

Havant Thicket Reservoir

Soil Management Plan

Main Reservoir Works Phase 2 and subsequent phases

06.02.2024 | Rev C04
Document Reference : HTR-FUW-P2-RE-RM-W-0006



Version Control Register

Version	Date	Author	Reviewed By	Approved By	Notes
C0.4	06/02/2024	Stephen Blunt	Geraint Lloyd	Geraint Lloyd	
C0.3	21/11/2023	Stephen Blunt	Geraint Lloyd	Geraint Lloyd	
C0.2	22/09/2023	Stephen Blunt	Geraint Lloyd	Geraint Lloyd	
Rev 07	11/08/2023	Stephen Blunt	Geraint Lloyd	Geraint Lloyd	

Revisions

Revision	Details
C0.4	Amended following comments 72-76 on DS 86 sheet HTR-POR-P2-RE-CS-K-0006 from PW
C0.3	Comment Sheet from PW: HTR - DS-72 - HTR MRW - Soils Management Plan - Client Comment Sheet_SMB20231115
C0.2	Amended following further Design Guardian and PW comments on rev 07 (DS64). 04.09.23
Rev 07	Amended following Design Guardian (HTR-DGC-MRW-0085 dated 30/05/2023) and PW comments 07.06.23 on C01.

Contents

1.0	Introduction	4
1.1	Record of Environmental Actions and Commitments	7
1.2	Environmental Statement.....	10
2.0	Project Information	11
2.1	Key personnel	11
3.0	Distribution & Review	12
3.1	Distribution	12
3.2	Review	12
4.0	Pre-construction information.....	14
4.1	Framework Soil Management Plan P01.2 (Atkins).....	14
5.0	Uses of soil within the works.....	15
5.1	Requirements and resources.....	15
6.0	Procedures for stripping, storing and replacing soils.....	18
6.1	Timing of Operations	18
6.2	Preparation and soil stripping	19
6.3	Soil Storage.....	19
6.4	Soil replacement.....	21
	Appendix 1 Detailed Phasing Plan	22
	Appendix 2 - Field test for suitably dry soils	23
	Appendix 3- Stripping programme and areas available for stockpiling soils.....	24

1.0 Introduction

1.0.1 In 2020, planning applications (reference APP/20/00990 and 51680/001) were submitted to Havant Borough Council (HBC) and East Hampshire District Council (EHDC) for permission to develop a reservoir for raw water storage. Planning permission was subsequently granted in 2021 subject to Conditions¹. Whilst planning consent was received from two authorities, the wording of the decision notices is identical and therefore the same Conditions apply to both permissions.

1.0.2 This Soil Management Plan (SMP) has been prepared by Future Water MJJV for the Main Reservoir Works (MRW) Phase 2 and subsequent phases at Havant Thicket Reservoir (as described below). It encompasses soil materials within the site that are to be recovered and used to support vegetation in the works. It excludes soil materials used for engineering purposes, as these are covered within the Materials Management Plan (MMP).

1.0.3 This document supplements and is consistent with the Framework Soil Management Plan Rev P01.2 (HTR-ATK-ZZ-ZZ-RP-Z-0166) submitted (and approved) to discharge Condition 39 for Phase 1 of the works. The requirement for a Soil Management Plan is set out in the Record of Environmental Actions and Commitments (refer to para 1.1.1) and is a condition of the Reservoir Planning Permission:

Condition 39: No phase of the development approved under Condition 4 shall commence until a Soil Management Plan has been submitted to and approved in writing by the Local Planning Authority.

The Plan shall include separate management of ancient woodland soils for restoration. The Plan shall include a timetable for the carrying out of the works, once approved. The development shall be carried out in accordance with the approved details and timetable.

Reason: To support reinstatement of the landscape disturbed by the construction works.

1.0.4 This SMP provides further detail relevant to works activities being conducted within Phase 2 and subsequent phases. It will be submitted to HBC and EHDC for approval under Condition 39 before the start of Phase 2. It will then be reviewed and, if necessary, amended to ensure suitability for the activities in each subsequent Phase of construction. It will remain a live document, being reviewed and updated as required in conjunction with the CEMP. This SMP is one of the documents which support the CEMP and are listed within it.

1.0.5 This Soil Management Plan (SMP) has been developed to enable the site team to manage soils within the site efficiently and effectively through the life of the project, maintaining the quality of site soils and their suitability for re-use within the project. It has been prepared with reference to guidance in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, MAFF's Good Practice Guide for Soil Handling and BS 3882: 2015 – Specification for topsoil, as applicable. The Future Water technical team should be contacted for further advice on soil handling, preparation and the establishment of vegetation.

¹ Permission details available at these links: [APP/20/00990](#) and [51680/001](#)

1.0.6 The Soil Management Plan includes:

- brief details of the project including who is responsible for maintaining this SMP (Section 2);
- a record of who the SMP has been distributed to and when and why the document was reviewed (Section 3);
- information transferred from ground investigation documents supplied by the client and designer (Section 4);
- uses of soils within the works (Section 5);
- procedures for stripping, storing and replacing soils (Section 6).

1.0.7 The project works are being implemented in phases as set out in the Detailed Phasing Plan (document ref HTR-FUW-RZ-DP-W-507) which is to be submitted to discharge planning condition 4. This Soil Management Plan has been prepared to cover works activities rather than individual phases, since some activities apply across more than one phase and some phases will be carried out concurrently.

1.0.8 Phase 1 of the construction consisted of the following items, carried out in 2022 – 2023:

- Construction of new junction off the B2149 including carriageway re-profiling
- Construction of new access road into the site from the new B2149 junction henceforth referred to as the Northern Access Route (NAR) - initially for use by construction traffic and then for use by visiting traffic when the reservoir is operational;

1.0.9 This SMP is for the activities currently within the Main Reservoir Works scope, planned to start in Q1 2024 and be completed by Q3 2029, which includes:

- Establishment of site compounds (part of the enabling works commenced 2023) - stripping of topsoil and excavating sub-soil. Below ground ducts for services and drainage. Hard surfacing provided for the main compound car park, access roads and unloading areas, temporary residential caravans for construction workers;
- Construction of temporary drainage system, access track & haul roads (part of enabling works commenced 2023) - stripping of topsoil and subsoil, excavation of temporary drainage ditches, creation of on-site lagoon, settlement ponds and diversion of existing watercourses;
- Construction of the reservoir earth embankment - borrow pit excavation, materials haulage, placement and compaction of clay, etc;
- Construction of the reservoir culvert – deliveries of concrete by drum mixer lorries. Reinforced concrete structures cast on-site using formwork;
- Construction of wetlands earth embankments and control structures - stripping of topsoil and subsoil, excavation of clay from borrow pits, materials haulage, clay compaction using vibrating rollers. Installation of control structures within the embankment to maintain the required water levels;
- Construction of the valve tower - deliveries of concrete by drum mixer lorries. Reinforced concrete structures cast on-site using formwork;
- Construction of the Southern Access Road – stripping of ground to formation level, placing and compaction of sub-base and drainage, final surface dressing;

