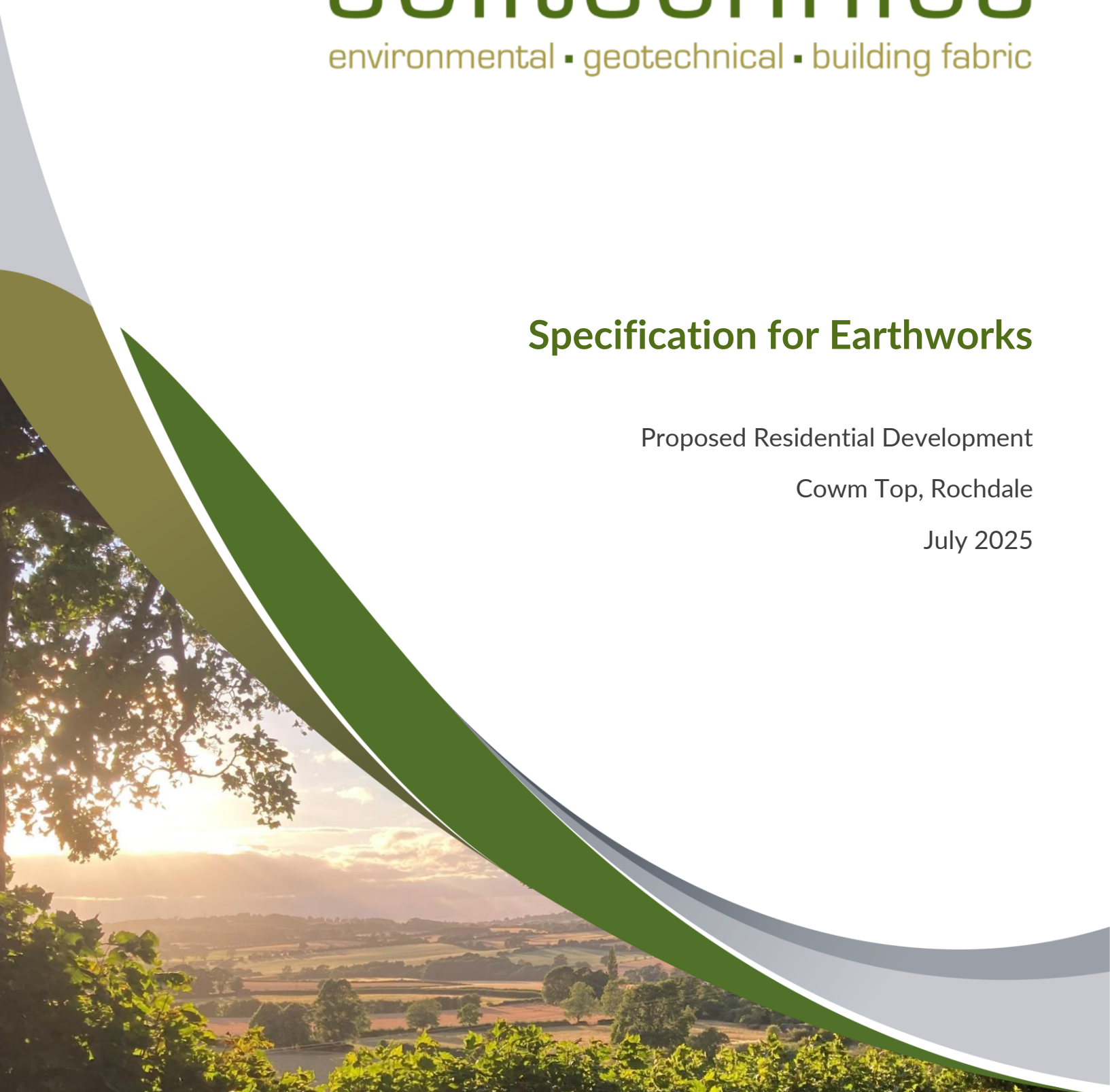




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Specification for Earthworks

Proposed Residential Development

Cowm Top, Rochdale

July 2025



Project Details

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Drawing Register

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Cut & Fill Appraisal	Barratt Homes	September 2024	H8544-BAH-XX-XX-DR-CE-202700-P02
Indicative detail for dealing with soft ground at base of fill areas	Soiltechnics Ltd	March 2025	STV5936-D04-A
Proposed Attenuation basin - SUDS Details Western Basin's	Barratt Homes	June 2024	H8544-BAH-XX-XX-DR-DR-300120-P02
Proposed Attenuation basin - SUDS Details Eastern Basin's	Barratt Homes	June 2024	H8544-BAH-XX-XX-DR-DR-300121-P02
Preliminary SUDS Details Swale Detail	Barratt Homes	June 2024	H8544-BAH-XX-XX-DR-DR-300122-P01

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1 Introduction

1.1 Scheme Outline

- 1.1.1 The overall scheme comprises the development of a parcel of land known as Cowm Top, Rochdale, with the construction of 445 No. low rise residential dwellings. As part of the scheme, earthworks reprofiling will be undertaken to facilitate development due to the hummocky terrain. Current development layouts and the cut and fill appraisal are presented in Appendix A.
- 1.1.2 It is understood that the development is controlled under the Rochdale Borough Council planning regime, under application reference 22/01190/FUL.
- 1.1.3 The specification relates to the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

1.2 Brief

- 1.2.1 This specification has been prepared for the Client: Barratt Homes Manchester.
- 1.2.2 The overall brief of works is to prepare an Specification for Earthworks for the excavation of in-situ soils on-site and the re-use of site derived excavated material, or imported earthworks material, on site.
- 1.2.3 The objectives of this report are outlined below:
- i) Summarise investigation works and earthworks testing undertaken to date.
 - ii) Provide a specification for placement of site derived and imported material.
 - iii) Outline a testing regime and requirements for record keeping.

1.3 Limitations

- 1.3.1 Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

1.4 Existing Documents

1.4.1 Reference has been made to the following documents related to the site during the preparation of this specification:

Author	Document Title	Date & Document Reference	Document Context
Smith Grant LLP	Land at Trows Farm, Castleton: Ground Investigation	September 2017 R2392-R01-v2	A report that contains factual information of intrusive investigation work and results of previous site investigations. This report contains some discussion of the implications of the findings with respect to the existing physical constraints to development of the site .
Smith Grant LLP	Cowm Top, Castleton: Preliminary Phase I & II Contamination and Geotechnical Assessment	February 2021 R2228-R02-v3	A preliminary Phase I and II Contamination and Geotechnical Assessment to identify major potential constraints to redevelopment as a result of land contamination or ground instability.
RSK	Trows Farm: Investigation and monitoring of site water seepages	May 2020 11440 L01	A letter report that details fieldwork undertaken by RSK to investigate water feature identified on site and includes relevant information gathered during the works.
Soiltechnics	Preliminary Slope Stability Assessment	March 20023 STV5936-R01-Rev_A	A preliminary assessment of appropriate slope angles in the temporary and permanent works.
Soiltechnics	Ground Investigation Report	December 2024 STV5936-R04-Rev_B	A desk study followed by interpretation of intrusive investigation works to supplement the existing GI data
Soiltechnics	Remediation Strategy	March 2025 STV5936-R05-Rev_B	The remediation strategy for the overall development.
Soiltechnics	Indicative detail for dealing with soft ground at base of fill areas	March 2025 STV5936-D04-A	This drawing provides the indicative construction detail for areas of ephemeral watercourses and springs that will be filled over.
Barratt Homes	Cut & Fill Appraisal	September 2024 H8544-BAH-XX-XX-DR-CE-202700-P02	Cut & fill summary across the scheme and also details the phasing.
Barratt Homes	SW Attenuation basin SUDS Details	February 2025 H8544-BAH-XX-XX-DR-DR-300120-P04	This drawing provides the location and indicative construction detail of the proposed attenuation basins to be constructed in the south western portion of the site.

Table 1-A: Summary of existing documents

2 Summary of Anticipated Ground and Groundwater Conditions

2.1 Proposed Development

- 2.1.1 The proposed development of a parcel of land known as Cowm Top, Rochdale, is anticipated to comprise the construction of 445 No. low rise residential dwellings. As part of the scheme, earthworks reprofiling will be undertaken to facilitate development due to the hummocky terrain.
- 2.1.2 The preliminary cut and fill drawing presented in Appendix A indicates that circa 276,000m³ of soil will be cut from site, and 223,000m³ will be required as fill; generating an excess of approximately 53,000m³. Additionally, it is anticipated that approximately 67,000m³ of Topsoil will be generated on site; although it is understood that some of this material will be exported from site during the development.
- 2.1.3 This surplus spoil will be further increased by arisings generated from foundation/service/ highway excavations.

2.2 Foundation Strategy

- 2.2.1 Information received from the Client states that shallow spread foundations are to adopted in areas of cut, and where foundations can feasibly be taken through any engineered fill into natural ground. In areas of deeper fill, piled foundations founded within the natural underlying material are to be utilised.

2.3 Ground Conditions

- 2.3.1 It is anticipated that soils from proposed 'cut' locations will comprise a layer of Topsoil which overlies a predominantly interdigitated fine and coarse grained material within the naturally deposited Hummocky Glacial Deposits. A ground model is provided below in Table 2-A below taken from the GIR produced by Soiltechnics Ltd in December 2024 (STV5936-R04-Rev_B).

