

Global Centre of Rail Excellence

Zone 1A Remediation Method Statement

Global Centre of Rail Excellence Limited

01 May 2023

GCRE001-AWJV-EW-RP-CLAH-00003

Notice

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1. Introduction

1.1. General

Atkins Limited (Atkins), part of the SNC-Lavalin Group, has been commissioned by Walters Group as their designer to undertake the detailed design of proposed earthworks for the redevelopment of the Nant Helen site, near Onllwyn, and Onllwyn Washery area as the Global Centre of Rail Excellence (GCRE), a rolling stock and rail infrastructure testing facility.

The development is located immediately to the south of Abercraf, approximately 20 km north-west of Swansea, south Wales. The development area, as indicated by the orange coloured GCRE boundary in Figure 1-1 comprises two areas: the 'Land at Nant Helen', also known as the 'main site', and 'the Washery'.

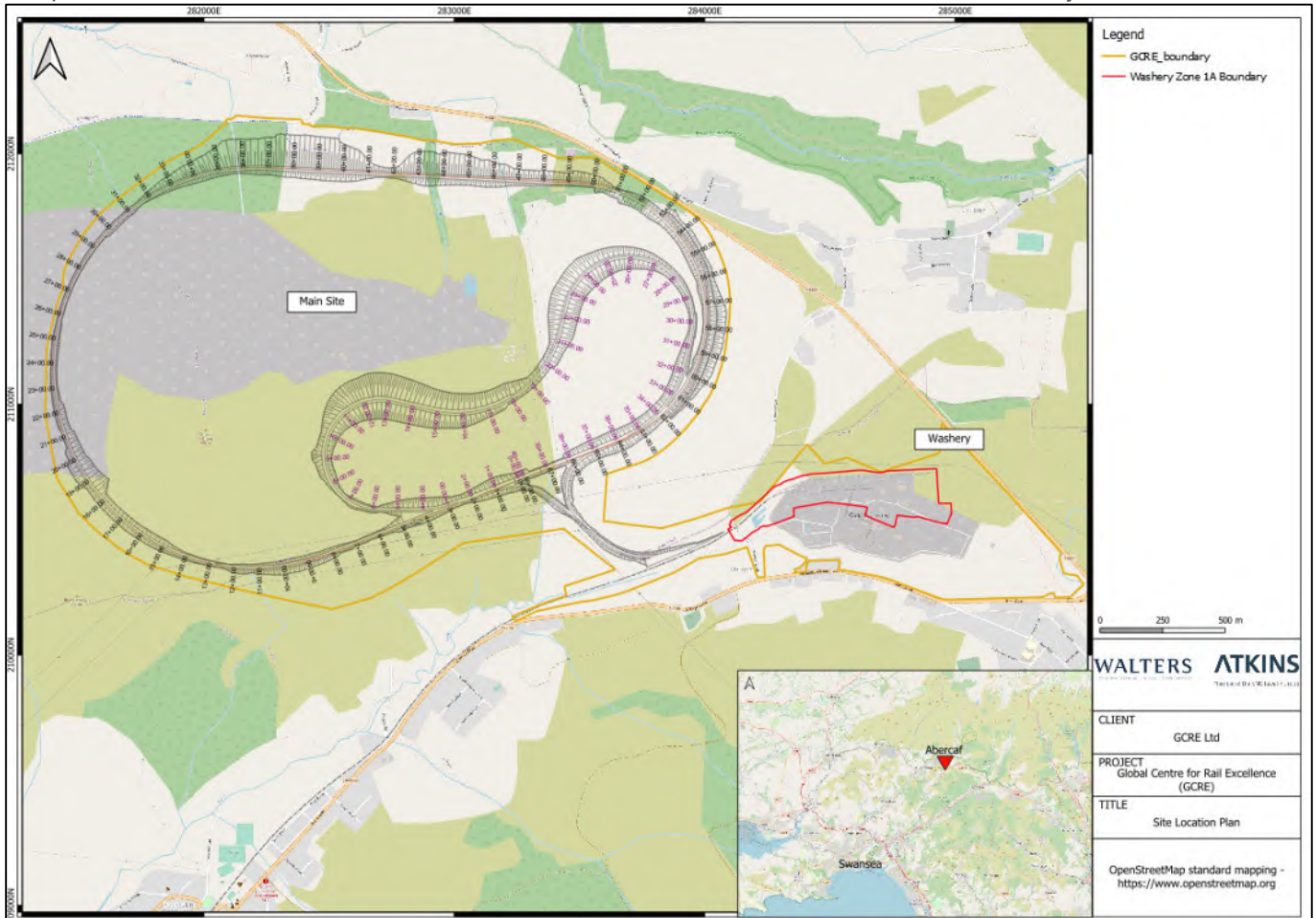


Figure 1-1 - Site Location Plan

This Remediation Method Statement (RMS) relates to works to be carried out on behalf of the Global Centre of Rail Excellence Limited (GCRE) for the redevelopment of the 'Land at Nant Helen' and 'the Washery', specifically sub area Zone 1A (the area within the red boundary in Figure 1-1), as a commercial use development (as detailed in Section 2). The areas outside of Zone 1A, but within the GCRE planning boundary are referred to as 'the site', the area that this report refers to is known as Zone 1A.

Further characterisation reports and remediation strategies will be prepared for other portions of the site.

The works covered by this RMS include bulk excavation for the construction of earthworks, earthworks, and redevelopment as an area of railway land which consists of tracks, sidings, a shunting cabin and an electricity substation.

1.2. Background

The Washery refers to the south-eastern portion of the site which incorporates the Onllwyn Washery, centred on approximate OS coordinates 284734E, 210533N. The Onllwyn Washery comprises railway land, spoil heaps, stockpiles, lagoons, several buildings, conveyer belts and material sorting facilities.

The 'Land at Nant Helen' refers to the central body of the site, located at the Celtic Energy Nant Helen opencast mine and will contain the proposed rail test tracks, centred on approximate Ordnance Survey (OS) coordinates 282643E, 211288N. The Celtic Energy Nant Helen Extension opencast mine was active until very recently, but is now in the process of being restored. Other parts of the proposed 'Land at Nant Helen' have been mined through opencast techniques in the past and have since been restored to their current levels.

Zone 1A consists of a roughly rectangular area of land that is approximately 900 m long and approximately 230 m wide, with its longest axis orientated west to east. The northern portion of Zone 1A (approximately a third of the area) consists of areas of vegetated colliery spoil and railway land. The central area is a raised area of coal stockpiles, which are linked to the railway land area and washery buildings to the south of Zone 1A by a series of conveyor belts. Two washery structures are present in the east and an area of lagoons is present in the west and south of Zone 1A. A disused cabin holding electrical equipment is present on the railway land with a former area of railway track bed crossing the south of Zone 1A and going off-site to the south.

Former washery infrastructure (i.e. railway track, concrete slabs, stockpiles of coal, buildings) is currently being removed as part of the sites ongoing demolition works.

The focus of this report is solely the northern part of 'the Washery', referred to within this report as 'Zone 1A'. The location of Zone 1A is shown by the red boundary line in Drawing 5209796-ATK-XX-DR-G-002, Appendix A.

This report should be read in conjunction with the information contained in the following reports:

- Geotechnical and Geoenvironmental Desk Study [1], Arup
- Ground Investigation Report [2], Arup;
- Stage 1 Ground investigation Report [3], Jackson Geo Solutions; and
- Zone 1A Geo-environmental Interpretative Report [4], Atkins

The works covered by this RMS include the bulk excavation and placement of engineered fill to achieve the required development level, gas mitigation and actions to protect human health from contamination risks, and to render the site safe and suitable for use. Temporary works are generally not covered although groundwater management is included.

1.3. Development Proposals

GCRE has obtained planning permission for the following change of use:

"Development of a Global Centre of Rail Excellence, comprising of two test tracks of loop configuration being an electrified high speed rolling stock test track of 6.9 km in length and an electrified low speed infrastructure test track of 4.5 km, with overhead line equipment (OLE) and dual platform station test environment; together with operations and control offices (including staff accommodation and welfare), shunter cabins (two), research and development, education and training, rolling stock storage sidings and maintenance/cleaning/decommissioning facilities; associated, drainage, internal vehicular accesses, branch line rail connection, staff and visitor car parking, lighting, electrical infrastructure (including substations and lineside shore supplies and transformers), fencing (perimeter security, acoustic and stock proof), land reformation and hard and soft landscaping, together with demolition of existing buildings/structures."

The Zone 1A portion of the site is a subsection of the wider development and will be an area of railway land that will not be accessible to the public development. Those activities that will occur within it have been underlined in the section above. Redevelopment will consist of:

- Demolition of existing structures (no longer covered by the planning permission);
- Bulk excavation;
- Earthworks to achieve required site levels;
- Railway sidings with connection to branch line, test tracks and Zone 2A to south;
- Shunting cabin (one);
- Electrical substation (one); and

- Lighting, drainage, electrical infrastructure such as Overhead Electrical Equipment (OLE) and fencing.
- It should be noted that demolition works are not contingent on the discharge of contaminated land specific planning conditions.

Significant excavation works will be required along the east and west of the Washery to accommodate the proposed railway sidings in Zone 1A. The following drawings, listed in Table 1-1 and presented in Appendix A, detail the redevelopment works set out above.

Table 1-1: Drawings Showing Proposed Redevelopment Works

Drawing Number	Drawing Title	Source
GCRE001-AWJV-EW-XX-DR-CE-00003	PHASE 1A EARTHWORKS: GENERAL ARRANGEMENT	Atkins
GCRE001-AWJV-EW-XX-DR-CE-00004	PHASE 1A EARTHWORKS PLATEAU: CUT & FILL HEAT MAP	Atkins
GCRE001-AWJV-EW-XX-DR-CE-00005	PHASE 1A EARTHWORKS PEAT EXTENTS	Atkins
GCRE001-AWJV-EW-XX-DR-CE-00001	PHASE 1A EARTHWORKS: CROSS-SECTIONS	Atkins
GCRE001-AWJV-EW-XX-DR-CE-00002	PHASE 1A EARTHWORKS: LONGITUDINAL-SECTIONS, SHEET 1	Atkins
GCRE001-AWJV-EW-XX-DR-CE-03003	PHASE 1A EARTHWORKS: LONGITUDINAL-SECTIONS, SHEET 2	Atkins
003A	ILLUSTRATIVE MASTER PLAN	Arup
003B	ILLUSTRATIVE MASTERPLAN – WASHERY OPTIONS	Arup

1.4. Key Parties

A summary of key parties involved in these works is presented below:

Table 1-2: Summary of Key Parties

Responsibility	Organisation
Client and Landowner	Global Centre of Rail Excellence Limited
Project Manager	Global Centre of Rail Excellence Limited
Key Stakeholders	Neath and Port Talbot Council (NPTC), Powys County Council (PCC), Natural Resources Wales (NRW)
Planning Authority	Neath and Port Talbot Council (NPTC)
Environmental Consultant / Designer	Atkins Limited
Principal Contractor: Earthworks	Walters Group Limited
Principal Contractor: Rail construction	To Be Confirmed

1.5. Objectives

The objective of this report is to provide a RMS that will satisfy the pre-commencement requirements of NPTC Planning Permission P2021/0327 Condition 23 for the Zone 1A area of the Washery. The location of Zone 1A is

shown in Drawing 5209796-ATK-XX-DR-G-002, Appendix A. A copy of the planning conditions is contained in Appendix B and Condition 23 is summarised below:

*“Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place **in each phase of development as identified in condition 7** [sic] (including ~~demolition~~ [sic], ground works, site or vegetation clearance) until a detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be prepared, and is subject to the approval in writing of the local planning authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 and The Contaminated Land (Wales) Regulations 2006, as amended by The Contaminated Land (Wales) (Amendment) Regulations 2012, in relation to the intended use of the land after remediation. The detailed remediation scheme should not be submitted until written approval for Condition 22 has been received from the local planning authority. All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012). All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2011-2026)”*

It should be noted the bold text and strike through in the paragraph above is transposed from the Decision Notice, which Atkins understand to have been amended to remove demolition from the planning permissions consideration.

1.6. Scope of Works

The scope of work that informs this report is as follows:

- Summary of planning situation and site characterisation information;
- Approach to bulk earthworks and materials management;
- Statement of ground gas protection measures that will be incorporated into the developments buildings;
- Watching brief to allow identification and mitigation of unanticipated contamination;
- Verification actions that will be undertaken to ensure delivery of the specified gas protection measures and materials management requirements; and
- Summary of contents of verification reporting that will be submitted to the Local Planning Authority.

1.7. Report Limitations

Data from previous reports undertaken by third parties have been incorporated into this report. This data has been assumed to be correct for the purposes of this assessment. Atkins does not accept responsibility for inaccuracies in the data supplied by any other party.

This RMS is based upon the current understanding of the site status, the ground conditions at the site following ground investigation and the level of design detail available for the redevelopment at the time of writing. Should conditions at the site be found to be different during future investigations or earthworks, the assessments made within this document may be liable to change. Further assessment, investigation, and/or validation sampling may be necessary to validate groundworks or any other works that materially alter the existing remediation profile on site or should the end use or design of the site development alter.

Any remedial activities undertaken after the date of this report shall be designed and completed in accordance with the most contemporary statutory legislation and guidance at the time of development. This report draws upon previous data from both intrusive investigation and validation testing, both of which rely upon the testing of a relatively small proportion of the sub-surface conditions at the site. Inferences drawn from these assessments are subject to the limitations of any such study.

2. Planning Conditions

Celtic Energy is required to restore the Nant Helen Opencast Mine in accordance with regulatory requirements and agreements with Powys County Council (PCC) and Neath Port Talbot Council (NPTC). Drawing 5209796-ATK-XX-DR-G-002, Appendix A, shows the areas of the development that fall within the PCC and NPTC respective administrative areas of responsibility. Zone 1A falls within NPTC's administrative boundary.

The Nant Helen Complementary Earthworks scheme, which includes the creation of 17.5 m wide plateaus within the site, has planning approval with several pre-commencement conditions still to be discharged.

Following Welsh Government (WG) discussions with both PCC and NPTC, the local authorities expressed a desire to develop a GCRE earthworks proposal for the site, in advance of the detailed rail project. This project is known as the Nant Helen Complementary Earthworks Scheme and an application was submitted for this earthworks scheme, seeking consent for the earthworks for two testing tracks, and the earthworks for a link from the existing railway in the south of the wider site which currently services the Onllwyn Washery to both councils. This earthworks full planning permission was submitted, and approval granted in July 2020. Following on from the Complimentary Earthworks Application a further Application was made for outline permission for the GCRE scheme.

This latter application was for the "Development of a Global Centre of Rail Excellence", with proposals comprising two rail tracks on sleepers set in a ballast track foundation, associated Overhead Line Equipment (OLE) and all other required supporting infrastructure. The two test tracks of a loop configuration are the outer loop (OL), which is an electrified high speed rolling stock test track of 6.9 km in length and the inner loop (IL), which is an electrified low speed infrastructure test track of 4.5 km. A vehicle access track is proposed adjacent to the proposed rail loops.

Planning applications and conditions that relate to assessment of land quality risks, their status and the stakeholder responsible for obtaining information to address them are summarised in Table 2-1 below. Conditions and Decision Notices with italicised text in Table 2-1 are relevant to Zone 1A and this RMS, regular text is used for Decision Notices or conditions that are not relevant to this RMS.

Table 2-1: Planning application and land quality condition summary

Planning Decision:	20/0738/ FUL	Local Planning Authority	Powys County Council (PCC)
Description:	Earthworks Planning Permission: Construction of complementary restoration earthworks to create two looped landform platforms (part in cutting and part on embankment) with associated drainage infrastructure and areas of landscaping and habitat creation to create a flexible and adaptable area of land that could be used for a variety of uses including agriculture, nature conservation, leisure, tourism and industrial, research and development/business uses (potentially including a proposed rail testing, research and development and storage facility).		
Condition and Summary			
15	Condition requires preliminary investigation and assessment of nature and extent of contamination. Requires Desk Study, site reconnaissance, initial conceptual site model (CSM) and preliminary risk assessment (PRA).		
16	Completion of site investigation into nature and extent of contamination, and reporting. To include appraisal of remedial options and identification of appropriate remedial options. Methodology of site investigation to be submitted to and approved in writing by the local planning authority prior to commencement.		
17	Preparation of detailed remediation scheme.		
18	Implementation of remediation scheme and notification to LPA that it has commenced.		
19	Remediation monitoring and maintenance scheme.		
20	Reporting, investigation and remediation of any unidentified contamination.		

Planning Decision:	21/0559/OUT	Local Planning Authority	PCC
Description:	GCRE Planning Permission: Development of a Global Centre of Rail Excellence, comprising of two test tracks of loop configuration being an electrified high speed rolling stock test track of 6.9km in length and an electrified low speed infrastructure test track of 4.5km, with overhead line equipment (OLE) and dual platform station test environment; together with operations and control offices (including staff accommodation and welfare), shunter cabins (two), research and development, education and training, rolling stock storage sidings and maintenance/cleaning/decommissioning facilities; associated, drainage, internal vehicular accesses, branch line rail connection, staff and visitor car parking, lighting, electrical infrastructure (including substations and lineside shore supplies and transformers), fencing (perimeter security, acoustic and stock proof), land reformation and hard and soft landscaping, together with demolition of existing buildings/structures		

Condition and Summary	
21	Requirement to complete preliminary investigation and assessment of the nature and extent of contamination in accordance with agreed phasing plan (Phasing Conditions 7). Requires Desk Study, site reconnaissance, initial conceptual site model (CSM) and preliminary risk assessment (PRA).
22	Completion of site investigation into nature and extent of contamination, and reporting in accordance with agreed phasing plan (Phasing Conditions 7). To include appraisal of remedial options and identification of appropriate remediation options and mine gas risk assessment. Methodology of site investigation to be submitted to and approved in writing by the local planning authority prior to commencement.
23	Preparation of detailed remediation scheme.
35	Implementation of remediation scheme and notification to LPA that it has commenced.
36	Remediation monitoring and maintenance scheme.
37	Reporting, investigation and remediation of any unidentified contamination.
48	No part of development to be brought into beneficial use until declaration by a competent person that remediation/mitigation needed to address risks posed by coal mining activity have been addressed.

Planning Decision:	P2020/0362	Local Planning Authority	Neath and Port Talbot Council (NPTC)
Description:	Earthworks Planning Permission: Construction of complementary restoration earthworks to create two looped landform platforms (part in cutting and part on embankment) with associated drainage infrastructure and areas of landscaping and habitat creation to create a flexible and adaptable area of land that could be used for a variety of uses including agriculture, nature conservation, leisure, tourism and industrial, research and development/business uses (potentially including a proposed rail testing, research and development and storage facility).		

Condition and Summary	
10	Requires CEMP to be prepared.
13	Condition requires preliminary investigation and assessment of nature and extent of contamination. Requires Desk Study, site reconnaissance, initial conceptual site model (CSM) and preliminary risk assessment (PRA).
14	Completion of site investigation into nature and extent of contamination, and reporting. To include appraisal of remedial options and identification of appropriate remedial options. Methodology of site investigation to be submitted to and approved in writing by the local planning authority prior to commencement.

15	Preparation of detailed remediation scheme.		
16	Implementation of remediation scheme and notification to LPA that it has commenced.		
18	Remediation monitoring and maintenance scheme.		
19	Reporting, investigation and remediation of any unidentified contamination.		
24	Requirement to submit any additional remediation requirements arising from unidentified contamination to the LPA.		
Planning Decision:	P2021/0327	Local Planning Authority	NPTC
Description:	GCRE Planning Permission: Development of a Global Centre of Rail Excellence, comprising of two test tracks of loop configuration being an electrified high speed rolling stock test track of 6.9km in length and an electrified low speed infrastructure test track of 4.5km, with overhead line equipment (OLE) and dual platform station test environment; together with operations and control offices (including staff accommodation and welfare), shunter cabins (two), research and development, education and training, rolling stock storage sidings and maintenance/cleaning/decommissioning facilities; associated, drainage, internal vehicular accesses, branch line rail connection, staff and visitor car parking, lighting, electrical infrastructure (including substations and lineside shore supplies and transformers), fencing (perimeter security, acoustic and stock proof), land reformation and hard and soft landscaping, together with demolition of existing buildings/structures.		
Condition and Summary			
21	Requirement to complete preliminary investigation and assessment of the nature and extent of contamination in accordance with agreed phasing plan (Phasing Conditions 7). Requires Desk Study, site reconnaissance, initial conceptual site model (CSM) and preliminary risk assessment (PRA).		
22	Completion of site investigation into nature and extent of contamination, and reporting in accordance with agreed phasing plan (Phasing Conditions 7). To include appraisal of remedial options and identification of appropriate remediation options and mine gas risk assessment. Methodology of site investigation to be submitted to and approved in writing by the local planning authority prior to commencement.		
23	Preparation of detailed remediation scheme.		
38	Implementation of remediation scheme and notification to LPA that it has commenced.		
39	Remediation monitoring and maintenance scheme.		
40	Reporting, investigation and remediation of any unidentified contamination.		
48	No part of development to be brought into beneficial use until declaration by a competent person that remediation/mitigation needed to address risks posed by coal mining activity have been addressed.		

NB: All conditions require submission to the LPA for approval before development/beneficial use can commence.

Italicised text highlights the condition this report is intended to address and the Planning Decision that is applicable to Zone 1A

Zone 1A is located within the Washery and NPTCs area of responsibility, therefore this report is prepared to address condition 23 of Planning Decision P2021-0327. The other Decision Notices detailed above are relevant to the other development zones of the site. Condition 23 of PCC decision notice 21/0559/OUT has matching requirements to NPTCs condition 23.

3. Site Summary

For a detailed summary of encountered ground conditions please refer to Atkins Geo-environmental Interpretative Report [4].

3.1. Site History

A review of the historical maps from 1867 to the present day indicates the Onllywn Washery has been the site of extensive coal mining activities from prior to the advent of Ordnance Survey (OS) Mapping to the 1970s. In 1867 ground workings from coal mining are shown across the Washery area, with features labelled as old coal levels. A significant portion of the Washery is shown as marshy ground with a series of ponds, drains and springs present. A branch line from the Neath and Brecon Railway runs through the centre of the Washery and the Zone 1A sub area (east to west) with Onllwyn Pit (Later colliery) present to the east and Onllwyn to the south. Coal mining activities expanded across the site until the 1970s when the collieries around and within the Washery are closed and the Washery use associated with open cast mining to the north commences. Substantial tipping of colliery spoil occurs, from 1967 to the closure of the collieries, across the Washery with the construction of buildings and lagoons associated with the recent Washery use adding to several buildings associated with colliery operations.

3.2. Geology, Hydrogeology & Hydrology

The following section summarises the geological, hydrogeological and hydrological conditions in Zone 1A and is based on the conditions observed as part of the 2021-2022 and 2022-2023 ground investigations reported in Atkins Geo-environmental Interpretative Report [4].

3.2.1. Geology

3.2.1.1. Artificial Ground

Made Ground is indicated by Groundsure data to be present across Zone 1A, within the Washery. Locally within Zone 1A railway ballast, road surfacing and Made Ground from coal stockpiles and anthropogenic uses are present. The majority of Made Ground relates to colliery spoil deposited during the operation of the former Onllywn and Dulais collieries which historic mapping shows to have been occurring prior to the mapping record commencing throughout the life of the surrounding collieries which formally closed in 1982.

Placement of colliery spoil within Zone 1A was a historic mining waste disposal activity that predates the current waste regime.

3.2.1.2. Superficial Deposits

BGS mapping [5] indicates the presence of peat in the west and north of Zone 1A. The peat is described by the BGS as 'partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps' [6].

Superficial deposits are not mapped in the south and east of Zone 1A by the BGS, but GI locations have recorded the presence of Devensian Till within the Zone 1A area at S1-BH112 and S1-BH116.

3.2.1.3. Bedrock Geology

BGS mapping [5] indicates the western portion of Zone 1A is underlain by South Wales Middle Coal Measure Formation (SWMCM), and the east of the Zone 1A is underlain by South Wales Lower Coal Measure Formation (SWLCM). These formations are described as 'grey, (productive) coal-bearing mudstones/siltstones, with seatearths and minor sandstones'.

Due to the similarity of the Middle and Lower Coal Measure Formations and the difficulty of differentiating them in the field they have been treated as one unit for the purposes of this report.

The 1:10,560 geological mapping [7] typically indicates that the bedrock dips in a west south-westerly direction at angles ranging from between 5° and 15°. However, there are localised variations to this, with several anticlines and synclines shown.

The Glyncorrwg Fault is shown on the published geological maps crossing the centre of Zone 1A with a NNW-SSE strike. Several inferred coal seams are shown by the BGS, and it is possible that there are other unidentified faults and/or coal seams within the Zone 1A site boundary.

3.2.1.4. Mining

The Zone 1A site is located within the South Wales Coal Field and is designated as a Development High Risk area by the Coal Authority [8] and the adjacent wider site has a known extensive history of coal mining, including the current opencast mining.

3.2.2. Hydrogeology

3.2.2.1. Aquifer Properties and Classifications

While superficial deposits of peat are mapped as being present across Zone 1A, Glacial Till is mapped adjacent to the northern boundary of Zone 1A, and to the west at the Land at Nant Helen, but shown to extend into Zone 1A in S1-BH112 and S1-BH116.

The peat is classified by the BGS and Natural Resources Wales (NRW) as an Unproductive Aquifer. Glacial Till is classified as a Secondary Undifferentiated Aquifer, a category assigned where it is not possible to attribute either category A or B to a rock type which might previously have been mapped as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Glacial Till deposits proximal to and within Zone 1A predominantly comprised of well graded gravels, cobbles and boulders within a low permeability silty clay matrix which limits recharge to, and confines water in, the underlying bedrock formations [9]. Where lenses of higher permeability silt and more continuous bands of stratified sand and gravel occur, Atkins agrees with Arup [9] [10] that these may be considered to act as localised perched aquifers but are not considered to alter significantly the role of the strata as a barrier to vertical flow.

The underlying rhythmic sequences of mudstones, siltstones, sandstones, fireclays and coals which make up the South Wales Coal Measures (SWCM) are collectively classified by NRW [11] as a Secondary A Aquifer. The permeable siltstones and sandstones are understood to form a multi-layered aquifer system supporting large quantities of water at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers or emerging as springs where basal horizons of subordinate sandstones intersect the ground surface.

3.2.2.2. Groundwater Vulnerability

The BGS GeoIndex [5] indicates that the SWLCM and SWMCM on-site are designated as Secondary A Aquifers with a medium groundwater vulnerability designation. There are no further groundwater vulnerability designations for Zone 1A.

3.2.2.3. Groundwater Source Protection Zones

The Welsh Government's Data Map [12] indicates Zone 1A is not within a groundwater source protection zone.

3.2.3. Hydrology

The River Dulais flows in a west-south-westerly direction through the western part of Zone 1A, and along a portion of the south-eastern boundary of the Washery.

The entirety of Zone 1A is located within the Dulais catchment. The catchment also includes:

1. Nant Ystalwyn, a tributary of the Dulais: Nant Ystalwyn is understood [10] to be fed by a selection of former water treatment ponds within the body of the Land at Nant Helen which are in-turn fed by the drainage features present on the southern face of the large overburden storage area.
2. Man-made drainage features: These are understood to pass beneath and along Onllwyn Road before feeding into a collection of ponds within the Washery.

The Camnant is located approximately 500 m east of Zone 1A. Other portions of the Washery are likely to be within the Camnant's catchment but topography and direction of flow of surface water drains (to the west) do not support Zone 1A falling within the Camnant's catchment.

3.3. Previous Works

The following sources of information relating to previous work for the project have been reviewed in preparation of this report, unless otherwise stated they cover the entire GCRE planning footprint:

- Land at Nant Helen and Onllwyn Coal Washery, Geotechnical and Geo-environmental Desk Study, Arup, 2018 [10]: A desk study covering the whole site including a summary of the site history and ground

conditions, including topography, geology, hydrogeology, hydrology, and coal mining legacy. Included a preliminary Conceptual Site Model (CSM), preliminary engineering assessment, summary of the identified geotechnical and geo-environmental risks and opportunities and recommendations for further work.

- Detailed Mine Workings Study, Arup, 2020 [13]: An addendum to the mining section of the desk study presenting a detailed review of the available mine abandonment plans, a more detailed assessment of the subsidence risks across the wider site and the available information on the extent and depth of opencast backfill. Provided recommendations for targeted intrusive ground investigation for areas identified to be at significant risk of subsidence as a results of mining activity.
- Environmental Statement, Arup, 2020 [14]: An environmental statement document prepared to support the full planning application submitted to PCC and NPTCBC.
- Ground Investigation Specification, Arup, 2021 [15]: Specification for ground investigation works at the wider site in accordance with UK Specification for Ground Investigation [16]. The specification included works (geophysical, trial pitting and rotary open holes) to target the risk areas identified by the Detailed Mine Workings Study.
- Ground Investigation Factual Report, Quantum Geotechnical Limited, 2022 [17]: Factual report detailing ground investigation fieldwork undertaken across the wider site between 15 November 2021 and 19 January 2022. Includes an account of the fieldworks undertaken, descriptions of strata encountered and 4 subsequent laboratory test results.
- Ground Investigation Report, Arup, 2022 [9]: Geotechnical and geo-environmental interpretation of the ground and groundwater conditions encountered in the ground investigation undertaken by Quantum Geotechnical Limited and to support the discharge of the project's planning conditions.
- Coal Mining Risk Assessment, Atkins, 2023 [18]: Reviews and expands on Arup's Detailed Mine Workings Study using information from the Quantum Ground Investigation Factual Report and Arup Ground Investigation Report (GIR).
- Stage 1 Ground Investigation, Factual Report, Jackson Geo Services [3]: Factual report detailing Stage 1 ground investigation field work. GI works specific to Zone 1A.
- Zone 1A Geo-environmental Interpretative Report, Atkins [4]: Review Jacksons Geo's Factual report and provides interpretation of the data including soil, controlled waters and ground gas risk assessment.