- Construction of the control house - deliveries of concrete by drum mixer lorries. Reinforced concrete structures cast on-site using formwork. Installation of ground structures and pipework;
- Construction of the spillway - deliveries of concrete by drum mixer lorries. Reinforced concrete structures cast on-site using formwork;
- Hard and soft landscaping - soft landscaping and aftercare. Hard landscaping comprising fencing, walling and the Avenue staircase;
- Raising of FE CAT A Track & installation of new culverts – installation of silt control measures downstream of the work site. Installation of new watercourse pipes and new headwalls. Raising of track level using site won material from borrow pits;
- Installation of Mechanical, Electrical, Instrumentation, Control and Automation (MEICA) and associated fit out of culvert - draw off, filling pipework and installation of associated systems within the embankment culvert and tower. Installation of security fencing, gates, doors and barriers on control structures.

1.0.10 The Detailed Phasing Plan (doc no. HTR-FUW-RZ-RE-DP-W-507) and the Construction Method Statement (doc no. HTR-FUW-RZ-RE-MS-W-505) outline the construction phasing and the programme of Reserved Matters planning submissions needed to construct the MRW, and indicate the location of the main works elements. A copy of the Detailed Phasing Plan is appended for ease of reference (Appendix 1) but the original should be consulted for up to date information. The design and preparation for works to construct the wetland embankment, wetland structures, penstocks, spillways & wetland access track (project Phase 2) are more advanced and so are shown in more detail in Table 1.

Table 1 Programme for Phase 2 wetlands works

ACTIVITY	PROGRAMME*
• Stripping of topsoil and sub-soil with mechanical excavation and remove to topsoil storage location for processing, classifying and re-use.	Q3 2024
• Excavation in Borrow Pits commenced to provide a supply of suitable material for the construction of wetlands embankment.	Q3 2024
• Placement and compaction of material recovered from borrow pits to form wetlands embankment; the placement will include transporting from borrow pits to footprint of the wetlands, deposition with excavators and dozers, and compaction with vibrating rollers.	Q3 2024
• Establishment of haul road tracks & hard standing/working platforms using a type-1 aggregate (or similar).	Q3 2024

ACTIVITY	PROGRAMME*
Installation of water control penstocks using a combination of pre-cast concrete pipe & in-suit concrete chamber structures. PCC pipes will be bed & surround with both 20mm shingle and GEN3 concrete (varying – location dependant).	Q3 & Q4 2024
Installation of reno mattress erosion protection at inlet and outlets of penstock water control pipes.	Q3 2024
Installation of geo-tech matting dressed with topsoil on upstream of spillways.	Q1 2025
Installation of deep rock protection on downstream of spillways.	Q2 2025
Installation of Type-1 footpath & access track on top of new wetlands embankment crest.	Q2 & Q3 2025
General topsoil works around footprint of embankment as directed by drawings in preparation for grass seeding & other soft landscaping activities.	Q3 2024
* Information from Phase 2 RM Wetlands High Level Extract Programme (RPFA14 09.01.2024) and subject to change	

1.1 Record of Environmental Actions and Commitments

1.1.1 The planning permissions were granted on the basis of a number of environmental actions and commitments made in the Environmental Statement which accompanied the planning applications. The Record of Environmental Actions and Commitments (REAC)² captures these actions which are required to be adhered to, at the pre-construction, construction and operation stages. Table 2 below details those REAC commitments that are required to be adhered to during construction and which are set out within this document.

² A2.1 Outline Environmental Management Plan Appendix A2 Description of the Development Environmental Statement Volume 4 – Appendices (OEMP), reference HTR-ATK-XX-XX-RP-Z-0069

Table 2 REAC Commitments

Extracts from Table 3-1 - Record of Environmental Actions and Commitments (REAC): Reservoir Site			
Ref	Objective	Actions/commitments (incl specific location and any monitoring required)	Where Addressed
B9	To contribute to compensation for loss of ancient woodland (onsite measures) and loss of habitat used by bats and dormice.	During detailed design, identify any opportunities to use ancient woodland soils to contribute to habitat creation. Include separate management of ancient woodland soils for restoration works after passing places on northern access road have been reduced to final size, and any other retained ancient woodland soils, in the soil management plan. During construction, the methods for ancient woodland soil management and re-use will be actioned.	Ancient woodland soils were stripped from Middle Clearing, Round Wood and The Avenue and stockpiled by Portsmouth Water. They were relocated to new planting areas on the southern edge of Havant Thicket (drawing HTR-ATK-RZ-ZZ-DR-Z-0008 P01 areas 6, 7 and 8a) by Future Water in Q1 2023, before commencement of the Main Works. The shallow topsoil along the Northern Access Road has been stripped from the verges and stored in a low bund alongside, for replacement following construction of this road.
GC4	To maximise the use of site-won materials in the construction of the Scheme and reduce amount of soils disposed off-site.	Principal Designer to seek as far as reasonably practicable, to reduce the amount of soil/materials excavated and/or of a hazardous nature, to re-use and recycle waste soils/materials on-site, where possible and to promote sustainable waste and material resource management. Principal Contractor to construct the Scheme in accordance with the submitted design and planning applications.	Minimise generation of waste soils – this document Section 6.0 See also: Materials Management Plan (HTR-FUW-P2-RE-RM-W-009) and Site Waste Management Plan (HTR-FUW-P2-RE-RM-W-008).
GC6	To reduce soil erosion and compaction during construction works.	Principal Contractor to prepare a CEMP to include (but not limited to) the following mitigation measures: Minimising the area and duration of soil exposure and timely reinstatement of vegetation or	This document – Section 6 See also: CEMP and Materials Management Plan (HTR-FUW-P2-RE-RM-W-009)

		hardstanding to prevent soil erosion and reduce temporary effects on soil compaction; Stockpile management (such as water spraying and avoiding over stockpiling to reduce compaction of soil and loss of integrity) to reduce soil erosion, windblown dust and surface water run-off; Implementation of appropriate dust suppression measures to prevent soil erosion; Implementation of working methods during earthworks to ensure that there is no uncontrolled run-off from the material / waste stockpiles; and Implementation of an appropriate MMP to document how excavated materials will be managed.	
LV5	Reinstatement of landscape disturbed by the works.	A Soil Management Plan will be developed within the detailed design stages and its recommendations implemented on site. This should include methodology for stripping, storage, de-compacting, backfilling, re-spreading, cultivation, amelioration and reuse of all existing topsoil and subsoil. The plan should be monitored on site by a Soil Scientist to ensure ground preparation, soil handling and cultivation is correctly carried out and soils are not compacted	This document – Section 6

