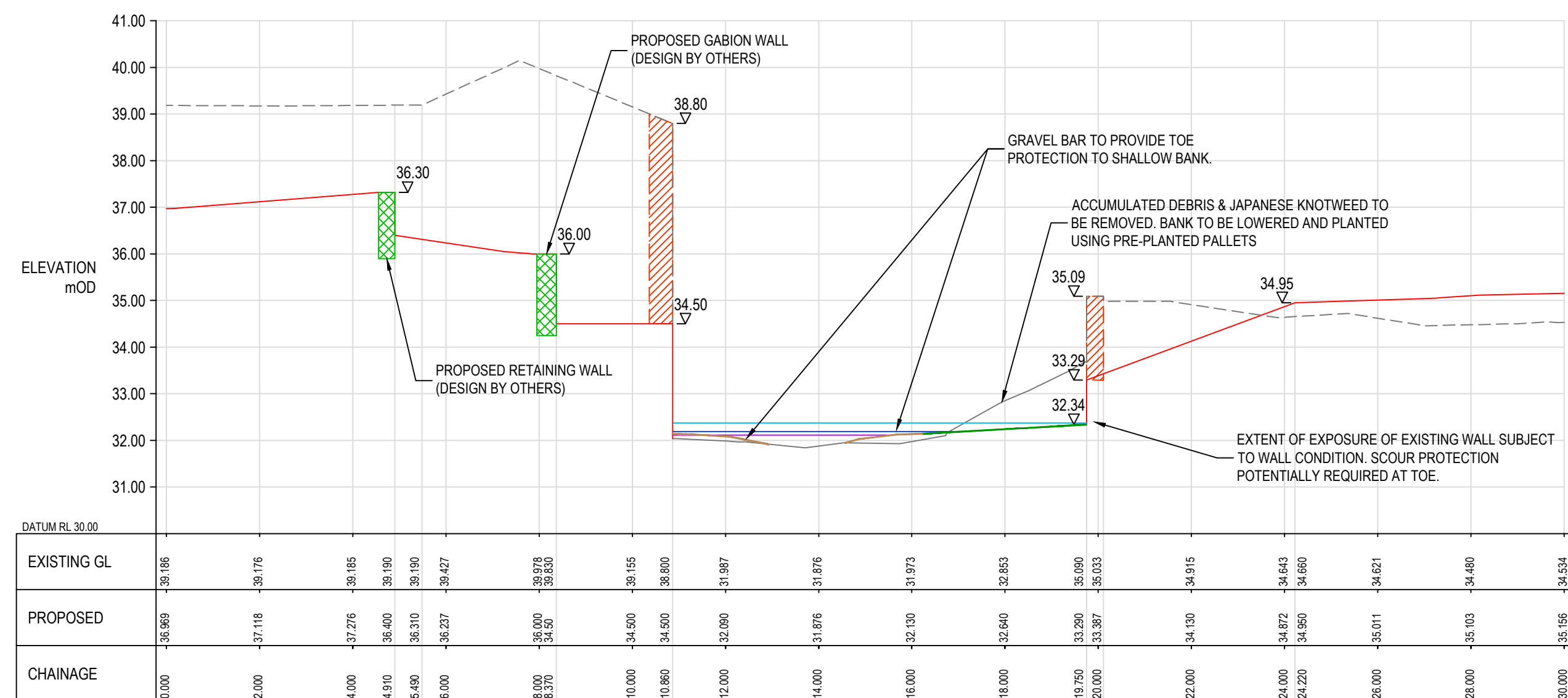
Tel: +44 (0)113 204 2000
Fax: +44 (0)1670 787 4164
Email: 0046688@burohappold.com
Web: www.burohappold.com

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

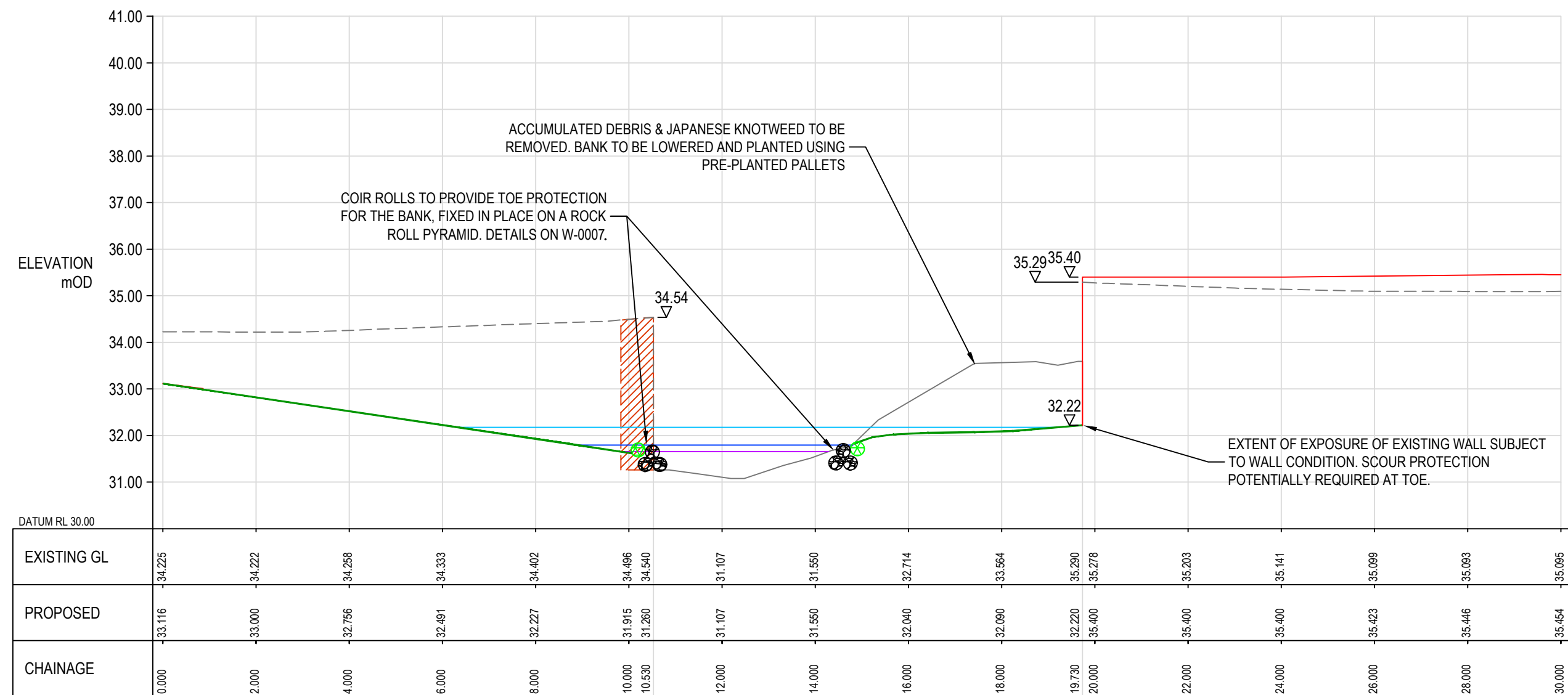
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Drawn by: NG	Date:	MARCH 2021
Checked by: RG	Rev:	C
Drawing No: 0046688-BHE-XX-XX-DR-W-0002		



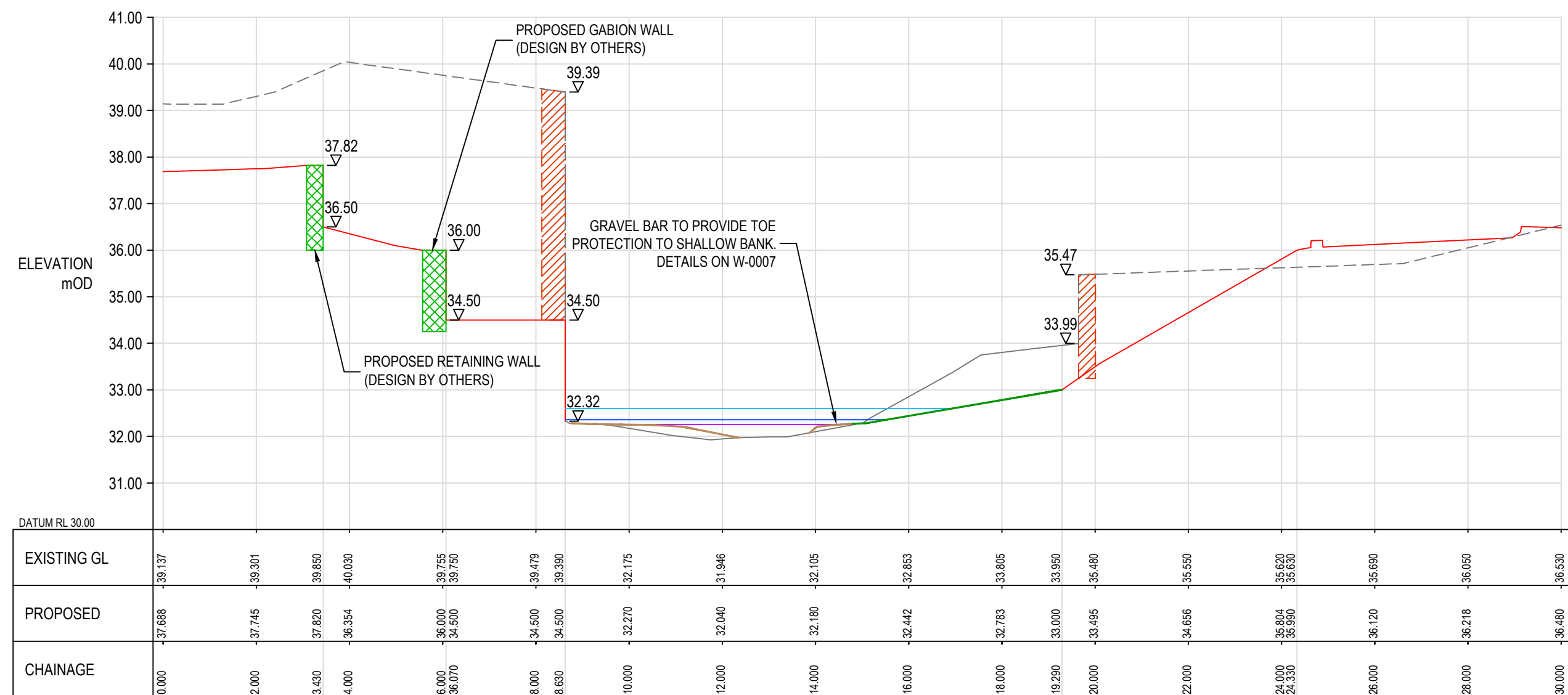
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SCALE 1:100 VERTICAL.