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Topsoil	Dark brown sandy gravelly clay or clayey gravelly sand.	G.L	G.L.	0.20 to 0.40
Made Ground	Firm sandy gravelly clay with brick, concrete, coal and occasional timber/fragments (SE corner of site).	0.20 to 0.40	0.30	0.45 to 2.50
	Soft grey gravelly clay with occasional brick (TP19 & TP20 only, north of Trows Farm).			1.05 to 1.40
	Black silty sandy gravel of clinker, brick and ceramic (TP01, TP03, NE corner of site).			0.30 to 1.10
Alluvium (TP17, TP19 & TP20 only)	Soft dark grey sandy silt.	0.30	-	0.55 to 0.60
Hummocky Glacial Deposits	Interbedded gravelly sands, silts and clays.	0.20 to 1.60	0.50	>15.15

Table 2-A: Ground model (STV5936-R04-Rev_B)

- 2.3.2 The composition of the Topsoil encountered was variable across site, consisting of either organic clayey gravelly sand or organic sandy gravelly clay. Rare anthropogenic inclusions were noted including brick and ceramic.
- 2.3.3 Made Ground is also anticipated in the south eastern portion of the site, comprising sandy gravelly clay with brick, concrete, coal with timber and ceramic fragments to silty sandy cobbly gravel of clinker, ceramic, glass, metal and brick fragments.
- 2.3.4 Alluvium is present at the base of the valleys extending through the southern portion of the site, with the presence of several springs noted creating existing drainage courses. In these locations the proposed fill heights are considerable. The Alluvium typically comprised soft, dark grey sandy gravelly silt.
- 2.3.5 The Hummocky Glacial Deposits encountered had variable composition sitewide, consisting of interbedded layers of fine-grained clay materials and coarse grained sand materials. Boreholes in the central and southern portions of the site generally recorded dominantly coarse-grained materials with some lenses of fine-grained clays, whereas boreholes in the northern and eastern portion of the site recorded generally fine-grained materials with lenses of coarse-grained sand, generally at greater depth.

2.4 Groundwater

- 2.4.1 The presence of springs across the site has been noted across the site as per Figure 2-A below, extracted from the Remediation Strategy report produced by Soiltechnics Ltd in March 2025 (STV5936-R05-Rev_B).



Figure 2-A: Location of springs shown as S1 to S4 (STV5936-R05-Rev_B)

- 2.4.2 Shallow groundwater was recorded between depths of 0.38m bgl and 0.90m bgl in ground gas monitoring wells in the northwest corner of the site. It is anticipated that these groundwater levels relate to perched groundwater within more granular superficial deposits, and are not expected to be representative of the groundwater table.

2.5 Contamination

- 2.5.1 Based on testing to date, existing Topsoil resources are considered suitable for reuse in a residential setting without any remedial action from a human health perspective.
- 2.5.2 All significant GAC exceedances in Made Ground arose from two hotspots of Made Ground, referred to as SL01 and SL02 respectively, where Made Ground was visible from the surface as shown in Figure 2-B. Additionally, asbestos was present in these soils also. Made Ground in this area did not appear to be laterally extensive and was only recorded as 0.30m deep. As such it is recommended that the Made Ground in this area is stripped and either reused beneath buildings/hardstanding/fill (effectively severing the pathway from source to site receptors), or disposed of off-site to landfill under the appropriate duty of care.

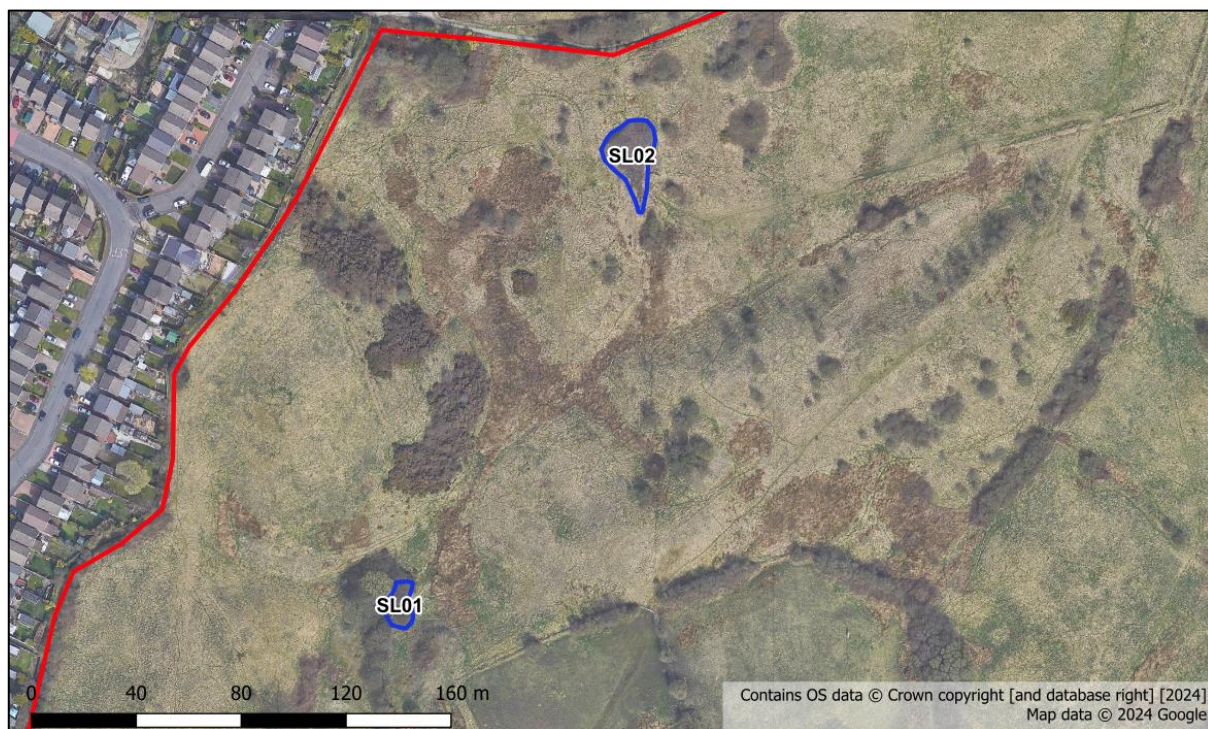


Figure 2-B: Observed extents of SL01 and SL02 (STV5936-R05-Rev_B)

- 2.5.3 Construction operatives will need to take special precautions in areas where asbestos is present, including the adoption of RPE (P3 half masks), the use of enhanced personnel decontamination facilities, in combination with localised mechanical dust suppression.
- 2.5.4 Monitoring of the spring locations (where construction permits), and the adjacent ponds to the south, should be undertaken before, during and after construction of the basin, to ensure development it not causing detrimental impact to surface waters. For further details, refer to the Remediation Strategy produced by Soiltechnics Ltd in March 2025, report reference STV5936-R05-Rev_B.

2.6 Anticipated material types

- 2.6.1 The proposed development involves significant reprofiling of the site due to the hummocky terrain present on site. Additionally, a series of attenuation basins are proposed along the southern boundary of the site.
- 2.6.2 Laboratory testing undertaken in previous reports has shown that the material to be excavated during the reprofiling works generally comprises Class 1B material where granular, and a Class 2A material where cohesive.
- 2.6.3 Due to the anticipated end use of the proposed development, the following classes of material are anticipated to be required across the site:

Material source location	Material End Use	Class
Bulk earthworks across the site	General fill used to reprofile the site.	1B – Uniformly Graded Granular Material 2A – Wet cohesive material
Alluvium and other soft ground at the base of valleys and within ephemeral drainage courses.	To be used as fill for landscape areas.	4 – Various
Topsoil derived from the proposed significant earthworks across the site, or to be imported.	To be used as topsoil across the site.	5A – Topsoil, or turf, existing on site 5B – Imported topsoil
Imported clay fill.	To be used as a minimum 900mm thick select layer within the attenuation basins.	7C – Selected wet cohesive fill

Table 2-B: Summary of anticipated materials on site

3 Specification for Earthworks

3.1 General Items

- 3.1.1 It is assumed that the Earthworks Contractor is fully conversant with SHW Volume 1 and 2 of the Manual of Contract Documents for Highway Works published by HMSO as amended October 2022 and to possess their own copy.
- 3.1.2 All works should follow the guidelines and recommendations contained within BS6031: 2009 Code of Practice for Earthworks.
- 3.1.3 Where a clause in the Specification relates to work goods or materials which are not required for the Works it shall be deemed not to apply.
- 3.1.4 Any Appendix referred to in the Specification which is not used shall be deemed not to apply for the currently proposed works.
- 3.1.5 The Earthworks Contractor is to keep a copy of all documents relating to this project for at least twelve years after completion.

3.2 Stockpiling of Material

- 3.2.1 Where earthworks materials are to be stockpiled, they shall be stockpiled according to their class. No mixing of different classes of materials is allowed unless agreed in advance by the Project Manager.
- 3.2.2 All stockpiles shall be shaped to minimise water ponding and ensure water runs off efficiently. Stockpile surface shall be sealed by smoothing the top layer using a bucket excavator. Channels should be cut into the material to divert water away from the stockpile.
- 3.2.3 Stockpiles shall be laid on free-draining granular material overlaid with a filter fabric geotextile.