1.2 Environmental Statement

1.2.1 The Environmental Statement Volume 4 - Appendices, Appendix A14 Material Resources and Waste, A14.1 Materials Management Strategy, (reference HTR-ATK-ZZ-ZZ-RP-Z-0139, revision C02), page 5, Chapter 2, paragraph 2.1 states that

'The sources of excavated materials at the reservoir site including access roads are:

- Stripping of topsoil from areas requiring excavation within the footprint of the reservoir including the extent of the embankments and wetland area;*
- Excavation of underlying geology including clay from within the footprint of the proposed reservoir; and*
- Smaller quantities of excavated materials generated by construction of the access roads, car park and visitor centre.*

The topsoil stripped from the reservoir site will be stored in stockpiles within the footprint of the reservoir close to the location of intended use where this is possible. A Soil Management Plan (SMP) will be produced detailing the procedures for maintaining the soil quality over the duration of the construction phase. The topsoil will be reused on the embankments and wetland retention structure, following their construction.'

2.0 Project Information

Project Name	Havant Thicket Reservoir Main Works
Project Number	C1294
Client	Portsmouth Water
Principal Contractor	Future Water MJJV Ltd
Person Responsible for Updating this Soils Management Plan	Geraint Lloyd, Contract Manager
Site Address	Land at Swanmore Road, Havant

2.1 Key personnel

2.1.1 Key personnel and their roles and responsibilities in relation to this document are:

Contract Manager	Ensuring availability of personnel for tasks in this document
Senior Works Manager (Earthworks)	Determining suitability of soil conditions for earthworks operations (Section 6.1) Planning and ensuring site operations are completed in accordance with this Plan
Soil Scientist	Advising on and monitoring ground preparation, soil handling and cultivation. Advising on soil profiles for specialist habitats (section 6.2.3) Assisting Landscape Architect in determination of suitability of stored soils before re-use (Section 6.4) Testing of stored soils if required (Section 6.4)
Landscape Architect	Determination of suitability of stored soils before re-use (Section 6.4)
Site Environmental Manager	Inspect soil stockpiles during storage (para 6.3.6) and retain inspection records

3.0 Distribution & Review

3.1 Distribution

3.1.1 This Soil Management Plan must be kept on site at all times. The controlled copy, held by Geraint Lloyd must be available for members of the Future Water workforce, subcontractors and the client.

3.1.2 The controlled copy of this Plan is held by:

Name	Position	Company
Geraint Lloyd	Contract Manager	Future Water MJJV Ltd

3.1.3 Each subcontractor must be familiar with the control measures and procedures outlined in this Plan.

3.2 Review

3.2.1 This plan shall be reviewed as often as is required to ensure that it reflects the progress of the project and in any event, not less than every 6 months.

Date	Name	Nature of Changes	Signed
04/10/2022	Stephen Blunt	Initial Draft for Main works	Stephen Blunt
09/11/2022	Stephen Blunt	Early estimates of soil resources and requirements added	Stephen Blunt
25/01/2023	Stephen Blunt	Text on Ancient Woodland soils removed, as these soils to be re-used by Portsmouth Water	Stephen Blunt
07/03/2023	Stephen Blunt	Adjusted with internal comments	Stephen Blunt
11/08/2023	Stephen Blunt	Amended following Design Guardian and PW comments, Appx 2 added	Stephen Blunt
20/09/2023	Stephen Blunt	Amended following further Design Guardian and PW comments on DS64. 04.09.23	Stephen Blunt
15/11/2023	Stephen Blunt	Amended to reflect revised phasing and further Design Guardian and PW comments on DS72.	Stephen Blunt

26/1/2024	Stephen Blunt	Amended to reflect revised phasing and further Design Guardian and PW comments on DS 86 (version C03).	<i>Stephen Blunt</i>
-----------	---------------	--	----------------------

4.0 Pre-construction information

4.1 Framework Soil Management Plan P01.2 (Atkins)

4.1.1 The 'Framework Soil Management Plan' Rev P01.2 (Atkins Doc No HTR-ATK-ZZ-ZZ-RP-Z-0166), reports that a provisional investigation of soil in grassland areas over the site was carried out by others in 2020. This involved examination of 13 trial pits and sending a sample of topsoil from each trial pit to an accredited laboratory for analysis against BS 3882:2015 'Specification for Topsoil'. The Certificates of Laboratory Analysis confirm the presence of silty clay loam topsoil over slowly permeable and seasonally waterlogged clay subsoil, i.e., similar to soil grouped in the Wickham 3 Association.

4.1.2 The document indicates that soils to be disturbed are likely to have medium resilience to movement and disturbance. They form part of Soil Handling Unit 2: This unit of soils comprises medium clay loams and medium silty clay loam with less than 27% clay content. These medium textured soils have a medium resilience (or medium susceptibility) to structural damage by vehicles trafficking over them, or during soil handling operations, in a climate area where there are 225 Field Capacity Days or fewer (Annual Average Rainfall 1000 mm or less). Based on an 'Indicative on-average months when vegetated mineral soils might be in a sufficiently dry condition according to geographic location, depth of soil and clay content', the soil at Havant Thicket Reservoir is predicted to be in a sufficiently dry condition between late May and early October.

5.0 Uses of soil within the works

5.1 Requirements and resources

5.1.1 At this incomplete stage of design and Plan preparation (January 2024) the final position, size and profile of the reservoir embankment is not finalised. The size and position of temporary works and permanent works around the reservoir are to be designed, together with the associated landscape and habitat areas. Ground investigation results, and data from the monitoring of the trial excavations and trial embankment, are being analysed to allow the quantities and qualities of materials needed for the works to be calculated.

5.1.2 Table 3 lists the main areas of the completed site and the types of soil that are anticipated to be required for landscape and other uses. Soil resources known to be present within the site and likely to meet those requirements are identified. All quantities are approximate and based on a standard depth of 0.3m. This table is subject to review as more site data becomes available and the design is developed.