3.4. Atkins 2023 Geo-environmental Interpretative Report

Following completion of Arup's work in 2022 Atkins designed a further ground investigation (GI) campaign to address information gaps in the Arup report for the Zone 1A area. GI works consisted of:

- Seventy seven boreholes progressed to between 4.0 m and 30.8 m bgl drilled using either dynamic, open hole rotary or rotary coring, including those locations undertaken for mining/geotechnical purposes only;
- Five machine-excavated trial pits progressed to between 0.7 m and 4.0 m bgl;
- Environmental samples were taken from each trial pit and sixteen boreholes. The remaining boreholes were undertaken for mining/geotechnical purposes;
- Analysis of 71 soil samples for soil chemistry, soil-leachate and waste acceptance criteria suites;
- Completion of three ground gas and groundwater monitoring rounds to add to six completed previously by Arup; and
- Groundwater and surface water sampling and analysis.

The following sections present the conclusion of Atkins geo-environmental investigation and Figure 3-1, Figure 3-2 and Figure 3-3 show the locations of investigation positions and installed monitoring wells

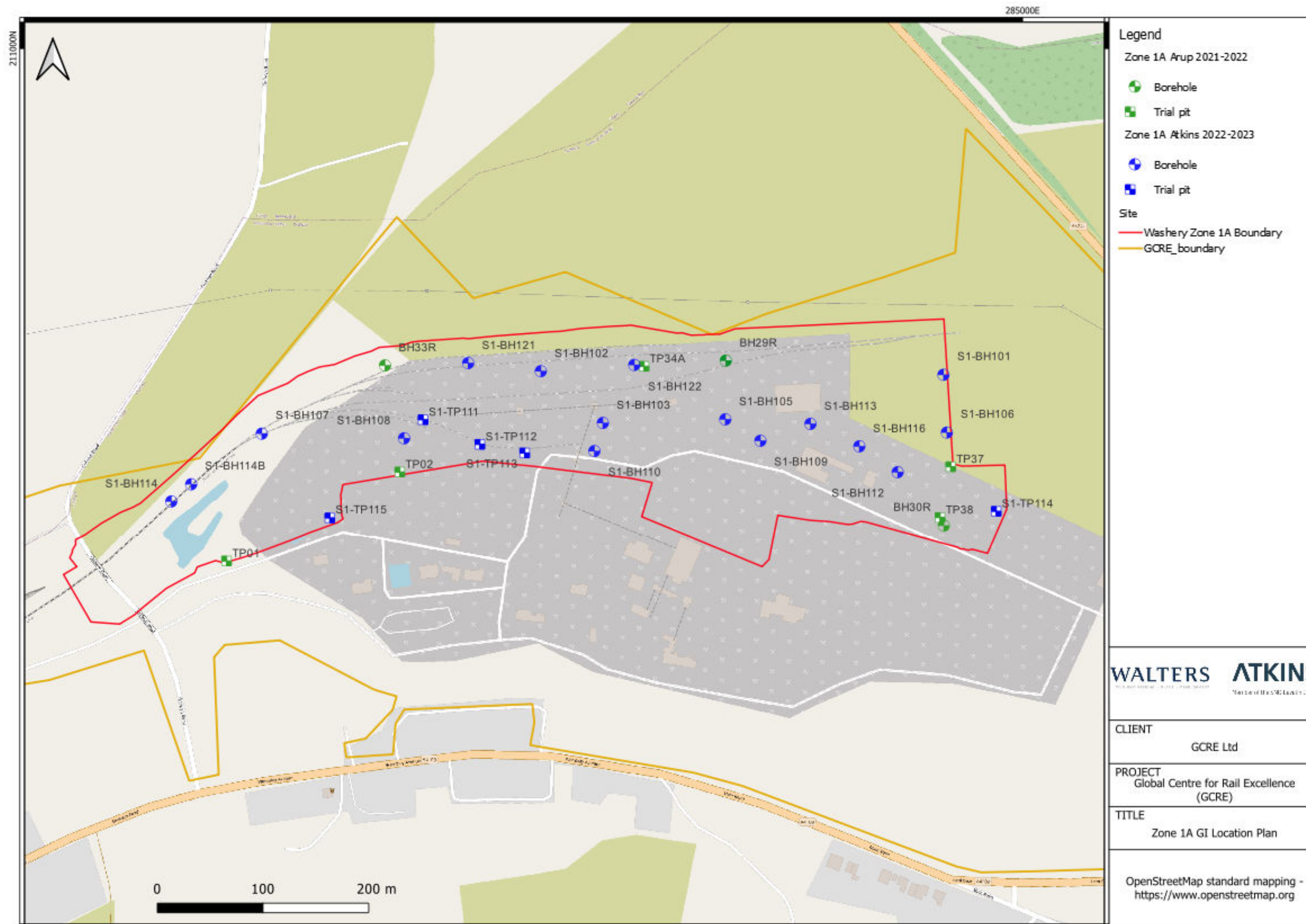


Figure 3-1: Exploratory hole location plan

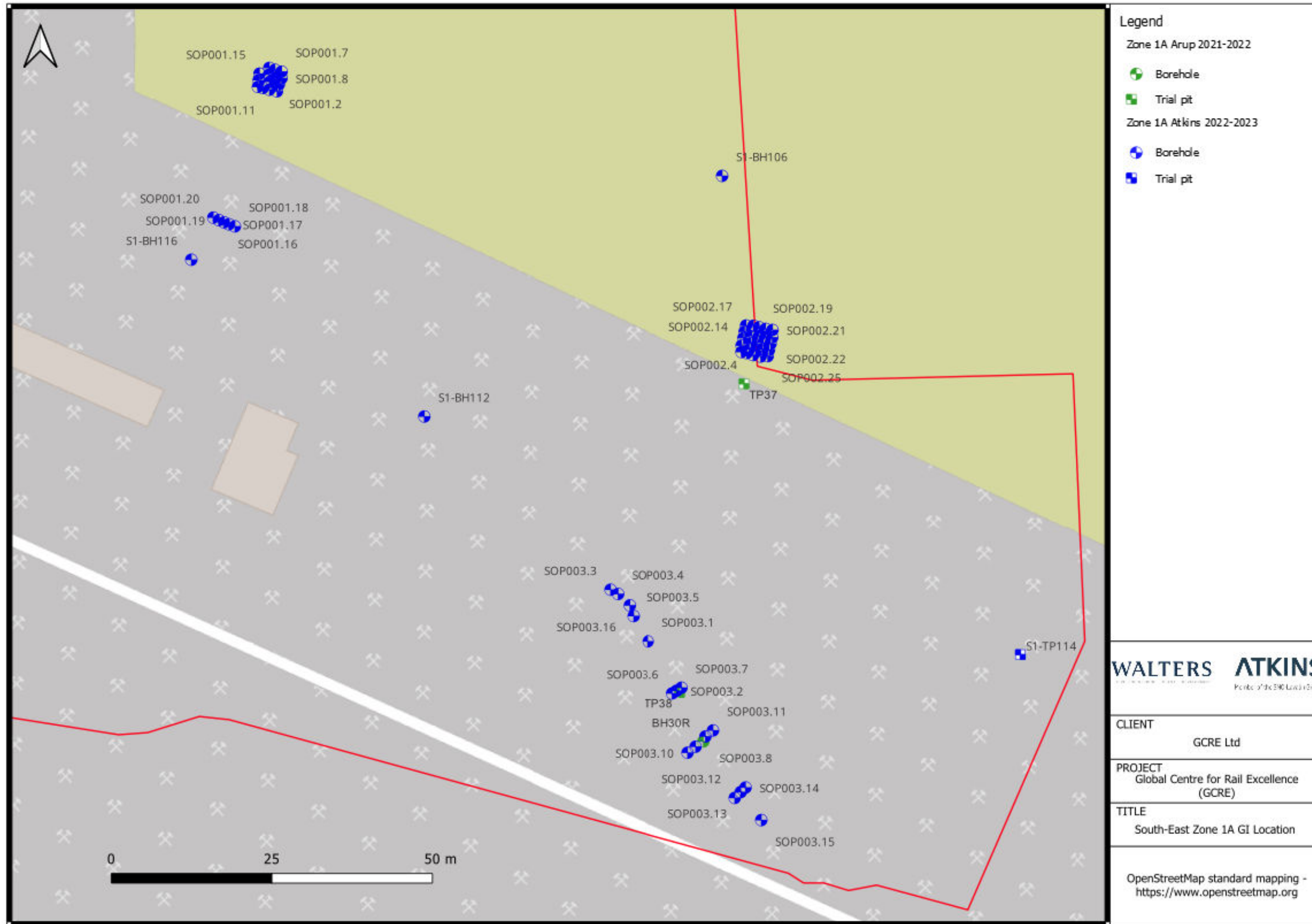


Figure 3-2: Exploratory hole location plan in south-east of Zone 1A

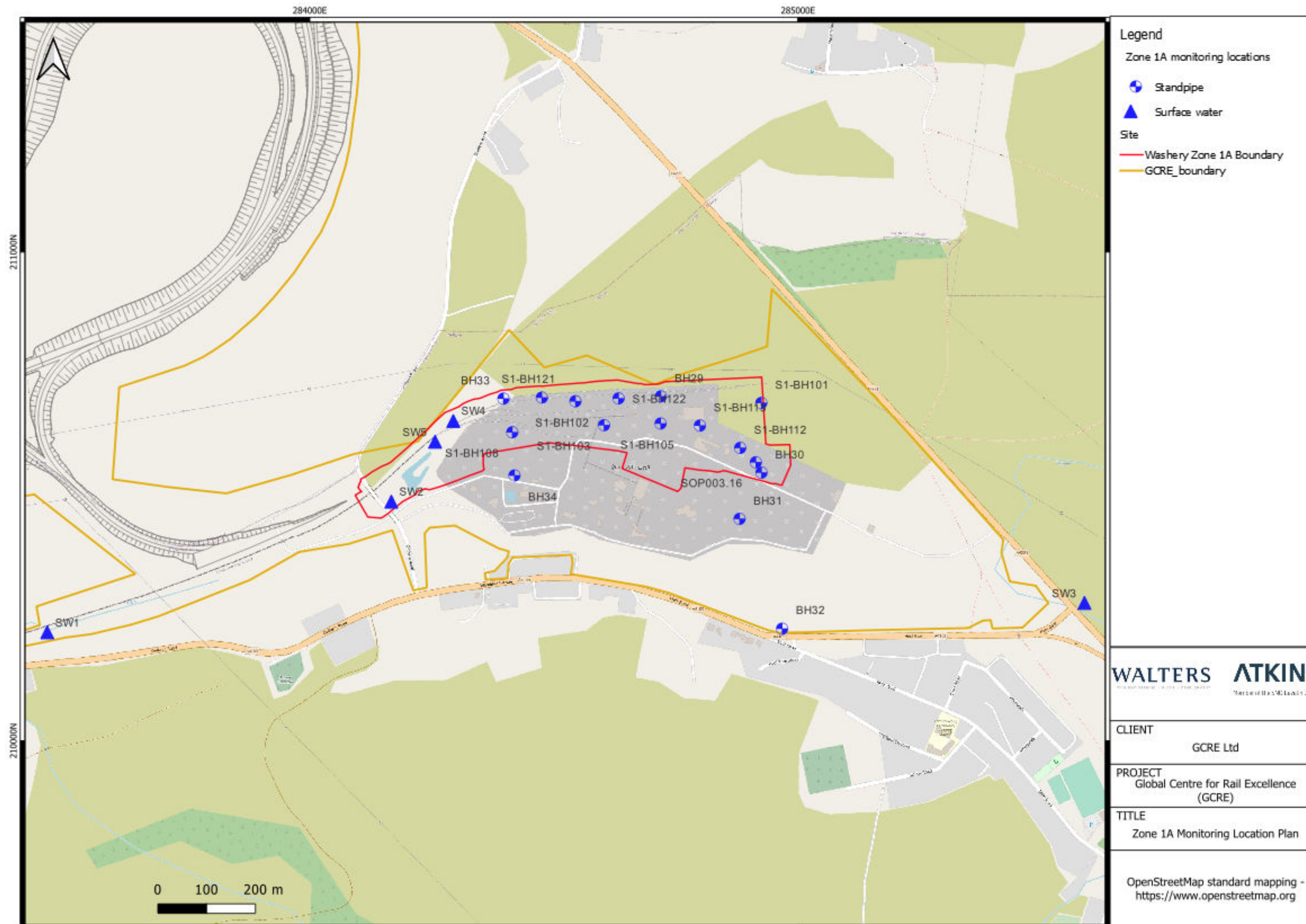


Figure 3-3: Monitoring location plan

3.4.1. Human Health Risks from soils

Results of the soil screening process recorded a single exceedance of the commercial land use Generic Assessment Criteria (GAC). The eastern part of Zone 1A recorded an exceedance of lead within S1-BH106 at a depth of 2.50 m bgl, indicating that the soil in this part of Zone 1A could pose a human health risk to future site users. S1-BH106 is located at the eastern boundary of Zone 1A in an overgrown area in Madeground that consists of colliery spoil. Within the Zone 1A masterplan, this area is proposed to be developed for use as sidings.

The Washery will have its levels amended in order to deliver a level platform for GCREs use, this change in level will place a considerable quantity of fill over the western Washery and result in significant cutting of fill in the eastern Washery, and the presence of this material (if demonstrated to be clean) will break the ingestion, dust inhalation and dermal exposure pathways that users of the developed site would be exposed to. Drawing GCRE001-AWJV-EW-XX-CE-00004, Appendix A, presents where cut and fill is intended within Zone 1A.

Asbestos was not visually observed during the ground works or detected in the 71 soil samples scheduled for geo-environmental laboratory analysis from Zone 1A. However, there was considered to be a potential risk that asbestos could be found in Made Ground, especially around areas of former buildings. If asbestos is found, mitigation should be considered as part of the construction works design. Should any unexpected visual or olfactory evidence of potential contamination, including asbestos, or potential sources of ground gas be encountered during construction works, it was recommended that part of the works should be halted. The report recommended that a contaminated land / asbestos specialist should be consulted immediately so that additional assessment can be undertaken, and appropriate mitigation measures are put in place.

3.4.2. Ground Gas / Mine Gas and Vapour Risks

Based on site historical information, the ground conditions encountered, and monitoring currently undertaken, it was considered that harmful ground gases pose a moderate risk to the human health and property receptors identified in the Zone 1A. It was considered that ground gas risk was likely to be CS3 (Moderate Risk). No recent monitoring during summer months (seasonal low ground water period) had been completed. However, unflooded mine workings were encountered at SOP003 (a location where a series of boreholes were drilled with the intention of identify a suspected mine working) and their presence in other parts of Zone 1A has been assumed when assessing risks from coal mine gas.

No vapour sources were identified.

It was recommended that Gas protection measures that deliver a CS3 level of protection should be incorporated into structures such as the proposed shunting cabin and electricity sub-station.

Following a decision regarding mine working treatment (grouting/additional ground investigation/excavation) of shallow mining risks a review of the mine gas portion of the risk assessment will be required to address acute risks associated with any treatment of mine workings displacing groundwater or mine gas.

Once all monitoring works are complete, all boreholes and wells must be decommissioned through backfilling and sealed in a manner that prevents them acting as migration pathways for mine gas, in accordance with the Environment Agency guidance for good practice for decomisioning redundant boreholes and wells, October 2012 [19].

3.4.3. Risks to Controlled Waters

The results of the leachate, groundwater and surface water testing mostly showed relatively limited and intermittent exceedances, and did not indicate that on-site soils posed an unacceptable risk to the underlying aquifer and surface waters. No exceedances of TPH or BTEX were recorded in the groundwater or surface water. Cadmium, chromium (total), cyanide (total), lead, manganese, nickel, several PAHs, pH, sulphate, and zinc were present at concentrations that intermittently exceeded water quality standards. For the majority of determinands, no apparent adverse correlation between soil leachate exceedances and groundwater/surface water exceedances was recorded. Contaminants of concern that exceeded water quality standards were considered to originate from the South Wales Coal Measures or the overlying Made Ground of colliery spoil (primarily reworked South Wales Coal Measures).

Where soils are proposed to be re-used, further leachate tests (including manganese) were recommend as being undertaken in order to determine whether they pose a potential environmental risk. The leachate results should be compared to suitable acceptability criteria, and where relevant Water Quality Standards are exceeded should either not be reused or a DQRA completed to derive site-specific criteria to determine whether the soils are suitable for use. It was assumed that piled foundations to support buildings will not be

required within Zone 1A, however piles may be required to support railway infrastructure such as overhead line electrification equipment once the earthworks have been constructed.. Should piled foundations be required the risk of creation of a preferential pathway would need to be assessed in a Piling Risk Assessment and the piles designed to mitigate the creation of a pathway for potential contamination.

3.4.4. Materials Management

Materials reuse, where proposed, needs to comply with either the CL:AIRE Definition of Waste Code of Practice (DoWCoP) [20], if the Landfill Directive applies, or Mining Waste Directive (MWD) [21]. These both require collection of verification data demonstrating that their requirements have been complied with during construction works to avoid regulatory action. Additionally, during earthworks a watching brief was recommended with screening of soils proposed for reuse, especially in areas of landscaping where exposure of future site staff to contaminants could occur.

It should be noted that material reuse will need to either comply with the DoWCoP (where soils/geology are natural or contain anthropogenic material that is not classified as mining waste) or the MWD (where soil/overburden consists of spoil from mining activities that is considered to be within its originating extractive site). The DoWCoP requires a Materials Management Plan (MMP) to be prepared then declared by a Qualified Person (QP), with verification activities undertaken during construction works, then submission of a MMP Verification Report to CL:AIRE. The MWD requires that a Waste Management Plan (WMP) be prepared if mining waste is not classified as inert waste or Unpolluted Soil, additionally an Environmental Permit may be required to reuse mining waste that is not classified as inert waste or Unpolluted Soil. Within Zone 1A further (verification) geo-environmental sampling and analysis is needed to allow either approach to be followed.

3.4.5. Geo-environmental recommendations

Atkins Geo-Environmental Interpretative Report [4] provided the following recommendations:

1. There is a potential for unanticipated contamination in the sites groundwaters. If groundwater is encountered during groundworks and evidence of contamination is noted, an environmental specialist should be consulted to ensure the appropriate handling and disposal of any contaminated waters.
2. The adoption of appropriate best practice environmental management during construction to mitigate potential risks to environmental receptors (e.g. minimisation of dust generation and migration, and controlled surface water run-off) should be incorporated in future site works.
3. Although not detected in the soil samples, due to the land use there is the potential for asbestos to be present on-site specifically in any undemolished former Washery structures and as unanticipated contamination present within Made Ground. An asbestos survey should be undertaken by a suitably qualified person, prior to demolition of on-site structures.
4. Where soils are proposed to be re-used, further leachate tests (including manganese) should be undertaken to determine whether they potentially pose an environmental risk. The leachate results should be compared to suitable acceptability criteria, and where the EQS/DWS are exceeded, DQRA may be required to derive site-specific criteria to determine whether the soils are suitable for use.
5. Due to the inherent variability which can be expected, there is a possibility that previously unidentified contamination may be encountered. It is recommended that this uncertainty is considered within health and safety risk assessments and a watching brief is provided during all excavation works in order to identify any unexpected, potentially contaminated ground conditions.
6. The ground model for the site is currently being developed. Once complete the ground gas risk assessment should be reviewed, in compliance with BS8485 [22], CIRIA C665, [23] and CL:AIREs Good Practice for Risk Assessment for Mine Gas Emissions [24].
7. The proposed shunting cabin and electricity substation should be designed with suitable gas protection measures for a CS3 site, with consideration of the correct building type, as defined by BS8485:2015 [22] and with gas protection designed in compliance with CIRIA C801 [25].
8. Once all monitoring works are complete, all boreholes and wells must be decommissioned through backfilling and sealed in a manner that prevents them acting as migration pathways for mine gas.
9. A method to mitigate the potential risk of lead to human health, identified within S1-BH106 at a depth of 2.50 m bgl should be designed based around proposed construction works. It is anticipated that clean cover would be placed above this soil, removing this contaminant linkage and potential associated risk.

10. Where soils are to be re-used, an MMP should be undertaken prior to any works or excavations taking place, in compliance with DoWCoP, or reuse should be completed in line with the MWD. A watching brief and further verification testing for soils will be required where re-use is proposed.

A remediation strategy should be undertaken, and followed during construction, to ensure sufficient contamination mitigation measures are followed and the above bullet points are addressed.

4. CSM

The conceptual site model for the redevelopment is based on the data summarised in the Geo-environmental Interpretative Report and is set out in Table 4-1. The methodology followed is as presented in Section 3.7 of the Atkins Geo-environmental Interpretative Report [4].

Table 4-1: Zone 1A Conceptual Site Model

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
<u>On-site</u> Made Ground associated with historic and current industrial activities (Coal Washery, former Colliery, Railway Land, former tramways, spoil heaps). Infilled ground associated with underlying historic mine shafts, quarries, and workings. Potentially contaminated surface water/road run-off from current Mineral Railway and Coal Washery. Localised spillages of hydrocarbons/fuels from current Mineral Railway activities. Historic contamination associated with historic industrial activities. Natural soils with a potential to generate ground gases (peat) Possible contaminants include: Asbestos Metals PAHs	Inhalation, ingestion and dermal contact with contaminants in soil and soil derived dust.	<u>Human Health</u> future users of site: site workers and maintenance staff during the operational phase	Low	Medium	Moderate/Low Asbestos was not recorded in any samples tested, although unrecorded asbestos may be present within the Made Ground and structures within Zone 1A that have not been demolished. There is a potential risk of undiscovered asbestos on-site and the consequent of exposure to asbestos would potentially be severe. Of the remaining determinands tested, a single exceedance of the assessment criteria was recorded for lead and was located in S1-BH106 at a depth of 2.50 m bgl. The remaining determinands were recorded at concentrations that are below the assessment criteria. Risk from determinands other than asbestos are considered to be low.	Post-construction it is anticipated that ground cover at the site will predominantly comprise minimal areas of exposed bare soil. Bare soils may be exposed during construction, increasing the short-term potential of soil derived dust and dermal contact with soils. It is assumed that any potential risks to construction workers would be managed through robust risk assessments to identify appropriate PPE and working methods. Further testing and assessment should be undertaken if soils are to be re-used instead of remaining in-situ to demonstrate that they are suitable for re-use. A remediation strategy should be undertaken, to include mitigation measures to ensure the risk posed by the lead exceedance is mitigated and to ensure reused material will be suitable for use. Prior to demolition of any on-site buildings / structures, an asbestos demolition and refurbishment survey should be undertaken and its

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
Petroleum hydrocarbons VOCs/SVOCs Ground and mine gasses (methane, carbon dioxide, hydrogen sulphide or carbon monoxide)						recommendations implemented. During construction works a watching brief is required to identify unanticipated contamination and to ensure that risks associated with a discovery are assessed and mitigated.
	Migration of ground gases and vapours along preferential pathways such as permeable ground / services / mine workings / faults. Accumulation within confined spaces such as the proposed cabin. Inhalation/asphyxiation/explosion.		Low	Severe	Moderate Risk The shallow mine workings present beneath Zone 1A are a significant potential source of ground gas, with made ground on-site posing a source with a much lower potential for gas generation. Elevated carbon monoxide, methane, carbon dioxide and flow rates were recorded and the site was assigned as Characteristic Situation 3- Moderate Risk.	The proposed shunt cabin and electricity sub-station should be designed with suitable gas protection measures for a CS3 site, with consideration of the correct building type, as defined by BS8485 [37] and CIRIA C801 [45]. Installation of gas protection to meet requirements of CS3 for the types of structures that are proposed. Gas protection verification. No entry into confined spaces without risk assessment, confined space training and appropriate mitigation. Completion of additional monitoring to feed into Zone 2A risk assessment Risk assessment and mitigation of gas risk due to displacement of gas / groundwater during mine working remediation if planned.

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
	Migration of ground gas along strata and preferential pathways such as permeable ground / services / mine workings / faults leading to accumulation and explosion.	<u>Human Health</u> neighbouring residential properties, nearby commercial properties including the wider site	Low	Severe	Moderate Risk Ground gas risk assessment has identified a viable source of coal mine gas and considers Characterisation Situation 3 to be likely to be present to receptors within the wider GCRE development footprint The risk to receptors that are outside of the GCRE planning redline is considered to be low due to the distances involved. Off-site receptors are considered to be at more significant risk from off-site ground gas sources. Piling may adjust the flow of mine gases on and off site and should be considered further if required.	No unacceptable risks are considered to be posed by the Zone 1A development to receptors outside of the GCRE planning boundary Further investigation of off-site sources and assessment of risks posed by them to Zone 2A. Installation of gas protection to meet requirements of CS3 or outcome of Zone 2A gas risk assessment for the types of structures that are proposed within Zone 2A. Gas protection verification in wider GCRE site footprint. No entry into confined spaces without risk assessment, confined space training and appropriate mitigation in wider GCRE development. Risk assessment and mitigation of gas risk due to displacement of gas / groundwater during mine working remediation if planned. Piling risk assessment to consider ground gas risks if piling designed.
	Inhalation and ingestion of wind-blown dust. Plant uptake.	<u>Human Health</u> Adjacent to the site boundary	Low	Medium	Moderate/Low Asbestos was not recorded in any samples tested, although unrecorded asbestos may be present within the Made Ground	Post-construction it is anticipated that ground cover at the site will predominantly comprise minimal areas of exposed bare soil.

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
	Leaching of contaminants and migration within groundwater.				and structures within Zone 1A that have not been demolished. There is a potential risk of undiscovered asbestos on-site and the consequent of exposure to asbestos would potentially be server. Of the remaining determinands tested, an elevated concentration of lead was recorded in S1-BH106 at a depth of 2.50 m bgl. The remaining determinands were recorded at concentrations that are below the long-term human health assessment criteria. Risk from determinands other than asbestos are considered to be low.	Bare soils may be exposed during construction, increasing the short-term potential of dust derived soils. Further testing and assessment should be undertaken if soils are to be re-used instead of remaining in-situ to demonstrate that they are suitable for re-use. Prior to demolition of any on-site buildings / structures, an asbestos demolition and refurbishment survey should be undertaken and its recommendations implemented. During construction works a watching brief is required to identify unanticipated contamination and to ensure that risks associated with a discovery are assessed and mitigated.
	Direct contact of foundations/services with aggressive soils and or groundwater. Chemical attack to buried structures.	<u>Property and Services</u> neighbouring residential and commercial properties.	Low	Mild	Low Risk Current and future below ground infrastructure is assumed to have been/will be constructed to appropriate standards for the site to withstand attack from soil chemistry.	Concrete design to take account of aggressive ground conditions in accordance with BRE SD1 (DS-1, AC-1) [46].

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
	Leaching or dissolution of contaminants in unsaturated soils and subsequent migration Lateral and vertical migration through Made Ground, superficial deposits and bedrock, mine workings (with either voids or infilled material), faults and artesian water. Migration via preferential pathways e.g. existing drainage, foul sewer, proposed service pipes/trenches.	<u>Groundwater</u> <u>Controlled Waters</u> Secondary A Aquifer (bedrock)	Low	Medium	Moderate Risk The works are likely to result in disturbance of soils and colliery spoil during excavation and construction which may result in the release of contaminants with a potential to migrate to groundwater, in addition to leachate generation during the operational phase. Groundwater below the site is present at a shallow depth and classified as a Secondary A Aquifers. Leachate and ground water testing to date has mostly shown that on-site soils pose a limited environmental risk. However, exceedances of WQS were intermittently recorded for cadmium, chromium, cyanide (total), lead, manganese, nickel, PAHs, pH, sulphate, and zinc in leachate, groundwater and surface water samples. For the majority of determinands, no adverse correlation between soil leachate exceedances and groundwater/surface water exceedances was recorded, however potential risks from onsite soils were identified with regards to manganese and cyanide.	DQRA should be undertaken to derive site-specific reuse criteria to determine whether the on-site soils are suitable for re-use on Zone 1A or the wider site, particularly for cyanide and manganese where exceedances have been recorded. Where soils are proposed to be re-used, further leachate tests (including manganese) should be undertaken to provide further information on the concentrations of these determinands within the on-site soils

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
	Leaching or dissolution of contaminants in unsaturated soils and subsequent migration. Lateral and vertical migration through Made Ground, superficial deposits and bedrock, mine workings (with either voids or infilled material), faults, and artesian water. Surface water runoff. Migration of contaminated water in drainage ditches to controlled surface waters.	<u>Surface Water Controlled Waters</u> Camnant (500m to east of site) and Dulais (in west of Zone 1A)	Likely	Medium	Moderate Risk For the majority of determinands, no adverse correlation between soil leachate exceedances and surface water exceedances was recorded. However potential risks from onsite soils were identified with regards to manganese and cyanide. Elevated concentrations of manganese were recorded in groundwater and some surface water samples.	DQRA should be undertaken to derive site-specific criteria to determine whether the onsite soils are posing a risk to controlled waters, and whether soils are suitable for re-use on Zone 1A or the wider site, particularly for cyanide and manganese where a wide range of exceedances have been recorded. Where soils are proposed to be re-used, further leachate tests (including manganese) should be undertaken to provide further information on the concentrations of these determinands within the onsite soils
	Lateral migration of contaminated water within the aquifer. Intake and uptake of contaminants in soil and soil-derived dust by flora and fauna	<u>Ecological</u> Onllwyn Gorsllwyn SSSI 150 m north-east of the site	Unlikely	Medium	Moderate/Low Risk The inferred groundwater direction is to the west, in the opposite direction of the SSSI. Furthermore, limited exceedances of EQS have been identified for onsite soils.	DQRA should be undertaken to derive site-specific criteria to determine whether the onsite soils are posing a risk to controlled waters, and whether soils are suitable for re-use on Zone 1A or the wider site, particularly for cyanide and manganese where a wide range of exceedances have been recorded. Where soils are proposed to be re-used, further leachate tests (including manganese) should be undertaken to provide further information on the concentrations of these determinands within the onsite soils

Sources	Pathway	Receptor	Probability	Consequence	Classification of Risk	Recommendations
<u>Off-site</u> Historical tips within 250 m of the site; Contamination and Made Ground associated with historical and current mining and quarrying activities; Potentially contaminated surface water/run-off from historical and current mining activities Possible contaminants include: Asbestos Metals PAHs Petroleum hydrocarbons VOCs/SVOCs	Inhalation, ingestion and dermal contact with contaminants in soil derived dust.	<u>Human Health</u> – future users of site	Unlikely	Medium	Low Risk Off-site land uses are similar in nature to identified on-site.	Further ground investigation and interpretive reporting will be undertaken on other portions of the wider site.
	Migration of ground gases and vapours along preferential pathways such as permeable ground / services / mine workings / faults. Accumulation within confined spaces such as the proposed cabin. Inhalation/asphyxiation/explosion		Likely	Medium	Moderate Risk Elevated carbon monoxide, methane, carbon dioxide and flow rates were recorded and the site was assigned as Characteristic Situation CS3. Off-site ground gas sources are considered to be similar to those within Zone 1A, with on-site sources posing a more significant risk due to their proximity.	Installation of gas protection to meet requirements of CS3 or outcome of Zone 2A gas risk assessment for the types of structures that are proposed. Gas protection verification. No entry into confined spaces without risk assessment, confined space training and appropriate mitigation. Risk assessment and mitigation of gas risk due to displacement of gas / groundwater during mine working remediation if planned.
Ground and mine gasses (methane, carbon dioxide, hydrogen sulphide or carbon monoxide)	Leaching or dissolution of contaminants in unsaturated soils and subsequent migration Lateral and vertical migration through Made Ground, superficial deposits and bedrock, mine workings (with either voids or infilled material), faults, and artesian water. Migration via preferential pathways e.g. existing drainage, foul sewer, proposed service pipes/trenches.	<u>Groundwater Controlled Waters</u> Secondary A Aquifer (bedrock)	Likely	Mild	Moderate/Low Risk Potential off-site sources have been identified, however groundwater monitoring within Zone 1A by Atkins and monitoring from the wider Washery completed by Arup has not shown an off-site source that presents an unacceptable risk. Groundwater flow within Zone 1A is to the west and Zone 1A is considered to be cross gradient to the majority of potential off-site sources.	Further ground investigation and interpretive reporting will be undertaken on other portions of the wider site.