3.3 Material Acceptability

- 3.3.1 Engineering fill is anticipated to comprise material excavated across the site as part of the extensive reprofiling activities to level the site, shown in Appendix A. It is anticipated that additional material will be won through the excavation of foundation/service/highway excavations.
- 3.3.2 Acceptable material shall be material excavated from within the site, or imported onto the site, which meets the requirements of Table 6/1 of this specification.
- 3.3.3 The GIR produced by Soiltechnics Ltd in December 2024 (STV5936-R04-Rev_B) has been used to establish the materials most likely to be incorporated into the earthworks and their associated acceptability requirements detailed in Table 6/1.
- 3.3.4 The preliminary classification of earthworks materials to be won from the site into their various classes shall be carried out by the Earthworks Contractor prior to, and at the point of excavation, although remedial works requirements will also need to be considered (e.g. segregation of potentially contaminated soils).

- 3.3.5 It is anticipated that some material will need to be exported off site and reference should be made to the site specific Materials Management Plan (MMP) for guidance on how to do this. It is understood that the MMP is currently being produced at the time of writing this specification and should be made available prior to the commencement of works on site. The MMP should consider the proposed earthworks, treatment methods, disposal locations, re-use of materials etc. The completed document shall then be submitted to the Qualified Person employed by the Employer for sign off and such that the Qualified Person can submit the Declaration to the Environment Agency.
- 3.3.6 It is anticipated that some Selected Cohesive Fill will need to be imported to site for the earthworks, specifically as puddle clay lining to the attenuation ponds. This select cohesive fill will need to meet the requirements of a Class 7C material as defined in Table 6/1.
- 3.3.7 Due to the soft and compressible nature of the Alluvium within the ephemeral drainage courses, the material will need to be excavated and replaced with suitably compacted engineered fill prior to the continuation of the earthworks. The requirements for backfilling the excavated Alluvium within the existing drainage courses is shown in drawing STV5936-D04-A provided in Appendix A, which includes the installation of a perforated pipe to formalise the drainage course.
- 3.3.8 Engineering fill to be used within the earthworks shall comply with the acceptability criteria set out in Table 6/1 in this document as well as Table 6/2 – Grading Requirements (SHW).
- 3.3.9 In addition to any grading requirements the maximum particle size of any fill material shall be no more than two-thirds of the compacted layer thickness.
- 3.3.10 The earthworks acceptability criteria (Table 6/1) is provided below:

Class	Material Description	End use	Property	Defined and tested in accordance with	Acceptable limits within		Compaction Requirements in Clause 612
					lower	upper	
1B	Uniformly Graded Granular Material	General Fill	i) Grading	BS 1377: part 2	Tab 6/2	Tab 6/2	95% of maximum dry density of BS1377:Part 4 (2.5kg rammer method) and CBR≥5%
			ii) Uniformity Coefficient	See Tab 6/1 Note 5 of SHW	-	10	
			iii) Maximum density (<i>soils placed underneath floor slabs, foundations or roads</i>)	BS 1377: part 2 (2.5kg rammer)	95%MDD	-	
2A	Wet cohesive material	General Fill	i) Grading	BS1377: part 2	Tab 6/2	Tab 6/2	95% of maximum dry density of BS1377:Part 4 (2.5kg rammer method
			ii) Plastic Limit (PL)	BS1377: part 2	-	-	
			iii) Moisture content	BS1377: part 2	PL - 4%	PL + 2%	
			iv) MCV	Clause 632	8	14	
			v) Undrained shear strength	Clause 633	50kPa	-	
			vi) Maximum density (<i>soils placed underneath floor slabs, foundations or roads</i>)	BS 1377: part 2 (2.5kg rammer)	95% MDD	-	
4	Various	Fill to landscape areas	i) Grading	BS1377: part 2	-	50mm	-
			ii) Moisture content	BS1377: part 2	-	25%	
			iii) MCV	Clause 632	6	-	
5A	Topsoil, or turf, existing on site	Topsoiling	i) Grading	Clause 618	-	Clause 618	-
5B	Imported topsoil	Topsoiling	i) Grading	Clause 618	-	Clause 618	-
7C	Selected wet cohesive material	Puddle clay lining to attenuation basins	i) Grading	BS1377: part 2	Tab 6/2	Tab 6/2	Table 6/4 Method 1
			ii) Liquid Limit	BS1377: part 2	35	70	
			iii) Plasticity Index	BS1377: part 2	-	40	
			iv) Permeability	BS1377: part 2	-	10 ⁻⁹ m/s	

Class	Material Description	End use	Property	Defined and tested in accordance with	Acceptable limits within		Compaction Requirements in Clause 612
					lower	upper	
			v) Pinhole dispersion	BS1377: part 2	ND1	ND1	
			vi) Undrained shear strength	Clause 633	40kPa	-	
			vii) Effective angle of internal friction (ϕ') when $c' = 0\text{kPa}$	Clause 636	24°	-	

Table 3-A: Earthworks Acceptability Criteria (Table 6/1)

3.4 Requirements for Determining Acceptability

- 3.4.1 The Earthworks Contractor shall be responsible for the classification and testing of material, both site won and imported. Contamination testing and validation is to be undertaken in accordance with the Remediation Strategy produced by Soiltechnics Ltd, STV5936-R05-Rev_B.
- 3.4.2 The Earthworks Contractor is to undertake all earthworks testing at the frequencies specified within Appendix 1/5, and is to supply records of all testing to the Client's Representative within 3 days of test completion. The frequency of testing may be altered by the Client's Representative if testing shows the material is consistently acceptable or consistently unacceptable. Testing is to be undertaken, and results provided to the Clients Representative, prior to the material being transported, placed, and compacted.
- 3.4.3 The Earthworks Contractor shall give the Client's Representative an opportunity to witness the taking of samples for classification testing and allow samples to be split for independent testing by the Client's Representative. Trial pitting may be instructed by the Client's Representative for the purpose of collecting samples.
- 3.4.4 Failure on the part of the Earthworks Contractor to provide test results and all daily site records to the Client's Representative within the above stated period may result in non-compliance of the earthworks specification with the Earthworks Contactor effectively proceeding at their own risk.
- 3.4.5 The Earthworks Contractor will survey the site to show the finished formation levels achieved for the development platforms levels shown. The earthworks will be undertaken to a tolerance of $\pm 50\text{mm}$. A site wide topographic survey must be undertaken on a monthly basis to a tolerance of $\pm 50\text{mm}$ to validate levels and quantities on a site wide basis.

3.5 Requirements for Excavation of Unacceptable Material

- 3.5.1 Topsoil is to be stripped and stored in a stockpile on the Site.
- 3.5.2 If any materials have altered their classification or become geotechnically unacceptable for any reason it will be necessary to repeat the classification and acceptability tests outlined in Table 6/1 at the frequency defined within Appendix 1/5.
- 3.5.3 Unacceptable material is defined as any material not meeting the requirements of this specification or as defined within the Specification for Highway Works Series 600 Volume 1, Clause 601T.
- 3.5.4 Geotechnically unsuitable Class U1A site won soils shall be removed from the site, unless the Class U1A materials can be improved to make them suitable for incorporation within the Works. The proposed method of improvement shall be submitted to the Client's Representative for approval prior to implementation along with supporting testing documentation to demonstrate that the required performance criteria will be met.
- 3.5.5 Any Class U1B or Class U2 Materials with unacceptable concentrations of contamination encountered shall be separately stockpiled, tested to confirm waste classification and removed from site to a suitably licensed landfill or waste treatment facility. If leachable or mobile contaminants are present, the stockpile area must be carefully prepared and lined to capture any run off to prevent the contamination of underlying soils.

- 3.5.6 Reference shall be made to the site-specific Remediation Strategy (Soiltechnics Ltd, STV5936-R05-Rev_B) regarding dealing with Class U1B and Class U2 Unacceptable Contaminated Material.
- 3.5.7 The Client's Representative shall be immediately advised of the discovery of any Class U1A, U1B, or U2 materials and leave them in-situ, making them safe and cordoning off the area.
- 3.5.8 The Earthworks Contractors shall perform any testing, investigations or surveys to the instruction of the Client's Representative and include all records within the completion report.
- 3.5.9 The Earthworks Contractor shall submit details of proposals for dealing with such materials along with costs to the Client's Representative for approval. Such proposals shall include details on plans to treat the materials within the field and shall obtain suitable advice from specialist environmental engineers on any special measures required. Where necessary the Earthworks Contractor shall seek specialist advice.
- 3.5.10 Should it be necessary to segregate unsuitable materials from acceptable materials then they shall be stockpiled separately in a clearly marked location agreed with the Client's Representative. Should there be a risk of leachable or mobile contamination identified from these materials they should only be moved and stockpiled once a lined bunded stockpile area has been prepared to minimise risks of causing further contamination. The design, construction and location of such must be agreed in advance with the Client's Representative and the position shall be clearly marked, fenced on site and recorded on site plans.
- 3.5.11 If instructed by the Client's Representative any Class U1A, U1B, or U2 materials shall be appropriately treated on site or removed directly from site to a suitably licensed landfill or waste treatment facility in accordance with all contemporary waste regulations, waste licensing and waste transfer protocols and controls.