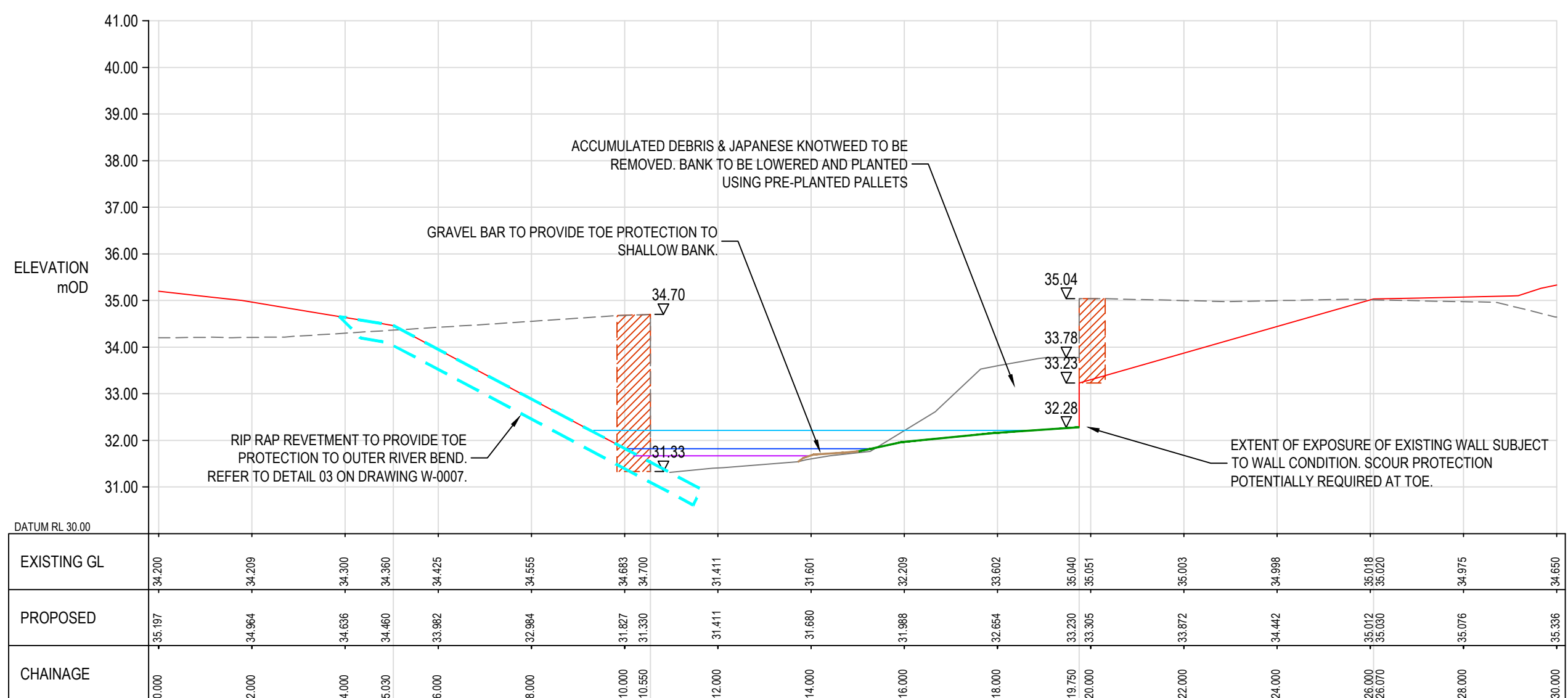
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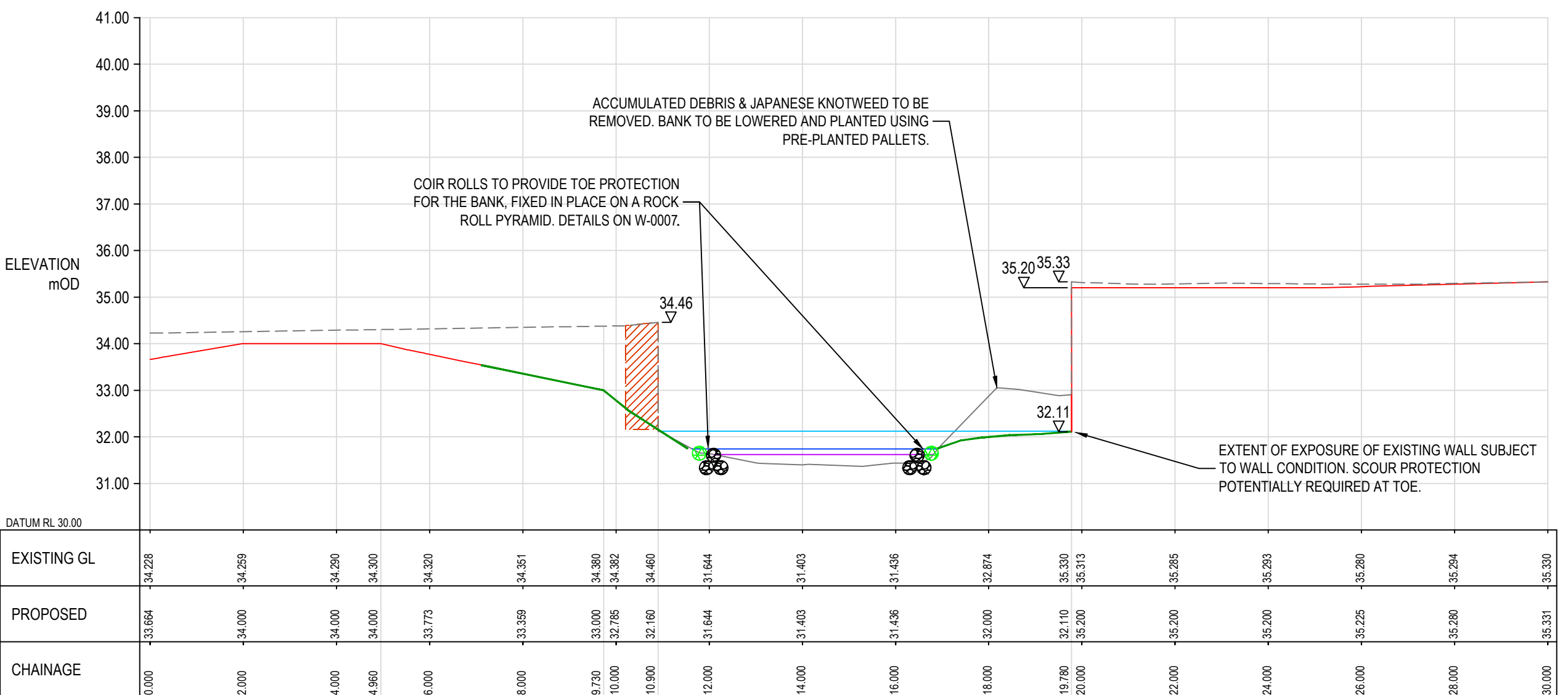
SECTION 05 CHAINAGE 90
SCALE 1:100 HORIZONTAL.
SCALE 1:100 VERTICAL.



SECTION 02 CHAINAGE 30
SCALE 1:100 HORIZONTAL.
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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CONSTRUCTION

1. BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
2. UNCERTAIN STABILITY OF EXISTING RIVER WALLS
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 CONDITIONS. MONITOR 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

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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 PALLETS
 --- 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	Ch'd
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STAGE 4

Status of drawing

BURO HAPPOLD
ENGINEERING

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

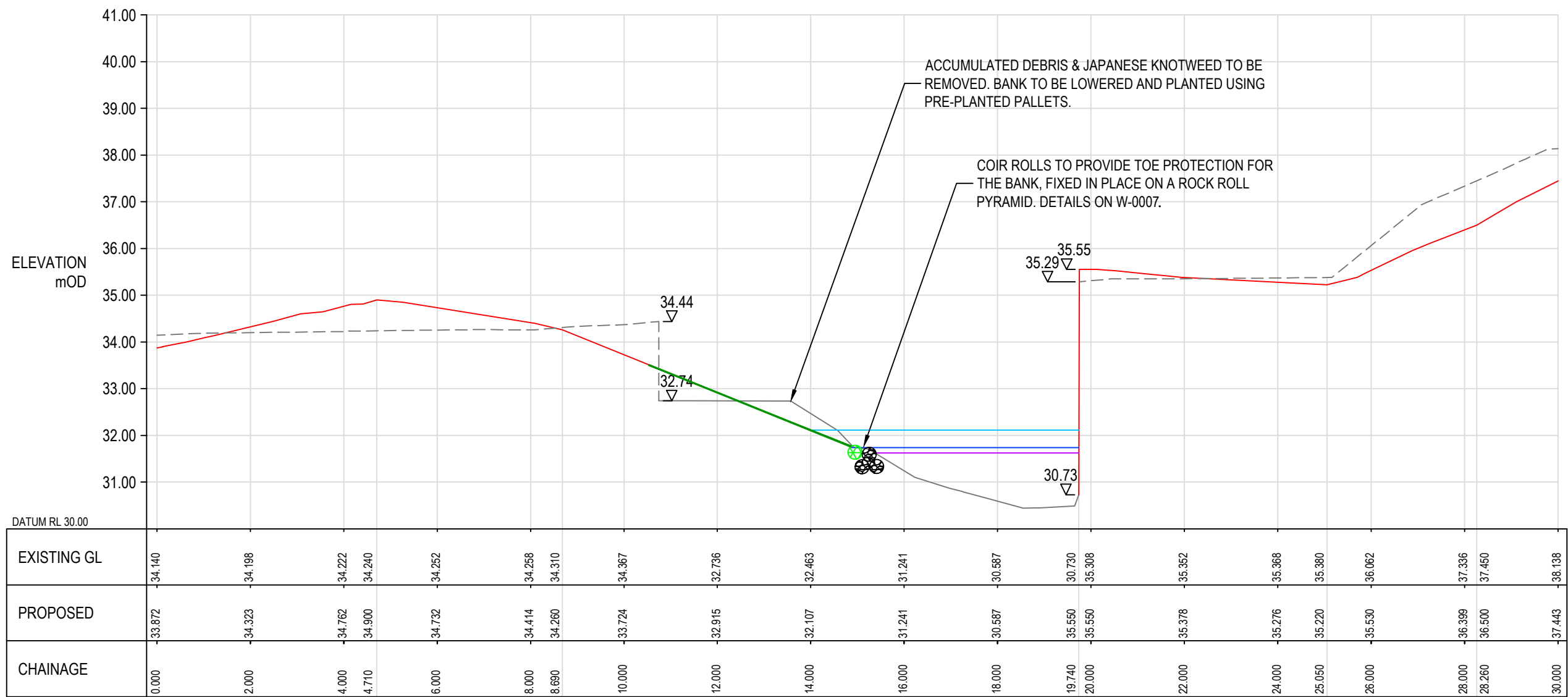
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
Email: 0046688@burohappold.com
Web: www.burohappold.com

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

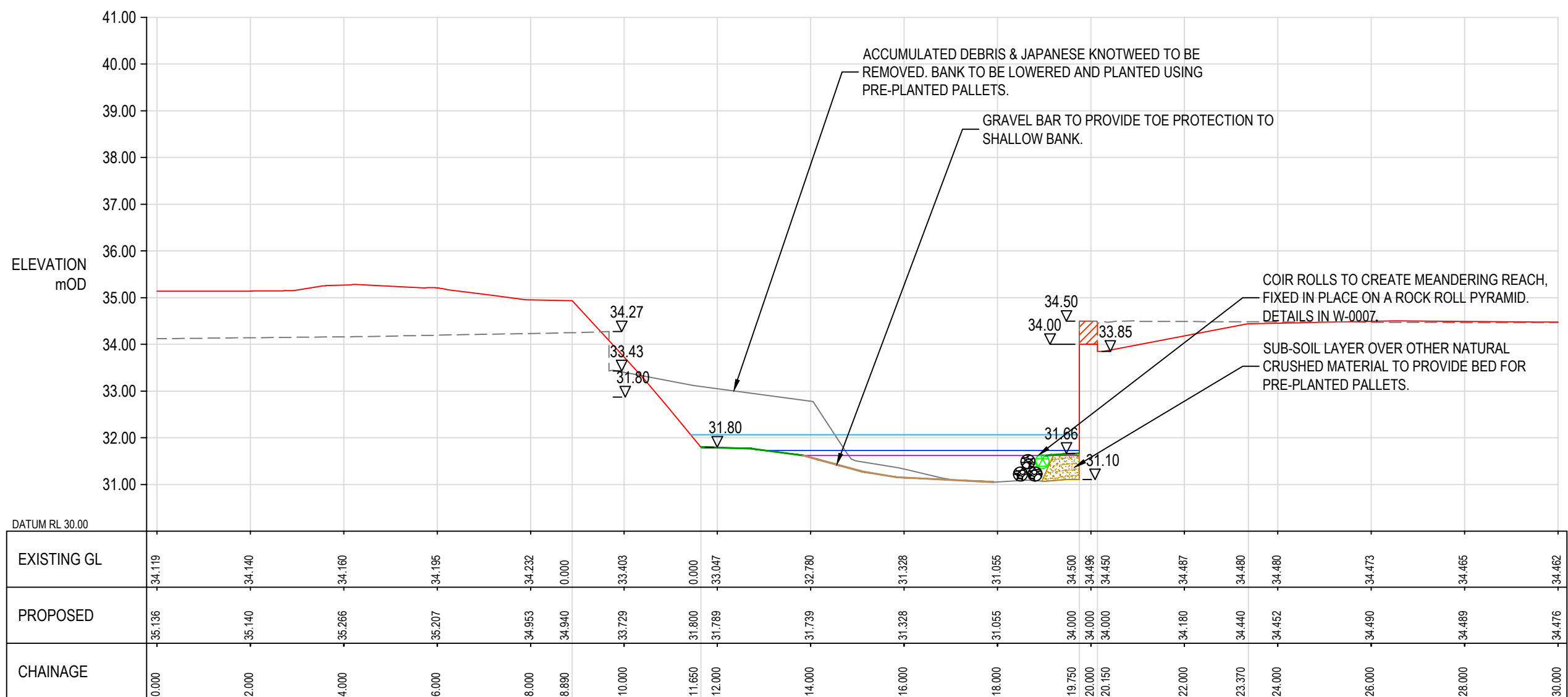
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Drawn by NG	Date APRIL 2021
Checked by RG	Rev D