Table 3 Soil requirements and resources

LOCATION	REQUIREMENT	RESOURCE
Verges of Northern Access Road (see para 5.1.4)	Ancient Woodland topsoils to supplement existing verge soils when replaced following road works c500 m ³	Topsoil from The Avenue, Middle Clearing, Round Wood (stripped by Portsmouth Water and stockpiled. To be placed by Future Water as part of Phase 1 works.
Southern edge of Havant Thicket (drawing HTR-ATK-RZ-ZZ-DR-Z-0008 P01 areas 6, 7 and 8a) or other land to be arranged by PW/FE (habitat enhancement / management by PW/FE)	Topsoils from broadleaved woodland origin, to accelerate development of diverse long-term ground flora, fungi and microbial activity in areas where conifer has been cleared to replant with broadleaves or create forest glades (to match resource available)	Topsoil from The Avenue, Middle Clearing, Round Wood (stripped by Portsmouth Water and placed by Future Water early 2023) 6,500 m ³
Reservoir embankment (downstream face)	Well-structured subsoil and topsoil profile to protect engineered embankment, encourage down-slope drainage and deep rooting for resilient grassland cover. Moderate fertility to minimise long-term maintenance requirement. Areas of low fertility where a diverse flora can be maintained 20,000 m ³	Topsoil and subsoil from trial and main embankment footprint, currently supporting grassland = 14,200 + 67,200 m ³

LOCATION	REQUIREMENT	RESOURCE
Reservoir embankment (upstream face)	Well-structured topsoil with Enkamat, vegetated to protect engineered embankment in wave zone. Moderate fertility to minimise long-term maintenance requirement. 4,500 m ³	Topsoil and subsoil from trial and main embankment footprint, currently supporting grassland Incl within above
Disturbed areas outside reservoir (excluding PMGRP zone)	Well-structured subsoil and topsoil profile to encourage drainage and deep rooting for resilient grassland cover tbc m ³	Topsoil and subsoil from temporary works areas, supplemented by soils from reservoir footprint, currently supporting grassland Incl within above
Disturbed areas outside reservoir – enhancement to create Purple Moor-Grass and Rush Pasture (PMGRP)	Subsoil and topsoil placed to match existing profile of damp to wet grassland and rush pasture (zone identified in LEMP section 7.25 (HTR-ATK-ZZ-ZZ-RP-L-0002 C01 July 2022), with enhanced wetness from additional water input 1474 m ³	Subsoil and topsoil from identified zone to be stripped, stockpiled separately and placed in receptor area following earthworks. 1474 m ³
Reservoir wetland bund (upstream and downstream faces)	Topsoil with Enkamat, vegetated to protect engineered embankment. 5,400 m ³	Topsoil from wetland bund footprint, currently supporting grassland 16,000 m ³
Reservoir wetland, islands and ephemeral shallows/margins	Low fertility but organic-rich soil to initiate marginal vegetation see 5.1.3 tbc	Topsoil from borrow pit footprints, currently supporting grassland 132,800 m ³
Borrow pits and disturbed areas within reservoir footprint	Soil for short-term grass cover to protect clay surface from desiccation and weathering, control silt and dust see 5.1.3 100,000 m ³	Topsoil and subsoil from borrow pit footprints, currently supporting grassland Incl in above
Temporary drainage ditch network	Soil for rapid grass cover to strengthen sides, control erosion and filter silty run-off 21,550 m ³	Topsoil from footprint of temporary ditch network, currently supporting grassland 21,550 m ³

5.1.3 Soils to be used as substrate in the reservoir wetland and to generate temporary grass cover on the borrow pits or disturbed areas within the reservoir footprint are less demanding of good structural quality and so soils which lose structure, or have to be stripped outside optimum conditions, should be allocated to these uses first.

5.1.4 Approximately 500m³ of Ancient Woodland topsoil stripped and stockpiled by Portsmouth Water in 2022 is allocated for use in supplementing existing soils along the Northern Access Road. Work by Future Water on the NAR under Phase 1 of the project is due to be completed late in 2023, before the commencement of Phase 2 to which this Soil Management plan relates.

6.0 Procedures for stripping, storing and replacing soils

6.0.1 The practical requirements of the Framework Soil Management Plan, where applicable to the works noted in Section 1 Main Reservoir Works scope, are repeated here and supplemented with additional detail. Following these procedures will minimise (or avoid completely) the amount of soil which becomes unusable and has to be disposed of off site. Inspection and audit procedures relating to this Plan are contained in the Quality Plan (doc ref HTR-FUW-ZZ-XX-QA-W-007).

6.0.2 The requirement for habitat enhancement to create Purple Moor-Grass and Rush Pasture (PMGRP) is identified in LEMP section 7.25 (HTR-ATK-ZZ-ZZ-RP-L-0002 | C01 | July 2022). Where different requirements apply to this enhancement activity, they are shown here with the 'PMGRP' reference.

6.0.3 The machinery to be used for stripping, storing and replacing soils will be determined according to conditions at the time and to the equipment available, and confirmed in Method Statements. Generally, soil will be stripped by combination of dozer and excavator, loaded into ADTs for haulage, deposited and then spread or stockpiled by excavator. Final cultivations will be as specified in the landscape specification.

6.0.4 The tracking system for recording the movement, storage and re-use of soils will follow the system set out in the Materials Management Plan (ref HTR-FUW-P2-RE-RM-W-009).

6.1 Timing of Operations

6.1.1 The works programme includes periods when earthworks are suspended, due to anticipated winter wetness. The actual periods of work involving the stripping, handling or replacement of topsoil and soils for vegetated areas will be determined by the Senior Works Manager (Earthworks) based on site conditions at the time.

6.1.2 These topsoils and soils for vegetated areas shall only be moved when in a dry and friable condition. None of these soils should be handled during and shortly after significant rainfall, and/or when there are any puddles on the soil surface because soil is liable to compaction, smearing or other structural damage if handled in a wet condition. An appropriate method for determining soil moisture content for soil handling is given as Appendix 2 which is taken from the Framework Soil Management Plan. Additionally, handling of topsoils and soils for vegetated areas will cease when the Plastic Limit is exceeded, and not recommence until the Senior Works Manager (Earthworks) has determined their suitability for movement.

6.1.3 Before plant is moved onto an area to commence ground works, confirmation will be obtained through the 'Permit to Dig' system that ecological and archaeological constraints have been discharged.

6.1.4 Where possible, soils from any area will be transported directly to their final location without stockpiling. Topsoil stripped for the excavation of the temporary drainage network will be loose-tipped alongside the route and replaced as soon as possible, to facilitate grass establishment for erosion control. Where topsoil and subsoil have to be stripped before their final location is available for deposition, then stockpiling will be essential. Soil stripping will be programmed to minimise the duration of stockpiling, and to avoid stockpiling over the winter as far as possible within the requirement to expose areas of clay excavation and other groundworks according to the construction programme.