3.6 Requirements for Construction of Fills

- 3.6.1 Prior to earthworks operations across the site, all grass, vegetation, and subsoil are to be removed and are to be stockpiled for future use provided they pass the necessary validation tests that would be undertaken according to the Remediation Verification report.
- 3.6.2 Whenever fill is to be deposited against the face of a natural slope, or sloping earthworks face including embankments, cuttings, other fills and excavations, such faces shall be benched immediately before placing the subsequent fill.
- 3.6.3 The Earthworks Contractor shall keep earthworks free of water.
- 3.6.4 The Earthworks Contractor shall employ only plant and working methods which are suited to the materials to be handled and traversed. They shall be responsible for maintaining the nature of the acceptable material so that when it is placed and compacted it remains acceptable in accordance with Table 6/1.
- 3.6.5 All fills are to be constructed in the locations and levels shown within the contract drawings, and using only suitable materials defined in Table 6/1.
- 3.6.6 Areas of fill are to be constructed evenly over their full width and to their fullest extent. Damage by construction traffic, and other vehicular traffic, shall be made good by the Earthworks Contractor with material having the same characteristics and strength as the material had before it was damaged.

- 3.6.7 Embankments and other areas of unsupported fills shall not be constructed with side slopes steeper than 1V:3H except to permit adequate compaction at the edges before trimming back, or to obtain the final profile following any settlement of the fill and the underlying material. Over-steepening shall not exceed 1 in 1 and shall remain only for the minimum periods necessary consistent with the safety of the Permanent Works.
- 3.6.8 All permanent faces of side slopes of embankments and other areas of fill formed in Classes 2 or 7 cohesive materials, other than pulverised-fuel ash, shall, subsequent to any trimming operations, be re-worked and sealed by tracking a tracked vehicle, suitable for the purpose, on the slope, or by other suitable methods.
- 3.6.9 Compaction of fills is to be undertaken using the plant and methods selected by the Contactor, appropriate to the compaction requirements as listed in Table 6/1 for the Class of material being compacted.
- 3.6.10 If more than one Class of material is being used in such a way that it is not practicable to define the areas in which each Class occurs, the contractor shall compact with plant operating as if only the material which requires the greater compactive effort is being compacted.
- 3.6.11 The earthworks shall be assessed against an End-Product Compaction regime and reference should be made to SHW Clause 612.11 to 612.15.

3.7 Compaction Testing of Cohesive Materials Below Roads

- 3.7.1 Where less than 1.0m depth of fill is placed below roads a CBR test is required at formation level at no greater than 50m intervals along the centreline of the road to confirm capping and sub base requirements.
- 3.7.2 Where greater than 1.0m depth is placed below roads a sand replacement tests is required at no greater than 50.0m intervals along the centreline of the road. Tests are required for every 0.5m depth of fill placement, i.e. if 1.0m of fill is placed a test is required at formation level and 0.5m below formation. Additionally, a CBR test is required at the new formation level at no greater than 50.0m intervals along the centreline of the road to confirm capping and sub base requirements.

3.8 Requirements for Supervision and Reporting

- 3.8.1 The earthworks are to be supervised by the Client's Representative. It is noted that no buildings will be founded on engineered fill and therefore Table 8 in Chapter 4.6 of the NHBC Standards 2025 is considered to not strictly apply and is for guidance only. On this basis, part time, independent geotechnical supervision is considered appropriate combined with independent in situ geotechnical testing procured via the earthworks contractor.
- 3.8.2 An Earthworks Verification Report will be produced following the completion of the earthworks and will incorporate the information specified in Clause 4.6.13 (NHBC) and particularly:
- As built records including locations of in situ testing in the x,y,z space
 - In situ test result certificates
 - Analysis of in situ testing results
 - Records and observations from part time supervision visits

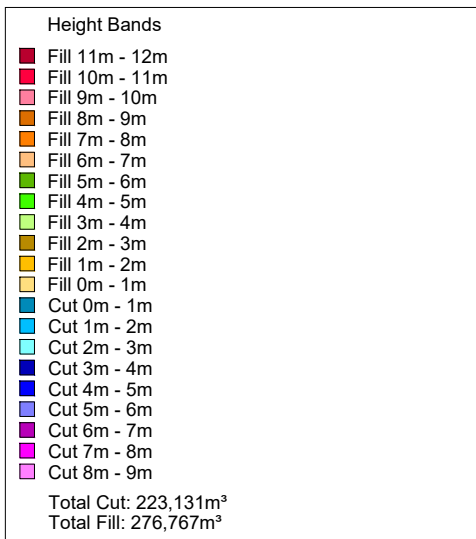
4 Appendix 1/5 - Testing to be Carried Out by the Contractor

Class	Testing	Frequency	Test certificate
1B	Grading and Sedimentation (Including uniformity coefficient for sand), BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	UKAS: ISO/IEC 17025
	Compaction relationship; BS 1377:Pt 2:2022 (2.5kg rammer)	Minimum of 3 per source plus 1 per 2500m ³ of material. Testing to be completed in accordance with sub clause 11 to 15 to clause 612.	
2A	Grading and Sedimentation, BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
	Plasticity index (fine-grained soils); BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
	Moisture Content; BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 1000m ³	
	MCV; BS 1377:Pt 2:2022 & Clause 632	Minimum of 1 per source plus 1 per 2000m ³	
	Undrained shear strength in triaxial compression – remoulded at natural MC; BS 1377:Pt 2:2022 & Clause 633	Minimum of 3 per source plus 1 per 2000m ³	
	Compaction relationship; BS 1377:Pt 2:2022 (2.5kg rammer)	Minimum of 3 per source plus 1 per 2500m ³ of material. Testing to be completed in accordance with sub clause 11 to 15 to clause 612.	
4	Grading and Sedimentation (Including uniformity coefficient for sand), BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
5A & 5B	Grading and Sedimentation (Including uniformity coefficient for sand), BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³ If material is to be imported, manufacturers testing certificates will be accepted if it can demonstrate compliance.	
7C	Grading and Sedimentation, BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
	Liquid Limit and Plasticity Index (fine-grained soils); BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
	Permeability, BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 1000m ³	
	Pinhole Dispersion, BS 1377:Pt 2:2022	Minimum of 3 per source plus 1 per 2000m ³	
	Undrained shear strength in triaxial compression with measurement of c and ϕ – remoulded at natural MC; BS 1377:Pt 2:2022 & Clause 633 sub-clause 3	Minimum of 3 per source plus 1 per 2000m ³	
	Shear box testing to determine c' and ϕ' – remoulded at natural	Minimum of 3 per source plus 1 per 2000m ³	

MC; BS 1377:Pt 2:2022 & Clause 636 sub-clause 3		
End specification compaction testing to demonstrate compliance; Clause 612 sub-clause 12-15	Minimum of 1 test every 200m ² spatially and vertically distributed across the site. x,y,z co-ordinates of every test to be recorded. Nuclear density testing (subject to calibration tests) and / or sand replacement techniques are permitted.	UKAS: ISO/IEC 17025

Appendix A Drawings

Zone	Area (m ²)	Fill inc Arisings (m ³)	Cut inc Arisings (m ³)	Net Fill (m ³)
Phase 1	2184.00	3825.00	3496.00	3262.00
Phase 2A	1995.00		1884.00	5959.00
Phase 2B	3591.00	6814.00	8643.00	-2462.00
Phase 3	1872.00	1182.00	2732.00	-1503.00
Phase 4	3442.00	2531.00	5746.00	-3241.00
Phase 5	1764.00	225.00	1875.00	-1650.00
Phase 6	2021.00	523.00	3266.00	-2743.00
Total		22313.00	27676.00	-5363.00



Original Ground Model Name: H8544-SVE-XX-XX-SIU-GL-200001-C01-BH.TS.08_E Trows Lane, Rochdale
Understore of Topsoil Model Name: H8544-SVE-XX-XX-XX-GL-200001-C01-BH.TS.08_E Trows Lane, Rochdale, -0.4 Topsoil Strip
Proposed Ground Model Name: H8544-BAH-XX-XX-DR-GE-361004-P01
Formation Model Name: H8544-BAH-XX-XX-DR-GE-361001-P01
Cut/Fill Model Name: H8544-BAH-XX-XX-DR-GE-202700-P01

Original Ground Model based upon:
1.H3544-SVE-XX-XX-SU-GL-20001-C01-BH.TS.05_E Trows Lane, Rochdale dated 04/08/2023

Underside of topsoil level based upon:
1.H8544-SVE-XX-XX-SU-GL-200001-C01-BH.TS.05_E Trows Lane, Rochdale, -0.4 Topsoil Strip

Proposed ground model based upon:
1.3D CAD levels within H8544-BAH-XX-XX-DR-GE-961004-P01
2.GE1 Landmark: 160' above

3.Finished road levels

- 1.FFL minus 0.45m (VibroPile)
- 2.FFL minus 0.45m (due to Trench Fill)
- 3.Finished ground level's minus 0.45m

4. Finished Garden levels minus 0.3m

Cut & Fill Modeling Results	Volume (m ³)
-----------------------------	--------------------------