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

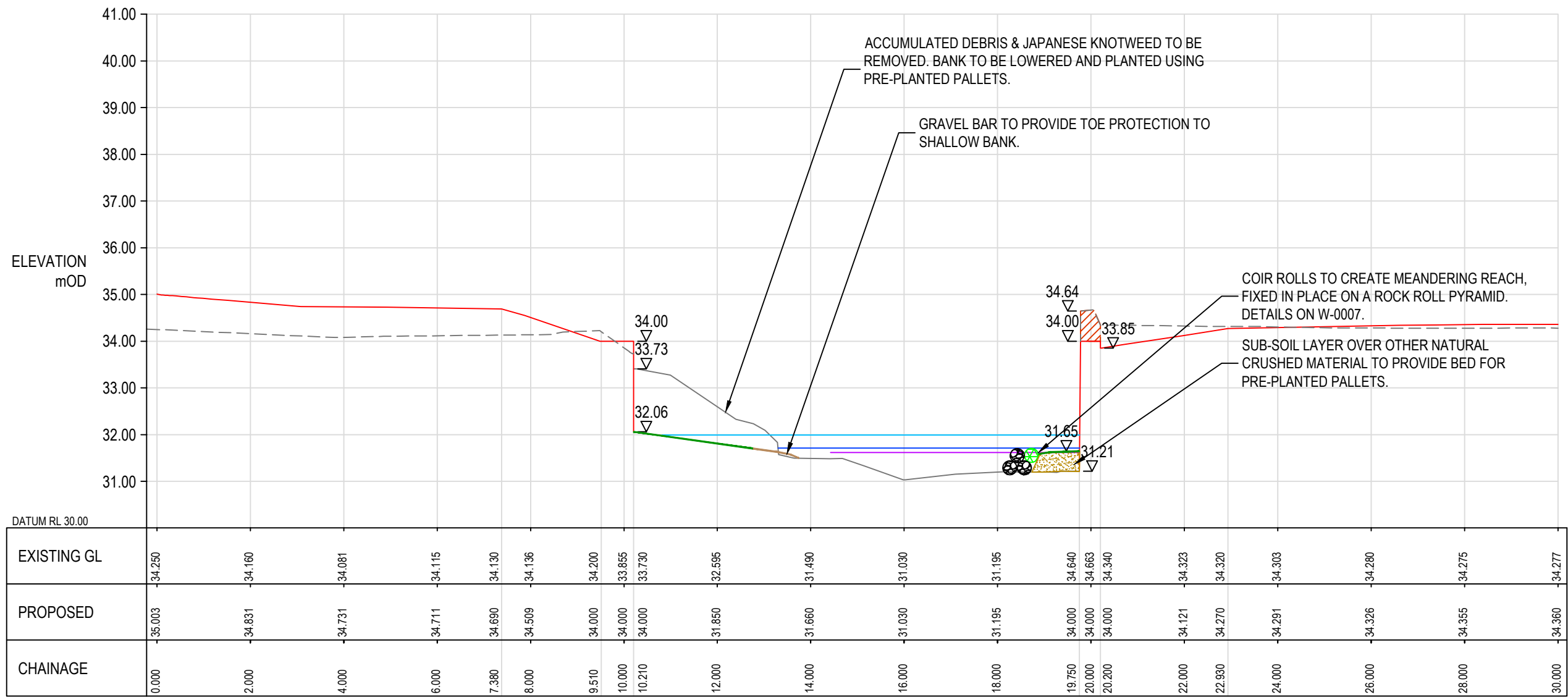
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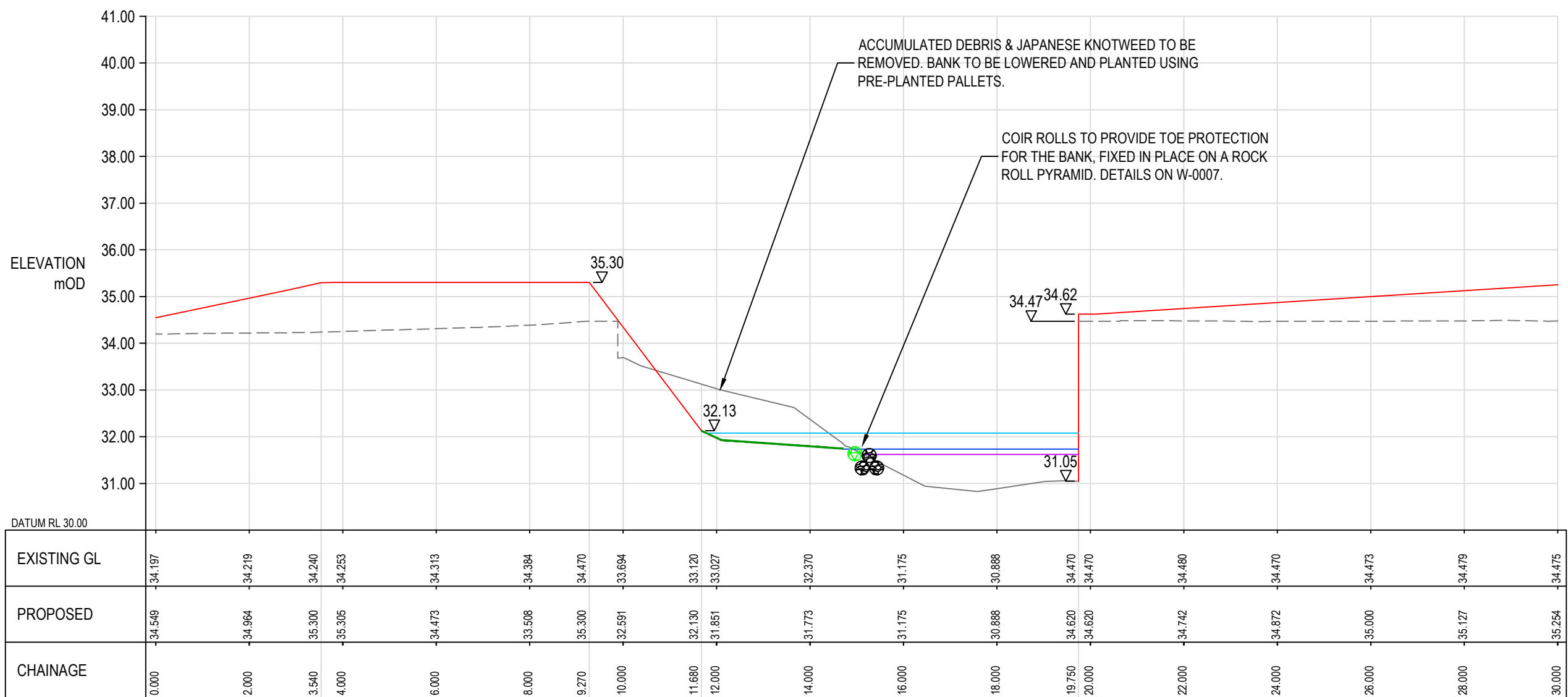
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SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



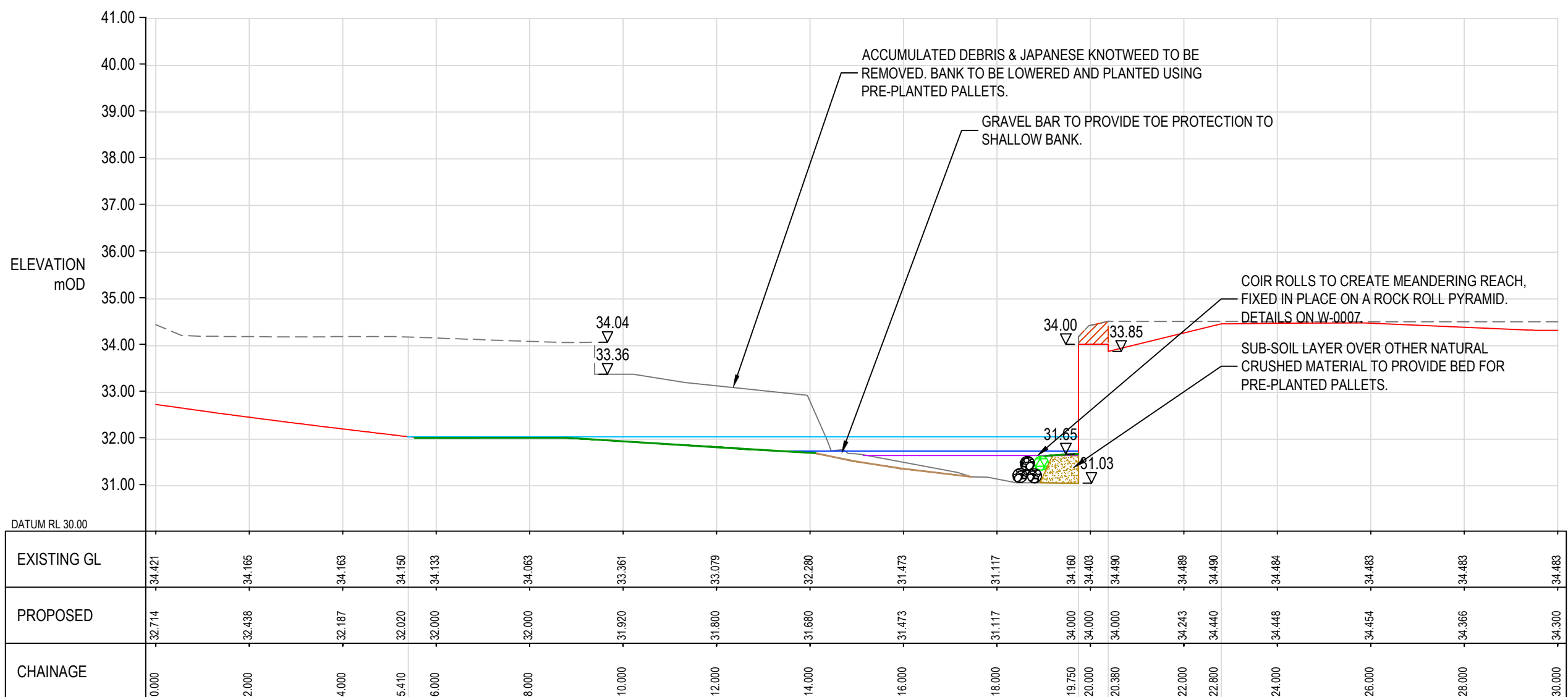
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SCALE 1:100 VERTICAL



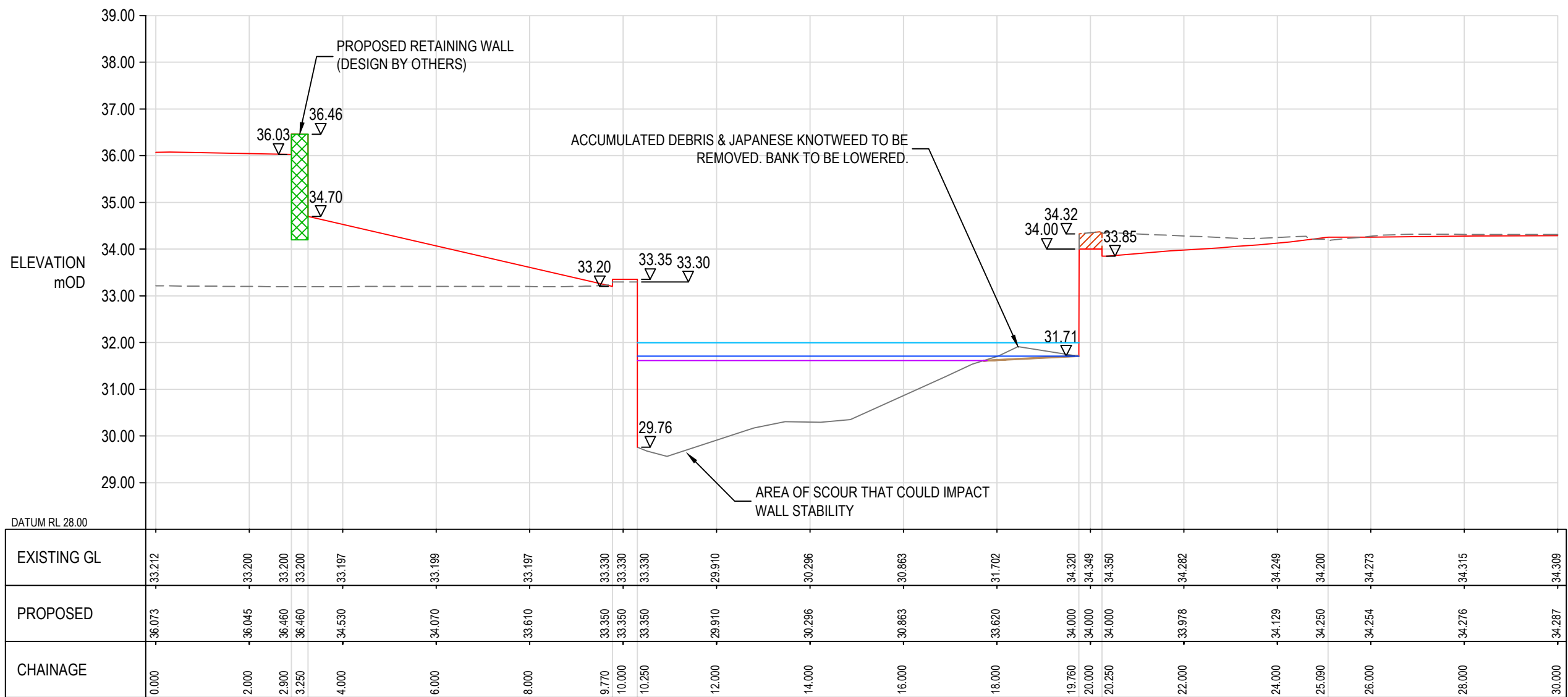
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SCALE 1:100 VERTICAL



SECTION 08 CHAINAGE 150
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



SECTION 10 CHAINAGE 190
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



SECTION 12 CHAINAGE 230
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL

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DECOMMISSIONING/DEMOLITION

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- Q50 WATER LEVEL (EXCEEDED 50% OF THE TIME)
- Q5 WATER LEVEL (EXCEEDED 5% OF THE TIME)
- PROPOSED GRAVEL BAR
- PROPOSED PRE-PLANTED COIR PALLETES
- 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	Chd