5. Remediation Method Statement

5.1. Introduction

This RMS relates to remediation and earthworks to be carried out on behalf of the GCRE for the redevelopment of Zone 1A of the former Onllwyn Washery (see Figure 1-1), as a commercial redevelopment (as detailed in Section 1.3).

The works covered by this RMS include the bulk excavation, earthworks construction and construction of rail infrastructure.

Development proposals for Zone 1A comprise two single storey buildings which consist of a shunting cabin and electricity sub-station. Both are single storey structures that will be controlled by GCRE and under unified management. Plans showing the development are contained in Appendix A.

As discussed in Sections 3.4 and 4, potential contaminant linkages exist, which currently present an unacceptable risk to human health and require remediation/mitigation as part of the development works.

5.2. Scope of Works

The general scope of works for the enabling earthworks and siding area construction for Zone 1A is as follows:

- Site clearance and preparation.
 - Stockpile management;
 - Material assessment and relocation for on-site re-use and/or off-site disposal. Material stockpiles will be situated within the Zone 1A footprint.
 - Identification and protection of any groundwater / ground gas monitoring boreholes to be retained and decommission of any that are within the footprint of the earthworks.
- Treatment of mine workings
 - Grouting contractor to complete assessment of acute mining gas and controlled water risks associated with injection of grout into workings.
- Groundwater management/dewatering is not considered to be required within the Zone 1A footprint, if needed the following process will be followed.
 - A Discharge Consent / Environmental Permit will be arranged;
 - Dewatering will be undertaken by the installation of wellpoints within the Made Ground / South Wales Coal Measures (SWCM);
 - Wellpoints shall be installed and screened at an appropriate depth;
 - The groundwater that is pumped out will be tested for a range of contaminants as stipulated by Dwr Cymru (Welsh Water) / Natural Resources Wales (NRW) as part of the discharge consent / Environmental Permit. This Discharge Consent / Environmental Permit will need to be organised and in place before any dewatering activities are undertaken and is the responsibility of the contractor, and;
 - If the dewatering produces an effluent that is not within the threshold limits, as stipulated by discharge consent / Environmental Permit, on-site treatment before discharge will be required.
- Bulk excavation and material management.
 - Excavation of fill in the east of the Zone 1A area and placement to an engineering specification in the west. Further details of the earthworks extents and design parameters are outlined within the construction drawings (Appendix A) and within Atkins Geotechnical Design Report [27];
 - Excavated material will be inspected visually and if evidence of contamination that makes it unsuitable for reuse is present segregated, stockpiled and tested. Following classification, excavated material will be placed within the earthworks and subject to verification testing or if unsuitable for use exported off-site to an appropriate disposal facility. Material may require pre classification for direct removal from site if stockpiling space is limited;
 - Following GI works the majority of material within the Zone 1A area that will be excavated is considered to be geotechnically suitable for reuse. All soils bar a location where lead exceeded the commercial

land use GAC and two locations where soil-leachate analysis identified exceedances of EQS for total cyanide, were considered suitable for reuse from a human health and controlled waters perspective. The area with the lead exceedance was considered to potential pose an unacceptable risk to human health in a commercial setting, but could be reused if placed at a depth of > 1m below formation within the earthworks. Risks to controlled waters would be addressed by verification sampling of excavated material and screening against reuse values based on EQS or site specific assessment criteria derived from completion of a DQRA. Re use of this material will be in accordance with appropriate materials management protocols outlined in section 5.6; and

- Any material that shows obvious visual or olfactory contamination, will be stockpiled separately in order to reduce the occurrence of cross contamination.
- Removal of known and unknown contamination sources and structures.
 - Breakout and removal of historical structures/ obstructions and infrastructure. Four known former buildings and a conveyor belt are anticipated within the work area:
 - Railway control cabin;
 - Washery buildings (Three); and
 - Conveyor built.
- During construction a discovery strategy (see Appendix C) will be in place and works will be completed under the supervision of an environmental consultant.
 - Staff to be trained and briefed on identification of potentially contaminated material.
 - Discovery strategy to be presented on Health and Safety Notice Board.
 - If required trial pitting, visual inspection and soil sampling will occur following demolition work to confirm that no unanticipated contamination is associated with structures that have not been investigated during previous characterisation works.
 - If unanticipated contamination is identified as presenting a potentially unacceptable risk then additional remediation and mitigation will be put in place.
- Implementation of a discovery strategy (Appendix C) throughout ground enabling works to identify (and remove from site) gross contamination sources (e.g. soils, structures etc.).
- Construction of railway sidings infrastructure.
 - Proposed buildings to received gas protection in accordance with BS8485:2015 [28].
 - Verification of gas protection in line with CL:AIRE Gas Protection Verification Scheme (GVPS). Further details are provided in section 5.12.2 of this report.
- Materials management including assessment for re-use and / or off-site disposal.
- Validation sampling, assessment and reporting.

5.3. Site Clearance and Preparation

The Zone 1A area is currently being used as part of the Washery and is supporting the mine restoration works occurring in the Main Site. The works will commence with the clearance of laydown areas, historic stockpiles and removal of any vegetation. Any construction waste materials will be segregated into appropriate waste streams for off-site recycling/disposal at an appropriately licensed facility.

The wider site area is considered to be appropriately demarcated and secure from external public areas however further internal demarcation as part of the Zone 1A site setup will be considered by the client / contractor.

Areas for stockpiling potentially contaminated material from the Earthworks excavation shall be prepared within the Zone 1A area in the south of the site where earthworks are not planned.

5.4. Dewatering - Groundwater / Perched Water Management

As previously stated, dewatering is not considered to be required, however the methodology below has been prepared as a precautionary measure.

Dewatering if required will be undertaken by the installation wellpoints or larger sumps within the excavation area. This will ensure that the excavation area is sufficiently dewatered to allow the complete excavation of the

eastern part of the Zone 1A earthworks. It is up to the contractor to decide the dewatering methodology and the layout of dewatering wellpoints or sumps.

The groundwater that is dewatered from the area must be in accordance with the particulars of a Consent for Discharge of Trade Effluent, to be applied for with Welsh Water. This discharge consent document will need to be organised and in place before any dewatering activities are undertaken and is the responsibility of the contractor to ensure that it is being adhered to.

The discharge consent document will include a range of common contaminants of concern which the effluent quality will have meet in order to be allowed to discharge to the foul sewer. If water does not meet the particulars of the Consent for Discharge, the water must be treated on-site before discharge. Taking into account previous investigations and assessment of site conditions, it is expected that some sort of pre-treatment will be required (e.g. lamella plate sediment filters, activated carbon units etc.).

An abstraction licence is required from Natural Resources Wales (NRW) if dewatering is greater than 20 m³/day, unless an exemption applies. It is the responsibility of the contractor to ensure a licence is in place if this is deemed to be necessary. The contractor will contact NRW for further advice.

Abstracted groundwater requiring treatment will also require an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016, from NRW, unless an exemption applies. The contractor is advised to contact NRW for further advice.

Based upon historical information and extensive ground investigation undertaken on the site, non-aqueous phase liquids (NAPL) are not anticipated to be encountered during earthworks operations within Zone 1A. Should NAPL be identified, this will be dealt with in accordance with the Discovery Strategy (Appendix C)

5.5. Excavation

Excavation works using mechanical plant will be completed to achieve the formation levels as outlined in the drawings presented in Appendix A.

Excavation works are to be controlled carefully so that any materials generated are thoroughly inspected, segregated, stockpiled and processed to form materials suitable for re-use and managed in line with the relevant specifications and waste management legislation. Materials that are unsuitable for re-use will be stockpiled, chemically analysed and subsequently removed from site to a suitable licenced waste facility. The recycling/disposal of all materials will comply with Sections 5.6.2, 5.6.3 and 5.6.4.

The excavated material will form part of the permanent earthworks structure; therefore, the material will require verification in accordance with Section 5.7.2.

5.5.1. Excavation Volumes

Indicative volumes of material to be excavated from the site during the Zone 1A are presented in Table 5-1, below.

Table 5-1: Estimated volumes of excavated material

Project Area	Excavation Description	Estimated Volume of Excavated Material (m ³)
Zone 1A	Earthworks Excavation	170,000

5.6. Materials Management & Reuse

5.6.1. Direct Placement

Where possible excavated material will be excavated and placed within the area where fill is required in one movement. Excavation works will be undertaken in the following fashion:

- Inspection of excavation area in accordance with discovery strategy (Set out in Appendix C).
- Excavations to be managed to prevent impacts on surface water features present on-site.
- Excavation will occur in discrete lifts of a nominal thickness of 1 m with each lift being inspected for evidence of visual or olfactory contamination prior to excavation, following inspection a verification sample

will be taken. Material suspected of being contaminated and unsuitable for use will be segregated and stockpiled while verification testing is completed.

- Verification samples will be collected for every 2,500 m³ of material excavated and placed in the earthworks. Sampling would nominally be completed in the area of excavation using a 50m by 50m grid.
- Records will be kept of:
 - Date of excavations;
 - Location and dimensions of area excavated;
 - Quantity of excavated and placed material;
 - Inspection and verification sampling activities;
 - Photographs of excavated and placed material;
 - Destination of material and location / level of placed material;
 - The excavation labelling shall correspond to a stockpile and materials tracking sheet/plan, that includes all details pertaining to each area of excavation (excavation ID, date excavated, date sampled, date results from lab expected, lab results, end destination of material & waste tracking documents)

5.6.2. Storage & Stockpile Management

Excavated material from the Earthworks Excavation works will, where possible, be placed directly into the area where fill is required. If stockpiling is required, however, material will be stockpiled in a suitable area to be tested and classified or pre classified for disposal directly off-site. Preparations of a stockpiling area shall include:

- the removal of all ground protrusions from the area to ensure that any plastic sheeting that is laid beneath the stockpiles is not punctured;
- area must not be close to any surface water bodies (i.e. Dulais);
- area shall be situated away from surface water drains. If it is not possible to have the stockpiling area away from drains, the drains must be suitably covered or redirected for the duration of the works; and
- It is noted that no residential dwellings are in proximity to the Zone 1A area however, the stockpiles shall be situated away from any residential dwellings to minimise odour and dust nuisance.
- Stockpile management procedures shall include:
 - Stockpiling shall be done in a fashion intended to minimise potential leaching and migration of contaminants to ground, surface waters and limit vertical / lateral migration;
 - Stockpiles shall be bunded to ensure that any contaminated rainwater runoff is contained. If water does collect within the bunded area, the contractor must have a method statement in place to deal with this potentially contaminated water (e.g. pump, storage and disposal);
- All potentially contaminated stockpiles must be covered with plastic sheeting in order to minimise odour and dust, as well as ensure that rainwater does not leach any potential contaminants in the material. The plastic sheeting shall over lay the top of the bunds where possible, to further minimise any water pooling within the bunded area;
- Stockpile size will be kept to a minimum, with material sampled every 2,500 m³. This will ensure that each stockpile can be chemically characterised effectively and will aid in reducing the costs of waste disposal by ensuring that all soil is classified correctly;
- Each stockpile must be signposted to include the following
 - Specific identification name/number (e.g.: SP1-12/02/20);
 - Date stockpiled;
 - Date stockpile was sampled (chemical classification and WAC testing);
 - The stockpile labelling shall correspond to a stockpile tracking sheet/plan, that includes all details pertaining to each stockpile (stockpile ID, date stockpiled, date sampled, date results from lab expected, lab results, end destination of material & waste tracking documents).

Stockpiles will be placed on the currently undeveloped Zone 1A area at the south of the site.

5.6.3. Reuse of Non-Mining Related Material

Reuse of Made Ground or natural soils / rock that is not covered by the Mining Waste Directive [29] will require a Materials Management Plan (MMP) in accordance with the CL:AIRE DoWCoP.

An MMP considers the proposed earthworks and materials management at the design stage and provides a risk-based approach to the characterisation of arisings and control of material re-use. The criteria for any re-use of materials will be based upon the criteria presented in the Appendix D. This will include the designation of a Qualified Person, who must review evidence relating to the proposed reuse of materials and sign a Declaration, which confirms the site can be redeveloped according to the MMP and established codes of practice. Closure of the MMP is linked to the Validation Report.

As part of the MMP process, materials either excavated on-site or brought to site from either on-site or off-site sources may be stockpiled or directly placed from their area of excavation. Where stockpiled the stockpile will be referenced, and materials moved from it will be logged to include the proposed final location of placement. Where direct transfer from the excavation area occurs inspection of the material before, during and after excavation shall occur to confirm the material is visually suitable for use, material shall be excavated in 1 m lifts and each lift will be subject to inspection and records completed documenting this inspection, with verification sampling taken to confirm that the material is suitable for use at a frequency of one verification sample collected every 2,500 m³ of excavated material. Verification sampling would nominally use a 50 m by 50 m grid. Visual inspection findings, verification sampling locations and elevations, photographs document the condition of each lift and the location of the materials excavated and its placed location will be recorded.

All off-site disposal will be tracked and recorded in accordance not only with the requirements of the MMP, but also the Duty of Care Regulations associated with the Environmental Protection Act 1990. All off-site disposal or treatment shall be at licensed facilities and associated waste disposal notes shall be held for a minimum of two years and shall be available for inspection by NRW, if required.

Atkins consider Made Ground comprising of historic colliery spoil i.e. material from historic coal mining associated with the Onwyllyn and Dulais collieries to be placed outside of its original extractive facility and to be subject to the Waste Framework Directive and the appropriate reuse route to be the DoWCoP and a MMP. Consultation with NRW has occurred and they have indicated that reuse of this material via an MMP is acceptable to them.

Existing site data has been assessed provisionally to characterise expected soil wastes as hazardous or non-hazardous, as presented in Section 3.4.4

5.6.4. Reuse of Mining Spoil

Reuse of spoil / Made Ground that is a product of mining activities and located within the originating extractive facility i.e. spoil or overburden arising from open cast mining in the Main Site will be completed in line with the Mining Waste Directive (MWD) [29]. The MWD requires that a Waste Management Plan (WMP) is prepared and an Environmental Permit obtained if mining waste is not classified as Inert Waste or as Unpolluted Soil and it is intended to reuse it. Within Zone 1A of the Washery the MWD is not considered to apply. Consultation with NRW has occurred and they have indicated that reuse via WFD, DoWCoP and an MMP is acceptable.

A WMP considers the proposed earthworks and materials management at the design stage and provides a risk-based approach to the characterisation of arisings and control of material re-use. If reuse under a WMP is needed then an Environmental Permit will be required and need sign off by Natural Resources Wales. The criteria for any re-use of materials will be based upon the criteria presented in the Appendix D.

5.7. Soil Validation Sampling Strategy

5.7.1. Validation of Sub-Grade

Reuse of material that forms part of the permanent works require validation. Excavated material will be inspected for visual / olfactory indicators of potential contamination and screened on-site for any gross contamination as defined in Section 5.7.4. Validation sampling and testing will be undertaken to demonstrate compliance with the relevant GAC as provided within Appendix D. Validation samples will be taken at a minimum of one sample per 2,500 m² of material (based on a 50 x 50 m grid) placed into the earthworks.

Where visual/olfactory indicators of potential contamination are encountered at the excavation extents, further contingency action will be required. This will include additional, targeted validation sampling/testing followed by

subsequent assessment and potentially additional excavation (subject to physical constraints) of identified contamination hotspots.

5.7.2. Validation of Fill Materials

At present, imported material for the Earthworks is not anticipated. If required, imported material should be sampled at a frequency no less than one sample per 2,500 m³ or three per source. All samples are to be tested and compared to the criteria outlined in Appendix D.

Where site won hard material will be used as fill for construction this material must be certified as chemically and geotechnically suitable for the use by the contractor. Chemical testing shall be in accordance with the determinants outlined in Appendix D. The re-use of this material will require an MMP or compliance with the WMD [29] as outlined in section 5.6.3 or 5.6.4.

Any material imported to the site shall not be a waste and the supplier of any fill that is not a primary material must be able to demonstrate that their product has been fully recovered and is no longer a waste. The latter could be achieved by the use of the appropriate Waste and Resources Action Programme (WRAP) Quality Protocol or the DoWCoP. Infill materials may comprise primary, recycled or secondary aggregate or other material, including imported or site won material. The Contractor is responsible for removal/replacement of any placed fill materials exceeding GAC and for rectifying any cross contamination which may have resulted from the placement of such materials.

Site won materials must be suitably tracked using industry standard software to comply with the terms of the CL:AIRE DoWCoP / WMP.

5.7.3. Unexpected Contamination

There is potential for unexpected contamination to be encountered on-site. An environmental scientist shall be present on-site during excavation works to carry out a watching brief and obtain validation samples. The environmental scientist will record details of visual and olfactory observations, any validation samples collected, and photoionisation detector (PID) readings. Unexpected contamination will be identified using these methods to identify common indicators of contamination, including unusual colouration, hydrocarbon odours, and deleterious materials.

A Discovery Strategy for encountering unexpected contamination is presented within Appendix C. The Discovery Strategy must be placed on the Health & Safety Notice Board and/or displayed in a prominent area where all site staff are able to take note of and consult the document at any time. Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the requirement to follow the Discovery Strategy.

5.7.4. Gross Contamination

In addition to any works required to meet the objectives outlined in Section 1.5, material that meets the definition of gross contamination (as defined in Table 5-2 below) shall be segregated from other materials at the excavation face for removal from site, and this includes NAPL or 'product' in unsaturated soils.

Table 5-2: Gross Contamination Definition

Contaminant / Indicator	Criteria
Polycyclic Aromatic Hydrocarbons (PAHs) and Coal Tar	Visual: Black liquid or semi-solid tar in veins or zones. Heavily stained or coated surfaces. Solid tar/bitumen. Headspace (2): Over 100 parts per million (ppm), olfactory (3)
Mineral Oils (Total Petroleum Hydrocarbons)	Visual: Liquid oil, oil saturated solids in veins or zones. Heavily stained or coated surfaces. Headspace (2): Over 100 ppm, olfactory (3)

This table should be read with the following associated notes:

- Where multiple contaminants are present, the selection criteria for each contaminant will be applied sequentially, starting with the perceived major contaminant.
- Headspace analysis criteria shall be subject to calibration of instruments.

3. Olfactory assessment shall always be confirmed by headspace analysis.
4. 100 ppm headspace is a guide and not an absolute value and should be considered in conjunction with visual and olfactory evidence.

5.8. Asbestos in Soil

Asbestos has not been identified within the site soils. Therefore based on the number of samples taken, absence of asbestos from samples analysed and lack of visual evidence of asbestos, it is considered that low intensity earthworks activities would present a low risk of asbestos fibre release across the site. However there is the potential for asbestos to be present in Made Ground or within the relict structures that will be demolished during the construction works.

Prior to demolition or work occurring on these structures an Asbestos Demolition and Refurbishment survey will be completed. Following this removal of any asbestos that is present within these structures will be completed in compliance with Control of Asbestos Regulations (CAR) 2012 [16]. Records relating to the survey, asbestos removal works and documenting the disposal of any removed asbestos will be recorded and provided in the Zone 1A verification report.

Although ground investigation data would suggest a low risk, the Contractor must carry out an asbestos risk assessment where there is evidence to suggest the presence of asbestos is reasonably foreseeable. The risk assessment shall be proportionate to the scale of works being undertaken and the likely degree of impact and volume of the asbestos containing material. A safe system of work shall be instituted by the Contractor with the site construction works status assessed under the CAR 2012 [16]. As a minimum all staff shall have asbestos awareness training and be briefed on the sites asbestos risks and able to identify when suspected asbestos may be present.

A watching brief will be maintained and if unidentified asbestos is suspected the Consultant will be informed, site works and risks will be evaluated and controls and mitigation commensurate with the risk put in place by the Contractor in accordance with CAR 2012 and CAR-Soils 2015 [17]. Further practical guidance on control measures and managing asbestos risk in soil can be found within CIRIA C765 Asbestos in Soil and Made Ground [29] good practice site guide:

Tool box talks must also be carried out to brief site staff on the site-specific risks and emergency procedures to be followed.

A soil contamination watching brief covering both asbestos and other possible contaminants shall also be available during key earthworks activities, such as breaking ground.

If visible asbestos is discovered or asbestos is suspected in an area of the site, the following procedure must be followed:

- Stop work, do not disturb. Move people away from the affected area;
- Immediately inform a site supervisor and establish the responsible site person;
- Barrier off location, erect warning signs;
- If in doubt, or if required by the asbestos risk assessment, put on appropriate PPE or RPE;
- Dampen down affected soils;
- Visually inspect surface soils and identify the most likely asbestos type and condition and collect evidence to assess the immediate risk for ACM observed; and
- Review the assessment of immediate risk against the existing groundworks risk assessment and update to reflect changes made as a result of the discovery and a potentially higher risk scenario.
- For higher risk scenarios which are not anticipated during these works, the risk assessment will need careful consideration of the type of asbestos encountered, the condition and the quantity, as well as the planned activity. For example, a high intensity activity such as crushing is much more likely to result in the release of asbestos fibres. Example control measures for higher risk scenarios are given below:
 - An appropriate level of information, instruction and training (IIT), for example Non-Licensed training (Category B) for those workers involved in asbestos sampling or hand picking;
 - Appropriate PPE (and RPE where appropriate) for ground workers and decontamination;
 - Appropriate exclusion zones around the excavations (where excavating in made ground/ sub-grade soils);
 - Soils to be appropriately moistened or 'dampened down' to prevent mobilisation of asbestos fibres where present;

- Tracking of plant through asbestos contaminated soils to be avoided where possible. Wheel wash facilities to be installed on-site to prevent the spread of potential asbestos containing soils;
- All open excavations and stockpiled soils, which are either known or suspected to contain asbestos fibres and fragments, shall be dampened down and sealed when not being worked upon, particularly at the end of the working day;
- Potential risks of soil contact to ground workers shall be minimised, particularly when working with general fill and undisturbed ground. Contact with such soils to be solely by machine wherever possible;
- Where necessary, decontamination arrangements shall be implemented for personnel, vehicles and equipment (entry/exits from exclusion zones were via decontamination units);
- Mitigation of fibre release through the control measures detailed above for dust. Reassurance air monitoring can be completed when excavating in areas of known asbestos contamination and the results of this monitoring shall be made available immediately post analysis to demonstrate efficacy of proposed mitigation measure. Should any exceedances be recorded, works must cease, risk assessment revised, and further mitigation measure put in place prior to work commencing once more; and
- Mitigation measures implemented across the scheme shall be guided by the output of the Decision Support Tool assessment (CL:AIRE JIWG CAR-Soil). Where any input parameter for the assessment alters from the construction phase assessment the Decision Support Tool shall be re-assessed and control measure output implemented without delay.

5.9. Removal of Below Ground Obstructions

Figure 5-1 provides indicative information on the historical layout of the site, including locations of known above ground structures, Figure 5-1 is reproduced in Appendix A. Whilst areas where obstructions are likely to be present do not require specific excavations for remediation purposes, it is possible that arisings generated during the removal of obstructions will require specialist testing and treatment prior to re-use on-site.

Below ground obstructions encountered during the cut to formation level are to be removed to an agreed level. Mechanical removal of obstruction may require use of hydraulic breaker attachments and/or hydraulic pulverisers (or similar). Requirements for operation of the mechanical plant and attachments are to be fully described in construction phase method statements and risk assessment.

An accurate record will be kept of all obstructions encountered, their treatment and any subsequent reinstatement of the ground. This will include photographs, accurate plans/drawings, and surveys.

Key structures and potential contamination sources within the Zone 1A area are covered in more detail below. The location of these features is shown in Figure 5-1 below.



Figure 5-1: Structures relevant to Zone 1A from Remediation Strategy

5.10. Clean Service Corridors

All services shall be placed within clean service corridors with trench backfill / surrounds being compliant with the chemical criteria provided in Appendix D.

Where services are positioned within perched water or at depth and cannot be placed within compliant fill materials, the type and installation details for these utilities shall be agreed by both the utility provider and the project team prior to placement, taking full account of the ground conditions.

Where service corridors are installed at depth and have the potential to act as preferential pathways, particularly off-site, low permeability stanks (typically consisting bentonite/cement or low permeability clay) shall be considered to mitigate this risk.

5.11. Monitoring Well Decommissioning

To remove the potential migration pathways for groundwater or ground gas they present from site all monitoring wells will be decommissioned in accordance with the EAs Good practice for decommissioning redundant boreholes and wells guidance [19]. Timing of decommissioning works will depend on the earthworks progress and the benefit from further monitoring.

Redundant boreholes will have headworks removed, if required the location will be over drilled to remove annulus material and pipework, and an appropriate backfill placed into the borehole. A concrete or cement cap of greater than 2 m thickness will then be used to seal the borehole. The cap will be located below the formation level of any planned excavation works, such as areas of excavation planned to produce fill for earthworks.

The backfill materials selected must be clean, inert and non-polluting.

Concrete and grouts that are introduced in a liquid form should be introduced through an appropriate delivery pipe (e.g. tremie pipe), to ensure that voids do not form.

Prior to the works occurring the contractor will calculate the quantities of material required to backfill each monitoring well and record the placed quantities, comparing used backfill with calculated quantities to check that no bridging or voids are present.

The following records will be kept:

- Reasons for abandonment;
- Measurement of groundwater level prior to backfilling;
- Depth and position of each layer of backfill and sealing materials;
- Type and quantity of backfilling material and sealing materials;
- Any changes to the borehole/well during abandonment (e.g. casing removal); and
- Any problems encountered during the abandonment procedure.

5.12. Gas & Vapour Mitigation

5.12.1. Ground and Mining Gas Protection

The site is classified as Characterisation Situation 3 (CS3) and the buildings proposed within Zone 1A (Shunt Cabin and Electricity Sub-Station) are classified under BS8485:2015 + A:2019 [30] as “Type C” considering they are commercial buildings with central management control, single occupancy and small to large sized rooms with good passive ventilation or active ventilation. CLAIRE’s Good Practice for the Risk Assessment of Mine Gas Emissions [24] document requires that detailed design of gas protection measures that are protective against CS3 is undertaken in line with CIRIAS C801 [25]. Prior to construction of sidings and support buildings a further submission will be made setting out the intended design of gas protection. It is envisaged, but subject to confirmation, that the gas protection system installed will meet the requirements of Table 5-3.

Table 5-3: Example Scope of Protective Measures

CS	Type C Building – commercial single occupier and centralised control
	Recommended Gas Protection Measures and Scores

	Levels of Protection Required (required score)	Gas Protection Measure Detail	Score
3	3	Cast in-situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations.	1.5 ^{A)} & ^{B)}
		Gas resistant membrane meeting all the following criteria: • Sufficiently impervious, both in the sheet material^{C)} and in the sealing of sheets and sealing around sheet penetrations, to prevent any significant passage of methane and/or carbon dioxide through the membrane; • Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; • Sufficiently strong^{D)} to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); and to withstand in-service stresses (e.g. settlement if placed below a floor slab); • Capable, after installation, of providing a complete barrier to the entry of the relevant gas; and • Verified in accordance with CIRIA C735 [N1].	2

^{A)} The scores are conditional on breaches of the floor slab, etc., being effectively sealed.

^{B)} To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetration cast in (see A.2.2.2 of BS8485:2015 + A:2019).

^{C)} A membrane with a methane gas transmission rate <40.0 ml/day/m²/atm (average) for sheets and joints (tested in accordance with BS ISO 15105-1:2007 manometric method) is regarded as sufficiently impervious.