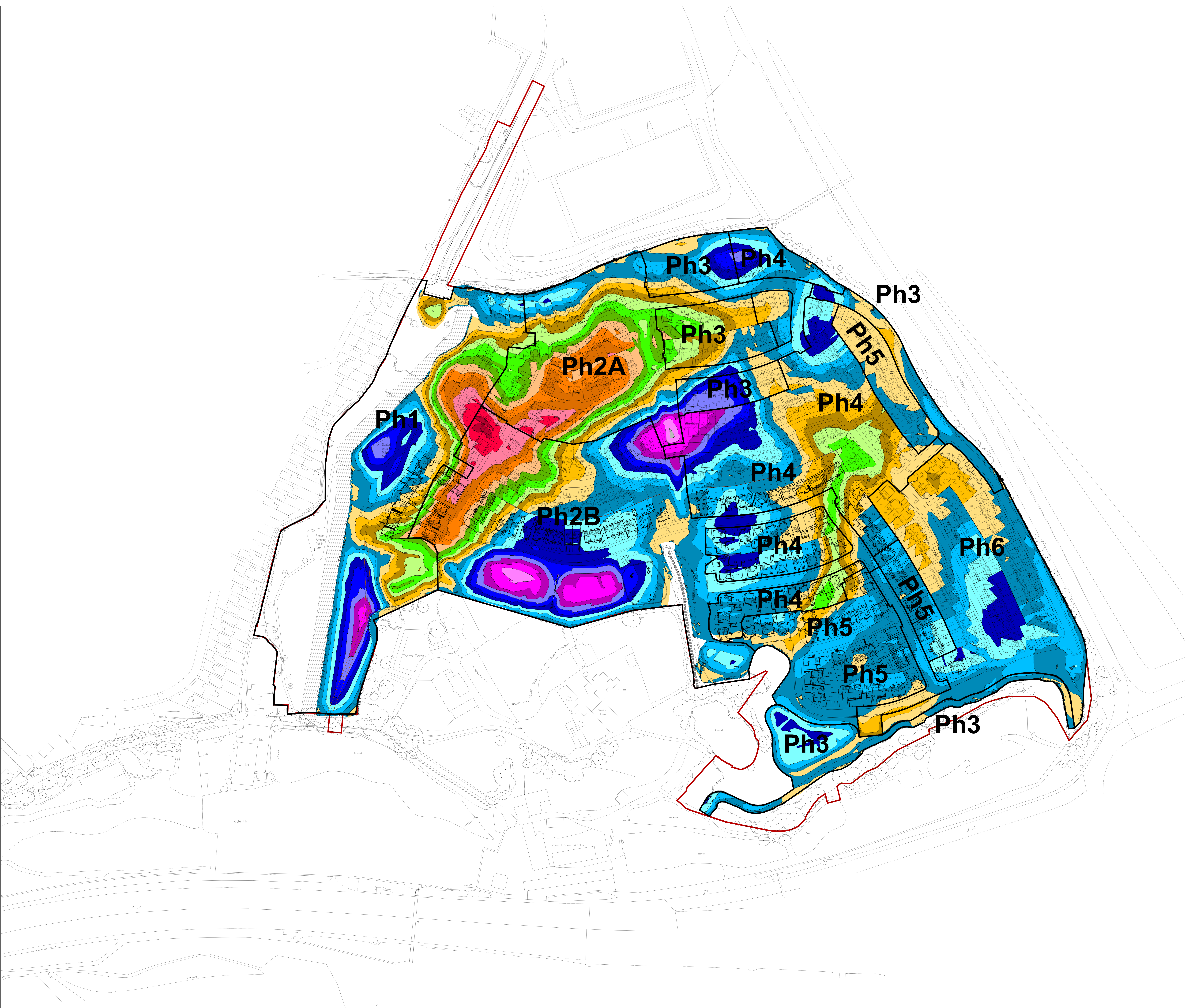
	Area (m ²)	Cut	Fill	Net
Original Ground Model vs Underside of Topsoil	168,438	67,375	-	67,375
Underside of Topsoil vs Proposed Formation	168,438	276,767	223,131	53,636

This model displays the following out & fill figures:
Total Cut 276,767m³
Total Fill 223,131m³
Thus Net Surplus of 53,636m³

PLEASE NOTE: THE REGRADE LEVEL WILL BE LEFT AT 450mm BELOW FFL. THE CUT & FILL MODEL MAYBE UPDATED AFTER COMMENTS MADE FROM THE STRUCTURAL ENGINEER.

A SLOPE ANGLE OF 1V:3H IS RECOMMENDED FOR SLOPES CUT INTO EXISTING GROUND.

ANY SLOPES CONSTRUCTED WITH THE GRANULAR HUMMOCKY

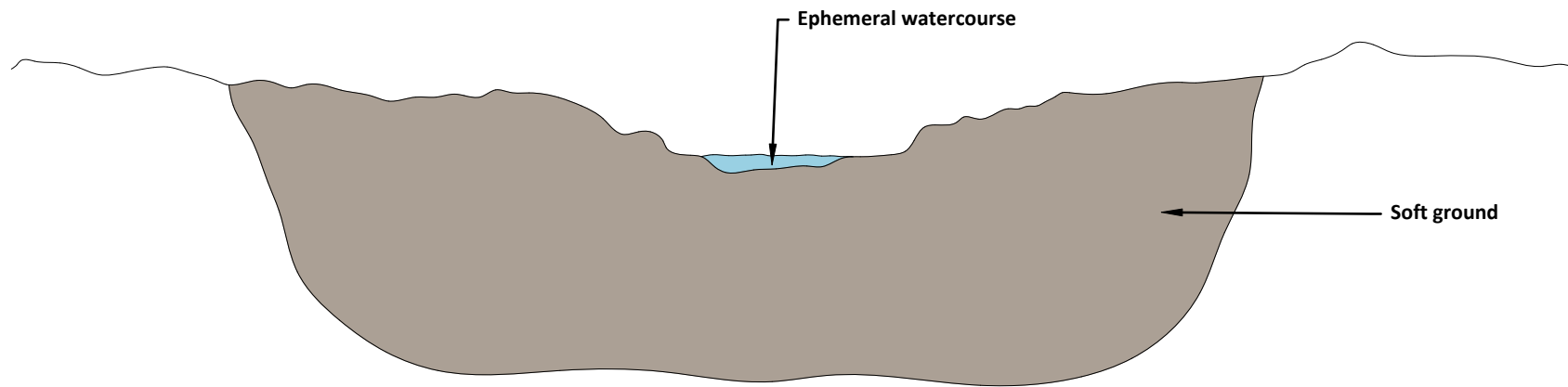


P02	Cut & Fill drawing amended, FFL's for traditional and RaftVibro lowered by 0.45m on the overall site. Site Cut & Fill as been split into build phases. Structural engineer to provide a suitable foundation detail to information provided. RaftVibro formation level may change subject to structural engineers proposals.	Mar 25	LB
Revision	Description	Date	Design By

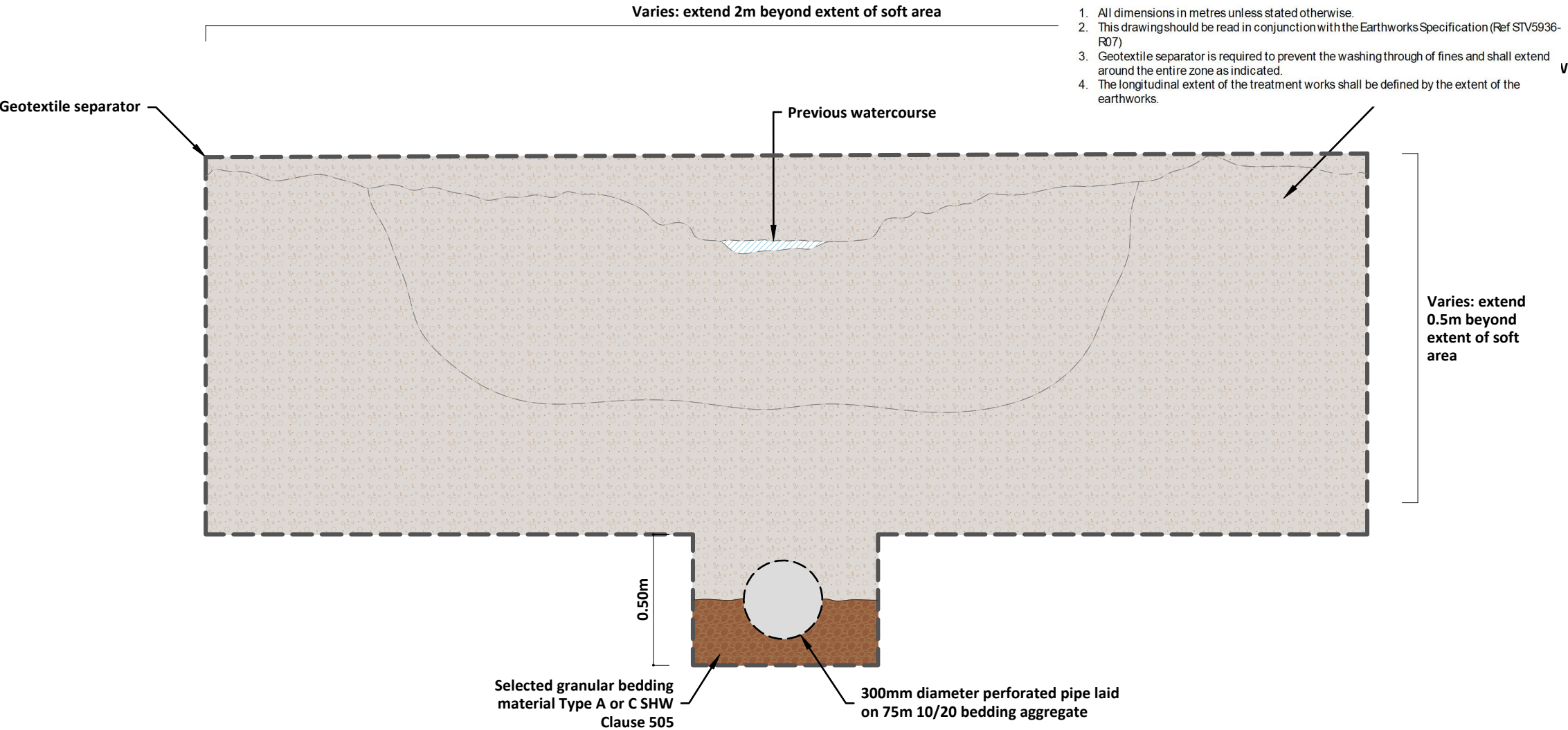
Project Cowm Top, Rochdale				 BARRATT HOMES
Description Cat & Fill Appraisal				
Sheet 1 of 3				
Design By LB				
Date	Sept 24	Scale of A0 1:1000	Revision P02	
Project	Originator	Functional	Number	
H654 - BAH -	XX	-XX -DR - CE -	202700	

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Existing



Proposed



- Notes
- 1. All dimensions in metres unless stated otherwise.
 - 2. This drawing should be read in conjunction with the Earthworks Specification (Ref STV5936-R07)
 - 3. Geotextile separator is required to prevent the washing through of fines and shall extend around the entire zone as indicated.
 - 4. The longitudinal extent of the treatment works shall be defined by the extent of the earthworks.