STAGE 4

Status of drawing

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ENGINEERING**

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

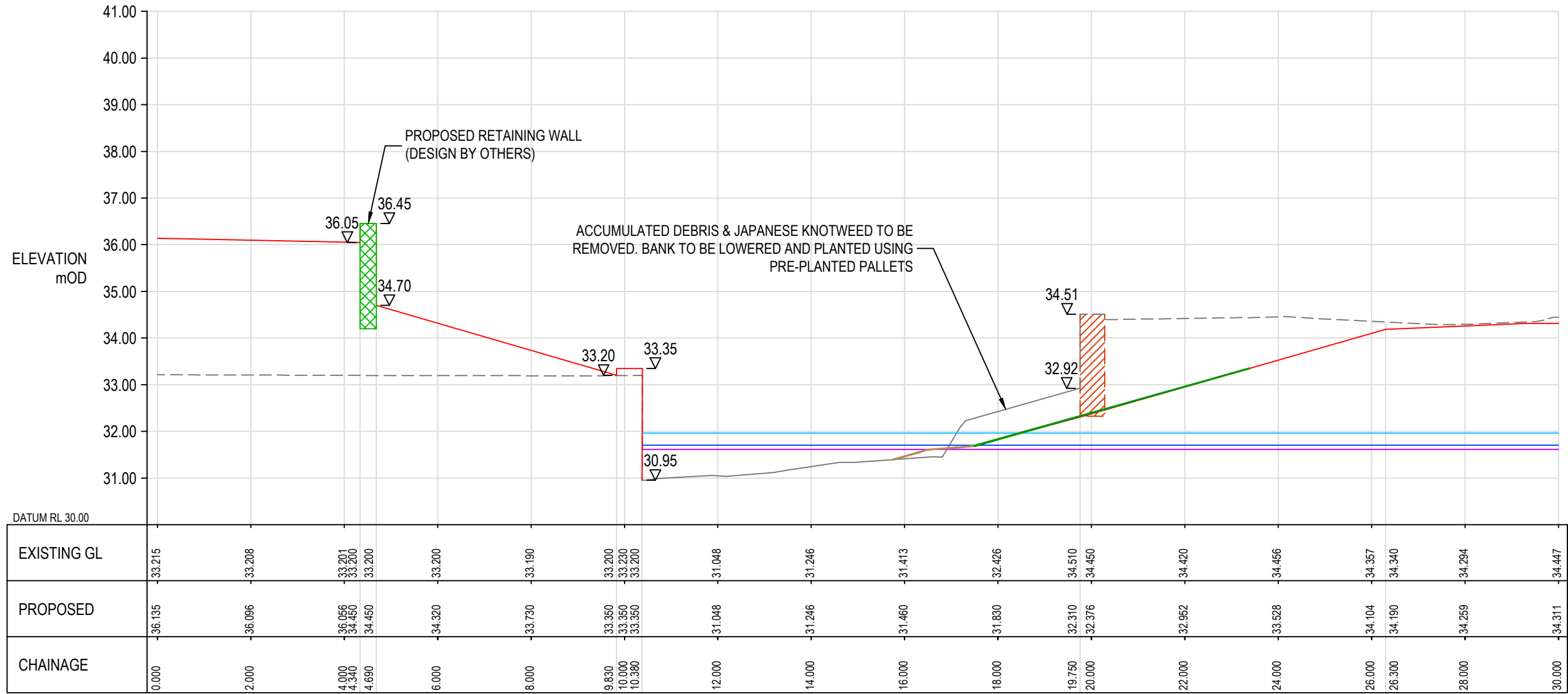
Architect **SEW**
Project **MAYFIELD DEVELOPMENT PARTNERSHIP**
Dwg Title **PROPOSED SECTIONS
SHEET 2**

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

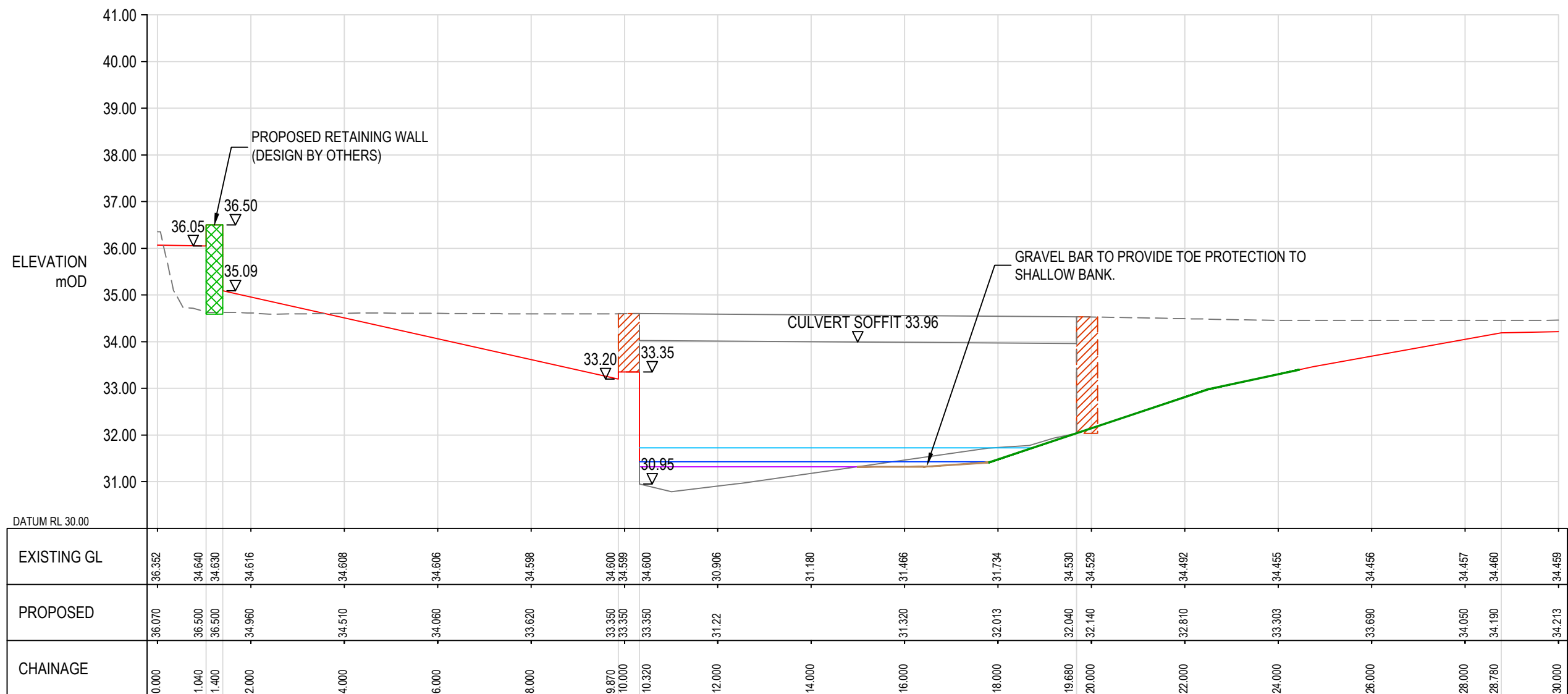
Job No. **0046688**
Date **APRIL 2021**
Rev **D**

Drawing No. **0046688-BHE-XX-XX-DR-W-0004**

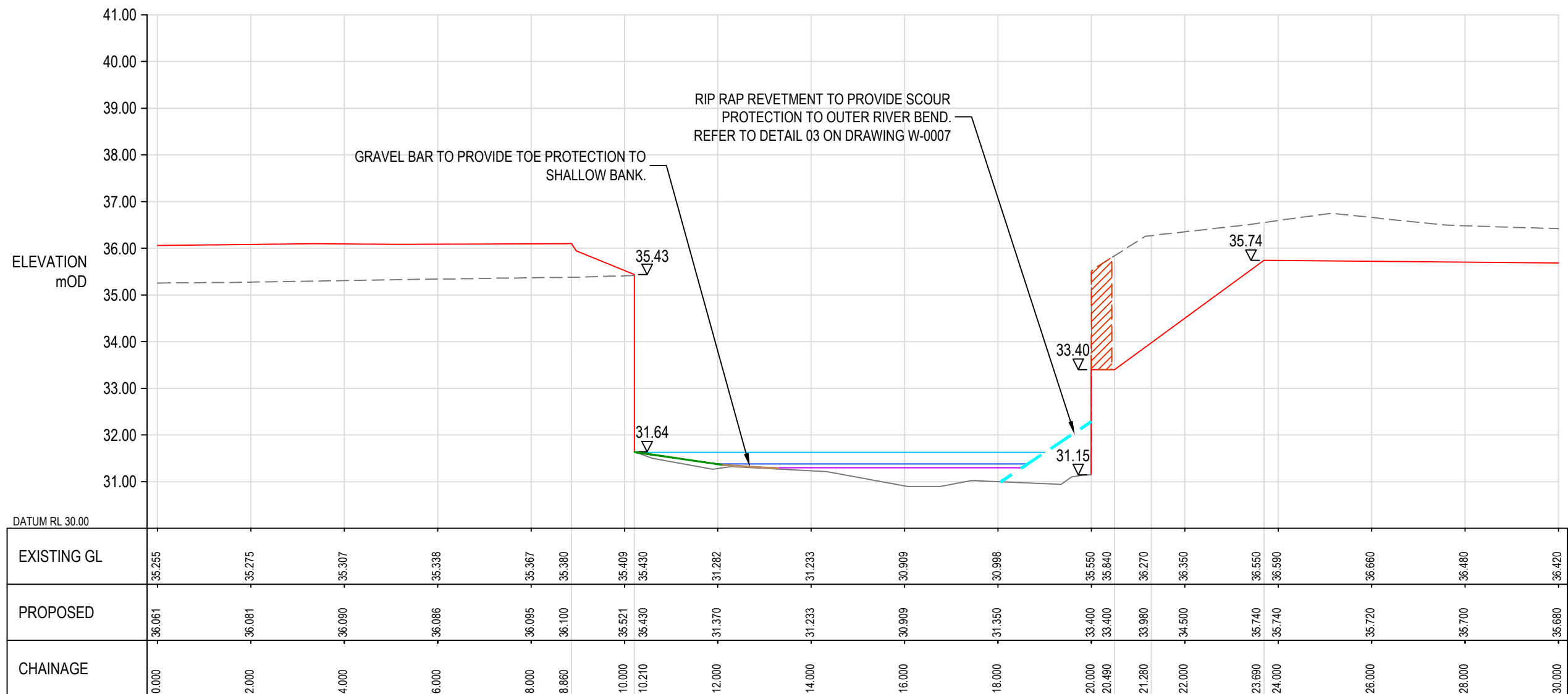
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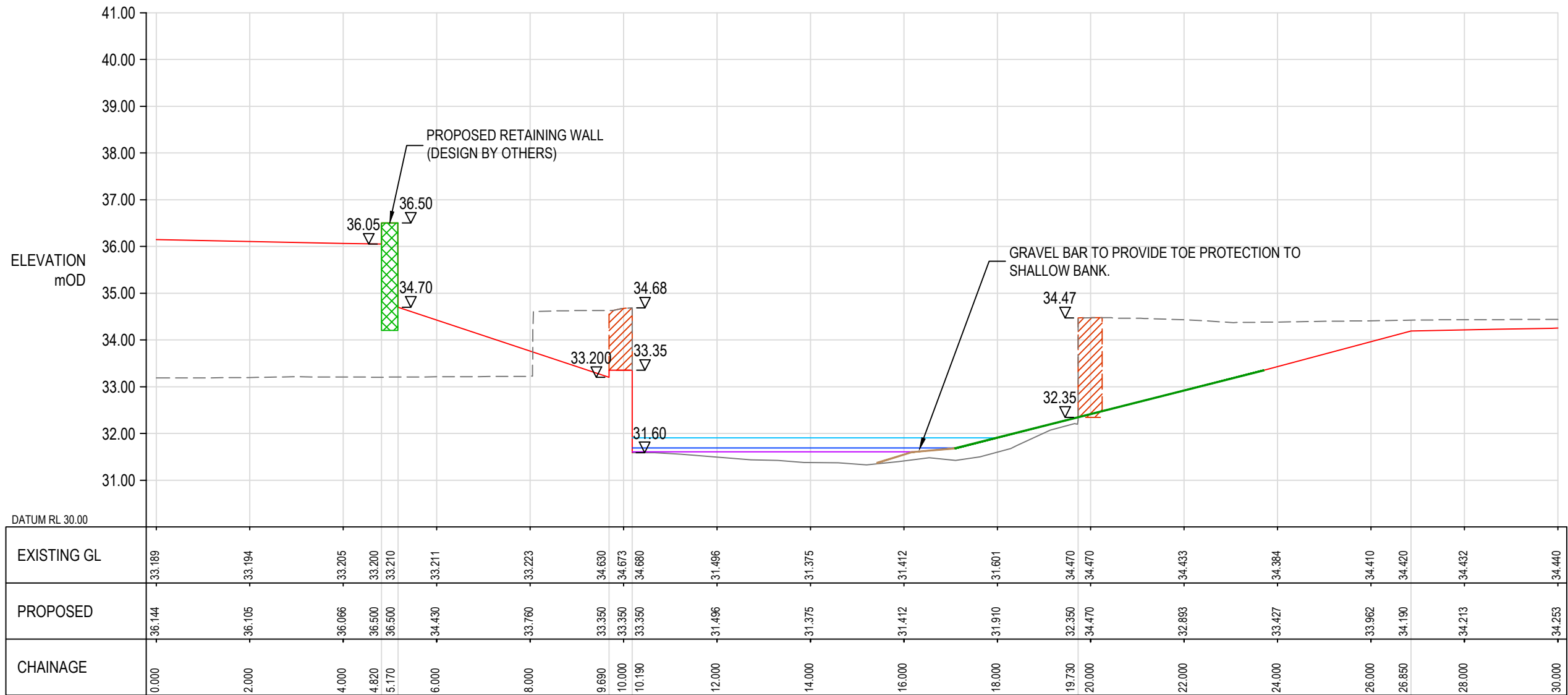
SECTION 13 CHAINAGE 250
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