^{D)} For example, reinforced LDPE (virgin polymer) membranes having a minimum mass per unit area of 370 g/m² and not significantly less than 0.4 mm thickness between the reinforcement scrim (tested in accordance with Procedure D (2 mm diameter tip) of BS EN ISO 9863-1:2016) installed above floor slabs are considered sufficiently strong to meet the performance criteria. Thicker and more robust membranes or an additional membrane protection layer should be installed directly beneath cast-in-situ floor slabs.

Where a membrane is required the contractor designing the buildings shall assess the proposed gas membrane barriers based on the technical data sheets and final design details received, against existing relevant guidance such as CIRIA C748 [32]. Validation of Gas Membranes and CL:AIRE GPVS.

Proper installation and subsequent verification are essential if a membrane is to act as a barrier to vapour and gas ingress into buildings. Even minor defects can significantly compromise the ability of the membrane to maintain internal concentrations below the acceptable limits, therefore the highest level of installer competence and verification/integrity testing is necessary. Table 5-4 below presents a relevant extract from CIRIA 'C748 – Guidance on the Use of Plastic Membranes as VOC Vapour Barriers' [32] and outlines the requirements that must be adopted for installation verification of the membranes.

Table 5-4: Verification and integrity testing requirements for membranes

Situation C: Public, commercial, retail, industrial, apartments

Gas regime/risk	Type of slab	Installer Experience	Suggested Level of Verification & Integrity Testing
Moderate risk Membrane to act as methane / carbon / low oxygen	Reinforced All slabs	Qualified ¹ and experienced installer (50% of operatives to hold qualification)	Verifier (consultant ⁴ or third party qualified and experienced installer ¹) to conduct a thorough verification (visual) inspection prior to all concrete pours including vented void, subgrade etc. All joints, pipe penetrations etc independently air lanced to ASTM D4437-99. 100 per cent leak detection considered on VOC/hydrocarbon contaminated sites. Consideration given to need

dioxide barrier		for/scope of integrity testing (e.g. initially on 50 to 25 per cent of pours then falling to 25 to 10 per cent if acceptable results obtained and no concerns raised by visual inspections).
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Notes

- ¹ Relevant qualification is NVQ Level 2 (gas protection installation).
- ² Before the works start the contractor should produce a detailed installation plan including method statement, CQA procedures and qualifications, on receipt of these the verification protocol could be increased or reduced.
- ³ Consideration should be given to carrying out leak detection (i.e. smoke, tracer gas or dielectric testing) on the first plots. If an unacceptable amount of holes are found during these tests then the verification consultant should discuss with the relevant personnel, strategies to prevent this occurring, these could include changing material, improving subgrade preparation, putting up warning signs to reduce the amount of trafficking etc.
- ⁴ Verification consultant should be competent, experienced and suitably trained. A statement detailing their qualifications and relevant experience should be included in the verification plan.
- ⁵ Air lancing is the only integrity test that has an independently recognised international standard that is suitable for testing taped and welded seams and should be used at the frequency suggested in the table.
- ⁶ Mallett et al (2014) also provides advice on the contents of the verification report that is normally submitted to the regulators.

Evidence of the above outlined installation and membrane integrity verification must be documented in detail within the Zone 1A remediation verification report. The general contents of this verification report are outlined within the NRW/WELGA Land Contamination Guidance [33] and the EA's Land Contamination Risk Management [34] guidance. This guidance states that supporting evidence is critical to the clarity of the verification report, as it provides vital evidence of how the ground gas and vapour protection measures were installed and how their integrity was verified.

Special consideration shall be given to the following extract from "CIRIA C735 – Good Practice on the Testing and Verification of Protection Systems for Buildings Against Hazardous Ground Gases (2014)" [35] regarding membrane installation verification. The verification documentation must include:

- description of the inspection regime (who carried out the inspections, their competence to do so, over what period, at what frequency and supported by a written record, e.g. completed proformas and captioned photographs presented in the appendices);
- description of each element of the gas protection system (setting out both the standard/generic measures and where measures were varied to meet particular/unusual circumstances (e.g. lift pits); and
- presentation of the manufacturer's material specifications for all elements of the gas protection system, including warranty information.

5.12.2. Ground Gas Protection Detailed Design and Verification Plan

To ensure that gas protection measures are implemented to the required standard and to document the works undertaken to the point that anticipated planning conditions relating to verification of remediation are discharged the following activities and verification works are required to produce a Ground Gas Protection Detailed Design Verification Plan.

5.12.2.1. Detailed Design of Gas Protection

Prior to construction works commencing on the Shunting Cabin, Electricity sub-station or other enclosure above ground structure in Zone 1A a detailed design of the gas protection intended to deliver protection suitable for a Characterisation Situation 3 will be submitted to the LPA for approval. This will be undertaken in accordance with CIRIA C801 [25] and include:

- Design Report for gas protection system;
- Specification for all components of the gas protection system including:
 - Gas proof membrane;
 - Floor slab

- Passive / Active ventilation (if required)

5.12.2.2. Programme

Prior to construction works commencing a programme detailing key dates shall be prepared and provided to the project team. Key dates shall include:

- Construction of pressure relief pathway (if intended);
- Subgrade preparation;
- Membrane Installation;
- Placement of rebar for floor slabs; and
- Concrete pouring dates.

The project team shall include, but not be limited to, GCRE, the Principal Contractor, Sub-contractors such as the membrane installer, Consultant and an independent membrane checker if distinct from the Consultant. The programme will be used to plan the verification inspections that reflect the planned construction sequence.

Following this, the project team will be informed of any changes to programme within 48 hrs of a change being decided on and verification visits will be rescheduled to coincide with key activities.

5.12.2.3. Qualification of Membrane Installation Contractors

The gas protection membrane shall be installed by a sub-contractor who is a member of the British Geomembrane Association (BGA). Installation staff shall be certified professionals with all operatives installing the membrane having attended the CSkills installation of gas membrane sector apprenticeship and up-skilling course or equivalent scheme, and be registered as working towards the L2 NVQ Diploma.

The membrane installation works supervisor will hold a Construction Skills level 2 NVQ diploma in Installation of Gas Membranes.

Prior to installation works starting the appointed membrane installation Contractor will provide a copy of their BGA membership accreditation, CVs demonstrating the competence and experience of membrane installation staff, and copies of the relevant qualifications held, to the Contractor for review. Copies shall be retained for inclusion within the Verification Report.

5.12.2.4. Method Statements & CQA Procedures

Prior to commencing works the Contractor / Sub-contractors responsible for installation of the ground gas protection systems elements will prepare Method Statements, Construction Quality Assurance (CQA) procedures and Design Documents covering the construction of the:

- Gas resistant membrane; and
- Cast In-situ Ground bearing floor slab.

These will be provided to the Consultant for review and retained for inclusion in the Verification Report, on receipt of these documents the verification protocol will be reviewed and may be increased or reduced.

5.12.2.5. Gas Protection Membrane

The gas membrane to be used on-site will be required to pass the requirements set out in BS8485 [28] and CIRIA C735 [35] with respect to performance and durability and will be:

- sufficiently impervious to methane and carbon dioxide gas, with a transmission rate of <40.0 ml/day/m²/atm (average) for sheet and joints (tested in accordance with the manometric method in BS ISO 15105-1);
- capable after installation of providing a complete barrier to the entry of the relevant gas;
- sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions;
- sufficiently strong to withstand in service stresses (e.g. due to ground settlement if placed below a floor slab);
- sufficiently strong to withstand the installation process and following construction activities until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, and dropping tools);
- chemically resistant to degradation by other contaminants that might be present; and

- Joints will be sealed in compliance with the membrane manufacturers specification using either butyl tape or heat welding. Joints will be over lapped by a minimum of 100 mm and installed by qualified staff (see section 5.12.2.3).

5.12.2.6. Inspection Stages & Verification Data

Table 5-5 sets out inspection activities and the validation information / documentation that shall be completed during each inspection activity for each potential gas protection element. These will be complied with unless otherwise stated in the Ground Gas Protection Detailed Design and Verification Plan which would be subject to approval by the LPA.

Table 5-5: Verification Inspection Stages

Inspection Stage	Gas Protection Element	Party Under Taking Inspections	Actions	Documentation / Verification Information Required
1	Gas Membrane	Contractor	On delivery of the membrane to site Contractor will record: 1. the quantities of membrane received; 2. the membranes condition, if damaged or defective the material shall be rejected and replaced with suitable material; 3. the type of membrane and it's specification, confirming that the membrane delivered is of the same type detailed in this RMS or delivers equivalent performance.	- Photographs of materials. - Copies of invoices. - Specification of membranes delivered. - Records in Site Diary detailing actions, staff involved and suitability of material. - Copies of records supplied to Consultant.
2A	Gas Membrane	Membrane Installer and Contractor	1. Joint walkover of 100% of sub-grade that gas protection membrane will be installed upon to confirm suitability for membrane placement. Surface to be smoothly rolled and free of loose material or sharp edges that may damage membrane if placed. 2. Repairs to sub-grade if not suitable for use; and 3. Additional inspection of rectified sub-grade.	- Photographs of sub-grade. - Completion of sub-grade handover declaration indicating acceptance of sub-grade by Membrane Installer from Contractor and that both consider it suitable for use.
2B	Gas Membrane	Consultant / Independent Verifier	1. Inspection of subgrade for suitability to receive membrane, inspection of 25% of initially prepared sub-grade. 2. Additional inspections to occur if unsuitable or defects identified.	- Photographs of sub-grade. - Site Visit report. in general compliance with CIRIA C735 [36] Appendix A5. - Documentation of any identified defects that are rectified.
2C	Gas Membrane	Membrane Installer	1. On completion of gas protection membrane installation, or portion thereof, the installing Sub-Contractor will visually inspect the membrane, pipe penetrations and joints etc to identify any damage or loss of integrity.	- Photographs of work. - Completion of membrane handover form stating membrane is free from damage and intact.

			2. Joints, pipe penetrations etc tested to recognised standard by installer (as detailed in method statement/CQA plan). 3. Repair any defects identified and record the location of each defect. 4. Membrane installer to inspect membrane prior to all concrete pours.	• Installer to supply sign off sheets (verification evidence) to verifier for all concrete pours. • Drawing showing panels of membrane, locations of seams / joints, penetrations and recorded defect / repairs
2D	Gas Membrane	Consultant / Independent Verifier	1. Independent inspection of gas protection membrane and joints at start of installation work. 2. Independent inspection of membrane and joints immediately prior to 25 to 50 % of concrete pours (minimum of two visits).	• Photographs of works. • Completion of Verification Site Visit report in general compliance with CIRIA C735 [36] Appendix A5.

5.12.2.7. Non Compliance Procedures

Where non-compliance or deviation from the requirements of the Ground Gas Protection Detailed Design and Verification Plan are identified by any member of the project team all members of the wider project team will be informed immediately.

Where this relates to using a material of equivalent performance or change in design that does not affect the robustness of the gas protection system these changes will be recorded and the RMS revised and reissued.

Where elements of the gas protection system are non-compliant or deviate from the requirements of the Gas Protection Detailed Design and Verification Plan, the location of the deviation will be recorded by the party identifying the issue, other stakeholders will be informed and steps will be taken to remedy the deviation.

Following remediation of the defect being reported a verification inspection will be undertaken and the outcome documented for inclusion into the Verification Report.

Until defects are rectified and verification has occurred follow on steps in the construction process may not proceed.

5.12.2.8. Gas Protection Verification Report Contents

Following construction of the buildings a Verification Report, prepared in compliance with BS8485 [28] Table 8 will be submitted to the LPA to demonstrate that the gas protection measures set out in the Ground Gas Protection Detailed Design and Verification Plan have been installed. Information to be included within the Verification Report is set out below:

- Contents;
- Executive Summary;
- Report Objectives;
- Site conditions and characterisation of ground gas regime;
- Site Location Plan;
- Site Layout Plans;
- As built plans;
- Construction and building related details;
- Product design, product specifications and justification;
- Recommended verification approach;
- Description of the installation, including details of parties involved (i.e. installer, verifier) and guarantees offered;
- Details of any deviation from the original design, and explanation and justification;
- As-built construction drawings/schematic plans and product specifications;
- Verification approach/methodology;
- Quality assurance/verification evidence, including photographs, monitoring/test results and data gathered including details of defects and corrective actions;
- Details of communications held with regulatory bodies;
- Personnel details such as relevant qualifications;
- Statement that no unanticipated contamination such as asbestos was identified during construction works and if encountered detail additional investigation, risk assessment and mitigations put in place.
- Conclusions, including future monitoring/management requirements and/or limitations of measures applied.

5.12.2.9. Follow on Controls

Following completion of the construction works the owner of the building or their designated agents will need to manage the building in compliance with BS8485 with centralised control of the building. The owner or their agents will need to undertake regular inspections of the pressure relief pathway to ensure that it is free of blockages that may impede its function. Additionally, controls will need to be maintained that will protect the integrity of the gas protection membrane during future development or construction works. The need for these requirements should be recorded in the developments Health and Safety file and a copy of the Verification Report saved with it.

6. Health, Safety, and Environment

6.1. Environmental Protection arrangements and Monitoring Schedule

6.1.1. Overview

Environmental protection is a key aspect of this Remediation Method Statement. All preparatory works concerning environmental protection and monitoring must be made prior to works commencing.

All the works will be undertaken in line with task-specific method statements, Walters 'Safe Systems of Work', task-specific risk assessments and under the control of the Contractor's health & safety protocols. These will be detailed elsewhere as part of the Contractor's operational controls, contractual requirements and legal responsibilities, and are not detailed in the RMS.

Any environmental incidents will be dealt with in accordance with the Contractor's incident reporting procedure and the Walters incident reporting, investigation and review procedure. The same procedures are to be followed should any communications or complaints be received from local residents, businesses or elsewhere.

6.1.2. Licensing, Permissions, Consents, Permits and Notices

The following permissions must be obtained, where required, in order to complete the works. These include:

- Environmental Permit from NRW for;
 - Treatment of pumped groundwater;
 - Treatment of excavated soils, including mechanical screening of potentially contaminated soils;
 - Reuse of mining waste that does not qualify for an exemption due to being Inert Waste or Unpolluted Soils.
- CL:AIRE Definition of Waste Code of Practice submissions;
- Temporary Trade Effluent Discharge Consent issued by Welsh Water;
- Abstraction licence from the NRW, for dewatering greater than 20 m³/day, unless an exemption applies.

6.1.3. Environmental Protection and Controls

Environmental controls applied to this project shall seek to ensure the works are completed whilst:

- Storing, handling, using, transporting and disposing of materials in a manner that minimises potential for environmental damage with provision made for double-skinned bowsters with control of access, small quantities of substances being stored on drip trays, spill kits;
- Minimising the creation of nuisance noise, dust, vibration, fumes and odour and;
- Minimising any effects on environmentally sensitive receptors on-site and in close proximity.

6.1.4. Noise

Noise is a potential nuisance rather than harmful emission with regards to offsite site receptors. Noise mitigation onsite shall be described in method statements and risk assessment. Monitoring as part of the Contractors programme of works will be undertaken to confirm levels.

The following measures will be implemented as per industry best practice to reduce levels of noise and vibration.

- Strict adherence to the site-specific construction working hours set out in Section 1.4 of the Construction Environmental Management Plan (CEMP) [37].
- All personnel on site will undergo site specific inductions and briefings, to include noise control measures.
- Noisy plant or equipment shall be sited as far away as possible from noise sensitive receptors. Wherever practicable, the use of barriers in the form of acoustic enclosures or barriers will be employed.
- Where practicable, loading and unloading will be carried out away from noise-sensitive receptors.

- A programme of site inspections and noise monitoring will be carried out to assess whether BPM are being employed in the control of noise, to investigate any noise complaints or incidents.
- A programme of community liaison will be carried out, including notification of works and details of the complaints process as detailed in Section 5.3 of the Construction Environmental Management Plan (CEMP) and the Noise Management and Monitoring Action Plan (NMMAP)

Reference shall also be made to best practice guidance including CIRIA C762 Environmental Good Practice on Site [38], and the Control of dust and emissions during construction and demolition supplementary planning guidance [39].

6.1.5. Dusts and Emissions

The mobile plant used to undertake the works may generate dusts, specifically during excavation, handling, treatment and stockpiling. To prevent and minimise dust generation to reduce the impact on the surrounding environment a range of measures will be implemented on-site.

- Haul routes are to be regularly inspected and maintained to minimise sediment laden run off.
- Haul roads to be dampened down to minimise dust generation by plant movements.
- Regular clearing, grading and maintenance of haul routes;
- Areas of hard standing to be provided at site access and egress points, where practicable.
- Site wheel washing facilities will be established at access and egress points and located a minimum of 10 m from any watercourse and outside of the flood plain.
- Good practice guidance for vehicle washing and cleaning from GPP13 to be implemented.
- Machinery, equipment and dust generating activities to be undertaken a minimum of 100 m from sensitive receptors, where practical.
- Where possible, exposed soil to be minimised through scheduling vegetation and topsoil stripping immediately prior to commencement of construction activities.
- A separate paved parking area with no access to construction areas to be provided for non-construction vehicles.
- No burning of material on-site.
- An adequate water supply will be provided on the site for effective dust suppression/mitigation, using non-potable water where possible and appropriate. Suppression techniques will be used more frequently during periods of dry weather.
- Standard good practices are to be followed for site haulage:
- Abrupt changes in direction to be avoided;
- Vehicles to be evenly loaded to avoid spillages;
- If within 100 m of site boundary, soil moving vehicle to be covered. Loaded vehicles carrying dust generating materials will also be covered when leaving site.
- Where required, road sweepers to be mobilised.
- Where possible, particularly dusty activities will be avoided during extended periods of dry and windy conditions.

6.1.6. Environmental Monitoring Schedule

It shall be necessary to implement a scheme of environmental monitoring to demonstrate suitability and efficacy of the environmental controls described above. Environmental monitoring shall be completed across the site and comply with the environmental monitoring schedule and intervention levels described in the wider site Construction Environmental Management Plan [37]. The specific location of the environmental monitoring points will be confirmed by the Contractor.

Should any threshold be exceeded, then works causing the exceedances in the affected area will be ceased or work levels reduced to achieve acceptable levels. Practices will be formally reviewed by Site Supervisor and any necessary additional control measures will be implemented.

6.1.7. Protection of Controlled Waters

6.1.7.1. General Measures

This section addresses general working arrangement with respect to the prevention of pollution to controlled waters:

- Temporary stockpiles of excavated materials shall be constructed in such a way to reduce rainwater infiltration and to minimise the release of odours or dust. This will be by either:
 - securely covered; or
 - shaped so to compact and / or seal materials.
- In dry weather excessive dust will be controlled by water mist suppression.
- Existing site drainage features will be appropriately sealed/protected or decommissioned prior to any soils being excavated, transported and / or stockpiled.
- Excavation and placement of materials throughout the works will be carried out under supervision by a banksman who will ensure safe systems of work are adhered to.
- All fuels will be stored on-site above ground in designated re-fuelling areas in double- skinned and self-bunded tanks. Oils and lubricants for plant will be stored either in the bunded tanks or on drip tray(s) inside locked metal store(s). Spill response kits will be available at the designated refuelling points. Material Safety Data Sheets (MSDS) shall be made available on-site and COSHH assessments will be provided for the use and storage of the materials.

6.1.8. Soil Quarantine

Prior to any works commencing it will be necessary as a precautionary measure to plan for the establishment of a controlled and segregated area for the storage, management, processing and characterisation of grossly contaminated materials if encountered.

A quarantine area as a minimum shall comprise;

- An impermeable layer to prevent infiltration;
- System for managing potentially contaminated runoff (e.g. perimeter bund, covering so to shed rainwater outside of quarantine area); and
- Fencing and segregation (including appropriate warning / hazard signage adored to the fencing).

Where grossly contaminated materials are encountered it is unlikely that proposed primary treatment strategies will be sufficient to allow the re-use of this material. Materials placed within the quarantine area shall therefore be characterised to determine whether treatment is appropriate and then for waste classification purposes to allow offsite disposal of all unsuitable materials.

The quarantine area shall be inspected daily and where any deficiency is noted remedial measures are to be put in place immediately to ensure full quarantine conditions are maintained.

6.2. Health and Safety (General)

Health and safety controls will be in place throughout the works, which will be outlined in more detail within the Contractor's construction risk assessments and method statements (RAMS) specific to the works being undertaken. Management of these controls remains the responsibility of the Principal Contractor, and will include, but not be limited to:

- All staff to attend a health and safety induction prior to working on the site;
- The working site will be segregated into clean and dirty areas, with the site compound including rest/smoking areas and canteen in the clean area. The dirty area will incorporate excavation areas and other intrusive works including soil stockpiles;
- Non-working clothes shall be left in lockers. Disposable overalls to be provided as necessary;
- Working methods shall limit exposure to impacted materials wherever practicable in the first instance. Contact with contaminated soil / groundwater should preferably be via mechanical plant with minimal hand digging to help limit potential exposure. Where potential contact is unavoidable, the workforce must always be separated from the contaminated soil / groundwater by wearing protective clothing;

- Personal Protective Equipment (PPE) to include as a minimum; hard hat, safety footwear, hand and eye protection, and high visibility clothing;
- Eating and smoking shall be limited to the designated clean areas because of the risk of ingesting contaminated soil;
- Any health disorders (headaches, stomach aches, eye/nose/throat irritation, dizziness etc.) must be reported to a First Aider or the site Safety Officer;
- Staff must not enter any trench, pit, or other confined space unless a permit to work current for the work being done has been issued following company protocols;
- Volatile organic compounds released during the earthworks shall be appropriately monitored (and recorded) via a combination of personal and work area monitoring techniques. Resulting stockpiles from the earthworks shall be included as part of the work area monitoring;
- All excavations / movements of soil materials shall consider measures to minimise the release of dust and incidental tracking/migration of materials around the site. Dust control methods shall be implemented as necessary. Stockpiles shall be on hardstanding or plastic sheeting and in specified areas of the site. Stockpile surfaces shall be battered and covered following completion and/or at the end of each day;
- Tool box talks to brief site workers on the potential hazards at the site, including contaminated land; and
- Visitors will only be permitted if properly equipped, authorised in advance and accompanied at all times

7. Validation and Verification Reporting

7.1. Validation Information and Data

Validation for Zone 1A will be undertaken, detailing all relevant information to demonstrate that the works have been undertaken in accordance with this RMS and other technical documentation/guidance as appropriate, and will support the discharge of the remediation related Planning Conditions relevant to these works, as detailed in Section 2. As a minimum, the following validation information will be collated:

- Description of the works completed including as-built drawings / plans / information (to include as a minimum the validation area coverage and final topography);
- Details of any remedial works undertaken, including details of any unexpected contamination encountered, any exceedances of the relevant GAC and associated agreed Remediation Change Notes (if applicable);
- Details of the source, type and volume of material excavated and placed / backfilled;
- Lines of evidence to demonstrate that remedial objectives have been met (such as field record sheets, waste transfer notes and chemical test results, including those available data from previous works screened against the applicable GAC, field records and verification reports);
- Appropriate chemical test data (soil quality) for placed earthworks materials in line with the relevant GAC (to include laboratory QA / QC information);
- Collation and assessment of the appropriate soil quality data via comparison to the appropriate / relevant GAC;
- Details of any notable ecological features (e.g. invasive species, protected habitats etc.) encountered;
- A 'Residual List' of remaining remedial works or actions passed on to subsequent contractors / projects;
- Auditable trail of material movements and / or details of material management e.g. stockpiling or segregation;
- Clear concluding statement on acceptability of the works;
- Site diaries and photo records (including photos of excavations and Marker Layer placement / re-instatement); and
- Evidence that suitable gas mitigation has been installed within the buildings:
 - In the case of membranes, evidence of proper installation and membrane integrity verification shall be documented in detail within the site wide remediation verification report. The general contents of this verification report are outlined within the EA's LCRM [34] and NRW/WELGA Development of Land Affected by Contamination Guidance [33]. This guidance states that supporting evidence is critical to the clarity of the verification report, as it provides vital evidence of how the ground gas and vapour protection measures were installed and how their integrity was verified.
 - Special consideration shall be given to the following extract from "CIRIA C735 – Good Practice on the Testing and Verification of Protection Systems for Buildings Against Hazardous Ground Gases (2014)" [35] regarding membrane installation verification. The verification documentation shall include:
 - description of the inspection regime (who carried out the inspections, their competence to do so, over what period, at what frequency and supported by a written record, e.g. completed proformas and captioned photographs presented in the appendices);
 - description of each element of the gas protection system (setting out both the standard/generic measures and where measures were varied to meet particular/unusual circumstances (e.g. lift pits); and
 - presentation of the manufacturer's material specifications for all elements of the gas protection system, including warranty information.

The Contractor's verification plan shall be included as part of their design and a verification report shall be produced following the completion of each construction stage phase of the works.

7.2. Verification Report

A Verification Report shall be produced for the whole of Zone 1A. The Verification Report shall be reviewed by the Client prior to submission to the Regulators to enable discharge of Planning Permission P2021-0327 condition 48.

The report shall provide a complete record of all remediation activities on-site and the data collected, as identified in the Verification Plan, to support compliance with agreed remediation objectives and criteria. The Verification Report will include details of the final strategy, works undertaken (including volumes treated/disposed), third-party approvals, verification, quality assessment, monitoring, final site conditions, wayleaves, warranties and contact details of involved parties/consultees, tip locations, excavation profiles, copies of waste transfer documents and health and safety information.

With reference to the EA/NRW guidance, the verification report shall include the following information:

- Background information (site details, personnel and roles, reasons and objectives for the remediation);
- Remediation;
- Methodology and programme (to include criteria);
 - Verification.
 - Monitoring.
 - Testing regime.
 - Ongoing works.
- Final site condition (monitoring requirements, restrictions on site use);
- Details of residual contamination (soil, groundwater, NAPL);
- Third party agreements (records of regulator liaison);
- Details of gas protection design, installation and verification (as built drawings, membrane details, gas protection verification plan, validation records, qualifications of membrane installers);
- Supporting information (plans, drawings, photographs, field and laboratory test results, progress reports and meeting minutes);
- Results of the groundwater monitoring programme completed for the perched water and deeper aquifer;
- Decommissioning details for the groundwater monitoring wells installed on-site; and
- A risk assessment for any residual contamination identified within the Zone 1A area.
- The verification report shall be produced to also satisfy the requirements of the CL:AIRE DoWCoP [40] and MWD [29] and hence shall contain all details and records pertaining to the MMP / WMP including (but may not be limited to):
 - Materials tracking;
 - Transfer notes;
 - Delivery notes;
 - Weighbridge tickets;
 - The as-built records including any alterations made;
 - Site plans which show sample locations;
 - Site plans showing areas of excavation and material placement (for re-used, treated, and imported material); and,
 - Photographic record of earthworks movements.