A	First issue	AM	21.07.2025
REV	DESCRIPTION	PREP	DATE

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Cowm Top, Rochdale

TITLE
Indicative detail for dealing with soft ground at base of fill areas

DRAWING NO. STV5936-D04-A	SCALE AT A3 Not to scale
------------------------------	-----------------------------

Scale:1:250



1. All Admittable things have been designed and built to be constructed in accordance with Specification Schedule C, Guidance Appendix C, Design and Construction Code of Practice, and United Kingdom Guidelines (where applicable). UK standards may be referenced.
2. All day work must be strictly during hours 05:30 to 18:00 (BS 5393:1989).
3. All proposed concrete pavements shall be to Class 1/2000 according to BS8081(1991). BS EN 1191 and base the BS 5393(1989) may be referenced.
4. All Admittable things shall be installed in Class 5 granular subgrade as detailed on the Pavements.
5. All concrete materials and selected aggregates and concrete covers shall be manufactured to BS EN 12620-1 Part 2.
6. Paving must be to base polyethylene pipe conforming to BS EN 12242-1. Polyethylene Pipes, including face joints, and manhole frames shall comply with BS EN 12242-2.
7. All levels relate to Ordnance Datum. Contractor to ensure that this drawing is read in conjunction with the site specific topographic survey provided by Grant Mainland and the benchmark information provided.
8. This drawing is to be read in accordance with all relevant drawings.
9. The survey shall be responsible for ensuring that any existing levels indicated on the drawings are correct before being used.
10. All proposed channels must be 1000mm wide and be 1000mm deep according to BS 5393(1989).
11. All drains should be drainage to the 1000mm and all gully connections shall be 1000mm at minimum gradient of 1:100 unless otherwise stated and in accordance with BS EN 12242-2.
12. Runoff from private surfaces shall be discharged across the Highway. Gullies or channels shall be provided as necessary to prevent this.
13. Pavement gullies shall be provided at the worst drainage points of all drains.
14. Pipes shall be protected from compression loading by construction traffic during construction period when they occur. See the 1000mm deep polyethylene pipe.
15. Unless the depth of the road formation levels are to be carried out to determine the depth of pavement construction to be approved by the Highway Authority. Consider pipe to installation of the road pavements.
16. Groundwater shall be investigated by means of the drilling outfalling of the proposed sewer where possible and inspection covers left until backfilling where necessary.
17. Contractor to provide Utilities with sufficient notice to permit connection of sewer with other on-site drainage.
18. Contractor to identify necessary Highway spacing limits from DMR (Highway Code) details, obtain approval with UK Local Authority and the Highway Authority. Obtain approval to reflect standard from the Environment Agency and/or the Local Authority.

	S104 Adaptable S.W. Sewer & Manhole		S104 Adaptable F.W. Sewer & Manhole
	S. Water Drag-Out and Invert		Foul Drag-Out and Invert
	538 Adaptable Road Gully		
	Street Name Plate		Proposed S104 Sewer Easement
	Proposed Adaptable Foul Water Pumpstation		Proposed Adaptable Foul Water Rising Main(s)
	Red of SUDs Feature		Top Edge of SUDs Feature
	Normal permanent Water Level within SUDs		Land Dedication for SUDs Feature

- 1 in 2yr Modelled Top Water Level
- 1 in 30yr Modelled Top Water Level
- 1 in 100yr Modelled Top Water Level
- 1 in 100yr+40% Climate Change Modelled Top Water Level

DRAINAGE DESIGN IS SUBJECT TO FULL
TECHNICAL APPROVAL BY UNITED
UTILITIES/CHOSEN NAV AND THE LLFA.

Scale:1:500

Scale:1:50

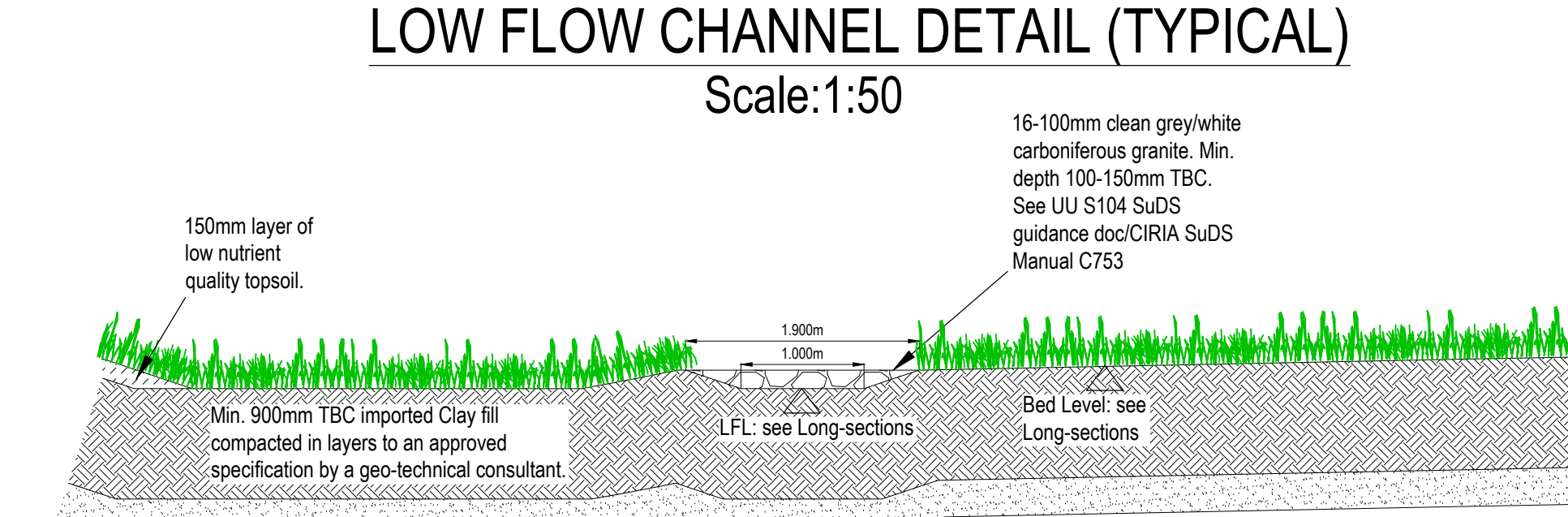
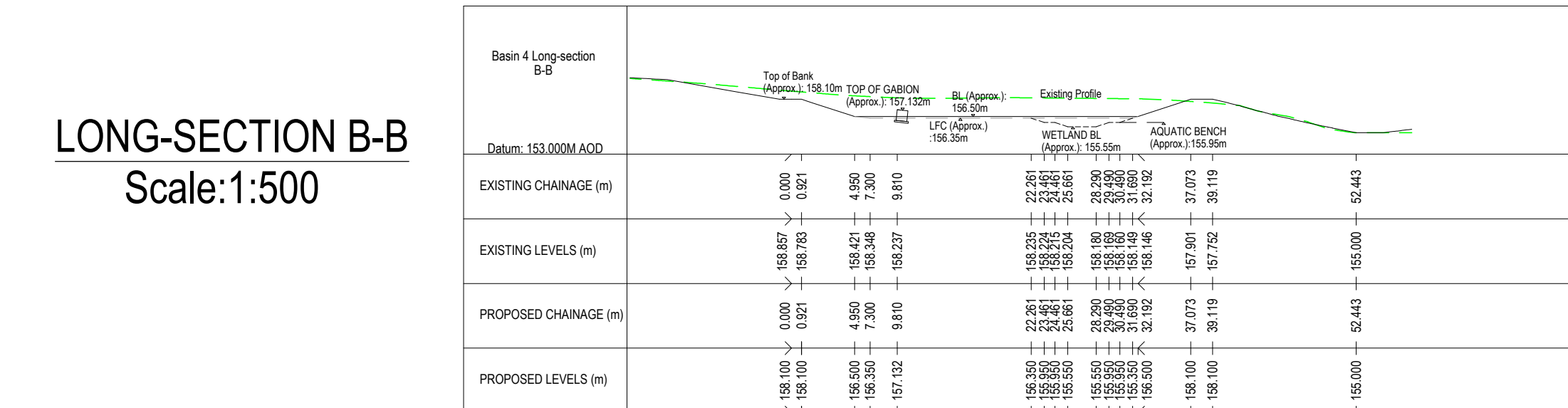
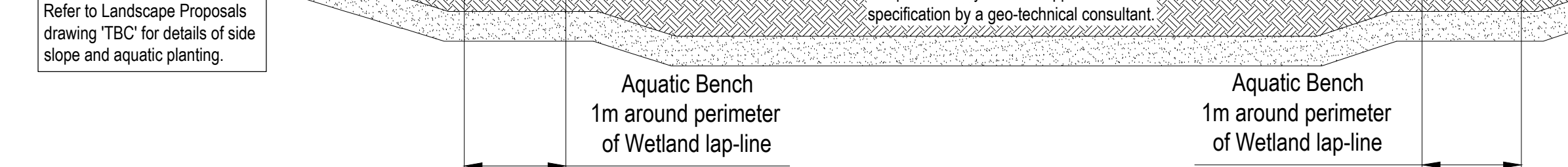
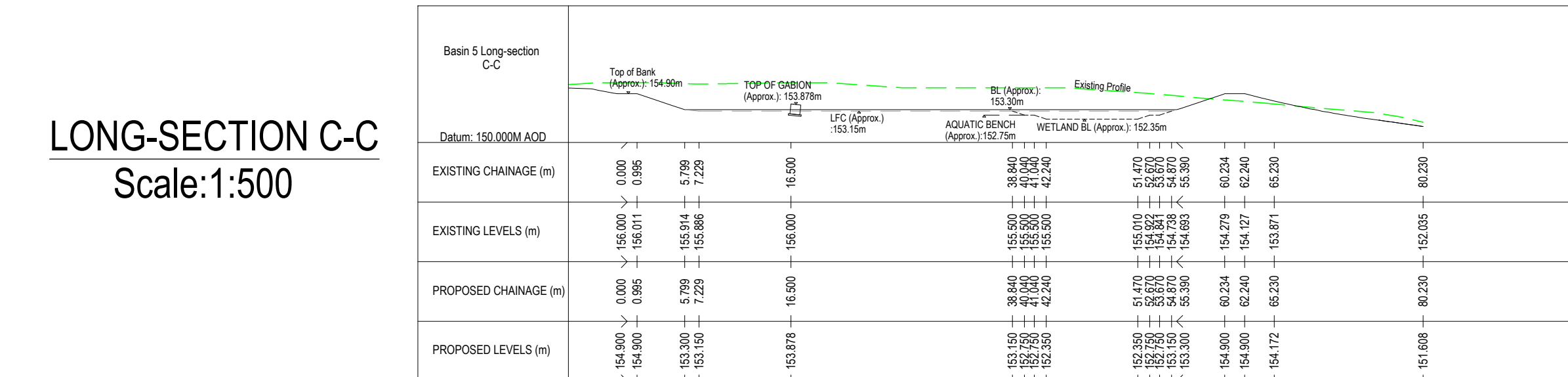
Scale:1:50