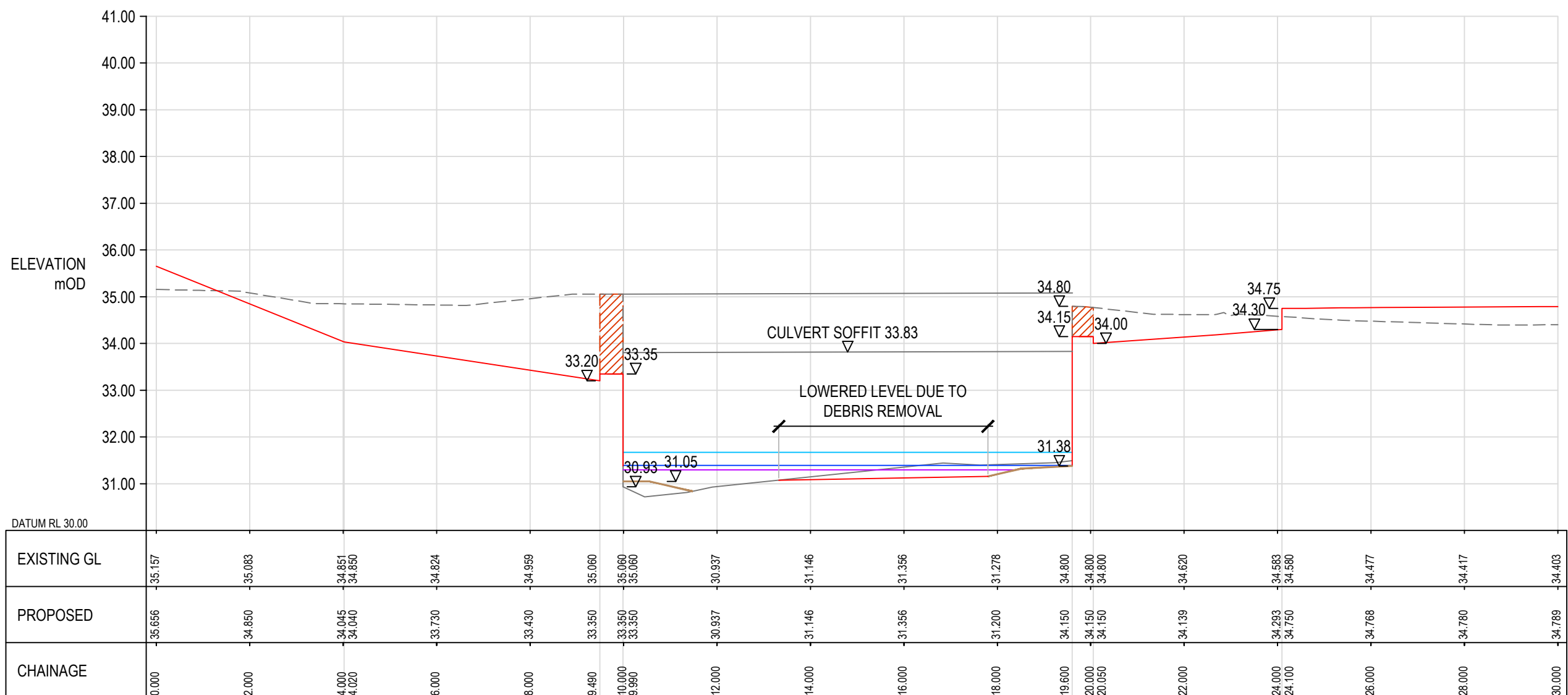
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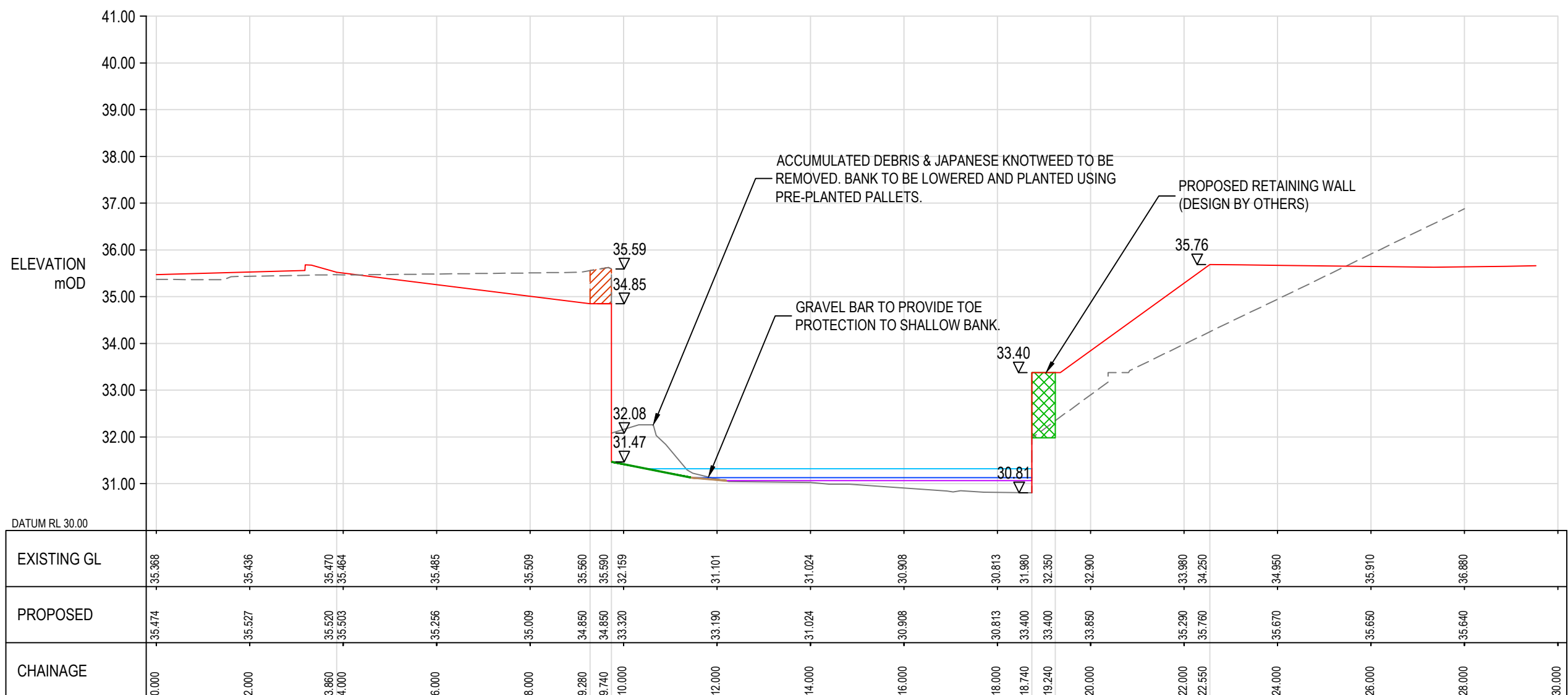
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SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL



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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HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION

1. BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
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. 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 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 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 GROSS 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 FACING DOWNSTREAM.
 9. WALL STABILITY CHECKS SHALL BE DONE PRIOR TO REMOVAL OF MATERIAL IN FRONT OF WALLS.
 10. JAPANESE KNOTWEED 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
- 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	Chd

STAGE 4

Status of drawing

**BUROHAPPOLD
ENGINEERING**

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

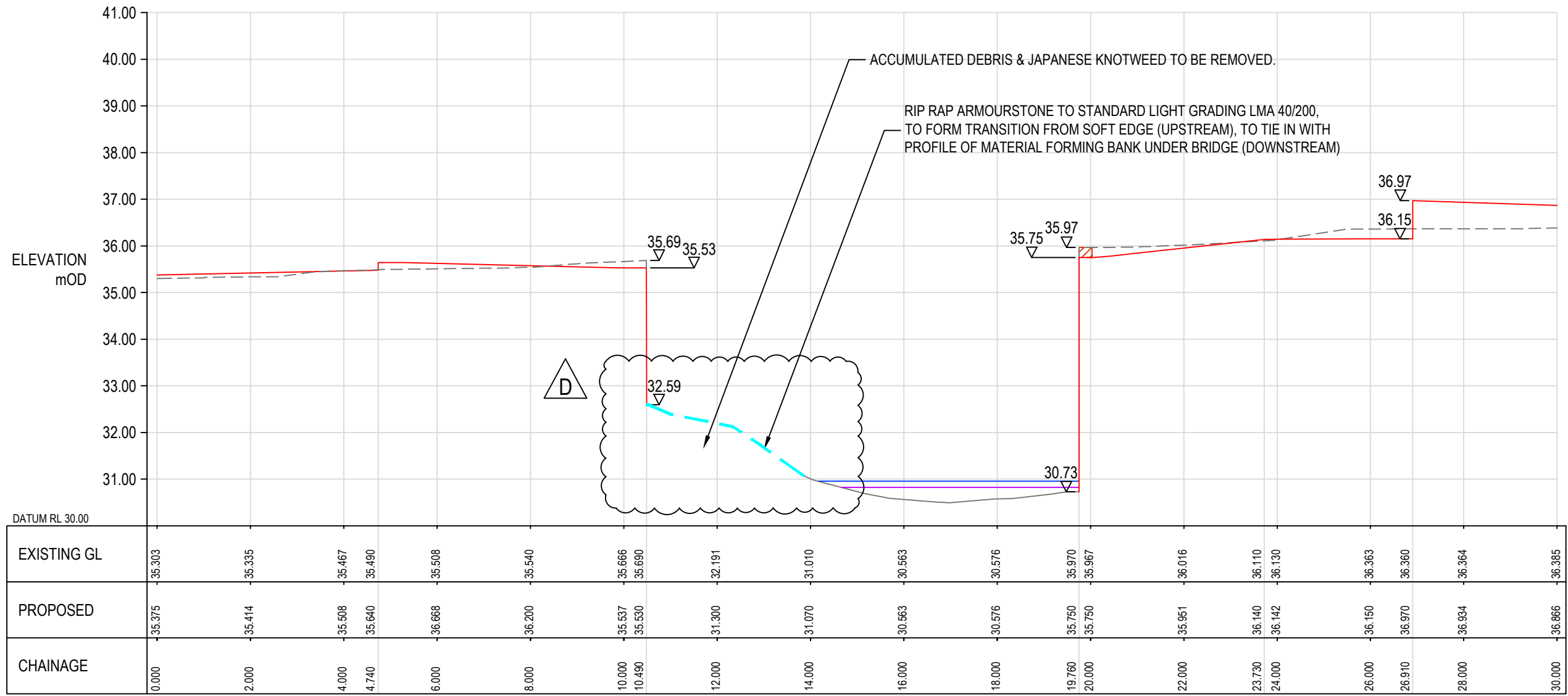
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
Email: 0046688@burohappold.com
Web: www.burohappold.com

Architect **SEW**
Project **MAYFIELD DEVELOPMENT PARTNERSHIP**
Dwg Title **PROPOSED SECTIONS
SHEET 3**

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

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

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



SECTION 19 CHAINAGE 365
SCALE 1:100 HORIZONTAL
SCALE 1:100 VERTICAL

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9. WALL STABILITY CHECKS SHALL BE DONE PRIOR TO REMOVAL OF MATERIAL IN FRONT OF WALLS.
10. JAPANESE KNOTWEED 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 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	Chd
-----	-------------	------	----	-----