6.1.5 PMGRP The identified area of existing wet grassland has been marked on site for protection from disturbance until stripping. This area lies within the footprint of the embankment, its ground improvement zone and/or the southern drainage attenuation pond, and therefore cannot be retained and enhanced in-situ. The existing soils which are to be used in habitat creation / enrichment will be stripped in dry conditions as 6.1.1 – 6.1.2, likely to be in the autumn preceding the start of main embankment earthworks, and stored until they can be placed in their final positions.

6.2 Preparation and soil stripping

6.2.1 Before stripping topsoil in grassland areas, above-ground vegetation will be reduced or removed from the areas to be stripped, so that the amount of vegetation within the topsoil strip is minimised (limiting anaerobic decomposition of vegetation / organic matter within the topsoil stockpiles). Herbicide shall not be used for this purpose. The target vegetation height is 50mm or lower, but Precautionary Methods of Working for wildlife protection (principally reptile and amphibian displacement) shall take priority.

6.2.2 The haulage route to, location and size of soil stockpiles will be determined before soil stripping commences. Areas within which soil stockpiles will be located are shown in the figure in Appendix 3. Additionally, topsoil stripped from parts of the borrow pits in the first and second earthworks seasons may be stockpiled on the remaining parts of those borrow pits, for replacement at the end of the earthworks season to protect the underlying surfaces and reduce erosion.

6.2.3 PMGRP A suitable example area of species rich Purple Moor-Grass Rush Pasture (from those identified in ES Appendix A9.2) will be examined by the Soil Scientist to determine the depth of each soil layer in the profile, and the structure of these soil layers. This information will be used to guide the design of the new habitat areas and the placement of soils to achieve the design objective.

6.3 Soil Storage

6.3.1 Each soil stockpile will contain one type of soil only. Soils will not be mixed. PMGRP topsoil and subsoil will be kept separate from other topsoil and subsoil resources, and stored within the area designated for this material. Soil for re-use within the same annual earthworks season (see Section 5) will be kept separate from soils requiring storage over one or more winter periods (eg those intended for areas of permanently vegetated works).

6.3.2 Existing topsoil will be stripped from storage locations before subsoils are placed in stockpile. Stripped topsoil may be placed directly onto existing topsoil but the maximum height of the stockpile will be reduced by 0.5m. Where existing topsoil will remain in-situ and not be stripped following removal of the storage mound, then a thin marker layer of inert or slowly-biodegradable material such as sand or bark will be placed before forming the storage mound to aid identification when removing the stored material.

6.3.3 Storage mounds will be located so that there is lateral drainage away from the base and water cannot pond beneath or against the stored soil. Shallow ditches will be installed to intercept water flowing downslope towards storage mounds, and where topsoil has been removed before forming a soil mound, outlets for any trapped water will be provided to avoid saturation of the base of the storage mound. If there is any risk of silty runoff from storage mounds entering a watercourse then silt fencing shall be installed between the mound and watercourse to intercept this.

6.3.4 Storage mounds will be planned to have sufficient capacity, taking account of the following height limits which have been set based on ‘moderate’ resilience (low resilience for wet grassland and ancient woodland soils) as noted in section 4.1:

Table 4 Height of soil storage mounds

Topsoil and subsoil to be re-spread within same earthworks season, in areas to be inundated within reservoir. Stripping in dry conditions as 6.1	5m height
Topsoil and subsoil to be re-spread within same earthworks season, in areas to be inundated within reservoir. Where dry conditions as 6.1 are not met, but stripping is essential and cannot be delayed.	4m height
Topsoil and subsoil to be re-spread in areas of permanent vegetation. Includes broadleaved woodland sources not designated as Ancient Woodland. Stripping in dry conditions as 6.1	4m height
Topsoil and subsoil from existing wet grassland, to be re-spread to form new wet grassland/PMGRP	3m height
Topsoil from ancient woodland, to be re-spread in areas of new woodland planting or other habitat enrichment work	1m height
Stockpile heights in accordance with FSMP para 3.22	

6.3.5 Method statements will indicate slope angles depending on the physical nature of each material, wetness, stability and the plant available, as directed by the works foreman or works manager at the time. Storage mounds will be shaped so that surface water is shed with minimum infiltration. During formation, if operations are to be suspended eg due to forecast wet weather then the interim surface will be ‘sealed’ against water infiltration by tracking the machine or back-blading with the bucket. Such sealed layers will be broken up when mound formation resumes. At the completion of mound formation the surface will also be ‘sealed’ against infiltration.

6.3.6 Mounds of Ancient Woodland soil which has to be stored will not be sown with vegetation but will be allowed to vegetate naturally. All other storage mounds containing soils which are intended to remain in situ for more than 6 months or over the winter period are to be grassed over, and weed control and other necessary maintenance carried out with the objective of managing erosion, maintaining soil structure and suppressing weeds. The temporary vegetation cover will be cut or mown as necessary to avoid the generation of seed that could interfere with the future permanent vegetation in each area where the stored soils are finally placed. Each mound will be inspected by the Site Environmental Manager at least once per month to identify any problems such as erosion or weed growth, and initiate remedial action. These inspections are to be recorded as part of the site inspections record EN-a-008. Herbicide shall not be used for weed control on stored Ancient Woodland soil, unless the Site Environmental Manager determines that no practical alternative is available.

6.3.7 Example seed mixture for short term cover on soil storage mounds:

30% turf-type perennial ryegrass
25% slender creeping red fescue
20% hard fescue

10% crested dogstail
10% browntop bent
2.5% small-leaved white clover
2.5% birds-foot trefoil
(Available as Masterline PM95 with Rye from DLF Seeds Ltd.)

Sowing rate 10g/m² if sown between 1 April and 30 September; 15g/m² if sown after 30 September.

6.4 Soil replacement

6.4.1 The timing of soil replacement, and condition/wetness of soils, will be as stated in section 6.1. The haulage route from soil stockpiles to location of use will be determined before soil replacement commences.

6.4.2 Future Water's landscape architect, assisted by the Soil Scientist as required, will determine whether stockpiled soils remain suitable for their intended uses, in conformity with the specification. If testing is required to inform this determination then it will be carried out by the Soil Scientist.