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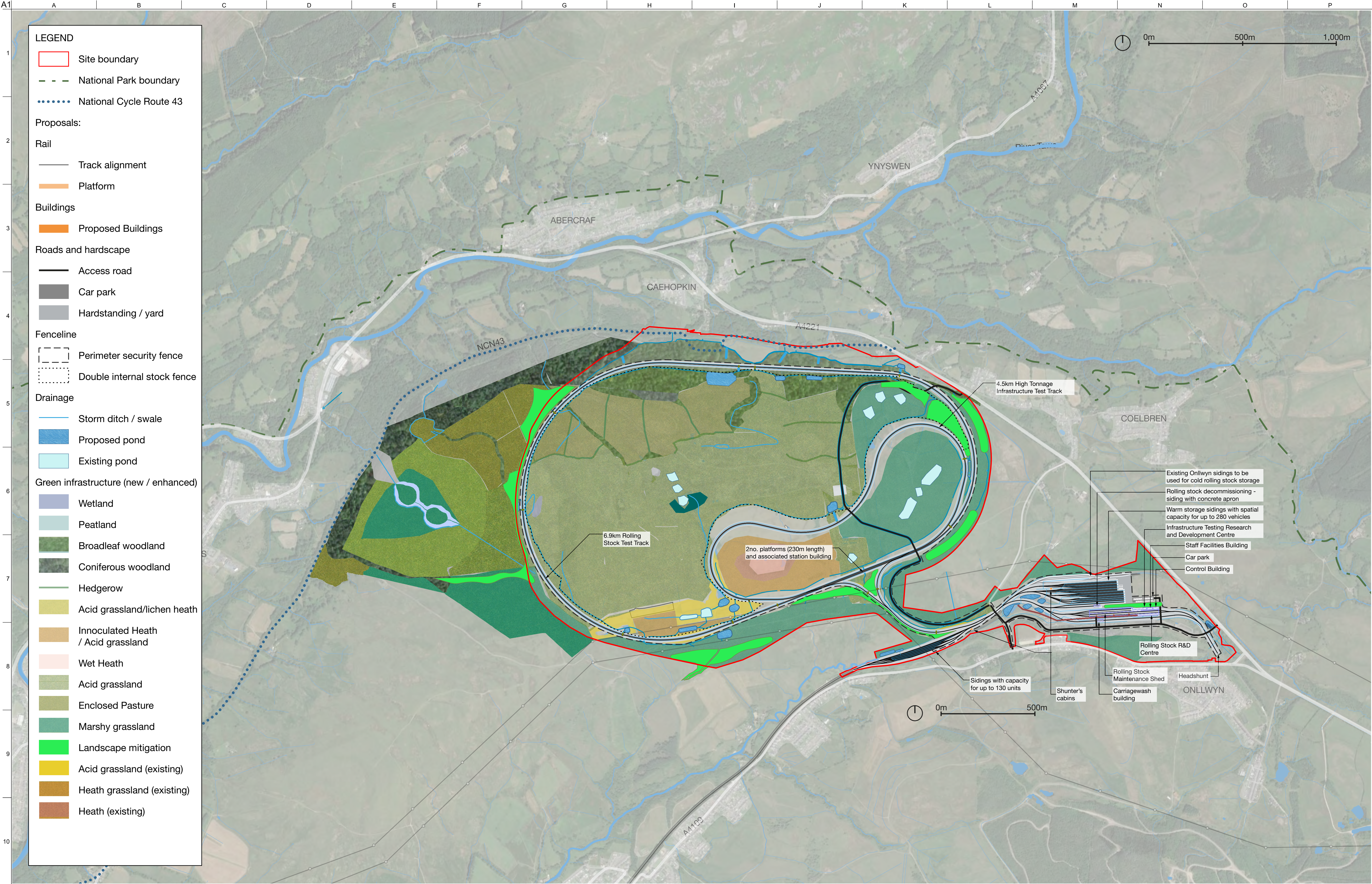
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Appendices



Appendix A. Drawings

A.1. 003A Illustrative Masterplan



0225/05/21BSERDB

IssueDateByChkidAppd

4 Pierhead St, Capital Waterside
Cardiff, CF10 4QP
T +44(0)29 20475727 F +44(0)29 20472277
www.arup.com

ARUP

Client
Welsh Government

Job Title
Global Centre for Rail Excellence

Drawing Title
Illustrative Masterplan

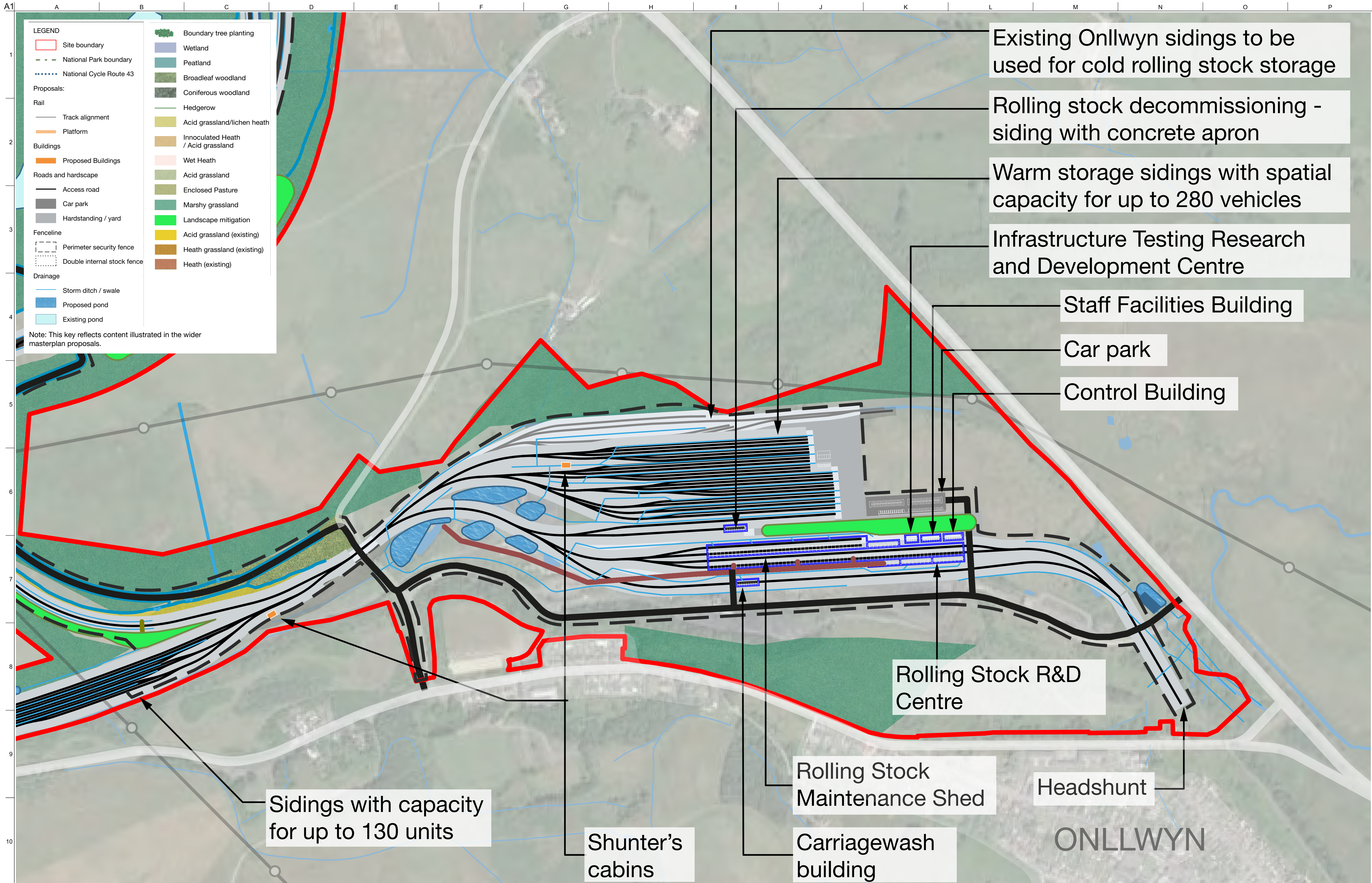
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DisciplinePlanning

Job No264904-00Drawing StatusPLANNING

Drawing No003AIssue02

A.2. 003B Illustrative Master Plan - Washery



Do not scale

02	25/05/21	BS	ER	DB
Issue	Date	By	Chkd	Appd

ARUP

4 Pierhead St, Capital Waterside
Cardiff, CF10 4QP
T +44(0)29 20472727 F +44(0)29 20472277
www.arup.com

Client
Welsh Government

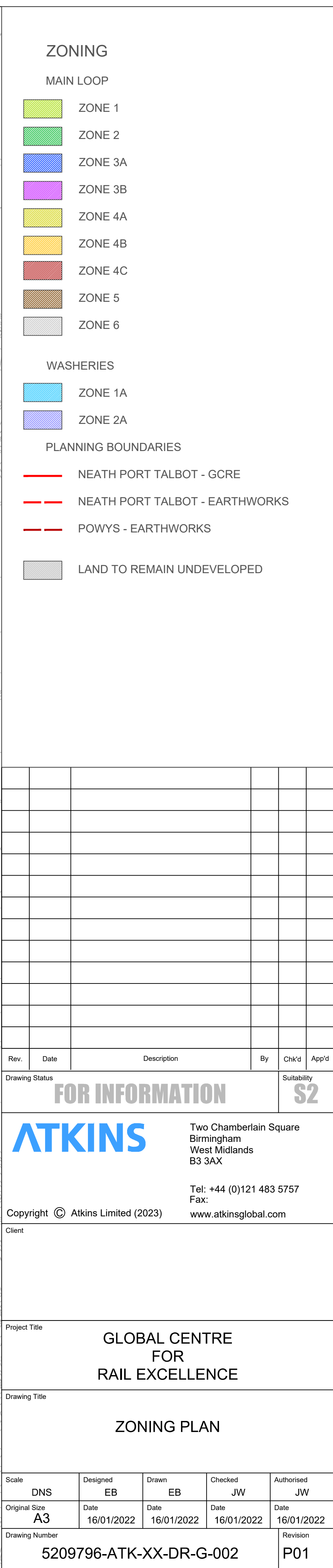
Job Title
Global Centre for Rail Excellence

Drawing Title
Illustrative Masterplan -
Washery Proposals

Scale at A1
1:2,500

Discipline Planning	Drawing Status PLANNING
Job No 264904-00	Issue 003B
Drawing No 003B	Issue 02

A.3. 5209796-ATK-XX-DR-G-002 GCRE Zoning Plan CLAH WIP



A.4. GCRE001_AWJV-EW-XX-DR-CE-00001

- P.1. OBTAIN ECOLOGICAL CONSENT AND IMPLEMENT MITIGATION WORKS.
- P.2. OBTAIN UTILITY CONSENT FOR DIVERSION AND ISOLATION. DIVERT 11KV OVERHEAD CABLES AND AFFECTED POLES, RUNNING PARALLEL WITH ROAD ALIGNMENT.
- P.3. OBTAIN ARCHAEOLOGICAL CONSENT, ARCHAEOLOGICAL EXCAVATION TO BE COMPLETED BY OXFORD ARCHAEOLOGY.
- P.4. ESTABLISH ACCESS CORRIDORS AND TEMPORARY SITE BOUNDARIES.
- P.5. ESTABLISH POLLUTION MONITORING POINTS
- P.6. LOCATE AND MARKUP SERVICES, CONSTRUCT TEMPORARY SUPPORT IF NECESSARY.
- P.7. CLEAR VEGETATION.
- P.8. STRIP TOPSOIL AND STOCKPILE.

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN. ALL LEVELS ARE INDICATED IN METRES ABOVE ORDNANCE DATUM (mAOD). ALL CHANGES ARE IN METRES.

2. IF THE PLANS, SECTIONS OR THE NOTES COLUMN OF EACH DRAWING WITHIN THIS SERIES SHOULD CONFLICT IN ANY WAY WITH THE GENERAL NOTES UPON THIS DRAWING, THE NOTES ON THE INDIVIDUAL DRAWING SHALL TAKE PRECEDENCE OVER SUCH GENERAL NOTES WHERE THEY CONTRADICT.

3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD EARTHWORK DETAILS AND NOTES, STRUCTURES DRAWINGS, DRAINAGE DRAWINGS, ROADWORKS DRAWINGS, GEOLOGICAL LONGITUDINAL SECTION, SPECIFICATION FOR HIGHWAY WORKS, SPECIFICATION APPENDICES, GEOTECHNICAL RISK LOG AND GEOTECHNICAL DESIGN REPORTS.

4. PRIOR TO COMMENCING THE WORKS, THE CONTRACTOR SHALL DETERMINE THE LOCATION OF UNDERGROUND SERVICES AND ARRANGE AND PROVIDE FOR ANY NECESSARY DIVERSIONS WITH THE RELEVANT STATUTORY UNDERTAKER. GROUND WORKS CARRIED OUT IN THE VICINITY OF ANY SERVICES PIPES OR CABLES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATUTORY UNDERTAKERS.

5. FOR ADDITIONAL REQUIREMENTS / RESTRICTIONS ON THE USE OF CLASS 1 / CLASS 2 GENERAL FILL SEE SPECIFICATION APPENDIX 6/1, 6/3 AND SHW CLAUSE 601. THE DESIGN ASSUMES THAT ALL GENERAL FILL (CLASS 1/CLASS 2) USED WITHIN THE EARTHWORKS WILL BE SUITABLE. IMPORTED OR "SITEOWN" FILL AND THE DESIGN PARAMETERS HAVE BEEN SELECTED ACCORDINGLY. IF THE CONTRACTOR PROPOSES THE USE OF IMPORTED GENERAL FILL THE SOURCE SHALL BE APPROVED IN ADVANCE BY THE DESIGNER'S SITE REPRESENTATIVE (DSR).

6. TOPSOIL STRIPPING SHALL BE CARRIED OUT OVER THE FULL EXTENT OF ALL EARTHWORK FOUNDATIONS UNLESS OTHERWISE INDICATED ON THE DRAWINGS AND PRIOR AGREEMENT WITH THE DESIGNER. ALL AREAS OF EMBANKMENT FOUNDATIONS SHALL BE PROOF-ROLLED (AS DEFINED IN APPENDIX 6/3). ANY SOFT SPOTS ($C_u \leq 40kPa$) SHALL BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH STANDARD EARTHWORK DETAIL SED 601.

7. WHERE THE SLOPE OF EXISTING GROUND BELOW EMBANKMENTS EXCEEDS 1V : 5H, BENCHING SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARD EARTHWORK DETAIL SED 604. BENCHING INTO EXISTING EMBANKMENTS SHALL BE IN ACCORDANCE WITH SED 604.

8. THE CONTRACTOR SHALL NOTIFY THE DESIGNER OF ANY SEEPAGE PRESENT IN EARTHWORKS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL DRAINAGE MEASURES TO INTERCEPT AND DISCHARGE SEEPAGE. THE LOCATION OF BATTER SLOPE DRAINS SHALL BE DETERMINED WITH THE DESIGNER IN CONJUNCTION WITH THE SUPERVISOR.

9. GEOTEXTILE SEPARATORS USED IN EARTHWORKS SHALL BE PROVIDED: AT LOCATIONS WHERE INDICATED ON THE EARTHWORK DRAWINGS, OR WHERE REQUIRED BY THE STANDARD EARTHWORK DETAILS OR WHERE DEEMED TO BE REQUIRED BY THE SUPERVISOR, AND SHALL COMPLY WITH SPECIFICATION APPENDIX 6/5 AND CLAUSE 609 OF THE SHW. ALL JOINTS IN GEOTEXTILE SEPARATOR LAYERS SHALL OVERLAP BY 300mm MINIMUM, AND WHERE PLACED ON SLOPING GROUND THE BOTTOM LAYER SHALL BE TAKEN UP SLOPE AND LAPPED UNDER THE TOP LAYER. NOTE: GEOSYNTHETIC REINFORCEMENT LAYERS SHALL SATISFY THE REQUIREMENTS OF APPENDIX 6/9.

10. INSTRUMENTATION AND MONITORING SHALL COMPLY WITH SPECIFICATION APPENDIX 6/12. INSTRUMENTATION PROTECTION MEASURES ARE TO BE CONFIRMED ON SITE BY THE DESIGNER'S SITE REPRESENTATIVE.

11. CUTTING SLOPES IN SOIL SHALL BE CONSTRUCTED AT 1 V : 2.2 H (24°) AND CUTTING SLOPES IN ROCK SHALL BE CONSTRUCTED AT 1.73 V : 1 H (60°), UNLESS OTHERWISE STATED ON THE EARTHWORKS DRAWINGS. A 3m WIDE BERM TO BE PROVIDED WHEN TRANSITIONING FROM ROCK TO SOIL IN CUTTINGS.

12. EMBANKMENT SLOPES SHALL BE CONSTRUCTED AT 1 V : 2.5 H (22°), UNLESS INDICATED OTHERWISE ON THE EARTHWORK DRAWINGS.

13. A 2m WIDE BERM TO BE PROVIDED ALONG EMBANKMENT AND CUTTING SLOPES FOR EVERY 10m CHANGE IN HEIGHT.

14. CUT AND FILL TRANSITION ZONES OF EARTHWORK SLOPES SHALL BE GRADED TO SUIT IN ACCORDANCE WITH SPECIFICATION APPENDIX 3000 SERIES; FOR TRANSITION ZONES ALONG AN EARTHWORK WHERE ADJACENT SLOPE BATTERS DIFFER THEN THE SLOPE ANGLE VARIES BETWEEN THEM TO GIVE A SMOOTH TRANSITION FROM ONE GRADIENT TO THE OTHER.

15. INSTALLATION OF ANY DRAIN OR SERVICE AT TOE OF CUTTING OR EMBANKMENT SLOPE SHALL BE UNDERTAKEN WITHOUT DETRIMENTAL IMPACT ON THE ADJACENT EARTHWORK. THIS SHALL INCLUDE RESTRICTION OF OPEN LENGTH OF OPERATIONAL EXCAVATION GREATER THAN 1.2m DEPTH AS REQUIRED TO SUIT SITE CONDITIONS AND WORKING METHODS.

16. ALL EMBANKMENT (EXCEPT WHERE REINFORCED SOIL IS CONSTRUCTED) FACES SHALL BE OVERFILLED 0.5m BEYOND FINISH EARTHWORKS LEVEL AND TRIMMED BACK TO ENSURE GOOD COMPACTION. THIS REQUIREMENT IS TO ENSURE ADEQUATE COMPACTION AT SLOPE FACE.

17. CONSTRUCTION OF TRACK DRAINAGE SHALL NOT COMMENCE UNTIL AFTER TERMINATION OF ANY SPECIFIED HOLD PERIOD (EXCEPT WHERE ASSOCIATED WITH TEMPORARY SURFACES). ADEQUATE DRAINAGE (PERMANENT OR TEMPORARY) SHALL BE PROVIDED IN CUTTINGS PRIOR TO EXCAVATION FOR TRACK DRAINAGE TO ENSURE PLACEMENT OF CAPPING WITHOUT DETERIORATION OF THE EARTHWORKS PLATEAU. ANY SETTLEMENT AFFECTING THE CAPPING LAYER SHALL BE MADE GOOD.

18. THE CONTRACTOR SHALL NOTIFY THE DESIGNER OF THE PROPOSED PROGRAMME FOR EXCAVATION OF ALL SLOPES AND TOPSOLLING. SLOPES FORMED IN ERODIBLE SOILS ARE TO BE TOPSOILED IMMEDIATELY ON ACHIEVEMENT OF EARTHWORKS OUTLINE AND AFTER INSPECTION AND INSTALLATION OF ANY FACE DRAINAGE. SEEDING TO FOLLOW ON AS SOON AS POSSIBLE THEREAFTER WITH DUE CONSIDERATION OF THE SEASON AND WEATHER CONDITIONS.

19. NO EXCAVATION DEEPER THAN 1.2m SHALL BE LEFT OPEN OR UNSUPPORTED FOR >24 HOURS. TEMPORARY WORKS ASSESSMENT SHALL BE UNDERTAKEN BY THE CONTRACTOR.

20. EXISTING PAVED AREAS BENEATH EMBANKMENTS AND OTHER AREAS OF FILL SHALL BE EXCAVATED DOWN TO THE UNDERSIDE OF THE BOUND LAYERS OR PERFORATED AND LEFT IN PLACE UNLESS SHOWN OTHERWISE ON THE DRAWINGS, OR AS DIRECTED BY THE DESIGNER.

21. HISTORICAL TRAM WAY RUNNING ALONG THE SOUTH OF THE SITE TO BE PROTECTED UNDER SCHEDULED MONUMENT CONSENT. REFER Drg No. GCR001-AWJV-EW-XX-DR-CE-01001 FOR CONSTRUCTION DETAIL.

22. WHERE OVER THE EDGE DRAINAGE IS CONSTRUCTED, THE SLOPE SHALL BE TOPSOILED AND SEEDED AS EARLY DURING CONSTRUCTION AS POSSIBLE TO ALLOW VEGETATION GROWTH TO TAKE PLACE TO PREVENT EROSION OF TOPSOIL.

23. UNLINED DITCHES SHALL BE SEEDED MINIMUM 2 WEEKS FROM EXCAVATION TO PREVENT UNDESIRABLE VEGETATION GROWTH.

24. WHERE CONFIRMATORY GROUND INVESTIGATION IS PROPOSED TO INFORM DESIGN AND / OR CONSTRUCTION, MAIN CONSTRUCTION WORKS SHALL NOT COMMENCE UNTIL THE FACTUAL GI DATA HAS BEEN REVIEWED BY THE DESIGNER.

25. THE CONDITION AND ACCEPTABILITY OF ALL ROCK CUTTINGS SHALL BE ASSESSED BY THE DESIGNER'S SITE REPRESENTATIVE IMMEDIATELY FOLLOWING EXCAVATION.

26. THE DESIGNER OR DESIGNER'S SITE REPRESENTATIVE SHALL PROVIDE ADDITIONAL DETAILS AS APPROPRIATE, TO THE LOCATION & EXTENT OF THE STANDARD EARTHWORKS DETAILS FOLLOWING SITE INSPECTION AND EXPOSURE OF EARTHWORKS DETAILS.

27. REFER TO "TRL ROCK ENGINEERING GUIDE TO GOOD PRACTICE - ROCK SLOPE EXCAVATION" FOR DEFINITION OF "COMPETENT ROCK" AND "OVERBURDEN MATERIAL ABOVE COMPONENT ROCK"

GCRE001-AWJV-EW-XX-DR-CE-00001
GCRE001-AWJV-EW-XX-DR-CE-00002
GCRE001-AWJV-EW-XX-DR-CE-00003
GCRE001-AWJV-EW-XX-DR-CE-00004
GCRE001-AWJV-EW-XX-DR-CE-00005

EARTHWORKS GENERAL NOTES

VEHICLE TESTING LOOP, INFRASTRUCTURE TESTING LOOP AND DELTA JUNCTION EARTHWORKS: GENERAL ARRANGEMENT

PHASE 1A EARTHWORKS: GENERAL ARRANGEMENT

PHASE 1A EARTHWORKS PLATEAU: CUT & FILL HEAT MAP

PHASE 1A EARTHWORKS PEAT EXTENTS

GCORE001-AWJV-EW-XX-DR-CE-00011
GCORE001-AWJV-EW-XX-DR-CE-00012
GCORE001-AWJV-EW-XX-DR-CE-00013
GCORE001-AWJV-EW-XX-DR-CE-00014
GCORE001-AWJV-EW-XX-DR-CE-00015
GCORE001-AWJV-EW-XX-DR-CE-00016
GCORE001-AWJV-EW-XX-DR-CE-00017
GCORE001-AWJV-EW-XX-DR-CE-00018
GCORE001-AWJV-EW-XX-DR-CE-00019
GCORE001-AWJV-EW-XX-DR-CE-00020

EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 1
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 2
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 3
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 4
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 5
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 6
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 7
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 8
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 9
EARTHWORKS: INSTRUMENTATION AND MONITORING, PLAN LAYOUT, SHEET 10

GCRE001-AWJV-EW-XX-DR-CE-01001

PROTECTION TO SCHEDULED MONUMENT: LAYOUT AND DETAILS

GCRE001-AWJV-EW-IT-DR-CE-03001
 GCRE001-AWJV-EW-VT-DR-CE-03002
 GCRE001-AWJV-EW-VT-DR-CE-03002
 GCRE001-AWJV-EW-VT-DR-CE-03003
 GCRE001-AWJV-EW-XX-DR-CE-03001
 GCRE001-AWJV-EW-XX-DR-CE-03002
 GCRE001-AWJV-EW-XX-DR-CE-03003

INFRASTRUCTURE TESTING LOOP EARTHWORKS: CROSS-SECTIONS
VEHICLE TESTING LOOP AND DELTA JUNCTION EARTHWORKS: CROSS-SECTIONS, SHEET 1 OF 3
VEHICLE TESTING LOOP AND DELTA JUNCTION EARTHWORKS: CROSS-SECTIONS, SHEET 2 OF 3
VEHICLE TESTING LOOP AND DELTA JUNCTION EARTHWORKS: CROSS-SECTIONS, SHEET 3 OF 3
PHASE 1A EARTHWORKS: CROSS-SECTIONS
PHASE 1A EARTHWORKS: LONGITUDINAL-SECTIONS, SHEET 1 OF 2
PHASE 1A EARTHWORKS: LONGITUDINAL-SECTIONS, SHEET 2 OF 2

GCRE001-AWJV-EW-XX-DR-CE-03011

EARTHWORKS: INSTRUMENTATION AND MONITORING, TYPICAL SECTIONS

GCRE001-AWJV-EW-XX-DR-CE-05001
GCRE001-AWJV-EW-XX-DR-CE-05002
GCRE001-AWJV-EW-XX-DR-CE-05005

EARTHWORKS STANDARD DETAILS, SHEET 1 OF 2
EARTHWORKS STANDARD DETAILS, SHEET 2 OF 2
EARTHWORKS: INSTRUMENTATION AND MONITORING, INSTALLATION DETAILS

GCRE001-AWJV-EW-XX-DR-CE-05011
GCRE001-AWJV-EW-XX-DR-CE-05012

ROCK STABILISATION AND NETTING DETAILS, SHEET 1 OF 2

GCRC001-AWJV-EW-XX-DR-CE-05021
GCRC001-AWJV-EW-XX-DR-CE-05022

RETAINING STRUCTURES DETAILS, SHEET 1 (IN ABEYANCE - NOT INCLUDED)
RETAINING STRUCTURES DETAILS, SHEET 2 (IN ABEYANCE - NOT INCLUDED)

[illegible]

P01	23-02-17	PRELIMINARY	RH	JT	RH
Rev.	Date	Description	By	Chk'd	App'd

Drawing Status	Suitability
Suitable for review and comment	S3



WALTERS | ATKINS

Client

GCRE

Global Centre of Rail Excellence
Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd

Project Title

GLOBAL CENTRE OF RAIL EXCELLENCE

Drawing Title

EARTHWORKS
GENERAL NOTES

Scale NTS	Drawn R.Howie	Checked J.Thillainadarajan	Approved R.Harper	Authorised ---
Original Size A1	Date 2023-02-17	Date 2023-02-17	Date 2023-02-17	Date ---

Drawing Number	Revision
GCRE001-AWJV-EW-XX-DR-CE-00001	P01

A.5. GCRE001_AWJV-EW-XX-DR-CE-00002

0 10 100
Millimetres

DO NOT SCALE

LEGEND:

- MINE TREATMENT:
DRILL AND GROUT
- MINE TREATMENT:
EXCAVATE AND REPLACE

NOTES

- DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT EARTHWORKS AND DRAINAGE SERIES DRAWINGS.
- USE WRITTEN DIMENSIONS ONLY - DO NOT SCALE DRAWING.
- DETAILS OF MINING REMEDIATION PROVIDED ON DRAWING Nos: GCRE001-AWJV-EW-XX-DR-GE-04001 TO 04007.
- DETAILED CROSS SECTIONS PROVIDED ON DRAWING Nos: GCRE001-AWJV-EW-IT-DR-CE-03001 AND GCRE001-AWJV-EW-VT-DR-CE-03001 TO 03003.
- DETAILED CROSS SECTIONS OF EARTHWORKS PASSING OVER THE SCHEDULE MONUMENT PROVIDED ON DRAWING No: GCRE001-AWJV-EW-XX-DR-CE-01001.
- ATTENTION IS ALSO DRAWN TO THE SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION NOTES.

LEGEND

- PROPOSED EARTHWORKS
- PROPOSED RAIL PLATEAU
- PROPOSED ENVIRONMENTAL BUND
- PROPOSED CYCLE TRACK
- PROPOSED LOCATION OF UNDERPASSES AND BRIDGES
- SCHEDULED MONUMENT
- EXISTING PYLON
- PROPOSED PILE WALL
- EARTHWORKS BERM
- SOIL TO ROCK TRANSITION BERM
- PLANNING PERMISSION BOUNDARY
- PROPOSED RAILWAY TRACKS

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards / risks normally associated with the type of work detailed on this drawing, note the following with reference to GCRE001-AWJV-EW-XX-RP-GE-00011:

CONSTRUCTION

- C1. Working on slopes and unstable existing ground.
- C2. Working at heights.
- C3. Encountering unrecorded mine workings.
- C4. Potential for coal exposure and ignition.
- C5. Electric pylons within the earthworks.
- C6. Damage to archeologically important structures.
- C7. Presence of soft ground at shallow depths.
- C8. Unstable rock surfaces.

MAINTENANCE/CLEANING

- M1. Post construction differential settlement.