STAGE 4

Status of drawing

BUROHAPPOLD
ENGINEERING

2 Brewery Place
Brewery Wharf
Leeds LS10 1NE
UK

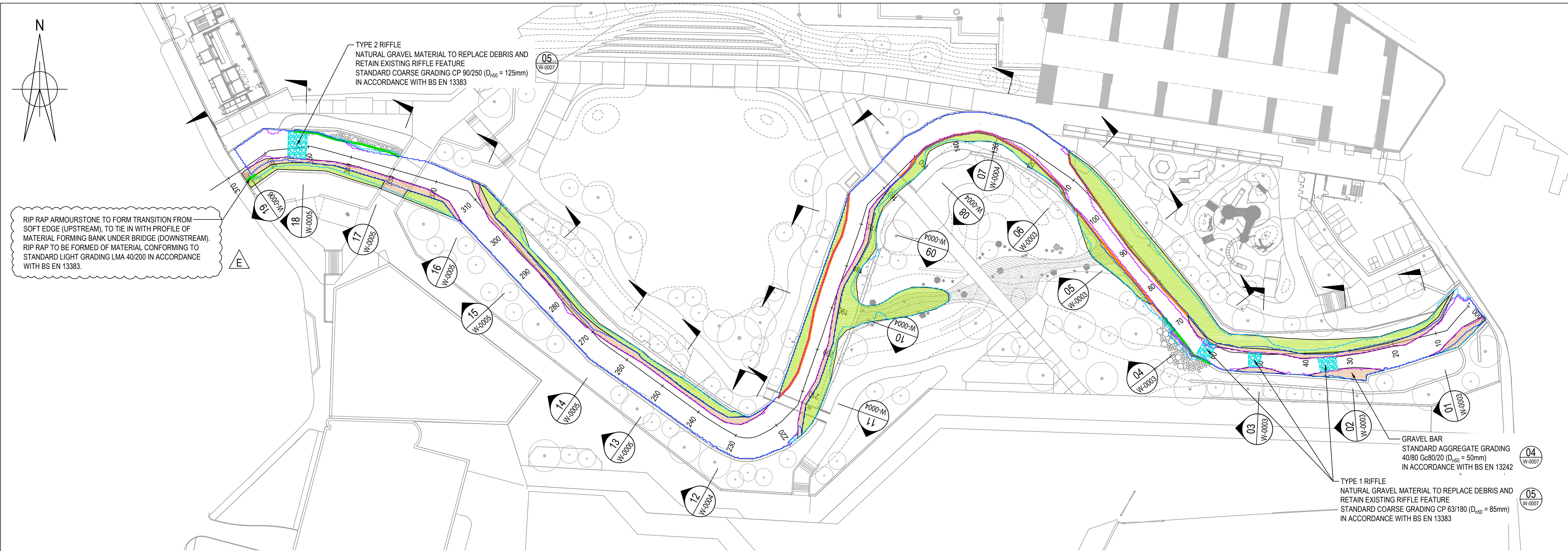
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
Email: 0046688@burohappold.com
Web: www.burohappold.com

Architect SEW
Project MAYFIELD DEVELOPMENT PARTNERSHIP
Dwg Title PROPOSED SECTIONS
SHEET 4

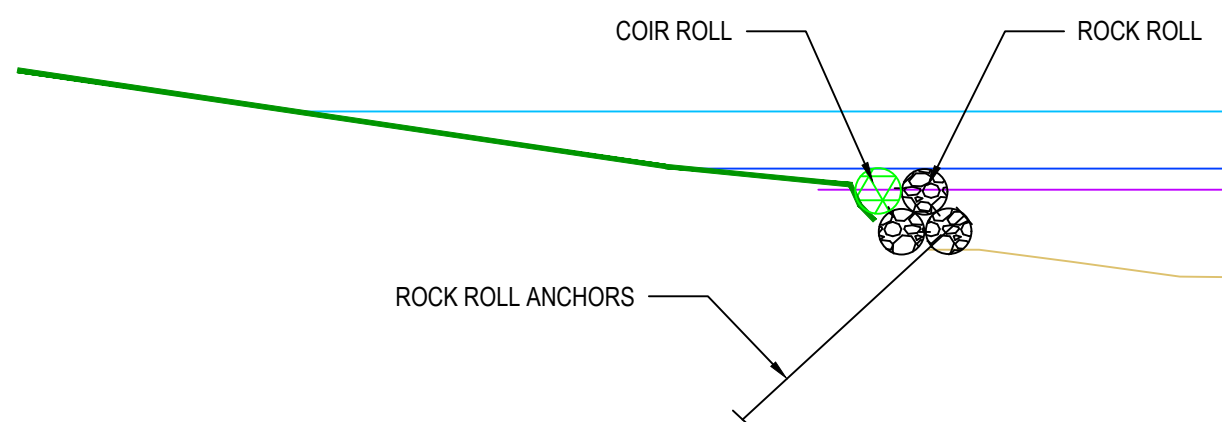
Scales@A1 1:50
Drawn by JZ
Checked by RG

Job No. 0046688
Date APRIL 2021
Rev D

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



TYPICAL EDGE DETAILS



01 'SOFT' EDGE
SCALE 1:50

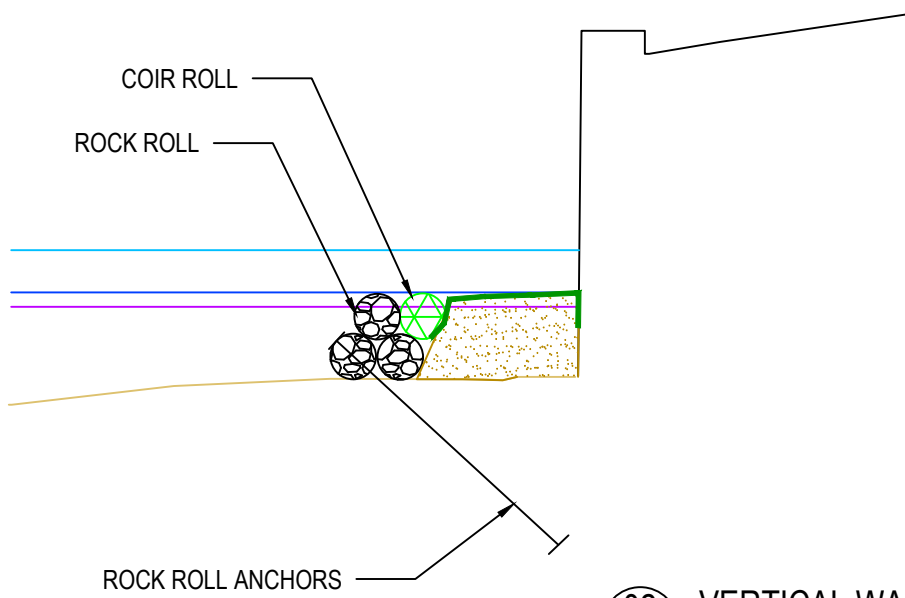
COIR ROLLS TO BE FIXED IN PLACE ON A ROCK ROLL PYRAMID OF THREE ROCK ROLLS (APPROX. 250 - 300MM DIAMETER).

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.



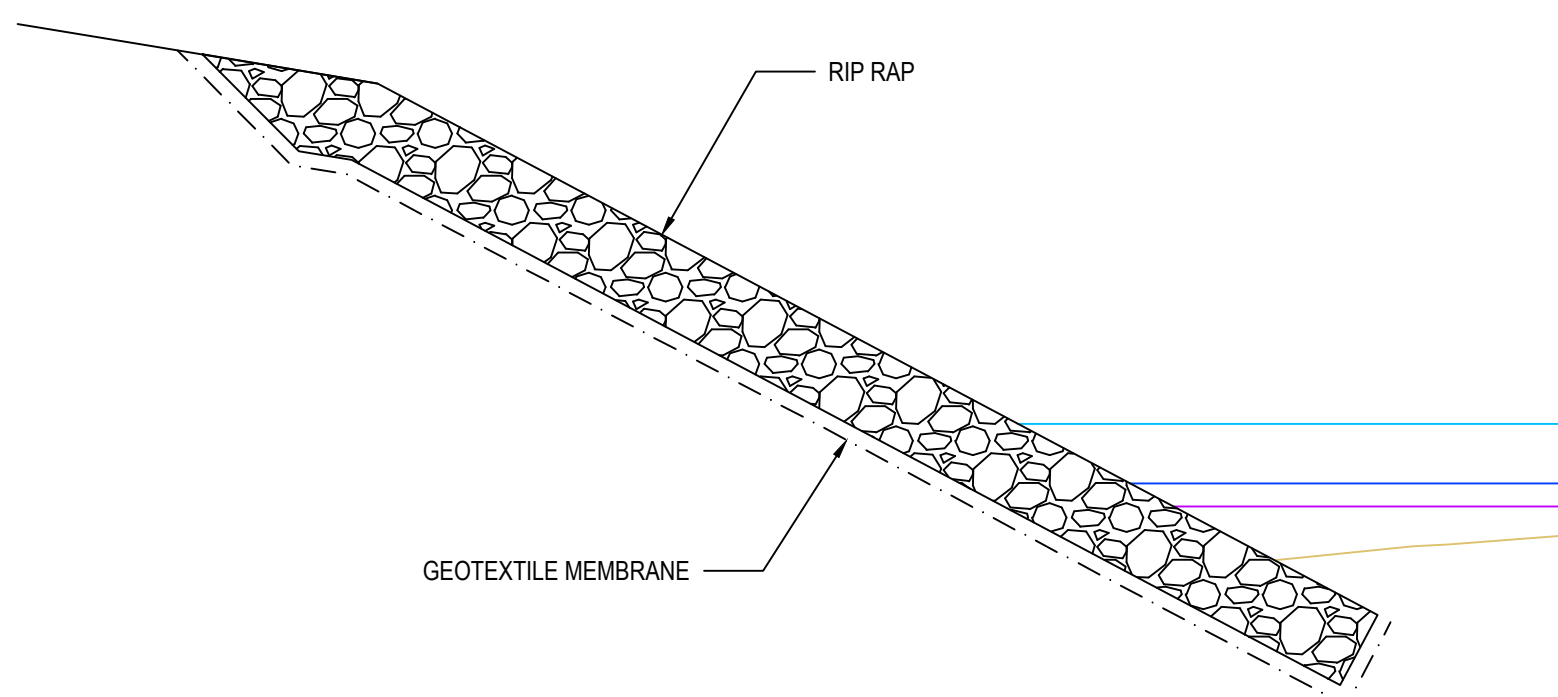
02 VERTICAL WALL
SCALE 1:50

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.