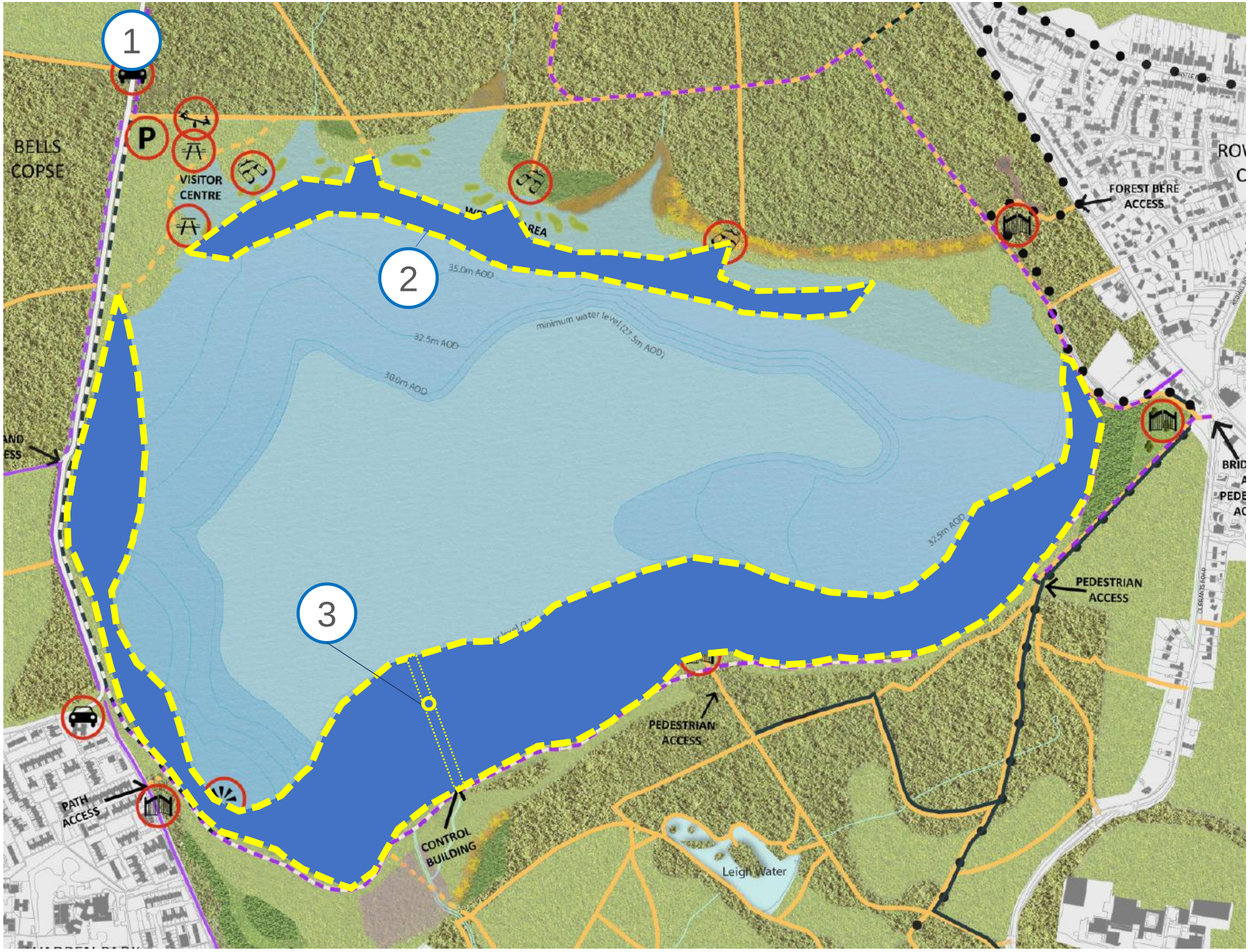
6.4.3 Where the formation is an engineered surface (eg the embankment or reservoir base) then any treatment before soil is spread will follow the engineering specification. In landscape areas the formation will be cultivated to remove surface compaction, unless the formation is dense impermeable clay in which case the grass mixture sown will rely on lateral drainage through the overlying substrate. Construction haul routes within landscape areas will be broken out and covered with soil before seeding, in accordance with the specification.

6.4.4 **PMGRP** Areas for the creation of this habitat will be founded on the re-engineered clay substrate, with sufficient compaction to minimise vertical drainage and maximise lateral flow of subsurface water within the topsoil and subsoil. The information gained by the Soil Scientist (para 6.2.3) will be used to guide the design of the new habitat areas and the placement of soils to achieve the design objective.

Appendix 1 Detailed Phasing Plan

(UNCONTROLLED COPY of doc no. HTR-FUW-RZ-RE-DP-W-507)

Reserved Matters Phasing



Ref	Element Covered	Proposed Submission Timing	Additional Information
1	Northern Access Route		Approved Feb 2023
2	Wetland Retaining Earthworks and Structures	Q1 2024	RM
3	Main Embankment, Culvert & Valve Tower	Q1 2024	Section 73 & RM