DECOMMISSIONING/DEMOLITION

N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P01	23-02-17	PRELIMINARY	RH	JT	RH

Drawing Status	Suitability
Suitable for review and comment	S3

WALTERS ATKINS

GCRE

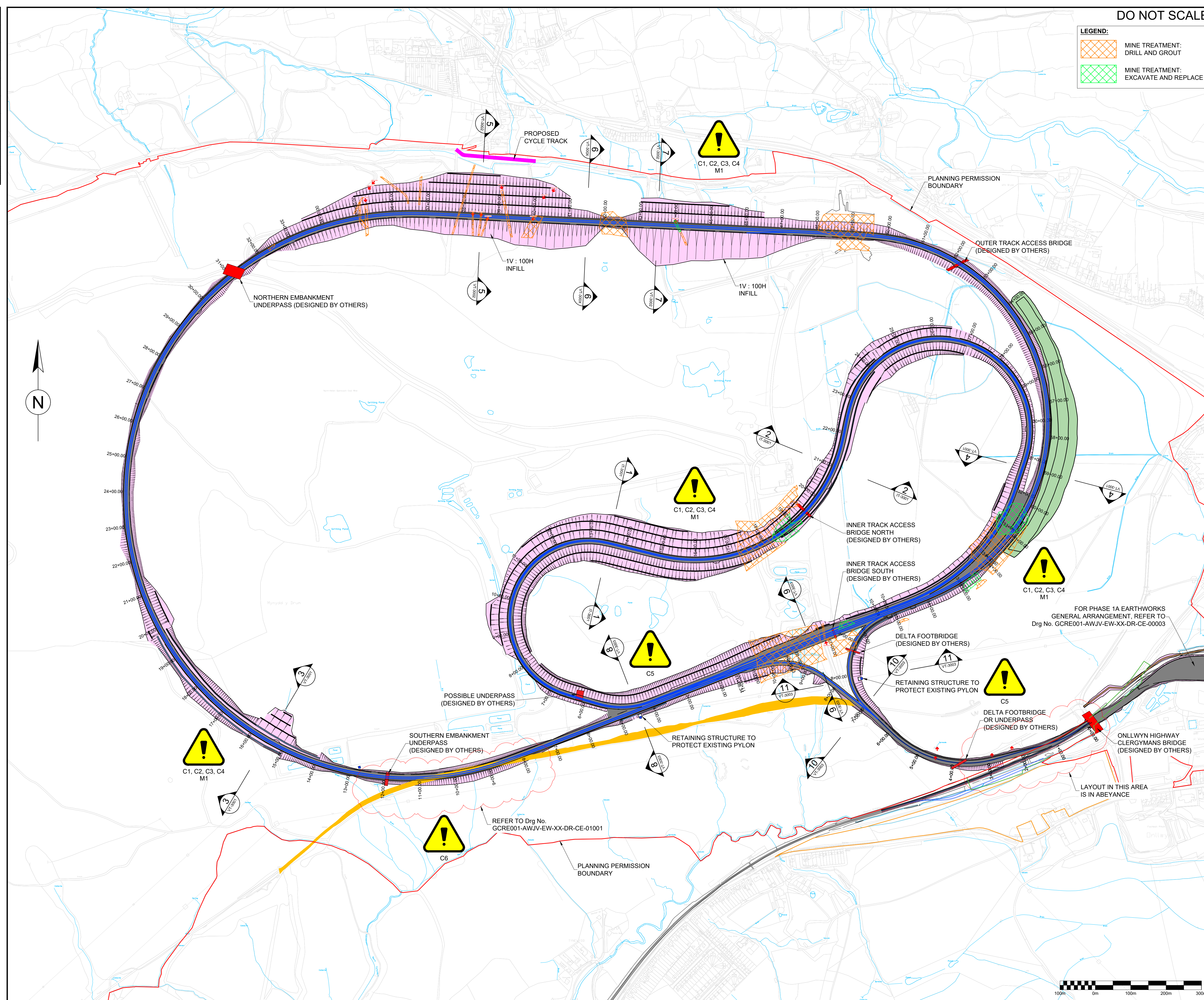
Global Centre of Rail Excellence
Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd

Project Title
GLOBAL CENTRE OF RAIL EXCELLENCE

Drawing Title
**VEHICLE TESTING LOOP,
INFRASTRUCTURE TESTING LOOP
AND DELTA JUNCTION
EARTHWORKS GENERAL ARRANGEMENT**

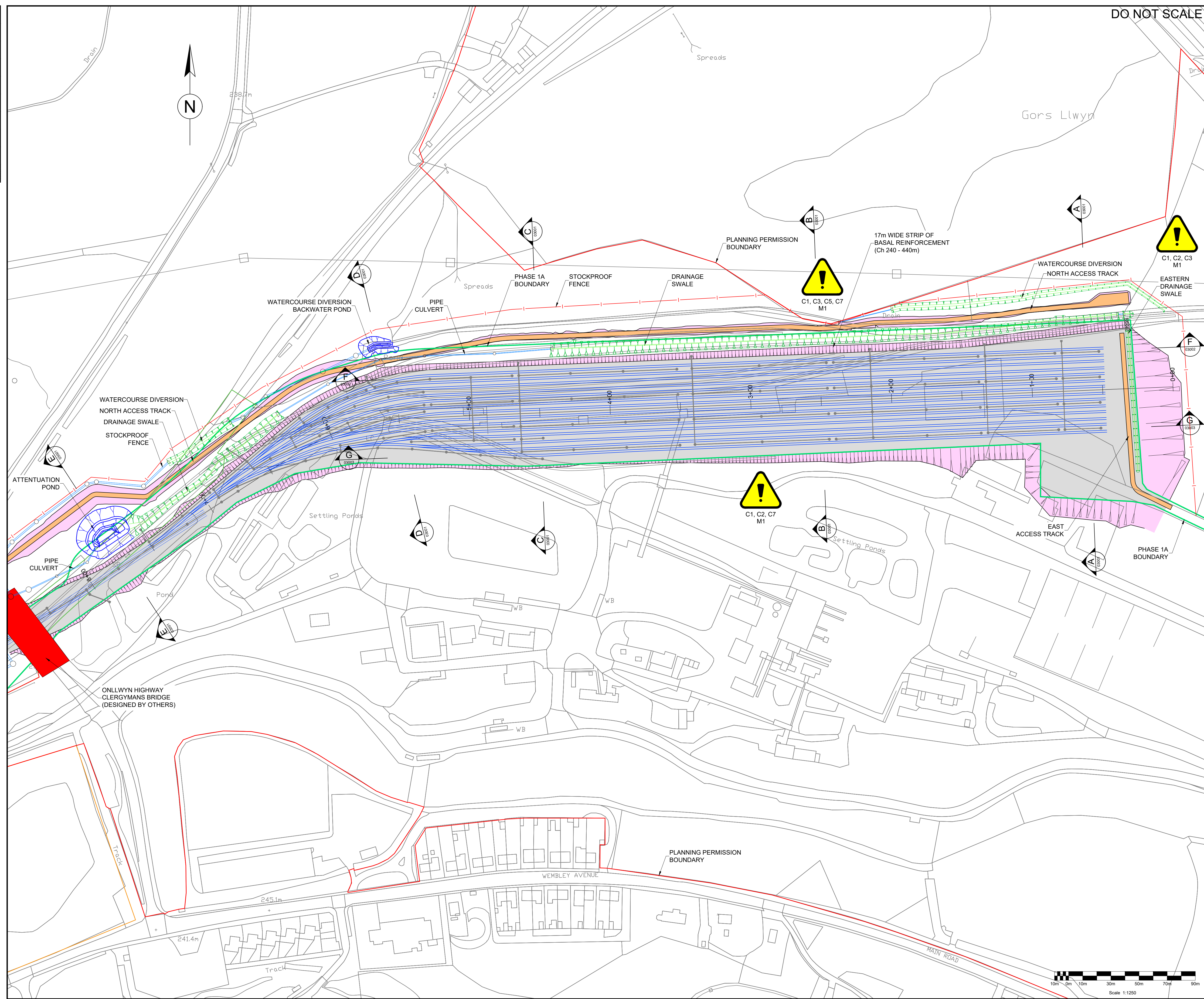
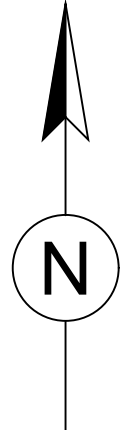
Scale	Drawn	Checked	Approved	Authorised
1 : 5000	R.Howie	Thillainadarajan	R.Harper	---
Original Size	Date	Date	Date	Date
A1	2023-02-17	2023-02-17	2023-02-17	---

Drawing Number	Revision
GCRE001-AWJV-EW-XX-DR-CE-00002	P01



A.6. GCRE001_AWJV-EW-XX-DR-CE-00003

100
0 10
Millimetres



DO NOT SCALE

- NOTES
- DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT EARTHWORKS AND DRAINAGE SERIES DRAWINGS.
 - USE WRITTEN DIMENSIONS ONLY - DO NOT SCALE DRAWING.
 - DETAILS OF MINING REMEDIATION PROVIDED ON DRAWING Nos: GCRE001-AWJV-EW-XX-DR-GE-04001 TO 04007.
 - DETAILED CROSS SECTIONS PROVIDED ON DRAWING Nos: GCRE001-AWJV-EW-XX-DR-CE-03001 TO 03003.
 - BASAL REINFORCEMENT SHALL BE TENSAR BASETEX 300/50 (OR SIMILAR APPROVED) AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS GUIDANCE.
 - ATTENTION IS ALSO DRAWN TO THE SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION NOTES.
- LEGEND
- PROPOSED EARTHWORKS
 - PROPOSED RAIL PLATEAU
 - PROPOSED LOCATION OF UNDERPASSES AND BRIDGES
 - PROPOSED STOCKPROOF FENCE
 - PROPOSED RAIL SYSTEMS (BY ARCADIS)
 - PROPOSED ACCESS TRACK
 - ORDNANCE SURVEY MAPPING

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards / risks normally associated with the type of work detailed on this drawing, note the following with reference to GCRE001-AWJV-EW-XX-RP-GE-00011:

CONSTRUCTION

- C1. Working on slopes and unstable existing ground.
- C2. Working at heights.
- C3. Encountering unrecorded mine workings.
- C4. Potential for coal exposure and ignition.
- C5. Electric pylons within the earthworks.
- C6. Damage to archeologically important structures.
- C7. Presence of soft ground at shallow depths.
- C8. Unstable rock surfaces.

MAINTENANCE/CLEANING

- M1. Post construction differential settlement.

DECOMMISSIONING/DEMOLITION

N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

P01	23-02-17	PRELIMINARY	RH	JT	RH
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Rev.	Date	Description	By	Chk'd	App'd

Drawing Status: **Suitable for review and comment**

Suitability: **S3**

WALTERS

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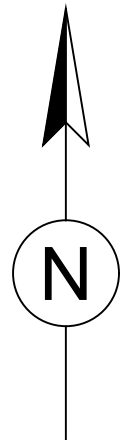
Client

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Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd

Project Title					
GLOBAL CENTRE OF RAIL EXCELLENCE					
Drawing Title					
PHASE 1A EARTHWORKS GENERAL ARRANGEMENT					
Scale	Drawn	Checked	Approved	Authorised	
1:1250	R.Howie	Thillainadarajan	R.Harper	---	
Original Size	Date	Date	Date	Date	
A1	2023-02-17	2023-02-17	2023-02-17	---	
Drawing Number	Revision				
GCRE001-AWJV-EW-XX-DR-CE-00003	P01				

A.7. GCRE001_AWJV-EW-XX-DR-CE-00004

100
0 10
Millimetres



DO NOT SCALE

NOTES

- DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT EARTHWORKS AND DRAINAGE SERIES DRAWINGS.
- USE WRITTEN DIMENSIONS ONLY - DO NOT SCALE DRAWING.
- ALL DIMENSIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
- PROPOSED EARTHWORKS WITHIN PHASE 1A AREA SHALL BE CONSTRUCTED WITH SIDE SLOPES NOT EXCEEDING:
 - 1V : 2.5H FOR EMBANKMENTS
 - 1V : 3.0H FOR CUTTINGS

LEGEND

- PROPOSED EARTHWORKS
- PROPOSED RAIL PLATEAU
- PROPOSED LOCATION OF UNDERPASSES AND BRIDGES
- PROPOSED STOCKPROOF FENCE
- PROPOSED RAIL SYSTEMS (BY ARCADIS)
- PLANNING PERMISSION BOUNDARY
- PHASE 1A BOUNDARY

EARTHWORKS CUT / FILL LEGEND:

- FILL 1.5 - 3.0m DEPTH
- FILL 0.0 - 1.5m DEPTH
- CUT 0.0 - 5.0m DEPTH
- CUT 5.0 - 10.0m DEPTH
- CUT 10.0 - 14.5m DEPTH

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards / risks normally associated with the type of work detailed on this drawing, note the following with reference to GCRE001-AWJV-EW-XX-RP-GE-00011:

CONSTRUCTION

- C1. Working on slopes and unstable existing ground.
- C2. Working at heights.
- C3. Encountering unrecorded mine workings.
- C4. Potential for coal exposure and ignition.
- C5. Electric pylons within the earthworks.
- C6. Damage to archeologically important structures.
- C7. Presence of soft ground at shallow depths.
- C8. Unstable rock surfaces.

MAINTENANCE/CLEANING

- M1. Post construction differential settlement.

DECOMMISSIONING/DEMOLITION

N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

P01	23-02-17	Preliminary	RH	JT	RH
Rev.	Date	Description	By	Chk'd	App'd

Drawing Status	Suitable for review and comment	Suitability	S3
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Global Centre of Rail Excellence
Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd

Project Title

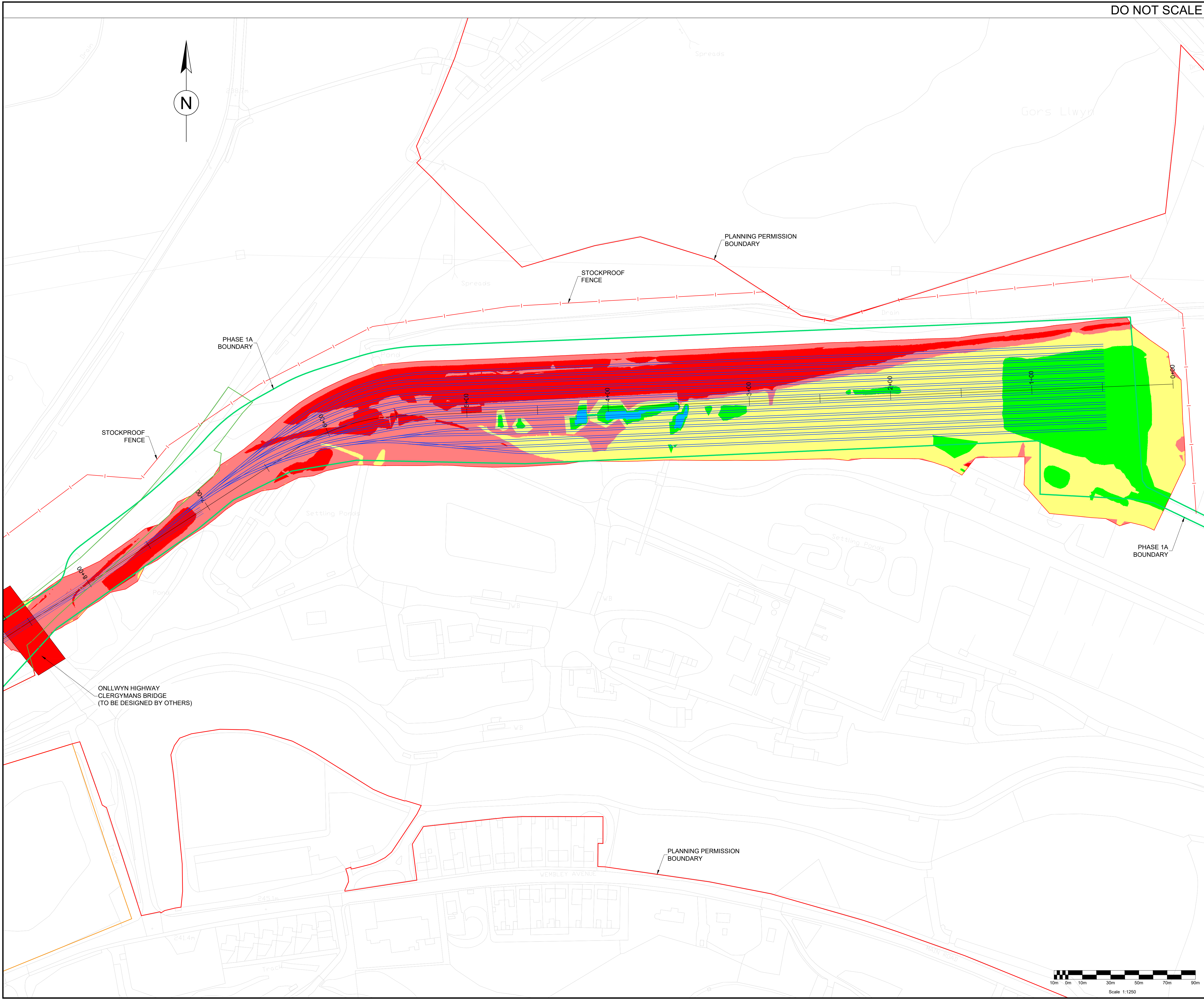
GLOBAL CENTRE OF RAIL EXCELLENCE

Drawing Title

PHASE 1A
EARTHWORKS PLATEAU
CUT & FILL HEAT MAP

Scale	Drawn	Checked	Approved	Authorised
1:1250	R.Howie	Thillainadarajan	R.Harper	---
Original Size	Date	Date	Date	Date
A1	2023-02-17	2023-02-17	2023-02-17	---

Drawing Number	Revision
GCRE001-AWJV-EW-XX-DR-CE-00004	P01

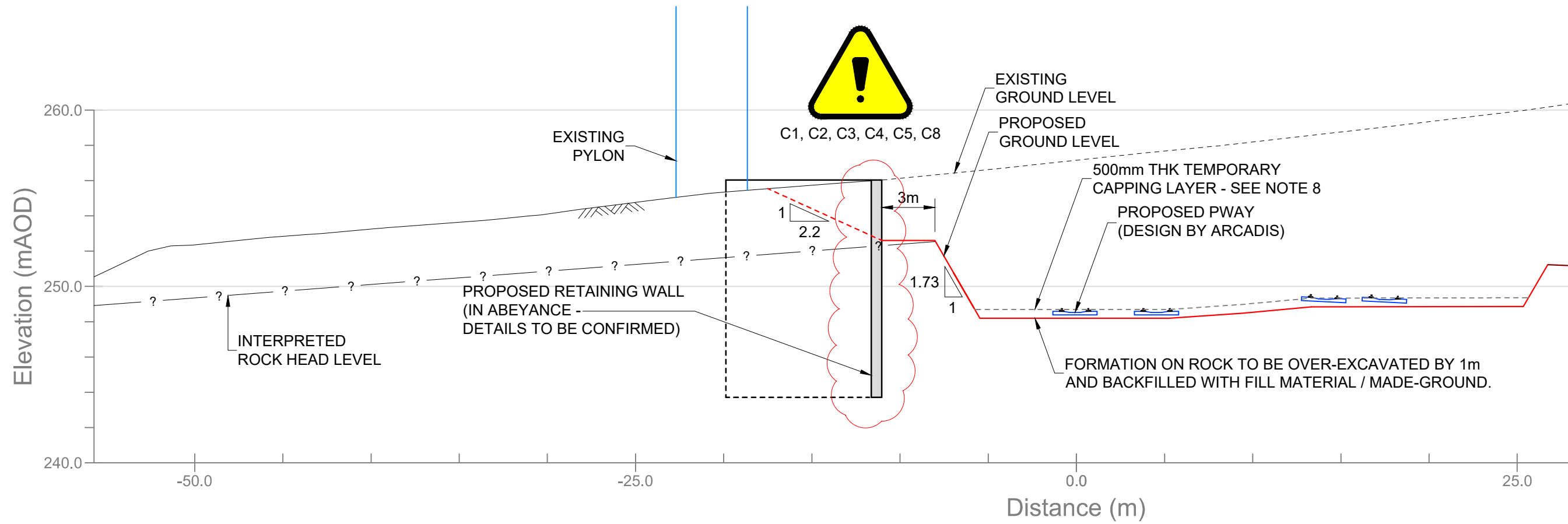


A.8. GCRE001_AWJV-EW-XX-DR-CE-00005

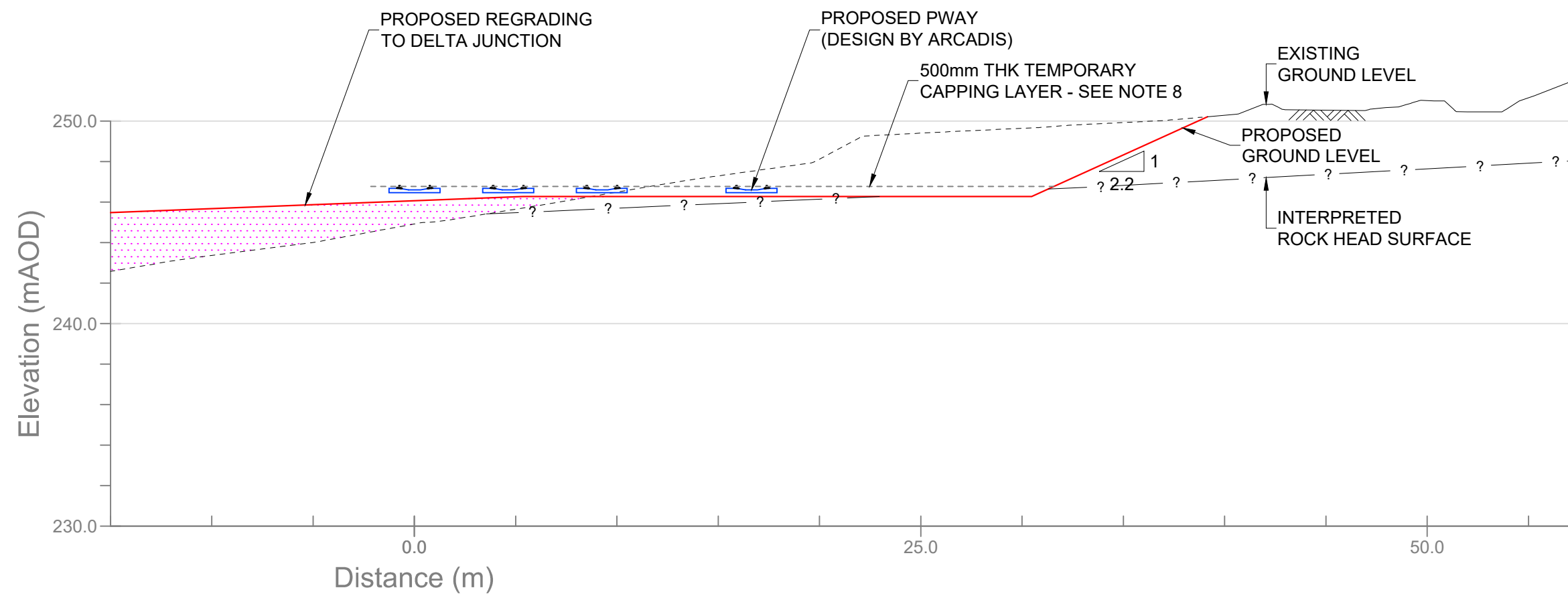
A.9. GCRE001_AWJV-EW-XX-DR-CE-03003

100
0
10
Millimetres

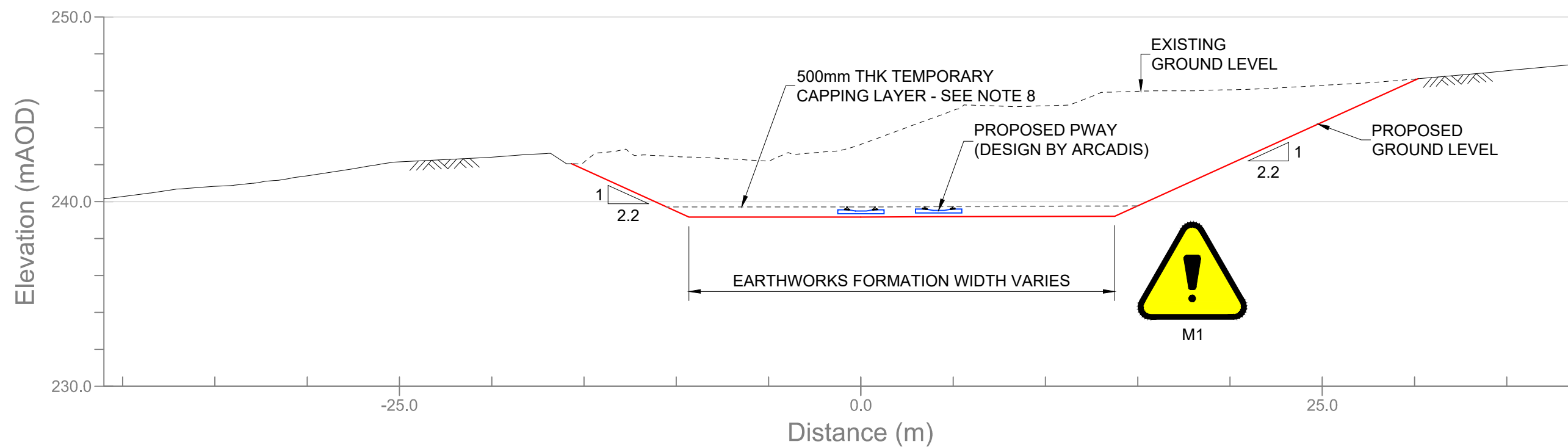
FOR CROSS-SECTION LOCATIONS, REFER
TO EARTHWORKS GENERAL ARRANGEMENT
Drg No. GCRE001-AWJV-EW-XX-DR-CE-00002



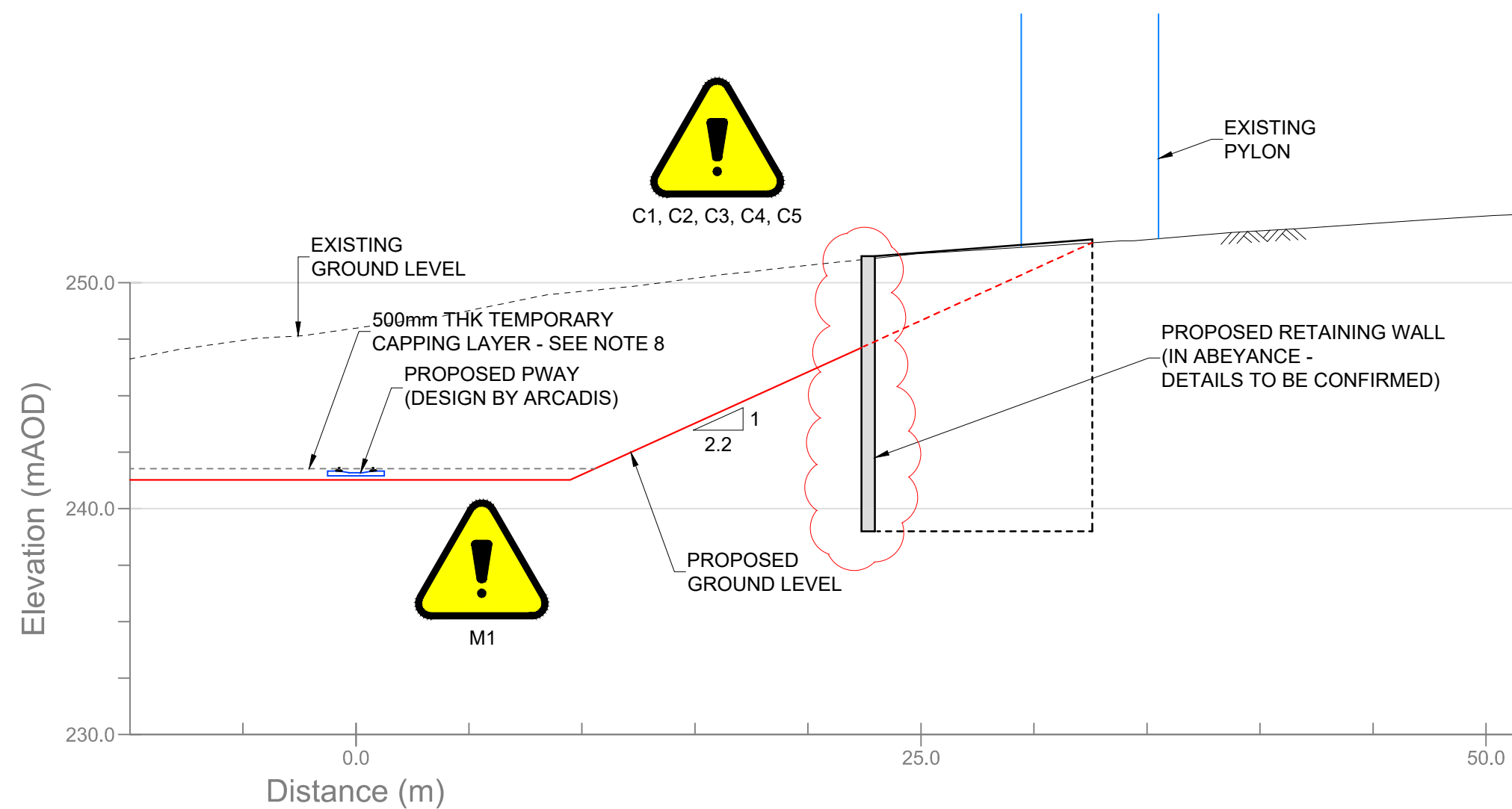
SECTION 8 - 8
VEHICLE TESTING LOOP: CHAINAGE 450m



SECTION 9 - 9
VEHICLE TESTING LOOP: CHAINAGE 6750m



SECTION 10 - 10
DELTA JUNCTION, CONNECTION CORRIDOR: CHAINAGE 700m



SECTION 11 - 11
DELTA JUNCTION, EAST CONNECTION CORRIDOR: CHAINAGE 873m

DO NOT SCALE

NOTES

- DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT EARTHWORKS AND DRAINAGE SERIES DRAWINGS.
- USE WRITTEN DIMENSIONS ONLY - DO NOT SCALE DRAWING.
- 0.0m DATUM FOR LATERAL DISTANCES ON CROSS-SECTIONS IS COINCIDENT WITH CENTRELINE OF OUTER TRACK.
- ALL EMBANKMENT SLOPES TO BE CONSTRUCTED AT A GRADIENT OF 1V : 2.5H UNLESS OTHERWISE STATED.
- ALL CUTTINGS IN SOIL TO BE CONSTRUCTED AT A GRADIENT OF 1V : 2.2H UNLESS OTHERWISE STATED.
- ALL CUTTINGS IN ROCK TO BE CONSTRUCTED AT A GRADIENT OF 1.73V : 1H (60°) WITH ROCKFALL PROTECTION, UNLESS OTHERWISE STATED.
- MINIMUM 3m BENCH TO BE PROVIDED AT TRANSITIONS FROM SOIL TO ROCK IN CUTTINGS WITH ROCKFALL PROTECTION.
- A 500mm THK CAPPING LAYER SHALL BE PROVIDED ALONG THE WIDTH OF THE TRACK CORRIDOR DURING EARTHWORK CONSTRUCTION. THIS LAYER IS TO BE REMOVED ACCORDINGLY DURING P-WAY CONSTRUCTION.
- ATTENTION IS ALSO DRAWN TO THE SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION NOTES.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards / risks normally associated with the type of work detailed on this drawing, note the following with reference to GCRE001-AWJV-EW-XX-RP-GE-00011:

CONSTRUCTION

- C1. Working on slopes and unstable existing ground.
- C2. Working at heights.
- C3. Encountering unrecorded mine workings.
- C4. Potential for coal exposure and ignition.
- C5. Electric pylons within the earthworks.
- C6. Damage to archeologically important structures.
- C7. Presence of soft ground at shallow depths.
- C8. Unstable rock surfaces.

MAINTENANCE/CLEANING

- M1. Post construction differential settlement.