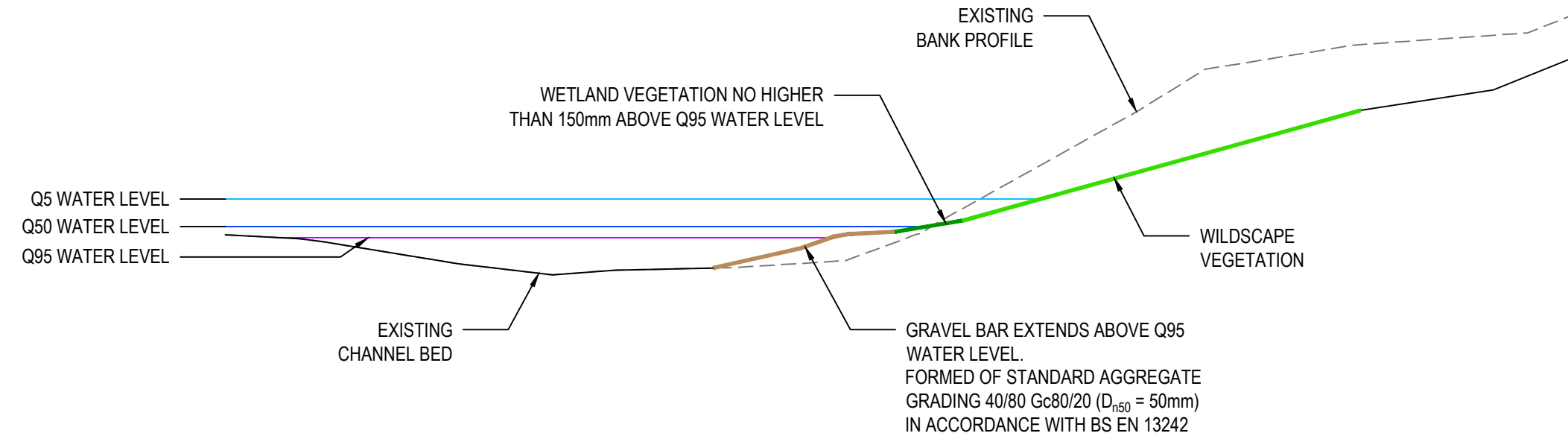


03 RIP RAP REVETMENT
SCALE 1:50

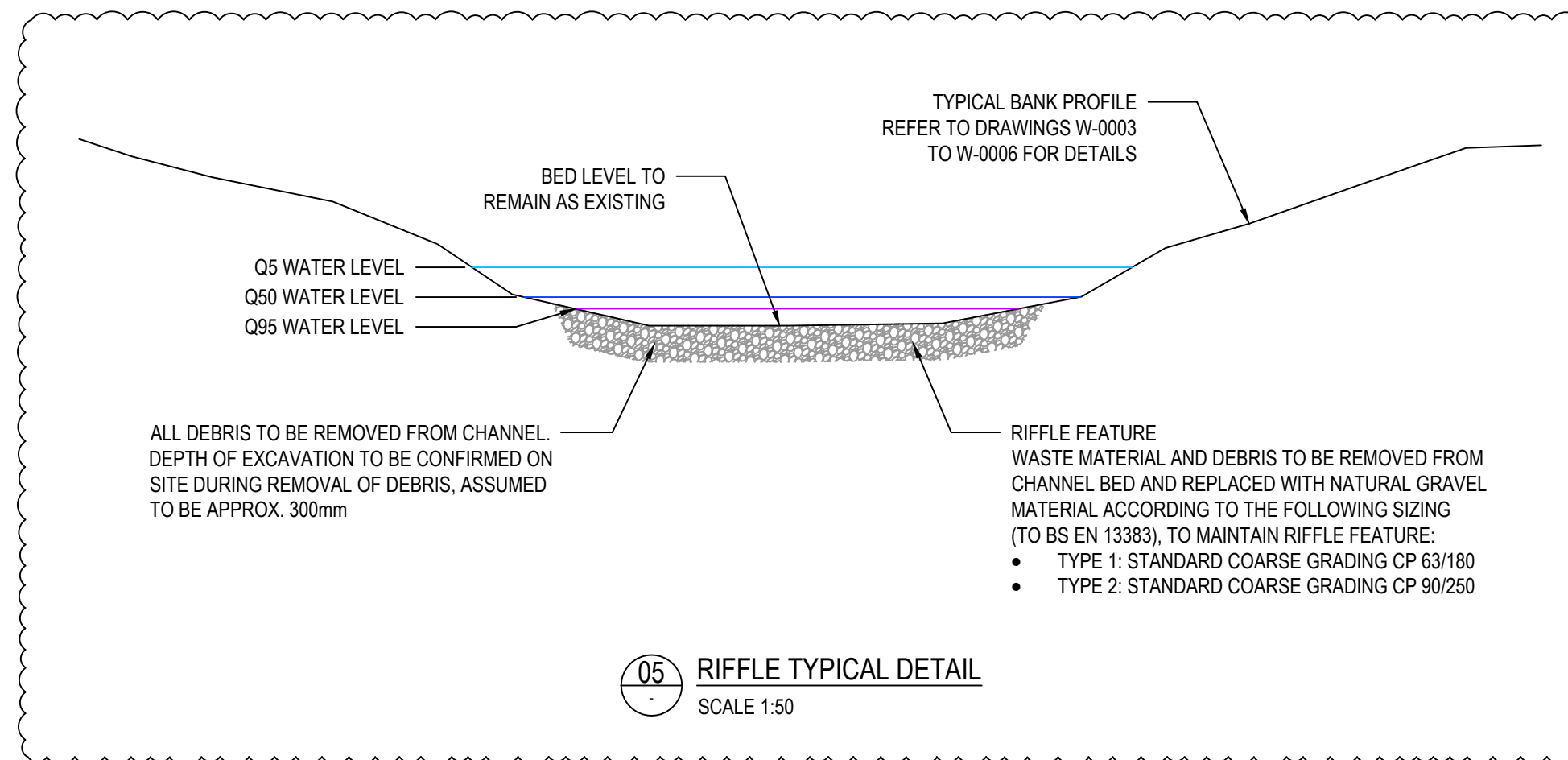
RIP RAP REVETMENT TO PROVIDE TOE AND BANK PROTECTION BETWEEN CHAINAGE 60-72M AND 330-353M, AND TIE IN WITH EXISTING BANK AT DOWNSTREAM EXTENT (CHAINAGE 366M)

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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HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING CONSTRUCTION:

- BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
- UNCERTAIN STABILITY OF EXISTING RIVER WALLS
- 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.
- 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:

- 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
- FOR EXISTING SITE CONDITIONS REFER TO DRAWING NO W-0001.
 - FOR PROPOSED GENERAL ARRANGEMENT INFORMATION AND TYPICAL CROSS SECTION LOCATIONS REFER TO DRAWING NO W-0002.
 - FOR PROPOSED CROSS SECTIONS REFER TO DRAWINGS NO W-0003, W-0004, W-0005 & W-0006
 - FOR LONG SECTION REFER TO DRAWING NO. W-0008
 - A SUITABLY QUALIFIED GEOMORPHOLOGIST SHALL SUPERVISE THE PLACEMENT AND SHAPING OF GRAVEL BARS AND RIFFLES

- 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

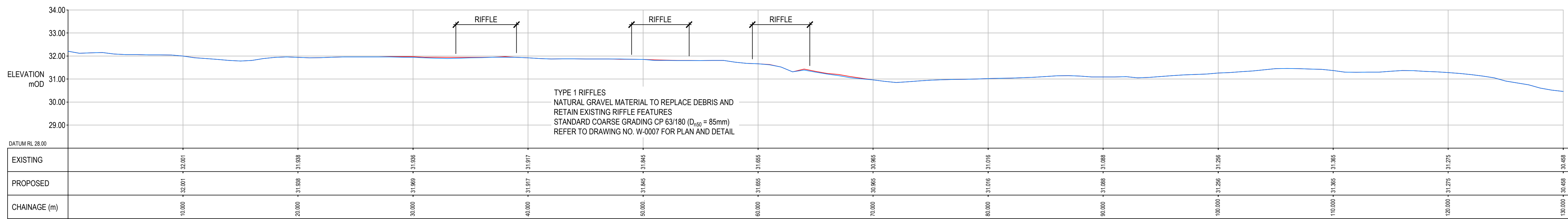
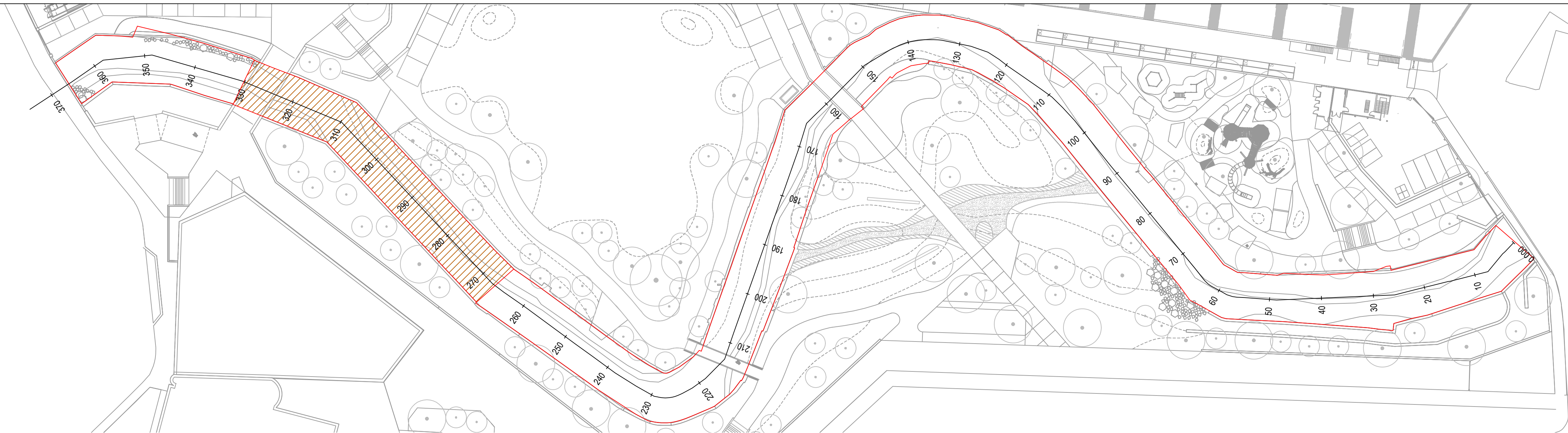
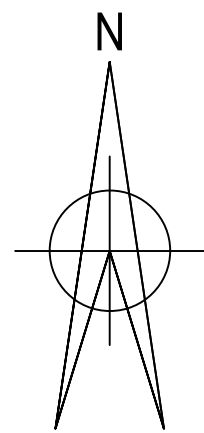
Tel: +44 (0)113 204 2200
Fax: +44 (0)870 787 4144
Email: 0046688@burohappold.com
Web: www.burohappold.com

Architect SEW
Project MAYFIELD DEVELOPMENT PARTNERSHIP
Dwg Title PROPOSED EDGE TREATMENT

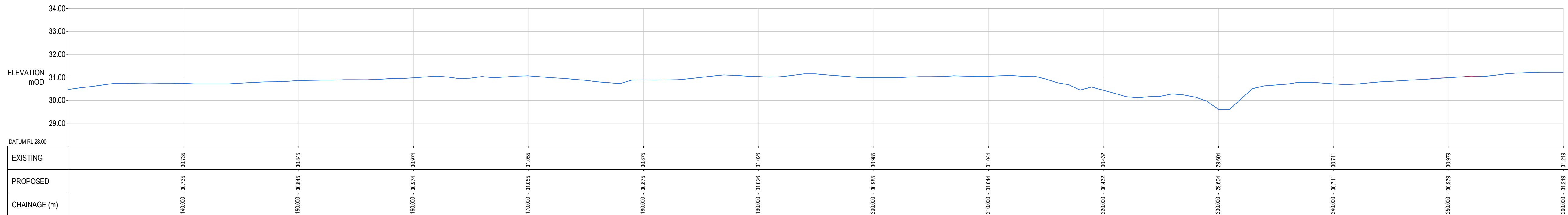
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Drawn by NG
Checked by RG

Job No. 0046688
Date APRIL 2021
Rev E

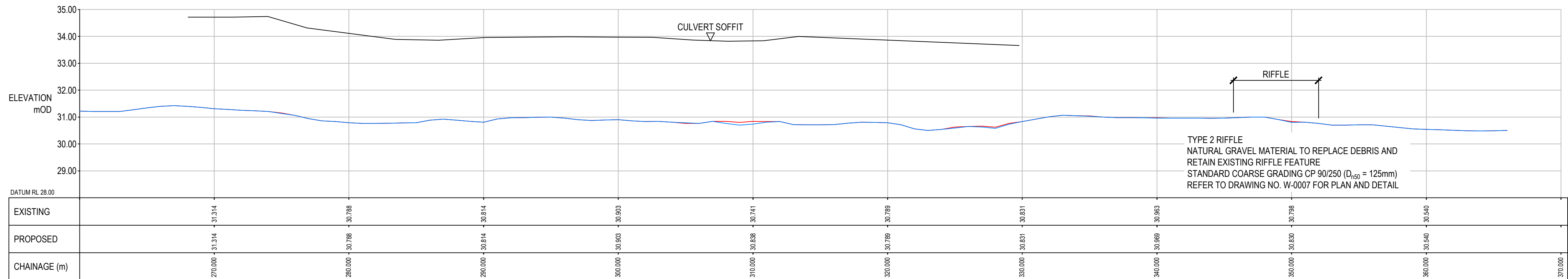
Drawing No. 0046688-BHE-XX-XX-DR-W-0007



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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HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

1. BELOW GROUND OBSTRUCTIONS INCLUDING RIVER WALL FOUNDATIONS
2. UNCERTAIN STABILITY OF EXISTING RIVER WALLS
3. WORKING ADJACENT TO WATER AND POTENTIALLY AT HEIGHT.
4. 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.
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 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 DILUTED SEWAGE WASTE.

DECOMMISSIONING/DEMOLITION.

REFER TO CONSTRUCTION ABOVE

- Notes
1. FOR EXISTING SITE CONDITIONS REFER TO DRAWING NO.W-0001.
 2. FOR PROPOSED GENERAL ARRANGEMENT INFORMATION AND TYPICAL CROSS SECTION LOCATIONS REFER TO DRAWING NO.W-0002.
 3. FOR PROPOSED CROSS SECTIONS REFER TO DRAWINGS NO.W-0003, W-0004, W-0005 & W-0006.
 4. FOR PROPOSED EDGE TREATMENT REFER TO DRAWING NO. W-0007.
 5. A SUITABLY QUALIFIED GEOMORPHOLOGIST SHALL SUPERVISE THE PLACEMENT AND SHAPING OF GRAVEL BARS AND RIFFLES.