Dates subject to change following further schedule development

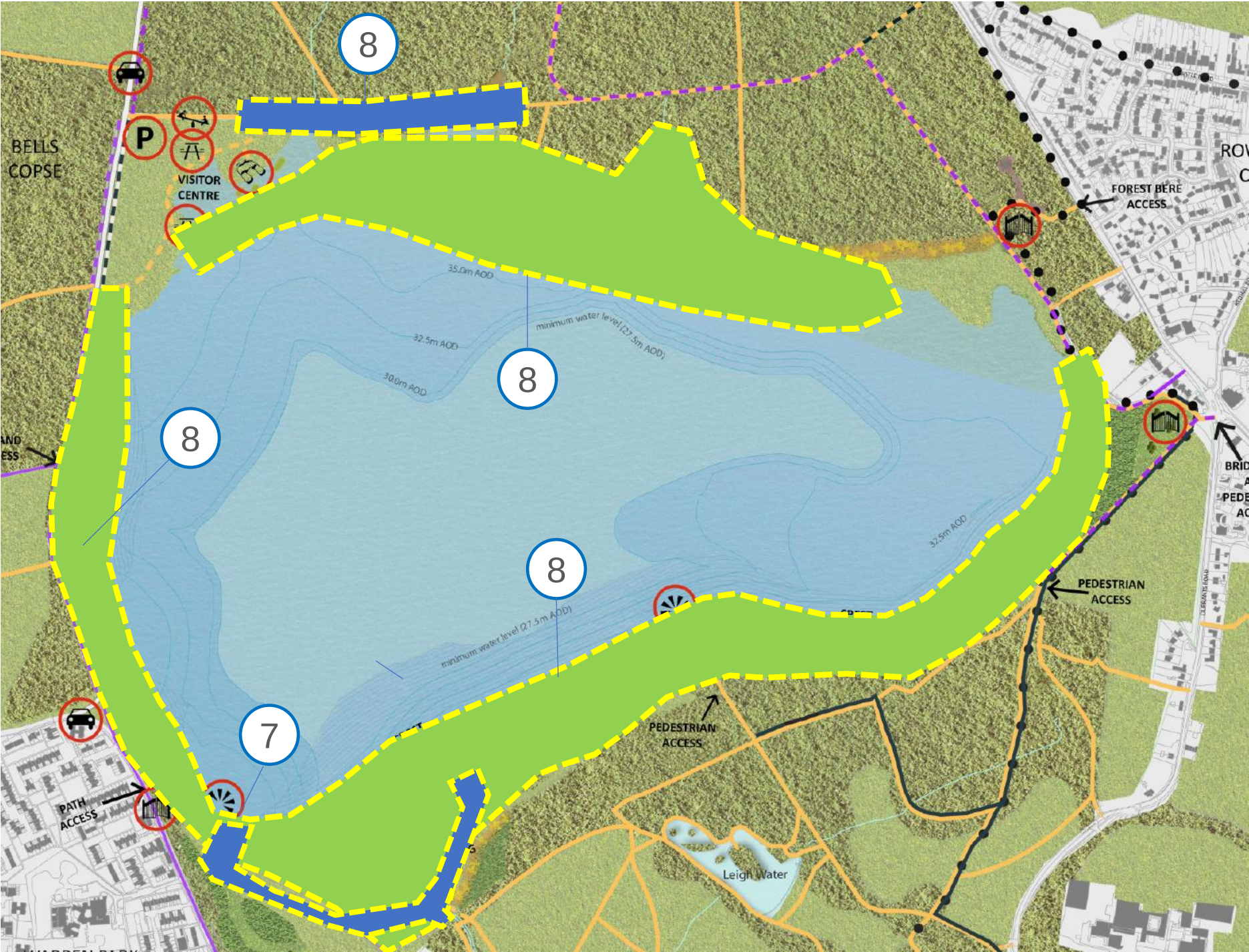
Reserved Matters Phasing



*Dates subject to
change following
further schedule
development*

Ref	Element Covered	Proposed Submission Timing	Additional Information
4	Southern Access Road	Q2 2024	RM
5	Control house and Pipe	Q3 2024	RM
6	Secondary means of access to outlet tower	Q1 2025	RM (Following new application)

Reserved Matters Phasing



Dates subject to change following further schedule development

Ref	Element Covered	Proposed Submission Timing	Additional Information
7	Spillway	Q4 2025	RM
8	Hard Landscaping, Soft Landscaping, Forestry England Track Culverts	Q2 2026	RM

Appendix 2 - Field test for suitably dry soils

(taken from 'Framework Soil Management Plan' Rev P01.2 Atkins Doc No HTR-ATK-ZZ-ZZ-RP-Z-0166, Appendix 2)

Table 4.2: Field Tests for Suitably Dry Soils

Soil tests are to be undertaken in the field. Samples shall be taken from at least five locations in the soil handling area and at each soil horizon to the full depth of the profile to be recovered/replaced. The tests shall include visual examination of the soil and physical assessment of the soil consistency.

i) Examination

- If the soil is wet, films of water are visible on the surface of soil particles or aggregates (e.g. clods or peds) and/or when a clod or ped is squeezed in the hand it readily deforms into a cohesive 'ball' means **no soil handling to take place**.
- If the sample is moist (i.e. there is a slight dampness when squeezed in the hand) but it does not significantly change colour (darken) on further wetting, and clods break up/crumble readily when squeezed in the hand rather than forming into a ball means **soil handling can take place**.
- If the sample is dry, it looks dry and changes colour (darkens) if water is added, and it is brittle means **soil handling can take place**.

ii) Consistency First test

Attempt to mould soil sample into a ball by hand:

- Impossible because soil is too dry and hard or too loose and dry means **soil handling can take place**.
- Impossible because the soil is too loose and wet means no soil handling to take place.
- Possible - Go to second test.

Second test

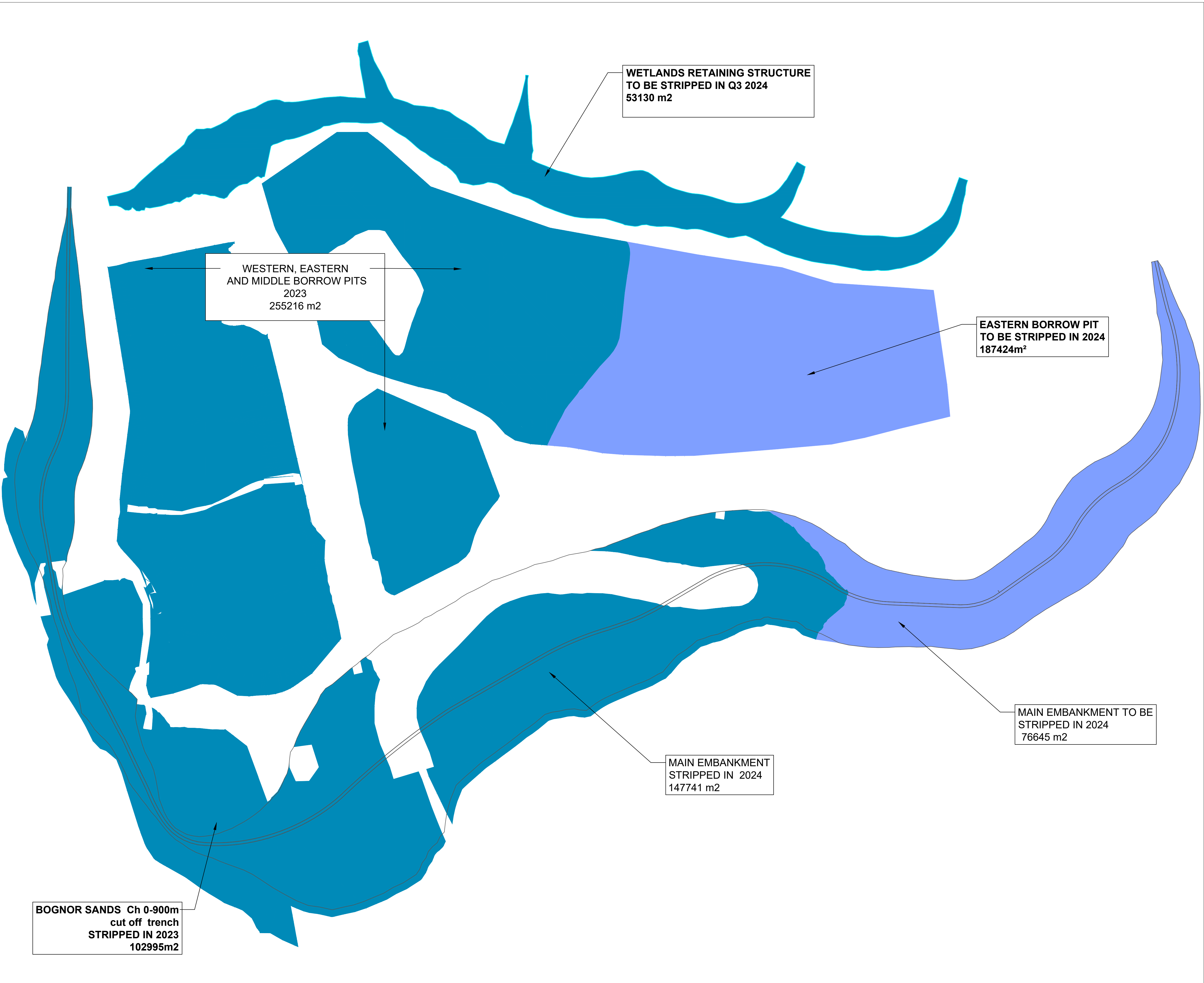
Attempt to roll ball into a 3mm diameter thread by hand:

- Impossible because soil crumbles or collapses means soil handling can take place.
- Possible means no soil handling can take place.