DECOMMISSIONING/DEMOLITION

N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P01	23-02-17	PRELIMINARY		RH	JT

Drawing Status	Suitable for review and comment	Suitability	S3
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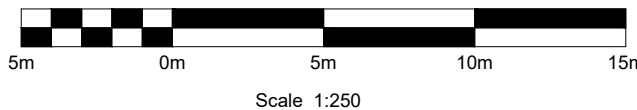


Client
GCRE
Global Centre of Rail Excellence
Canolfan Fyd-Eang Rhagoriaeth Rheilffyrdd

Project Title
GLOBAL CENTRE OF RAIL EXCELLENCE

Drawing Title
VEHICLE TESTING LOOP AND DELTA JUNCTION EARTHWORKS CROSS-SECTIONS SHEET 3 OF 3

Scale 1 : 250	Drawn R.Howie	Checked Thillainadarajan	Approved R.Harper	Authorised ---
Original Size A1	Date 2023-02-17	Date 2023-02-17	Date 2023-02-17	Date ---
Drawing Number GCRE001-AWJV-EW-VT-DR-CE-03003				Revision P01



A.10. Figure 5-1 Structures relevant to Zone 1A from Remediation Strategy



Legend

— Washery Zone 1A Boundary

— GCRC_boundary

CLAH Site Walkover

AST

Boiler

Car Park

E-Sub

Garage

IBC

Laboratory

Lagoon

Office

Oil Storage

Plant Park

Railway

Scrapyard

Spoil

Stockpile

Storage

Store

Surface

Washery

Waste Store

Workshop

WALTERS **ATKINS**
CIVIL ENGINEERING - PLANT - DEVELOPMENT
Member of the SNC-Lavalin Group

CLIENT

GCRC Ltd

PROJECT

Global Centre for Rail Excellence
(GCRC)

TITLE

Zone 1A Existing Site Layout

OpenStreetMap standard mapping -
<https://www.openstreetmap.org>

Appendix B. Planning Decision Notice

**NEATH PORT TALBOT COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL CASTELL-NEDD PORT TALBOT**

**TOWN AND COUNTRY PLANNING ACT 1990
THE TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT
PROCEDURE)(WALES) ORDER 2012**

APPROVAL OF OUTLINE PLANNING PERMISSION

Name and address of the applicant

The Welsh Ministers
Department for Economy & Transport
Cathays Park
Cardiff
CF10 3NQ
United Kingdom

Name and address of the agent

Mr David Brown
Arup
4 Pierhead Street
Capital Waterside
Cardiff
CF10 4QP
United Kingdom

DATE REGISTERED: 29 March 2021

APPLICATION NO: P2021/0327

LOCATION: Land at and surrounding the Nant Helen Surface Mine site,
Powys and Onllwyn Distribution Centre, Neath Port Talbot

PROPOSAL: Development of a Global Centre of Rail Excellence, comprising of two test tracks of loop configuration including an electrified high speed rolling stock test track of 6.9km in length and an electrified low speed infrastructure test track of 4.5km, with overhead line equipment (OLE) and dual platform station test environment; together with operations and control offices (including staff accommodation and welfare), shunter cabins (2 no.), research and development, education and training, rolling stock storage sidings and maintenance/ cleaning/ decommissioning facilities; and associated, drainage, internal vehicular accesses, branch line rail connection, staff and visitor car parking, lighting, electrical infrastructure (including substations and lineside shore supplies and transformers), fencing (perimeter security, acoustic and stock proof), land reformation and hard and soft landscaping, together with demolition of existing buildings/structures (cross-boundary application - see Powys CC Application ref. 21/0559/OUT). (Additional Environmental Info: Revised ES Chapters, Figures, Appendices - Air Quality / Biodiversity)

NEATH PORT TALBOT COUNTY BOROUGH COUNCIL as the Local Planning Authority in pursuance of its power under the above mentioned Act and Order hereby **PERMITS** the development as described above to be carried out in accordance with the application and the plans submitted therewith, subject to compliance with the following conditions:

Conditions:-

THIS IS DECISION NOTICE REVISION 2 DATED 24th NOVEMBER 2022.

Time Limit Conditions

- ~~1 Details of the access, appearance, landscaping, layout, and scale, (hereinafter called "the reserved matters") shall be submitted to and approved in writing by the Local Planning Authority before any development begins and the development shall be carried out as approved.~~

- 1 Details of the access, appearance, landscaping, layout, and scale, (hereinafter called "the reserved matters") shall be submitted to and approved in writing by the Local Planning Authority before any development begins **on any related phase approved under Condition 7** and the development shall be carried out as approved.

Reason:

The application was made for outline planning permission.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- 2 Any application for approval of the reserved matters shall be made to the Local Planning Authority not later than three years from the date of this permission.

Reason:

To comply with the requirements of Section 92 of the Town and Country Planning Act 1990.

- 3 The development shall begin either before the expiration of five years from the date of this permission or before the expiration of two years from the date of approval of the last of the reserved matters to be approved, whichever is the later.

Reason:

To comply with the requirements of Section 92 of the Town and Country Planning Act 1990.

- 4 The development hereby permitted shall be carried out in substantial accordance with the principles and mitigation measures as set out within the Environmental Statement and Addendum unless provided for in any other conditions attached in this permission.

Reason:

The proposed development is the subject of an Environmental Impact Assessment and due regard must be had to the principle impacts of the development in the preparation of the detailed design and operation of the site. Any material alteration to the proposal may have an impact which has not been assessed by the process.

List of Approved Plans

- 5 The development hereby permitted shall be carried out in accordance with the following documents and plans or as otherwise modified by other conditions, schemes or approvals by the Local Planning Authority:

ES - Volume I - Main Text - Combined
ES Volume II Front Cover and Table of Contents
ES Volume III Front Cover and Table of Contents
Drawing 001 Site Location Plan
Drawing 002 Parameter Plan
Drawing 004 Proposed Demolition Plan

Reason

Required to be imposed pursuant to Section 71ZA of the Town and Country Planning Act 1990 (as amended).

Pre-Commencement Conditions

- 6 Before beginning any development at the site, you must do the following: -
- a) Notify the Local Planning Authority in writing that you intend to commence development by submitting a Formal Notice under Article 24B of the Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (DMPWO) in the form set out in Schedule 5A (a newly inserted Schedule) of the DMPWO (or in a form substantially to the like effect); and
 - b) Display a Site Notice (as required by Section 71ZB of the 1990 Act) in the form set out in Schedule 5B (a newly inserted Schedule) of the DMPWO (or in a form substantially to the like effect), such Notice to be firmly affixed and displayed in a prominent place, be legible and easily visible, and be printed on durable material. Such Notice must thereafter be displayed at all times when development is being carried out.

Reason:

To comply with procedural requirements in accordance with Article 24B of the Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (DMPWO) and Section 71ZB of the Town and Country Planning Act 1990.

NOTE: Templates of the required Notice and Site Notice are available to download at www.npt.gov.uk/planning

- 7 Prior to the submission of any application for the approval of reserved matters, the applicant / developer shall have submitted to and had approved in writing by the Local Planning Authority a plan sub-dividing the overall site area into phased development areas to substantially accord with the illustrative masterplan and parameters submitted to and approved as part of this application, together with details of the supporting information which is to be submitted for each phase under the relevant conditions of this consent

Reason:

To allow the sub division of the overall site into coherent areas of land and the submission of reserved matters pursuant to each development area and to ensure the development complies with Policy BE1 of the Neath Port Talbot Local Development Plan.

The above Condition was discharged under Planning application P2022/0649 on the 04/10/2022

- 8 As part of the submission of the first reserved matters application for each phase of development as agreed under Condition 7 which proposes new buildings, a schedule of external materials (including samples where requested) shall be submitted to and approved in writing by the Local Planning Authority. The development of that phase shall be carried out in accordance with the details as approved.

Reason:

In the interests of visual amenity of the area and to ensure the development complies with Policy BE1 of the Neath Port Talbot Local Development Plan

- 9 Prior to the commencement of work on each phase of development as agreed under Condition 7, and notwithstanding the submitted details which refer to palisade fencing, full details of all boundary enclosures / treatments within the site and on the site boundaries including their siting, design and materials, together with an assessment of ecological impacts (including upon wildlife movement and collisions and details of how wildlife corridors and movement will be accommodated) shall have been submitted to and approved in writing by the Local Planning Authority. The boundary treatments within each phase shall be carried out in accordance with the details as approved before the use of the associated land within that phase is commenced or buildings occupied and thereafter retained as approved.

Reason:

In the interests of health and safety and visual amenity of the area, to ensure all ecological mitigation measures are applied in line with the ES, and to ensure the development complies with PPW, Future Wales, TAN5 and Policies EN6, EN7 and BE1 of the Neath Port Talbot Local Development Plan.

~~10 No development shall take place (including demolition, ground works, and vegetation clearance) until such time as the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation, which has been submitted by the applicant and approved in writing by the Local Planning Authority. The archaeological programme of work will be undertaken and completed in accordance with the relevant Standards and Guidance laid down by the Chartered Institute for Archaeologists. A copy of the resulting report should be submitted to the Local Planning Authority. After approval by the Local Planning Authority, a copy of the report and resulting archive should also be sent to the Historic Environment Record Officer, Glamorgan Gwent Archaeological Trust for inclusion in the regional Historic Environment Record and the National Monuments Record, RCAHMW. Thereafter, the programme of work will be fully carried out in accordance with the requirements and standards of the written scheme.~~

- 10 No development outside of the areas delineated as phase 1a and phase 2a on the phasing plan as agreed under Condition 7 shall take place (including **demolition**, ground works, and vegetation clearance) until such time as the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work within each of the further phases in accordance with a written scheme of investigation, which has been submitted by the applicant and approved in writing by the Local Planning Authority. The archaeological programme of work for each phase will be undertaken and completed in accordance with the relevant Standards and Guidance laid down by the Chartered Institute for Archaeologists. A copy of the resulting report for each phase should be submitted to the Local Planning Authority. After approval by the Local Planning Authority, a copy of the reports and resulting archive should also be sent to the Historic Environment Record Officer, Glamorgan Gwent Archaeological Trust for inclusion in the regional Historic Environment Record and the National Monuments Record, RCAHMW. Thereafter, the phased programme of work will be fully carried out in accordance with the requirements and standards of the written scheme.

Reason:

To identify and record any features of archaeological interest discovered during the works, in order to mitigate the impact of the works on the archaeological resource, and generally to protect the historic environment as required by Planning Policy Wales and Policy SP21 of the Neath Port Talbot Local Development Plan.

NOTE: Please see associated Condition 7 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

11 Notwithstanding the draft Construction Environmental Management Plan (CEMP), no development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until an updated phase-specific Construction Environmental Management Plan (CEMP) has been submitted to and approved in writing by the Local Planning Authority. The CEMP shall be made with reference to the requirements of British Standard BS5228-1:2009 - "Code of practice for noise and vibration control on construction and open sites". The CEMP should include as a minimum the following information: -

- a) Risk assessment of potentially damaging construction activities.
- b) Construction methods: details of construction materials or techniques to be used;
- c) General Site Management: details of the construction programme including timetable; details of site clearance; details of complaint investigation procedures.
- d) Resources Management: details of fuel and chemical storage and containment, details of waste generation and its management, details of water consumption, wastewater, and energy use.
- e) Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements).
- f) Pollution Prevention Plan: demonstrating how relevant Guidelines for pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan.
- g) Invasive Non-Native Species Management Plan.
- h) Details of task and security lighting to avoid disturbance of habitats of importance to crepuscular or nocturnal species.
- i) Responsible persons and lines of communication and emergency contact details.
- j) Use of protective fences, exclusion barriers and warning signs.
- k) Control of Nuisances: Identification of the significant construction and demolition noise & vibration sources; details of physical and operational management controls necessary to mitigate noise & vibration emissions; details of dust & odour control measures and measures to control light spill.
- l) Hours of working on site, including specified hours for deliveries; details of restrictions to be applied during construction and demolition works (including timing, duration and frequency of works) to prevent noise or nuisance amenity issues to surrounding properties.
- m) Responsible Persons: details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details
- n) All items listed under para. 7.16.1 - 7.16.5 of the ES

The approved CEMP shall be adhered to and implemented throughout the site preparation and construction period strictly in accordance with the approved details.

Reason:

In order to ensure necessary management measures are agreed and implemented to protect local amenity, especially for people living and/or working nearby, highway safety during construction, and to ensure all ecological mitigation measures are applied in line with the ES, and to accord with Planning Policy Wales (Edition 11), TAN 5: Nature Conservation and Policies SP15, SP16, EN6, EN7 and EN8 of the Neath Port Talbot LDP.

NOTE: Please see associated Condition 8 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

12 No development shall commence until a Construction Method Statement/ Traffic Management Plan has been submitted to and approved in writing by the Local Planning Authority. The statement shall provide for:

- (i) Details of the traffic management to be provided to protect the highway network and NCN 43, including details of the approved route for construction traffic (which should seek to avoid heavy vehicles using the route through Seven Sisters);
- (ii) Details of wayfinding and pedestrian/cycle (active travel) routes to serve the site during the construction phase.
- (iii) Details on vehicle and cycle parking for site operatives and visitors.
- (iv) Detail on loading and unloading areas for plant and materials.
- (v) Detail on storage of plant and materials during the construction phase.
- (vi) Details covering the erection and maintenance of security hoarding.
- (vii) Wheel washing facilities

The approved Statement shall be adhered to throughout the construction period.

Reason:

In the interest of highway safety and to ensure compliance with Policies BE1 and TR2 of the Neath Port Talbot Local Development Plan.

13 No development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until an Ecological Protection Plan (EPP) has been submitted to and approved in writing by the local planning authority. The EPP shall include but is not limited to the measures set out in 7.16.5 and 7.21.3 of the ES.

- a) Risk assessment of potentially damaging construction activities.
- b) Details of Pre-commencement Surveys, including methodologies and timing.
- c) Identification of "biodiversity protection zones".
- d) Reptile trapping and relocation method statement including details of receptor sites.
- e) Vascular Plant Species translocation method statements (specifically common wintergreen, lesser bulrush, floating bur-reed, greater tussock sedge and spiked water milfoil, royal fern and viviparous fescue).
- f) Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts to retained features of ecological importance during construction (may be provided as a set of method statements).
- g) The location and timing of sensitive works to avoid harm to ecological features of importance.
- h) The times during construction when specialist ecologists need to be present on site to oversee works.
- i) Responsible persons and lines of communication.
- j) The role and responsibilities on site of an Ecological Clerk of Works (ECow) or similarly competent person.
- k) Use of protective fences, exclusion barriers and warning signs.

The approved EPP shall be adhered to and implemented throughout the construction period strictly in accordance with the approved details.

Reason:

To comply with Neath Port Talbot Council Policies SP15, SP16, EN6 and EN7 in relation to the Natural Environment and meet the requirements of Planning Policy Wales (Edition 10, December 2018), TAN 5: Nature Conservation and Planning and Part 1 Section 6 of the Environment (Wales) Act 2016

NOTE: Please see associated Condition 9 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- 14 No development shall take place in any phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until details of the proposed site-wide strategy to maintain and enhance wildlife corridors supporting wildlife movement within and without of the development site has been submitted to and approved in writing by the Local Planning Authority. This will include but is not limited to the following:
- a) Detailed specification of culverts
 - b) Locations of culverts
 - c) A plan showing key wildlife corridors across the site, as informed by up to date ecological surveys
 - d) Details of landscaping and fencing to encourage use
 - e) Monitoring of use

The scheme shall be implemented as approved.

Reason:

To ensure all ecological mitigation measures are applied in line with the ES; in compliance with wildlife legislation, PPW, Future Wales, TAN5 and LDP Policies EN6 and 7.

- 15 No development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until a scheme to maintain and enhance wildlife corridors has been submitted to and approved in writing by the Local Planning Authority. The scheme shall be in line with, implement and demonstrate compliance with the approach set out in the strategy agreed under condition 14, and shall be implemented as approved.

Reason:

To ensure all ecological mitigation measures are applied in line with the ES; in compliance with wildlife legislation, PPW, Future Wales, TAN5 and LDP Policies EN6 and 7.

- 16 No development shall take place (including demolition, ground works, site or vegetation clearance) until a scheme for the conservation of reptiles has been submitted to and approved in writing by the Local Planning Authority. This will include but is not limited to the following:
- a) Location of any receptor sites to be used and detail of landownership/control of the sites
 - b) Suitability of receptor sites for reptiles that will include estimated existing populations presented based on up to date survey information.
 - c) Enhancement measures to be implemented on receptor sites
 - d) Re-location methodologies and timing
 - e) Monitoring proposals
 - f) Details of any necessary agreement with landowner.

The scheme shall be fully implemented as approved in accordance with the agreed methodologies and timescales.

Reason:

In the interests of ecology and as reptiles are afforded protection under the Wildlife and Countryside Act (1981) as amended. To ensure the ecological mitigation measures to be applied in line with the ES; in compliance with wildlife legislation. particularly Wildlife and Countryside Act (1981) as amended, PPW, Future Wales, TAN5 and LDP Policies EN6 and EN7.

- 17 No development shall take place (including demolition, ground works, site or vegetation clearance) until a Barn Owl Compensation Scheme that includes the provision of a minimum of 2 Barn Owl boxes, 1 in NPT and 1 in Powys has been submitted to and approved in writing by the LPA. The scheme will include but is not limited to:
- a) Details of locations and details of landownership
 - b) Box design/specification
 - c) Demonstration of agreements with relevant landowners
 - d) Details of monitoring use
 - e) Provisions for replacement where damage or deterioration prevents intended use

The scheme shall be implemented as approved.

Reason:

To contribute towards the mitigation of loss of wild bird habitat to the development and to comply with the Conservation of Habitats and Species Regulations 2017 (as amended). To ensure the ecological mitigation measures to be applied in line with the ES; in compliance with wildlife legislation, PPW, Future Wales, TAN5 and LDP policies EN6 and EN7.

- 18 No development shall take place in any phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until such time as a Strategic Biodiversity Plan (SBP) has been submitted to and approved in writing by the Local Planning Authority. The SBP shall set out the approach to be taken to the production of phase-specific Biodiversity Plans (PBP) under condition 19. The SBP shall include but is not limited to the following:
- a) Methodologies and principles for scheduling of pre-commencement ecological checks and where necessary update to ecological surveys, particularly for protected species, taking account of CIEEM Advice note on the Lifespan of Ecological Report and Surveys.
 - b) Methodology to update and confirm the quantitative assessment of habitat loss and creation (updating ES 7.19.48, table 7.8 and Appendices 7T and 7V).
 - c) A biodiversity enhancement scheme that will set out the approach to the design and implementation of enhancement measures including, but not limited to, the measures set out in 7.23.1-7.23.7 inclusive, of the Environmental Statement.
 - d) Detail the mechanism, including principles to be applied, for the review of the adequacy of mitigation, compensation and enhancement measures in light of pre-commencement ecological checks and / or surveys. This will include the inclusion of new, revised and additional measures where necessary to ensure the scheme delivers an overall net benefit.

The Plan shall be implemented as approved.

Reason:

To update and clarify the ecological impacts predicted and inform the ecological mitigation, compensation and enhancement measures to be applied in line with the ES; in compliance with wildlife legislation, particularly the Environment Wales Act 2016, PPW, Future Wales, TAN5 and LDP policies EN6 and 7.

- 19 No development shall take place in each individual phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until such time as a Phase Biodiversity Plan (PBP) has been submitted to and approved in writing by the Local Planning Authority. The PBP shall be in line with, implement and demonstrate compliance with the approach set out in the SBP agreed under condition 18. The Plan shall be implemented as approved.

Reason:

To update and clarify the ecological impacts predicted and inform the ecological mitigation, compensation and enhancement measures to be applied in line with the ES; in compliance with wildlife legislation, particularly the Environment Wales Act 2016, PPW, Future Wales, TAN5 and LDP policies EN6 and 7.

- 20 No development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance, or machinery being brought onto site) until protective fencing and warning signs have been erected on site in accordance with the approved Construction Environmental Management Plan and Ecological Protection Plan. All protective fencing and warning signs will be maintained during the construction period in accordance with the approved details.

Reason:

To comply with Neath Port Talbot Council Policies SP15, SP16, EN6 and EN7 in relation to the Natural Environment and meet the requirements of Planning Policy Wales (Edition 10, December 2018), TAN 5: Nature Conservation and Planning and Part 1 Section 6 of the Environment (Wales) Act 2016

NOTE: Please see associated Condition 11 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- ~~21 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until a preliminary investigation and assessment of the nature and extent of contamination affecting the application site area has been submitted to and approved in writing by the local planning authority. This investigation and assessment must be carried out by or under the direction of a suitably qualified competent person, in accordance with current guidance and best practice, and shall assess any contamination on the site, whether or not it originates on the site.~~

~~The report of the findings shall include:~~

- ~~• A desk study~~
- ~~• A non-intrusive site reconnaissance~~
- ~~• Formulation of an initial conceptual model~~
- ~~• A preliminary risk assessment~~

~~If the preliminary risk assessment identifies there are potentially unacceptable risks a detailed scope of works for an intrusive investigation, including details of the risk assessment methodologies, must be prepared by a suitably qualified competent person. The contents of the scheme and scope of works are subject to the approval in writing of the local planning authority.~~

~~All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012).~~

- 21 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place in each phase of development as identified in condition 7 (including **demolition**, ground works, site or vegetation clearance) until a preliminary investigation and assessment of the nature and extent of contamination affecting the application site area has been submitted to and approved in writing by the local planning authority. This investigation and assessment must be carried out by or under the direction of a suitably qualified competent person, in accordance with current guidance and best practice, and shall assess any contamination on the site, whether or not it originates on the site.

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with Policy EN8 of the Local Development Plan.

NOTE: Please see associated Condition 13 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- ~~22 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until a site investigation of the nature and extent of contamination has been carried out, by a suitably qualified competent person, in accordance with a methodology which has previously been submitted to and approved in writing by the local planning authority. A written report of the findings of the site investigation shall be made available to the local planning authority before any development begins. A mine gas risk assessment should form part of the overall assessment.~~

~~The written report should include an appraisal of remedial options and identification of the most appropriate remediation option(s) for each relevant pollutant linkage. The report is subject to the written approval of the local planning authority.~~

- 22 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place in each phase of development as identified in condition 7 (including **demolition**, ground works, site or vegetation clearance) until a site investigation of the nature and extent of contamination has been carried out, by a suitably qualified competent person, in accordance with a methodology which has previously been submitted to and approved in writing by the local planning authority. A written report of the findings of the site investigation shall be made available to the local planning authority before any development begins. A mine gas risk assessment should form part of the overall assessment. The written report should include an appraisal of remedial options and identification of the most appropriate remediation option(s) for each relevant pollutant linkage. The report is subject to the written approval of the local planning authority.

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with Policies SP16 and Policy EN8 of the Local Development Plan.

NOTE: Please see associated Condition 14 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

~~23 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until a detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be prepared, and is subject to the approval in writing of the local planning authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 and The Contaminated Land (Wales) Regulations 2006, as amended by The Contaminated Land (Wales) (Amendment) Regulations 2012, in relation to the intended use of the land after remediation. The detailed remediation scheme should not be submitted until written approval for Condition 22 has been received from the local planning authority.~~

~~All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012).~~

~~All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' 2012).~~

23 Notwithstanding those works already permitted and approved in accordance with planning approval P2020/0362, no development shall take place **in each phase of development as identified in condition 7** (including **demolition**, ground works, site or vegetation clearance) until a detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be prepared, and is subject to the approval in writing of the local planning authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme

must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 and The Contaminated Land (Wales) Regulations 2006, as amended by The Contaminated Land (Wales) (Amendment) Regulations 2012, in relation to the intended use of the land after remediation. The detailed remediation scheme should not be submitted until written approval for Condition 22 has been received from the local planning authority. All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012). All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012).

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with Policies SP16 and Policy EN8 of the Local Development Plan.

NOTE: Please see associated Condition 15 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- 24 No development shall take place in any phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) where foul connections are required until a foul water drainage scheme for that phase has been submitted to and approved in writing by the local planning authority. The scheme shall thereafter implemented in accordance with the approved details prior to the occupation of the development.

Reason:

To prevent hydraulic overloading of the public sewerage system, to protect the health and safety of existing residents and ensure no pollution of or detriment to the environment.

- 25 No development shall take place in any phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) - where such phase affects sewers and water mains - until details of a method statement and risk assessment for the protection of the structural condition of the public sewers and watermains crossing the site has been submitted to and approved in writing by the Local Planning Authority. The approved protection measures shall be implemented in full before any other development hereby permitted has commenced, and shall be retained at all times for the duration of the approved operations including the restoration works.

Reason:

To ensure that the proposed development does not affect the integrity of the public sewerage and water supply system in the interests of public health and safety.

~~26 No development shall take place in each phase of development as identified in condition 7 (including demolition, ground works, site or vegetation clearance) until details of both hard and soft landscape works have been submitted to and approved in writing by the local planning authority. These details shall include (but not be limited to):~~

- ~~i) A statement setting out the design objectives and how these will be delivered;~~
- ~~ii) any earthworks showing existing and proposed finished levels or contours;~~
- ~~iii) means of enclosure and retaining structures;~~
- ~~iv) other vehicle and pedestrian access and circulation areas;~~
- ~~v) hard surfacing materials; and~~
- ~~vi) minor artefacts and structures (e.g. furniture, play equipment, refuse or other storage units, signs, etc.~~
- ~~vii) A landscape management plan, including management responsibilities and maintenance schedules for all landscaped areas, which shall cover a period of no less than 20 years~~

~~Soft landscape works shall include planting plans; written specifications (including cultivation and other operations associated with plant and grass establishment); schedules of plants noting species (native only), plant supply sizes and proposed numbers/densities where appropriate; an implementation programme (including phasing of work where relevant).~~

~~Development thereafter must be completed in full accordance with the details and implementation programme as agreed, and the landscaping shall thereafter be maintained in accordance with the approved management plan.~~

26 No development shall take place in each phase of development as identified in condition 7 (including ~~demolition~~, ground works, site or vegetation clearance) until details of both hard and soft landscape works for that phase have been submitted to and approved in writing by the local planning authority. These details shall include (but not be limited to):

- i) A statement setting out the design objectives and how these will be delivered;
 - ii) any earthworks showing existing and proposed finished levels or contours;
 - iii) means of enclosure and retaining structures;
 - iv) other vehicle and pedestrian access and circulation areas;
 - v) hard surfacing materials; and
 - vi) minor artefacts and structures (e.g. furniture, play equipment, refuse or other storage units, signs, etc.
 - vii) A landscape management plan, including management responsibilities and maintenance schedules for all landscaped areas, which shall cover a period of no less than 20 years
- Soft landscape works shall include planting plans; written specifications (including cultivation and other operations associated with plant and grass establishment); schedules of plants noting species (native only), plant supply sizes and proposed numbers/densities where appropriate; an implementation programme (including phasing of work where relevant). Development thereafter must be completed in full accordance with the details and implementation programme as agreed, and the landscaping shall thereafter be maintained in accordance with the approved

management plan.

Reason:

To ensure that an appropriate scheme of planting is provided to mitigate the visual impact of the earthworks, both from the Brecon Beacons National Park and from Neath Port Talbot and Powys area; and to ensure all ecological mitigation measures are applied in line with the ES; in compliance with wildlife legislation, PPW, Future Wales, TAN5 and LDP Policies EN6, EN7 and BE1 of the Local Development Plan.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- 27 Prior to the submission of any application for approval of reserved matters, a scheme of intrusive site investigations shall be carried out on site to establish the risks posed to the development by past coal mining activity. As part of (or alongside) the first reserved matters submission full details shall be submitted detailing (a) the findings of the intrusive site investigations carried out to locate the mine entries and shallow coal mine workings; and (b) details of any remediation works and/or mitigation measures to address land instability arising from coal mining legacy as may be necessary, which should include a plan showing the established locations of the mine entries present on site and how these relate to the development layout.

The intrusive site investigations and remedial works shall be carried out in accordance with the approved details and with authoritative UK guidance.

Reason:

To ensure that the scheme is designed and implemented with regard to the need to address the risks posed to the development by past coal mining activity, and to ensure compliance with Policies SP16 and EN8 of the Local Development Plan.

- 28 As part of the submission of the first reserved matters application (for any phase of development as agreed under Condition 7) a site wide landscape Strategy and associated scheme of Landscape Mitigation Planting (to include a timetable for implementation; shall be submitted to the Local Planning Authority for its approval in writing. Such landscape strategy shall cover a period of no less than 20 years, and shall include a mechanism for review and extension in the event planting has not mitigated the impacts on the National Park to the extent identified in the Environmental Statement. This strategy will include indications of all existing trees and hedgerows on the land, and details of any to be retained, taking into account potential growth, together with measures for their protection in the course of development. No development shall commence until such landscape strategy has been approved in writing, and thereafter the scheme shall be implemented in accordance with the approved details.

Reason:

To ensure that an appropriate scheme of planting is provided to mitigate the visual impact of the earthworks, both from the Brecon Beacons National Park and from Neath Port Talbot and Powys area; and to ensure all ecological mitigation measures are applied in line with the ES; in compliance with wildlife legislation, PPW, Future Wales, TAN5 and LDP policies EN6, EN7 and BE1 of the Local Development Plan.

NOTE: Please see associated Condition 17 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- 29 As part of the submission of the first reserved matters application (for any phase of development as agreed under Condition 7) a detailed light pollution/dark skies assessment shall have been undertaken and submitted to the local planning authority for its approval in writing. The result of such assessment shall be used to inform and influence the final external lighting scheme required under condition 56.

Reason:

To ensure the extent, form and use of external lighting is minimised in the interest of protecting nearby Brecon Beacons National Park (Dark Sky Reserve) and to ensure compliance with Planning Policy Wales, Future Wales, and Policies SC1 and BE1 of the Neath Port Talbot Local Development Plan.

- 30 As part of the submission of the first reserved matters application (for any phase of development as agreed under Condition 7) a site wide Energy Strategy shall be submitted to the LPA for its approval in writing. Thereafter, for each phase of development as agreed under Condition 7, the first reserved matters submission for that phase shall be accompanied by an Energy Assessment which shall include, but not be limited to proposed methods of energy production and generation, including renewable energy, together with passive methods to be implemented to achieve energy reduction, to demonstrate compliance with the overarching energy strategy for the site. The development of each phase shall thereafter be operated in accordance with the scheme as approved.

Reason:

In the interest of sustainability and to comply with the decarbonisation objectives of Planning Policy Wales and Future Wales, and the requirements of Policy RE2 of the Neath Port Talbot Local Development Plan.