LEGEND

EXISTING CHANNEL BED LEVEL (LOWEST POINT)

PROPOSED CHANNEL BED LEVEL (LOWEST POINT)

EXISTING CULVERT LOCATION

C	UPDATE FOLLOWING EA REVIEW	19.04.21	NG	JF
B	STAGE 4	29.01.21	NG	JF
A	STAGE 3 FINAL	18.12.20	NG	RG
Rev	Description	Date	Dm	Ch'd

STAGE 4

Status of drawing

**BUROHAPPOLD
ENGINEERING**

2 Brewery Place
Brewery Wharf
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UK

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

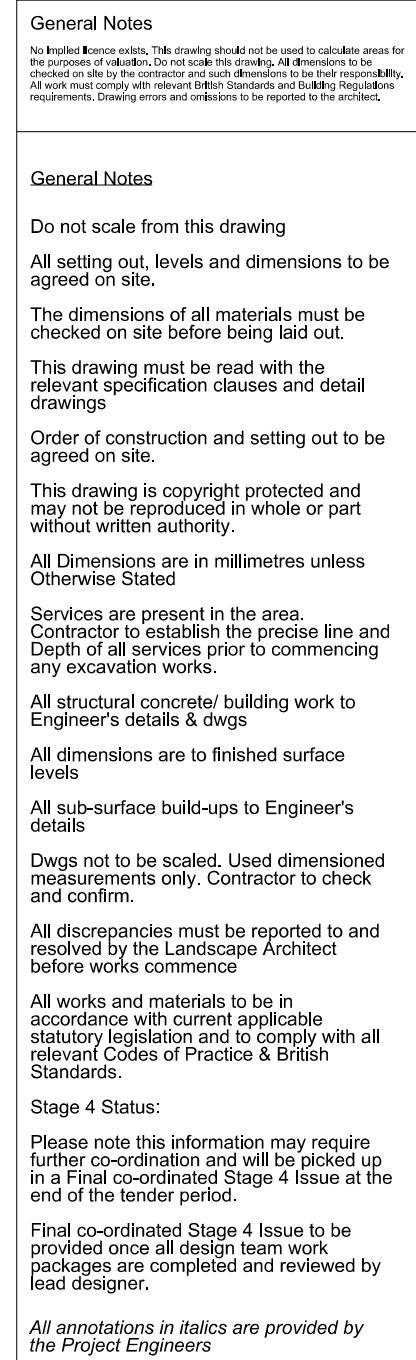
Architect **SEW**
Project **MAYFIELD DEVELOPMENT PARTNERSHIP**
Dwg Title **CHANNEL BED LONG SECTION**

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 C3 – Studio Egret West (SEW) Drawings

KeyplanScale Bar

COM Studio

3 Brewhouse Yard
London
EC1V 4JQ
hello@egretwest.com
egretwest.com

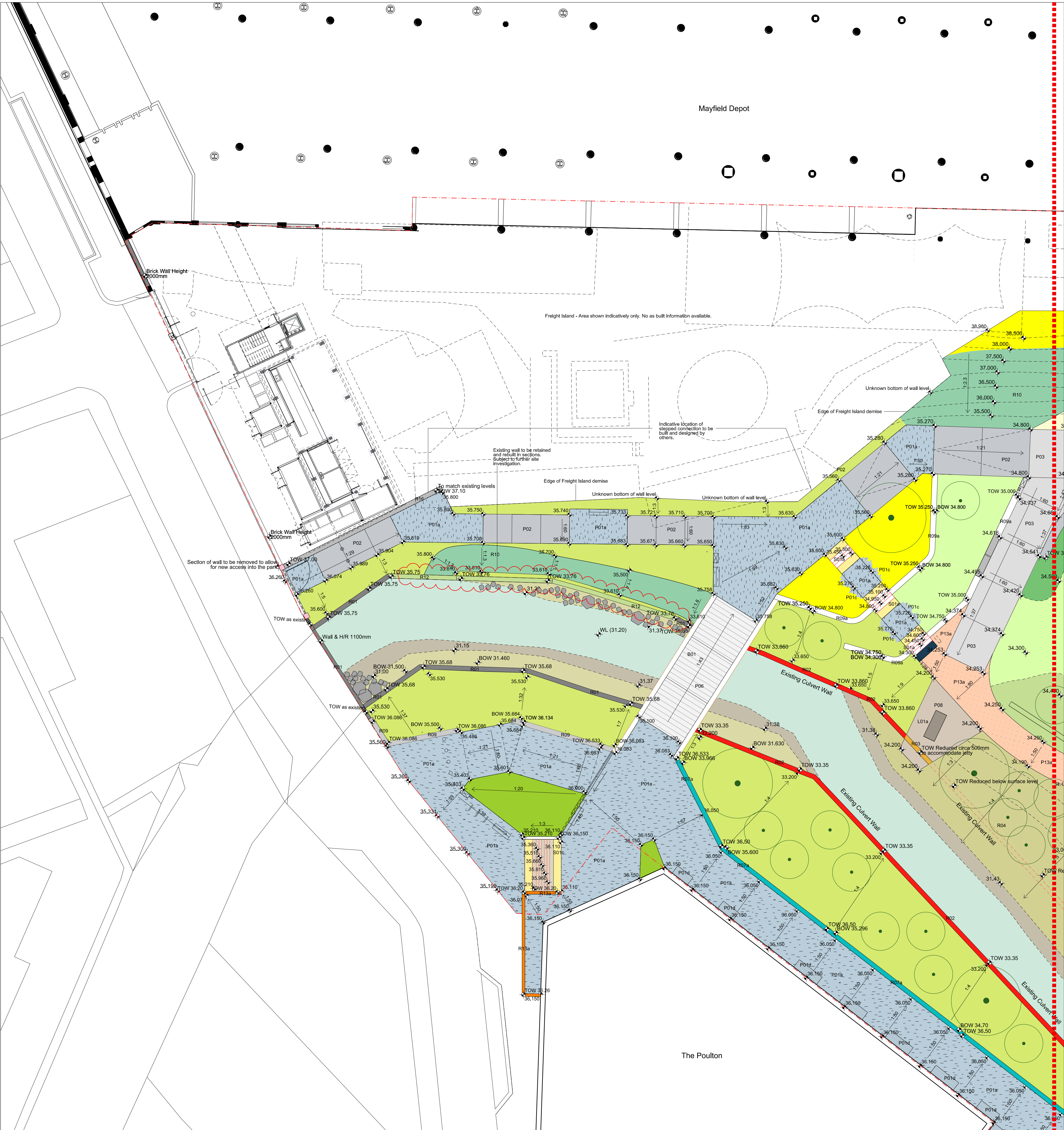
Mayfield Partnership

Project	
---------	--

Drawing Title
Site Overall GA

Scale at #0	Date
1.500	04.00.00

MA	SEW
Drawing Number	Revision



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 Q24/10A

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

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

No implied licence exists. This drawing should not be used to calculate areas for the purposes of valuation. Do not scale this drawing. All dimensions to be checked on site by the contractor and such dimensions to be their responsibility. All work must comply with relevant British Standards and Building Regulations requirements. Drawing errors and omissions to be reported to the architect.

Notes

General Notes

- Do not scale from this drawing
- All setting out, levels and dimensions to be agreed on site.
- The dimensions of all materials must be checked on site before being laid out.
- This drawing must be read with the relevant specification clauses and detail drawings
- Order of construction and setting out to be agreed on site.
- This drawing is copyright protected and may not be reproduced in whole or part without written authority.
- All Dimensions are in millimetres unless Otherwise Stated
- Services are present in the area. Contractor to establish the precise line and depth of all services prior to commencing any excavation works.
- All structural concrete/building work to Engineer's details & specs
- All dimensions are to finished surface levels

Stage 4 Status:

- Please note this information may require further co-ordination and will be picked up in a Final co-ordinated Stage 4 issue at the end of the tender period.
- 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

General Notes

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

- Downs not to be scaled. Used dimensioned measurements only. Contractor to check and confirm.
- All discrepancies must be reported to and resolved by the Landscape 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.

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

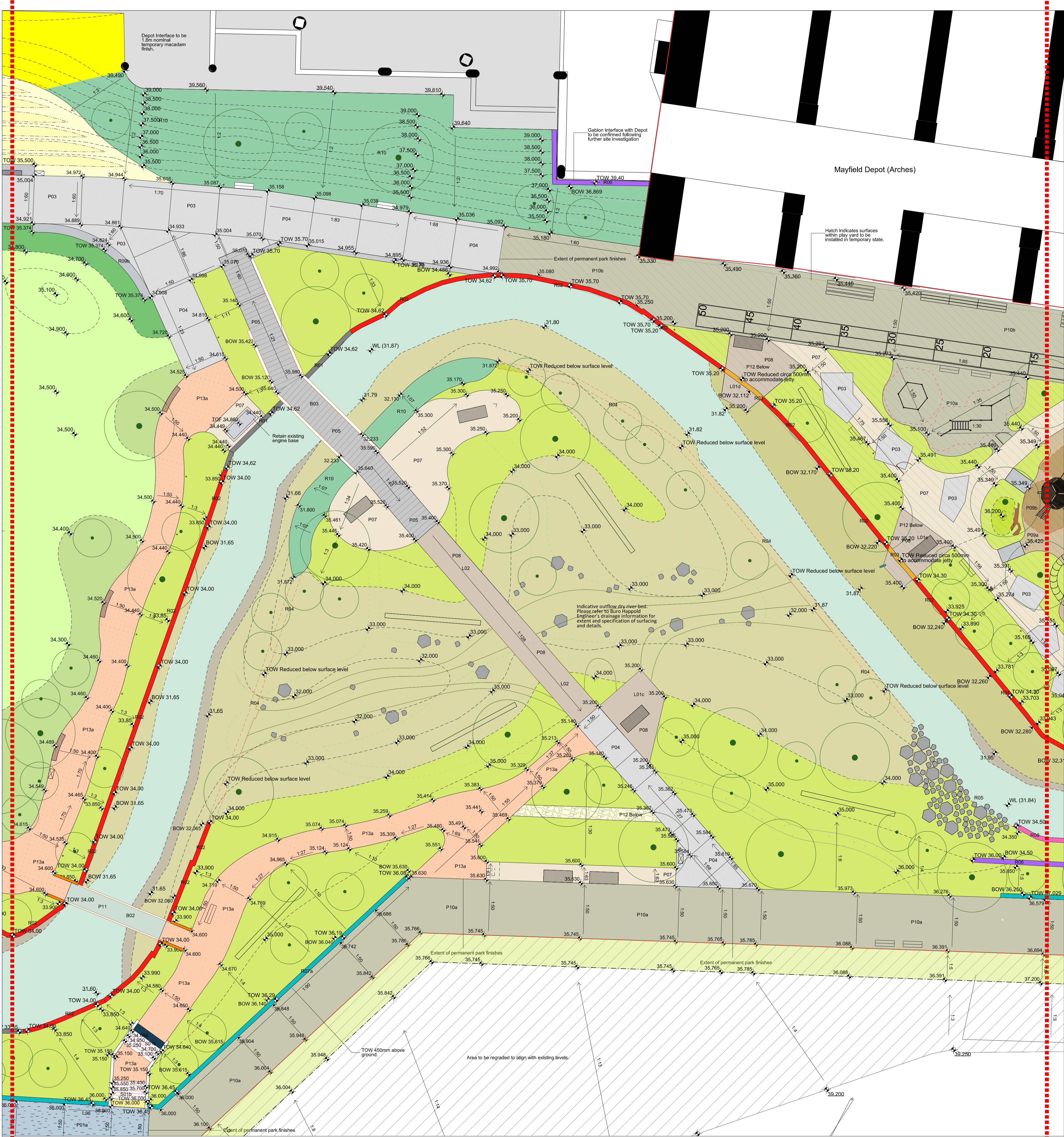
hello@sewest.com
egreastwest.com
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Client
Mayfield Partnership

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-007115

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 L01 refer to SEW-ZZ-00-DR-L-003210

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 SEW-ZZ-00-DR-L-003401 and SEW-ZZ-00-DR-L-003402

For L01 refer to SEW-ZZ-00-DR-L-003410

For L01a refer to SEW-ZZ-00-DR-L-003412

For L01b 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 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 SEW-ZZ-00-DR-L-003405

B03

Bridge 03

Description: Northern Bridge

Please refer to Northern Bridge design intent drawing 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.

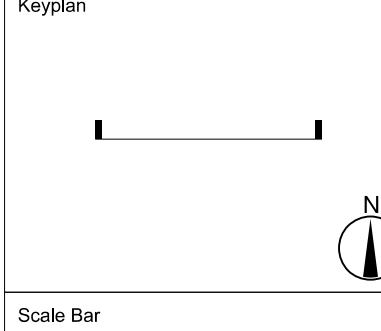
General Notes
No implied fence exists. This drawing should not be used to calculate areas for the purposes of valuation. Do not scale this drawing. All dimensions to be checked on site by the contractor and such dimensions to be their responsibility. All work must comply with relevant British Standards and Building Regulations requirements. Drawing errors and omissions to be reported to the architect.

Notes
General Notes
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-The dimensions of all materials must be checked on site before being laid out.
-This drawing must be read with the relevant specification clauses and detail drawings.
-Order of construction and setting out to be agreed on site.
-This drawing is copyright protected and may not be reproduced in whole or part without written authority.
-All dimensions are in millimetres unless Otherwise Stated.
-Services are present in the area. Contractor to establish the precise line and depth of all services prior to commencing any excavation work.
-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:
-Please note this information may require further co-ordination and will be picked up in a final co-ordinated Stage 4 Issue at the end of the tender period.
-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



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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 footings and jetties design intent 0345-SEW-ZZ-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: Wall to be reduced in height and new coping added

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

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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Notes

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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 dimensions are to finished surface levels

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

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

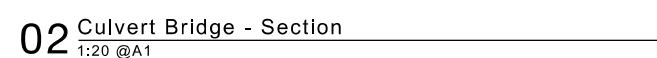
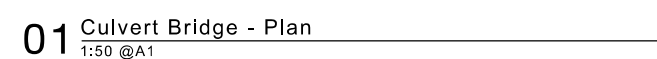
1:200 04.09.20

Drawn by Checked by

MA SEW

Drawing Number Revision

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



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.

FR	SEW	
Drawing Number		Re
0345-SEW-77-77-DR-I-003403		