N.B.: It is possible to roll most coarse loamy and sandy soils into a thread even when they are wet. For these soils, the Examination Test alone is to be used.

Appendix 3- Stripping programme and areas available for stockpiling soils

(Drawing 'HTR Phasing 2024 and 2025' Rev A 01.2024 and
Drawing 'Topsoil Management Plan Stockpile Locations' 01.2024
based on working design at 01.01.2024 and subject to refinement / revision)



LEGEND



Rev	Description	Date	Initial



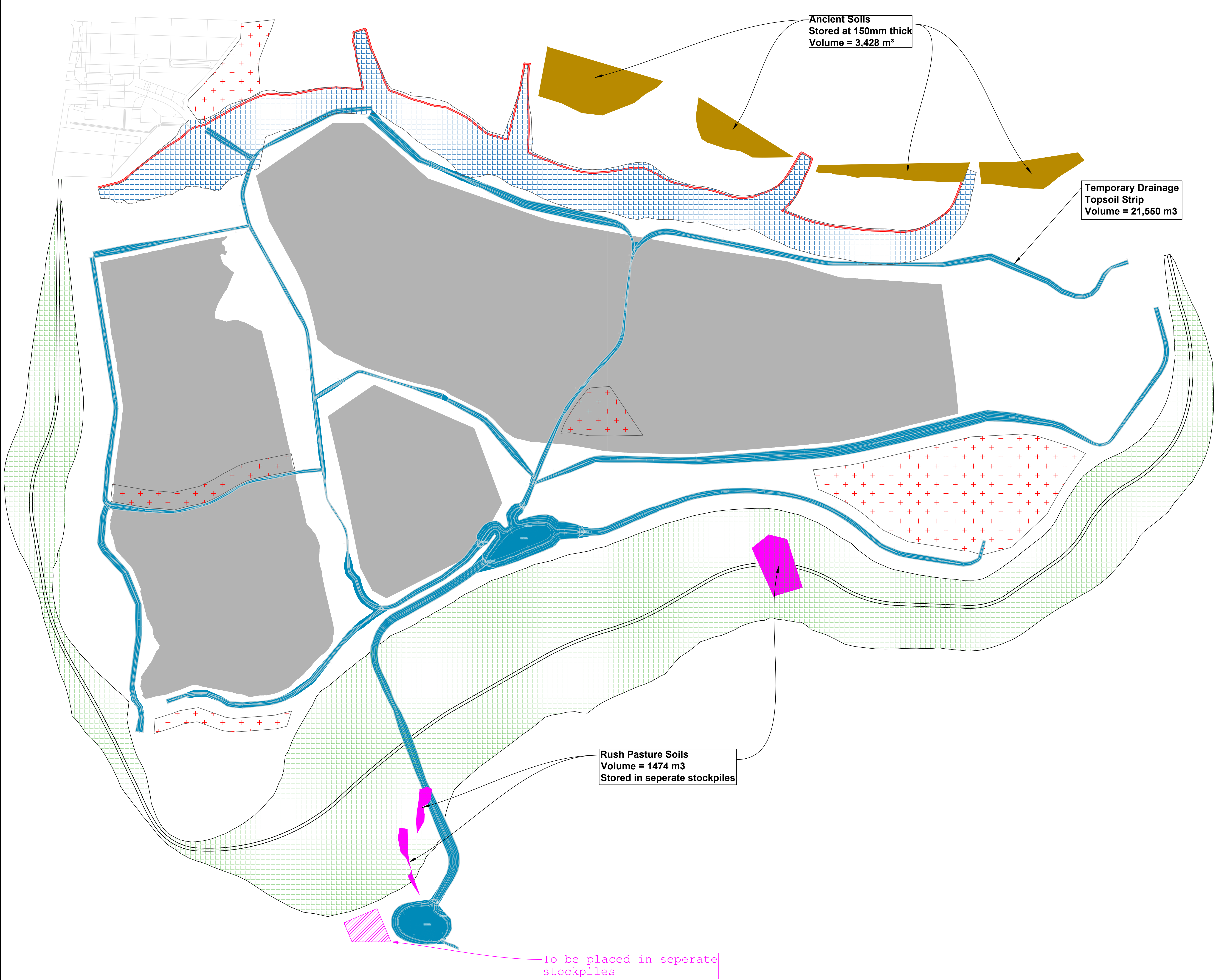
Jones Bros Civil Engineering UK
Ty Glyn
Canol y Dre
Ruthin
Denbighshire LL15 1QA Email: mail@jones-bros.com Tel (01824) 703 661

Client
Portsmouth Water

Site
Havant Thicket Reservoir

Drawing
HTR PHASING 2024 AND 2025

Drawn By	Date	Checked By
TR	05/02/2024	-
Scale	Surveyor	Revision Date
N/A	EG	-
Cad Plot Date	Cad File Name	
05/02/2024	HTR PHASING 2024 AND 2025	



LEGEND

Indicative Topsoil Storage Areas

Wetland Retaining Structure Construction Footprint

Main Embankment Construction Footprint

Ancient Soils Stockpile

Purple Moor Grassland Area

Purple Moor Soil Stockpile

Temporary Drainage System

Rev	Description	Date	Initial

Jones Bros Civil Engineering UK
Ty Glyn
Canol y Dre
Ruthin
Denbighshire LL15 1QA Email: mail@jones-bros.com Tel (01824) 703 661

Client
Portsmouth Water

Site
Havant Thicket Reservoir

Drawing
Topsoil Management Plan Stockpile Locations

Drawn By TR	Date 05/02/2024	Checked By MW
Scale N/A	Surveyor EG	Revision Date -
Cad Plot Date 05/02/2024	Cad File Name Topsoil Management Plan Stockpile Locations.dwg	