Scale:1:50

Scale:1:50

Scale:1:50

Project: Cowm Top, Rochdale					
Description: Proposed Attenuation basin - SUDS Details Western Basin's					
Design By: LB		Date: Jun 24		Scale at A0: As Shown	
				Revision: P02	
Project	Originator	Functional	Spacial	Form	Discipline
HR544	- BAH -	XX	- XX -	DR -	DR - 300120



ENGINEERING KEY

	S104 Adoptable S.W. Sewer & Manhole		S104 Adoptable F.W. Sewer & Manhole
	Water Drop-Out and Invert		Fault Drop-Out and Invert
	S38 Adoptable Road Gully		
	Street Name Plate		Proposed S104 Sewer Easement
	Proposed Adoptable Foul Water Pumpstation		Proposed Adoptable Foul Water Rising Main(s)
	Bed of SUDs Feature		Top Edge of SUDs Feature
	Normal permanent Water Level within SUDs		Land Dedication for S104 SUDs Feature

WATER LEVELS KEY:

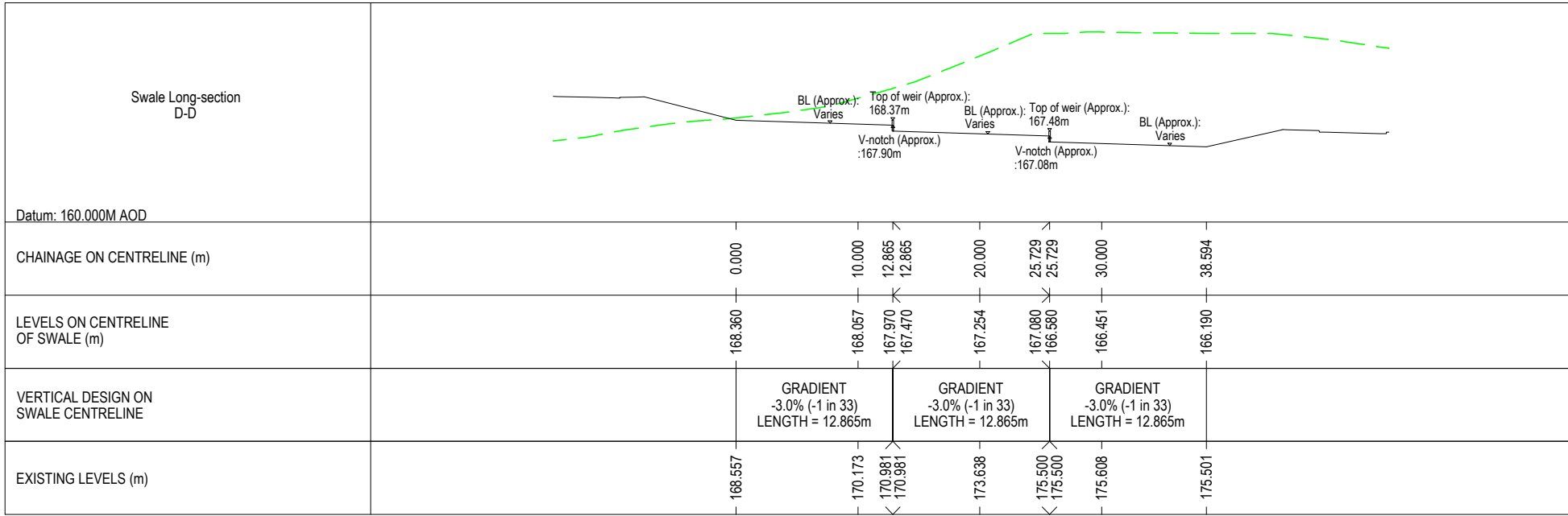
	1 in 2yr Modelled Top Water Level
	1 in 30yr Modelled Top Water Level
	1 in 100yr Modelled Top Water Level
	1 in 100yr+40% Climate Change

PRELIMINARY ONLY

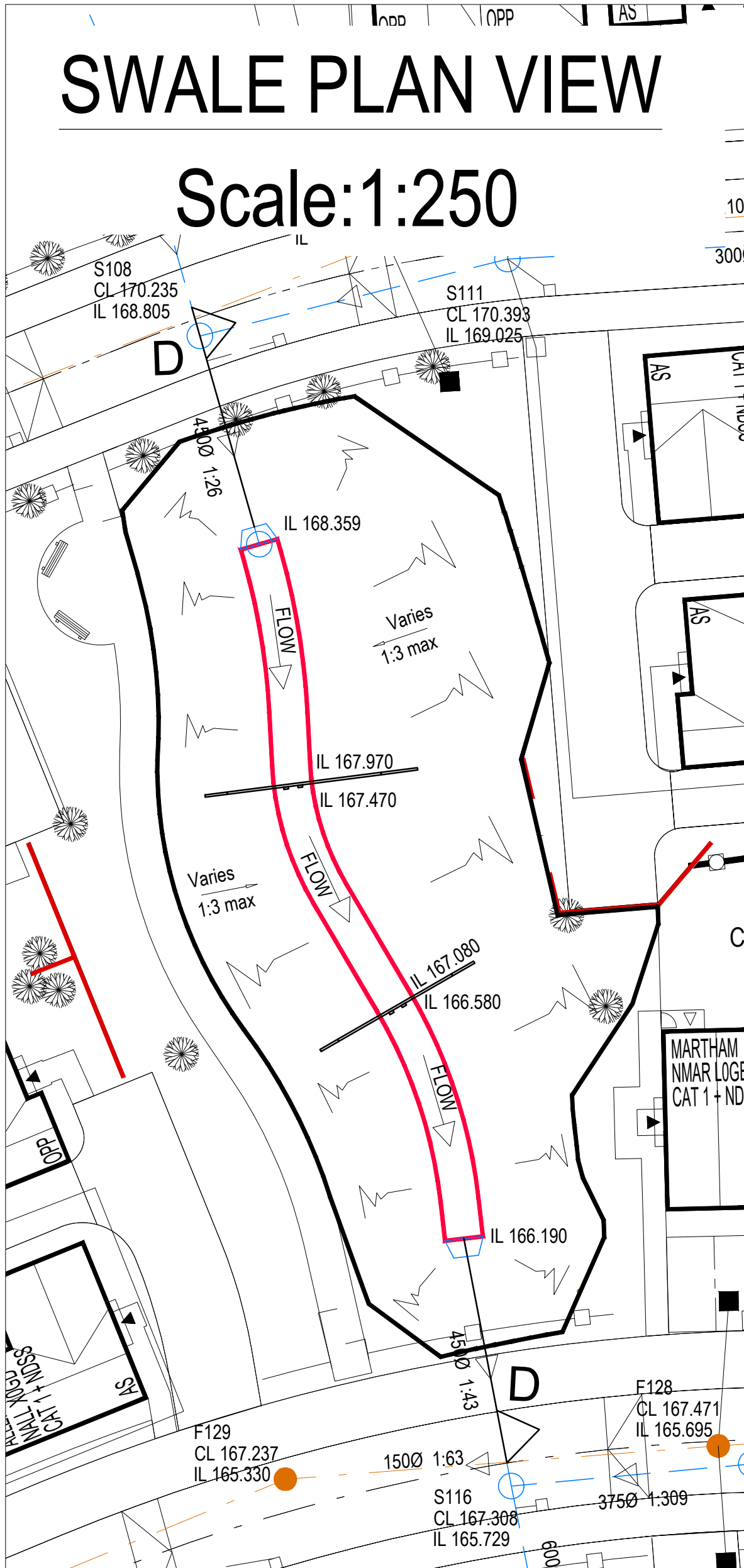
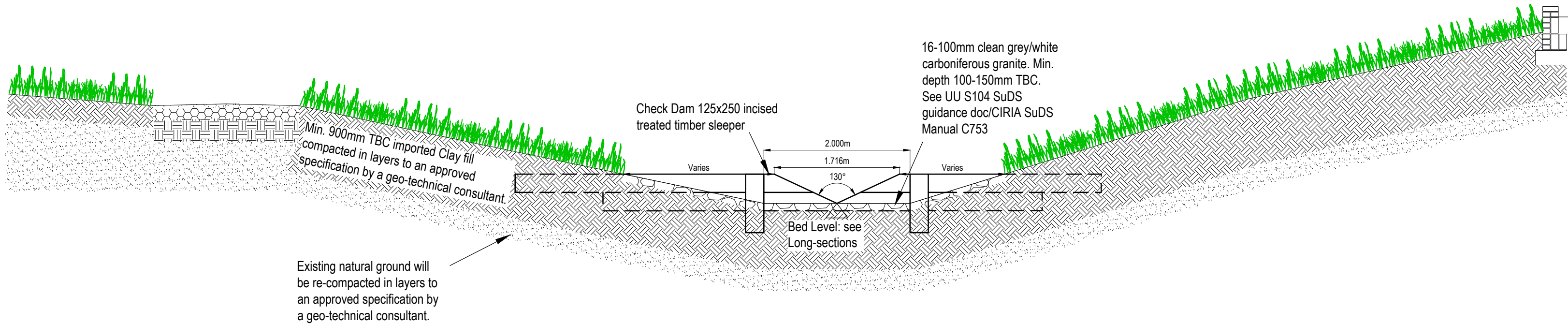
RAINFALL DESIGN IS SUBJECT TO FULL
TECHNICAL APPROVAL BY UNITED
UTILITIES/CHOSEN NAV AND THE LLFA.

P02	Attenuation Basins and SUDs amended to the new planning layout. In order to ensure that the pipes and SUDs are sized correctly, the storm simulations were modelled in total drainage and will be refined at final approved detailed design.			Jun 24	LB																								
Revision	Description			Date	Design By																								
Project: Chowm Tse, Rochdale Drawn: Chowm Tse Proposed Attenuation Basin - SUDS Details Eastern Basin's <table border="1"> <thead> <tr> <th>Design By</th> <th>Date</th> <th>Scale</th> <th>As Drawn</th> <th>Revisions</th> <th>P02</th> </tr> <tr> <th>Project</th> <th>Original</th> <th>Functional</th> <th>Spacial</th> <th>Flow</th> <th>Natural</th> </tr> </thead> <tbody> <tr> <td>HSS44 - BAH -</td> <td>XX</td> <td>XX</td> <td>XX</td> <td>DR - DR</td> <td>-</td> </tr> <tr> <td colspan="6"> 300121 </td> </tr> </tbody> </table> Not scale from the drawing. You can check dimensions only. Any discrepancies are to be reported to Originator.						Design By	Date	Scale	As Drawn	Revisions	P02	Project	Original	Functional	Spacial	Flow	Natural	HSS44 - BAH -	XX	XX	XX	DR - DR	-	300121					
Design By	Date	Scale	As Drawn	Revisions	P02																								
Project	Original	Functional	Spacial	Flow	Natural																								
HSS44 - BAH -	XX	XX	XX	DR - DR	-																								
300121																													

LONG-SECTION D-D
Scale:1:500



V-NOTCH CHECK DAM DETAIL (TYPICAL)
Scale:1:50



Warning to House Purchasers

Buyers are warned that this is a working drawing and the contents of this drawing may be subject to change during the build process. The layout, form, content, and dimensions specified are included for general guidance only. Finishes or features shown may alter in respect of individual properties. Whilst we make every effort to ensure our drawings are up to date there may from time to time be an unavoidable delay in updating these due to changes in regulations and/or re-planning. Purchasers are advised to check with Sales Adviser whether any alterations have been made to this drawing. The contents of this drawing do not constitute a contract, part of any contract or warranty unless specifically incorporated into the contract. They should not be relied upon for the purposes of entering into a contract to purchase any property.

ENGINEERING LAYOUT NOTES

- All adoptable drainage works have been designed and are to be constructed in accordance with "Sewerage Sector Guidance Appendix C - Design and Construction Guide v2.1", and United Utilities Guidelines. Where specification conflicts, UU guidelines shall take precedence.
- All clay pipe work shall be extra strength clayware to BS 295 and BS65 (SW only).
- All precast concrete pipework shall be to Class 120 in accordance with BS5911-Part 1, BS EN 1916 and bear the BS kitemark.
- All adoptable drainage to be bedded in Class S granular surround unless otherwise stated on the longsections.
- All concrete manhole and soakaways rings, and concrete cover slabs to be manufactured to BS EN 1917 and BS5911-Part 3.
- Rising mains to be black polyethylene pipes complying to BS EN 13244-2. Polyethylene fittings, including fusion joints, and electro-fusion fittings shall comply with BS EN 13244-2.
- All levels relate to Ordnance Datum. Contractor to ensure that this drawing is read in conjunction with the site specific topographical survey provided by Barratt Manchester and the benchmark information provided.
- This drawing is to be read in accordance with all other relevant drawings.
- The contractor shall be responsible for ensuring that any existing invert levels indicated on the drawings are correct before work commences.
- All proposed connections to the sewer shall be 1500 unless stated otherwise.
- All private house drainage shall be 1000 and all drag-out connections shall be 1500 at a minimum gradient of 1:80 unless otherwise stated, and laid in accordance with Part H of the Building Regulations.
- Runoff from private surfaces shall not discharge across the highway. Gullies or channels shall be provided as appropriate to prevent this.
- Pram crossings shall be provided at the inner tangent points of all junctions.
- Pipes shall be protected from concentrated loading by construction traffic during the construction period when insufficient cover to the pipes may make them vulnerable to damage.
- In situ CBR tests of the road formation levels are to be carried out to determine the depth of pavement construction required. This is to be approved by St Helens Borough Council prior to construction of the road pavements.
- Groundworker to ensure that plot drainage be within the curtilage of the plot they serve where possible and inspection covers kept within hardstanding where possible.
- Contractor to provide United Utilities with sufficient notice prior to commencement of sewer works on their Inspections telephone number.
- Contractor to obtain all necessary highway opening notices from St Helens Borough Council, obtain approval to work on United Utilities Sewerage System, obtain approval to method statement from the Environment Agency and/or the Local Lead Flood Authority for any works affecting a watercourse.

ENGINEERING KEY

- | | | | |
|-----------|---|-----------|--|
| —○— S1 | S104 Adoptable S.W. Sewer & Manhole | —●— F1 | S104 Adoptable F.W. Sewer & Manhole |
| □ (10.25) | S. Water Drag-Out and Invert | □ (10.25) | Foul Drag-Out and Invert |
| □ --- □ | S38 Adoptable Road Gully | □ --- □ | Proposed S104 Sewer Easement |
| □ --- □ | Street Name Plate | □ --- □ | Proposed Adoptable Foul Water Pumpstation |
| □ --- □ | Proposed Adoptable Foul Water Pumpstation | □ --- □ | Proposed Adoptable Foul Water Rising Main(s) |
| — | Bed of SuDS Feature | — | Top Edge of SuDS Feature |
| — | Normal permanent Water Level within SuDS | — | Land Dedication for S104 SuDS Feature |

WATER LEVELS KEY:

- | | |
|---|--|
| — | 1 in 2yr Modelled Top Water Level |
| — | 1 in 30yr Modelled Top Water Level |
| — | 1 in 100yr Modelled Top Water Level |
| — | 1 in 100yr+40% Climate Change Modelled Top Water Level |

PRELIMINARY ONLY

DRAINAGE DESIGN IS SUBJECT TO FULL TECHNICAL APPROVAL BY UNITED UTILITIES/CHOSEN NAV AND THE LLFA.

Revision	Description	Date	Design By

Project: Cwm Top, Rochdale			
Description: Preliminary SuDS Details Swale Detail			
Design By: LB	Date: Jun 24	Scale at A1: As Shown	Revision: P01
Project: HXXXX - BAH -	Originator: XX	Functional: - XX - DR - DR -	Number: 300122



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