- 31 As part of the submission of the first reserved matters application (for any phase of development as agreed under Condition 7) a site wide / overarching waste management strategy / Plan shall be submitted to the LPA for its approval in writing, detailing the control, management, storage and disposal of any waste material generated during the demolition and construction of the development. The development of each phase shall thereafter be undertaken in accordance with the scheme as approved.

Reason:

To ensure the appropriate disposal of any waste arising from the development in terms of protection of the environment and to ensure the sustainability principles are adopted during development and complies with Policy W3 of the Neath Port Talbot Local Development Plan.

- 32 At commencement (stage 2), completion (stage 3) and 12 months after completion (stage 4), all highway works required off Wembley Road onto Onllywn Road to allow for safe access for Pedestrians, cyclists, crossing points and bus stop locations shall be subject to a Road Safety Audit in accordance with Design Manual for Roads and Bridges HD19/03 and shall at each stage of the Audit be submitted to and approved

in writing by the Local Planning Authority. All measures arising from the audit shall be implemented on site in accordance with the agreed details and timetable.

Reason:

In the interest of highway safety and to ensure the development complies with Policy TR2 of the Neath Port Talbot Local Plan.

- 33 In support of the submission of the first of the reserved matters for each phase of development identified in Condition 7, a scheme detailing the phasing approach for the development reflecting the car parking (including a minimum of 10% spaces with Vehicle Charging Points for Ultra Low Emission Vehicles (ULEV)), delivery and maneuvering requirements on site for that phase, to include shall be submitted to the Local Planning Authority for its approval in writing. The approved scheme shall be implemented on site prior to any related part of the development being brought into beneficial use, in accordance with the agreed scheme and phasing.

Reason:

In the interest of highway safety and to ensure the development accords with the sustainability objectives of Planning Policy Wales and Future Wales: The National Development Plan, and to ensure compliance with Policies BE1 and TR2 of the Neath Port Talbot Local Development Plan.

- 34 In support of the submission of the first of the reserved matters for each phase of development identified in Condition 7, a scheme shall be submitted to the LPA for its approval in writing detailing the provision of cycle parking and facilities, which shall include covered shelters, appropriate lighting and CCTV, staff lockers, and changing and showering facilities.

Reason:

In the interests of promoting sustainable transport and to ensure the development complies with Policy SP20 of the Neath Port Talbot Local Development Plan.

- 35 In support of the submission of the first of the reserved matters for each phase of development identified in Condition 7, a scheme shall be submitted to the Local Planning Authority for its approval in writing detailing the provision of outdoor amenity space to benefit the staff employed within that phase / part of the site. No building in each phase shall be operated until such amenity space has been provided in accordance with the approved details, and such amenity space shall thereafter be maintained and retained for its approved purpose.

Reason:

To ensure appropriate amenity space is provided to serve the staff at the site, and to comply with Policy OS1 of the Neath Port Talbot Local Development Plan.

Action Conditions

- ~~36 No later than six months before the development is first brought into beneficial use, a detailed 25 year Ecological Management and Monitoring Plan (EMMP) shall be submitted to the local planning authority for its approval in writing. The purpose of the~~

~~plan shall be to set out strategies for the management, maintenance and monitoring measures of the ecological, environmental and landscape features at the site as outlined in the submitted Environmental Statement. The content of the EMMP must include (but not be limited to) the following:~~

- ~~a) The measures set out in 7.22.2 and 7.25 excluding details provided under condition 14 (wildlife corridors), 9 (fencing), 55 (lighting), 17 (barn owls).~~
- ~~b) Details of the management and monitoring of enhancements provided in the Bio enhancement scheme under conditions 18 & 19.~~
- ~~c) Description and evaluation of features to be managed.~~
- ~~d) Ecological trends and constraints on site that might influence management~~
- ~~e) Aims and objectives of management~~
- ~~f) Appropriate management options for achieving aims and objectives~~
- ~~g) Prescriptions for management actions~~
- ~~h) Preparation of a work schedule (including an annual work plan capable of being rolled forward over 5 year phases).~~
- ~~i) Details of the body or organisation (and funding thereof) responsible for implementation of the plan.~~
- ~~j) Ongoing monitoring and remedial measures.~~

~~The use hereby approved shall not commence until such Ecological Management and Monitoring Plan (EMMP) has been approved in writing, and thereafter the EMMP shall be implemented in accordance with the approved details.~~

~~A Report describing the results of monitoring shall be submitted to the local planning authority at intervals identified in the EMMP. The report shall also set out (where the results from monitoring show that conservation aims and objectives are not being met) how contingencies and/or remedial action will be identified, agreed with the local planning authority, and then implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.~~

36 As part of the first reserved matters **for any phase of development (excluding phase 1a) as approved under condition 7 of this permission**, a detailed 25 year Ecological Management and Monitoring Plan (EMMP) for the site as a whole shall be submitted to the local planning authority for its approval in writing. The purpose of the plan shall be to set out strategies for the management, maintenance and monitoring measures of the ecological, environmental and landscape features at the site as outlined in the submitted Environmental Statement. The content of the EMMP must include (but not be limited to) the following:

- a) The measures set out in 7.22.2 and 7.25 excluding details provided under condition 14 (wildlife corridors), 9 (fencing), 55 (lighting), 17 (barn owls).
- b) Details of the management and monitoring of enhancements provided in the Bio enhancement scheme under conditions 18 & 19.
- c) Description and evaluation of features to be managed.
- d) Ecological trends and constraints on site that might influence management.
- e) Aims and objectives of management.
- f) Appropriate management options for achieving aims and objectives.
- g) Prescriptions for management actions.
- h) Preparation of a work schedule (including an annual work plan capable of being rolled forward over 5 year phases).
- i) Details of the body or organisation (and funding thereof) responsible for

implementation of the plan.

j) Ongoing monitoring and remedial measures.

The EMMP shall be implemented in accordance with the approved details. A Report describing the results of monitoring shall be submitted to the local planning authority at intervals identified in the EMMP. The report shall also set out (where the results from monitoring show that conservation aims and objectives are not being met) how contingencies and/or remedial action will be identified, agreed with the local planning authority, and then implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

Reason:

To ensure all ecological mitigation/enhancement and compensation measures are applied in line with the ES, and to comply with Policies SP15, SP16, EN6 and EN7 of the Neath Port Talbot LDP, and meet the requirements of Future Wales, Planning Policy Wales (Edition 11), TAN 5: Nature Conservation and Planning.

NOTE: Please see associated Condition 10 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- 37 No less than three months prior to the first beneficial use of the facility hereby approved, a scheme shall be submitted detailing:
1. The predicted nature and type of trains using the facility, which as a minimum should ensure that unless required for shunting of other trains within the facility, all trains using the test tracks hereby approved shall as a minimum fall within the environmental parameters as set out in Chapter 14 of the Environmental Statement;
 2. updated air quality modelling and assessments relating to statutory, non-statutory sites and ancient woodland based upon such identified parameters; and
 3. Any necessary mitigation and long-term monitoring measures to be implemented to minimise adverse impacts upon the ecology of these sites.

The development shall not be brought into beneficial use until such scheme has been approved, with any mitigation and long-term monitoring identified within the assessments thereafter implemented in accordance with the agreed details and timescales.

Reason:

To update and clarify the ecological impacts from air quality predicted and inform the ecological mitigation measures to be applied in line with the ES in compliance with wildlife legislation, particularly the Conservation of Habitats and Species Regulations 2017 (as amended), PPW, Future Wales, TAN5 and LDP Policies EN6 and EN7.

- 38 The approved remediation scheme under condition 23 must be carried out in accordance with its terms prior to the commencement of development other than that required to carry out remediation. The local planning authority must be given two weeks written notification of commencement of the remediation scheme works.

Following completion of the measures identified in the approved remediation scheme, a verification report that demonstrates the effectiveness of the remediation carried out must be produced, and is subject to the approval in writing of the local planning authority. The verification report contents must be agreed with the local planning authority before commencement of the remediation scheme.

All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012).

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with Policies SP16 and EN8 of the Local Development Plan.

NOTE: Please see associated Condition 19 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- 39 Following submission of a remediation strategy, if deemed necessary as part of that strategy a monitoring and maintenance scheme to include monitoring the long-term effectiveness of the proposed remediation over a period of duration to be agreed in writing with the local planning authority and the provision of reports on the same must be prepared, both of which are subject to the approval in writing of the local planning authority.

Within six months following the completion of the measures identified in that scheme and the achievement of the remediation objectives, reports that demonstrate the effectiveness of the monitoring and maintenance carried out must be produced, and submitted to the local planning authority.

All work and submissions carried out for the purposes of this condition must be conducted in accordance with DEFRA and the Environment Agency's 'Land Contamination Risk Management' and the WLGA document 'Development of Land Affected by Contamination: A Guide for Developers' (2012).

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with Policies SP16 and EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

NOTE: Please see associated Condition 18 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- 40 In the event that contamination is found at any time when carrying out the approved development that was not previously identified, work on the affected area of the site shall cease immediately and shall be reported in writing to the Local Planning

Authority. A Desk Study, Site Investigation, Risk Assessment and where necessary a Remediation Strategy must be undertaken in accordance with the following document:- Land Contamination: A Guide for Developers (WLGA, WAG & EAW, July 2006). This document shall be submitted to and agreed in writing with the Local Planning Authority. Prior to occupation of the development, a verification report which demonstrates the effectiveness of the agreed remediation, shall be submitted to and agreed in writing with the Local Planning Authority.

Reason:

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other off site receptors in accordance with Policies SP16 and EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

NOTE: Please see associated Condition 19 of Planning Permission ref. P2019/5455 in respect of the advanced earthworks.

- 41 Prior to the facility being brought into beneficial use the operator shall submit for the written approval of the Local Planning Authority an Operational Noise Management Plan (ONMP) detailing the necessary controls to ensure compliance with the agreed noise criteria set out within the Environmental Statement. As a minimum it shall include any assumptions that have been made regarding the operation of the site in deriving the predicted noise levels as detailed in Appendix 10C of the Environmental Statement. The ONMP shall be subject to periodic review not less than every 12 months, with the results of such review submitted to the Local Planning Authority for its approval in writing, and any recommended changes to operational activities that may be recommended within such revised ONMP thereafter implemented in accordance with a timetable to be agreed in writing by the Local Planning Authority.

All operations at the site shall be carried out in full accordance with the ONMP (as approved or revised) for the duration of its operation.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 42 Prior to the facility being brought into beneficial use, all acoustic barriers identified on Figures 10.1 to 10.3 within the Environmental statement shall have been constructed/ provided on site in full accordance with a detailed location plans and specification, which shall first have been submitted to and approved in writing by the Local Planning Authority. Thereafter all acoustic barriers shall remain in place for the life of the development.

Reason: To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 43 Prior to the installation of any fixed plant or machinery an updated BS4142 assessment shall be submitted to and approved in writing by the Local Planning Authority. The assessment must demonstrate that the approved noise criteria specified in condition 64 (based on Table 10.1 of the Environmental Statement) can still be achieved at any noise sensitive receptor (and shall include details of any necessary mitigation to achieve such levels). All fixed plant or machinery and identified noise mitigation measures shall thereafter be maintained as approved and operated at all times to ensure that the approved noise criteria in condition 64 are not exceeded.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 44 For the purposes of demonstrating compliance with Condition 64 and the *"Total overall predicted scheme noise level with noise fence barriers"* stated in Table 10.5 of the Environmental Statement (reproduced below) during the first 12 months of operation the operator shall, at its expense, employ a consultant approved by the Local Planning Authority to assess the level of noise emissions from the site, according to a measurement protocol which shall first have been agreed in writing by the Local Planning Authority.

Receptor (see fig. 10.1 in ES)	Total overall predicted scheme noise level L_{Aeq} (15 mins) with noise fence barriers			
	Daytime L_{Aeq} (15 mins)	Evening L_{Aeq} (15 mins)	Night Time L_{Aeq} (15 mins)	L_{Amax} , F
R1	29	29	26	56
R2	41	41	37	58
R3	40	40	37	58
R4	41	41	38	59
R5	42	42	39	57
R6	39	38	35	54
R7	45	33	29	49
R8	37	37	33	53
R9	40	36	31	50
R10	36	36	33	53
R11	41	41	38	59
R12	35	22	18	48
R13	33	27	23	47
R14	42	35	31	57

No later than 13 months after the development is first brought into beneficial use, a noise emissions assessment completed at the expense of the developer shall be submitted to the Local Planning Authority for approval. Should the assessment conclude that the predicted noise levels as identified within Table 10.5 of the Environmental Statement are being exceeded, then a scheme for further mitigation shall accompany any assessment and shall thereafter be implemented within three months following the written approval from the Local Planning Authority. The mitigation as approved shall thereafter be retained and maintained in accordance with the details as approved.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 45 Prior to the commencement of the use hereby permitted a scheme for the ongoing monitoring of noise during operation of the site shall have been submitted to and approved in writing by the Local Planning Authority.

The scheme shall include (but not be limited to);

- a) Access to monitoring data by the Local Planning Authority at no additional cost to the authority;
- b) A scheme for identifying exceedances and initiating an investigation and corrective action to address any exceedance of the agreed criteria set out in condition 64.
- c) A procedure for the reporting of the outcome of the investigation and any action taken to the Local Planning Authority within 24 hours of the exceedance

Once approved the scheme shall be implemented for the duration of the operation of the site. Development thereafter shall proceed in line with the approved scheme and shall remain as such for the duration of the operational use of the site.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 46 Not less than three months prior to the first operation of the facility/site, a community liaison scheme, which shall include (but not limited to):

- a) a mechanism for dealing with complaints from the Local Community;
- b) Details of a nominated representative of the operator who will have the lead role in liaising with local residents and the relevant planning authority; and
- c) the composition and operation of a regular Stakeholder Meeting (to include representatives of the communities surrounding the site) shall be submitted to the local planning authority for its approval in writing. The facility/site shall not be operated until such time as the scheme has been approved in writing by the local planning authority, and the liaison and approved stakeholder meetings shall thereafter continue in accordance with the approved scheme for as long as the facility operates.

Reason:

To ensure that the operator has ongoing, formal engagement with the local community and specialist consultees, in the interest of fostering a positive community relationship, and particularly in the interests of protecting the amenity of nearby residential properties, and in accordance with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 47 At twelve months, three years and five years after the first beneficial operation of the facility hereby approved, additional traffic impact surveys shall be undertaken to ascertain the actual traffic flows, and such survey data and assessment of the need (if

any) for further or additional traffic management or orders as required to be implemented (and including a timetable for implementation) shall be submitted within one month of the survey date to the Local Planning Authority for its approval in writing. The recommendations within the approved assessment shall be implemented in accordance with the approved details.

Reason:

In the interest of highway safety and to ensure the development complies with Policy TR2 of the Neath Port Talbot Local Plan.

- 48 Prior to the commencement of the use hereby permitted a traffic management scheme to prevent vehicular obstruction at both site entrance off Wembley Ave/Heol Gaer (A4109) and the Intervalley Road (A4221) (e.g TROs) shall have been submitted to and approved in writing by the local planning authority. The approved scheme shall be implemented in accordance with a timetable agreed within the approved scheme.

Reason:

In the interest of highway safety and to ensure the development complies with Policy TR2 of the Neath Port Talbot Local Plan.

- ~~49 Notwithstanding the submitted plans, no part of the development hereby approved shall be brought into beneficial use until such time as a combined cycleway and pedestrian access, together with street lighting, linking Onllwyn Road to the main washery site, and an improved pedestrian crossing of Wembley Avenue to Onllwyn Road at the Wembley Avenue junction (to include as a minimum dropped kerbs and tactile paving) have been implemented in accordance with a scheme which shall first have been submitted to and approved in writing by the Local Planning Authority.~~

- 49 **No development outside of Phase 1A as approved under Condition 7 of this permission shall be brought into beneficial use** until such time as a combined cycleway and pedestrian access, together with street lighting, linking Onllwyn Road to the main washery site, and an improved pedestrian crossing of Wembley Avenue to Onllwyn Road at the Wembley Avenue junction (to include as a minimum dropped kerbs and tactile paving) have been implemented in accordance with a scheme which shall first have been submitted to and approved in writing by the Local Planning Authority

Reason:

As such pedestrian / cycleway improvements are considered essential to facilitate safe and sustainable access to the site, and to accord with Policy SP20 of the Neath Port Talbot Local Development Plan.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- ~~50 No part of the development hereby approved shall be brought into beneficial use until such time as a scheme of Active Travel Improvements, to include (but not limited to) improvements to bus facilities at Wembley Avenue (NPT) and improvement works required along NCN43 (Powys) and wider links to the site has been submitted to and approved in writing by the Local Planning Authority. All identified improvements shall~~

~~be implemented in accordance with a timescale approved under the scheme.~~

- 50 **A. As part of the first reserved matters for any development outside of Phase 1a as approved under condition 7 of this permission, a site wide strategy for Active Travel Improvements, to include (but not limited to) improvements to bus facilities at Wembley Avenue (NPT) and improvement works required along NCN43 (Powys) and wider links to and within the site, including timeframes for their implementation has been submitted to and approved in writing by the Local Planning Authority.**
- B. Detailed schemes for all identified improvements within the strategy shall be submitted to and approved in writing by the Local Planning Authority prior to their implementation in accordance with timescales approved under the site wide strategy and retained as such thereafter.**

Reason:

In order to facilitate safe and sustainable access to the site, and to accord with Policy SP20 of the Neath Port Talbot Local Development Plan.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

- 51 At twelve months and five years after the first beneficial operation of the facility hereby approved - or in the event a specific request is made in writing by the Local Planning Authority - a survey of the highways surrounding the site shall be undertaken to ascertain whether unplanned visitors to the facility are causing problems on the local highway network, with the results submitted to the Local Planning Authority for approval in writing. If such monitoring identifies adverse impacts, a scheme shall be submitted to the Local Planning Authority for its approval in writing within one month of the survey date detailing potential mitigation measures (which could include parking provision or regulations, or other visitor-related proposals). The recommendations within the approved scheme shall be implemented in accordance with the approved details and timescales.

Reason:

In the interest of highway safety and to ensure the development complies with Policy TR2 of the Neath Port Talbot Local Plan.

- 52 No part of the development hereby approved (or such phase that may be approved under condition 7) shall be brought into beneficial use until such time as a signed statement or declaration prepared by a suitably competent person confirming the completion of any remedial works and/or mitigation necessary to address the risks posed by past coal mining activity, and confirming that the site is, or has been made, safe and stable for the approved development, has been submitted to and approved in writing by the Local Planning Authority.

Reason:

To ensure that a competent person has verified the works on site in order to mitigate

any risks arising from the coal-mining legacy at the site, and to ensure compliance with Policy EN8 of the Neath Port Talbot Local Development Plan.

~~53 No later than six months before the development is first brought into beneficial use, a Welsh language Impact Assessment / strategy shall be submitted to the Local Planning Authority for its approval in writing, outlining all measures and engagement pre-operation to assess the impacts on Welsh language and identification of opportunities arising from the proposed development.~~

53 No later than six months before any of **the phases of development approved under condition 7 of this permission are used for the testing of rail rolling stock**, a Welsh language Impact Assessment / strategy shall be submitted to the Local Planning Authority for its approval in writing, outlining all measures and engagement pre-operation to assess the impacts on Welsh language and identification of opportunities arising from the proposed development

Reason:

To contribute to the Well-being Goal of creating a 'Wales of vibrant culture and thriving Welsh language' and comply with the need for such major development to promote the Welsh language in accordance with Policy SP22.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

~~54 Prior to first beneficial operation of any part of the development hereby permitted a detailed Welsh Language Action Plan, founded on the impacts and opportunities identified within the Impact Assessment approved under condition 52, and identifying specific measures and a timetable and implementation plan, shall have been submitted to and approved in writing by the local planning authority. All measures identified within the Action Plan shall be implemented in full accordance with the approved plan.~~

54 **Prior to first beneficial operation of any of the phases of development approved under condition 7 of this permission for the testing of rail rolling stock** a detailed Welsh Language Action Plan, founded on the impacts and opportunities identified within the Impact Assessment approved under condition 49, and identifying specific measures and a timetable and implementation plan, shall have been submitted to and approved in writing by the local planning authority. All measures identified within the Action Plan shall be implemented in full accordance with the approved plan.

Reason:

To contribute to the Well-being Goal of creating a 'Wales of vibrant culture and thriving Welsh language' and comply with the need for such major development to promote the Welsh language.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

~~55 Notwithstanding the submitted Travel Plan, no less than six months prior to first beneficial use of any part of the development hereby approved, an updated Travel Plan shall be submitted to and approved in writing by the Local Planning Authority. The amended Travel Plan shall include details of the appointment of a Travel Plan Coordinator, and incorporate the means to encourage staff to use more sustainable means of transport and reduce the demand on private transport. The Plan should also include a detailed monitoring scheme/schedule, which shall incorporate regular reviews covering the initial five year period, together with details covering submission and approval of subsequent updated Travel Plans every five years for the duration of the operation of the development, which shall seek to address any issues that have failed to reduce the use of the car and meet the agreed targets set in the travel plan. All measures identified within any approved Travel Plan required by the scheme shall be implemented within three months following its approval.~~

55 Notwithstanding the submitted Travel Plan, no less than six months **prior to first beneficial use of Phase 2a on the phasing plan as agreed under Condition 7 of this permission for the testing of rail rolling stock**, an updated Travel Plan shall be submitted to and approved in writing by the Local Planning Authority. The amended Travel Plan shall include details of the appointment of a Travel Plan Coordinator, and incorporate the means to encourage staff to use more sustainable means of transport and reduce the demand on private transport. The Plan should also include a detailed monitoring scheme/schedule, which shall incorporate regular reviews covering the initial five year period, together with details covering submission and approval of subsequent updated Travel Plans every five years for the duration of the operation of the development, which shall seek to address any issues that have failed to reduce the use of the car and meet the agreed targets set in the travel plan. All measures identified within any approved Travel Plan required by the scheme shall be implemented within three months following its approval.

Reason:

In the interests of promoting sustainable transport and to ensure the development complies with Policy SP20 of the Neath Port Talbot Local Plan.

The above condition was amended under Non-Material amendment application P2022/0650. Approved on the 24th November 2022.

56 No external lighting shall be installed or operated at the site other than in accordance with a detailed external lighting scheme, which shall first have been submitted to and approved in writing by the local planning authority. The scheme shall take into account the Dark Skies Assessment required by condition 29, together with the lighting needs and mitigation requirements associated with the development during operational hours and shall be the minimum required to perform the relevant lighting task. It shall also be specifically designed to minimise the risk of light spillage beyond the development site boundary and within ecologically sensitive areas.

The scheme shall include:

- a. A report, prepared by a lighting engineer, setting out the technical details of the luminaires and columns, including their location, type, shape, dimensions and, expected luminance output and specifically explaining what design attributes

- have been chosen to minimise light pollution.
- b. A plan illustrating illuminance levels across the development site and at the boundary of the site. The level of illuminance should be appropriate to the character of the surrounding area as a whole.
- c. A statement which demonstrates how the lighting scheme will be viewed against the wider landscape and, where appropriate, the potential role of landscaping in minimising the day and night-time visual impact of the installation.
- d. An Environmental Lighting Impact Assessment against conservation requirements for protected species and designated landscapes.

All lighting installed at the site shall be in full accordance with the approved details.

Reason

To ensure the extent, form and use of external lighting is minimised in the interest of protecting the wider countryside, nearby Brecon Beacons National Park (Dark Sky Reserve) and to ensure nocturnal wildlife are not adversely affected or disturbed by the lighting of the site and to ensure compliance with Planning Policy Wales, Future Wales, TAN5 and Policies SC1, BE1, EN6 and EN7 of the Neath Port Talbot Local development Plan.

- 57 Prior to the facility being brought into beneficial use the operator shall submit for the written approval of the Local Planning Authority a scheme addressing any required areas of external storage, together with those area(s) identified for decommissioning of trains or similar rail related items. There shall be no external storage of materials or parts (including those arising from the decommissioning of trains or similar rail related items) other than in accordance with such agreed details.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 58 No less than three months prior to commencement of the development hereby permitted, full details of a Labour Recruitment Strategy, to include measures aimed at facilitating best available access for local people to the opportunities for employment arising from the construction and operation of the Global Centre of Rail Excellence, and identifying how the project can deliver benefits to Wales and to local communities through targeted recruitment and training, and supply chain initiatives, shall have been submitted to the Local Planning Authority for its approval in writing. The Strategy, which shall include a timetable for its implementation, shall thereafter be implemented as approved.

Reason:

To ensure that the developer undertakes best endeavours to facilitate best available access for local people to the opportunities for employment arising from the construction and operation of the GCRE.

Regulatory Conditions

- 59 The site access onto / from the Intervalley Road (A4221) shall be restricted solely to construction traffic, emergency vehicles and deliveries only, and shall at not times be

used by staff or other persons working on or visiting the site. Prior to first beneficial use of any part of the former washery site, the access shall be provided with permanent gates and signage in accordance with details which shall first have been approved in writing under this condition or an associated reserved matters submission, with the gates and signage thereafter retained in accordance with the approved details.

Reason:

In the interest of highway safety and to ensure compliance with Policies BE1 and TR2 of the Neath Port Talbot Local Development Plan.

- 60 Construction and demolition works on the site of the former washery (also applying to the starting up and/or warming up of any vehicles, equipment and machinery) shall not occur outside of the following times:

07.00 to 18.00 hours Mondays to Fridays (excluding Bank/Public Holidays) and;
08.00 to 13.00 hours on Saturdays
No construction or demolition activities shall occur on Sundays or Bank/Public Holidays.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 61 During the hours of 19.00 and 07.00 hours the following activities shall not take place within the former washery site;
- Use of the train wash facility
 - Use of the maintenance shed without the air curtain switched off and doors closed

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 62 During the hours of 19.00 and 07.00 hours all train movements within the former washery site shall be electric-powered, unless the operator has first had submitted to and approved in writing a scheme (supported by appropriate noise assessment) dealing with the number, speed and specification of movement of trains during such defined period.

Reason:

To ensure that the impacts of any non-electric train movements are suitably assessed and controlled under an agreed scheme, in order to protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 63 Any buildings incorporating offices and / or staff accommodation, shall be constructed ensuring that the sound insulation performance of all such buildings achieves internal ambient noise levels that do not exceed the values detailed within British Standard

BS8233:2014.

Reason:

To protect the amenity of those persons working at or visiting the approved use and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 64 The rating level of noise arising from operation of the test tracks shall not exceed the values set out in, or derived from, the tables attached to this condition at any dwelling which is lawfully existing or has planning permission at the date of this permission.

Receptor (see fig. 10.1 in ES)	Total overall predicted scheme noise level L_{Aeq} (15 mins) with noise fence barriers			
	Daytime L_{Aeq} (15 mins)	Evening L_{Aeq} (15 mins)	Night Time L_{Aeq} (15 mins)	$L_{Amax, F}$
R1	29	29	26	56
R2	41	41	37	58
R3	40	40	37	58
R4	41	41	38	59
R5	42	42	39	57
R6	39	38	35	54
R7	45	33	29	49
R8	37	37	33	53
R9	40	36	31	50
R10	36	36	33	53
R11	41	41	38	59
R12	35	22	18	48
R13	33	27	23	47
R14	42	35	31	57

Where a dwelling to which a complaint is related is not listed in the tables attached to these conditions, the operator shall submit to the Local Planning Authority for written approval proposed noise limits selected from those listed in the Tables to be adopted at the complainant's dwelling for compliance checking purposes. The proposed noise limits are to be those limits selected from the Table specified as being likely to experience the most similar background noise environment to that experienced at the complainant's dwelling.

All measurements shall be taken using a type 1 sound level meter with a microphone height between 1.2m and 1.5m in free field conditions (3.5 m from a reflective surface).

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 65 On receipt of a justified complaint to the Local Planning Authority the Local Planning Authority may request in writing that the applicant obtain an assessment of the noise arising from the operations on the site. The noise assessment shall be undertaken by a competent and suitably qualified acoustic consultant, who shall be a Member of the Association of Noise Consultants (ANC) or the Institute of Acoustics (IOA).

Prior to undertaking the noise assessment and within 14 days of receipt of the written request from the Local Planning Authority following receipt of a complaint, the consultant shall contact the Local Planning Authority and shall agree a methodology and most appropriate standards which shall include timeframes for the completion of the noise assessment. Following the noise assessment, a copy of the report shall be submitted to and approved by the Local Planning Authority along with evidence that the control measures recommended within the report are implemented and maintained thereafter.

Reason:

To protect the amenity of nearby residential properties and wider locality and to accord with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026).

- 66 Any residential accommodation (whether temporary staff facilities or permanent lay-down and mess facilities) provided at the site shall be for short-term accommodation of staff associated with the GCRE, or associated visitors to the site, and shall not be utilised as permanent residential accommodation, or occupied at any time by any person(s) as their sole or main place of residence.

Reason:

Since no justification for the provision of permanent residential accommodation within the countryside has been put forward, and to ensure compliance with Policy SC1 of the Neath Port Talbot Local Development Plan

- 67 Prior to the facility being brought into beneficial use, adequate water supplies for firefighting purposes shall have been provided on site

Reason:

To ensure that adequate water supplies are available on site for firefighting purposes on site as requested by Mid and West Wales Fire Service

Informatives:

- 1 As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems - designing, constructing, operating and maintaining surface water drainage systems'. It is therefore recommended that the developer engage in consultation with Neath Port Talbot and Powys County Council, as the determining SuDS Approval Bodies (SABs), in relation to their proposals for SuDS features. Please note, Dwr Cymru Welsh Water is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation.
- 2 The applicant may need to apply to Dwr Cymru / Welsh Water for any connection to the public sewer under S106 of the Water industry Act 1991. If the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Gravity Foul Sewers and

Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com

- 3 The applicant is also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist us in dealing with the proposal the applicant may contact Dwr Cymru Welsh Water to establish the location and status of the apparatus. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.
- 4 If the development will give rise to a new discharge (or alter an existing discharge) of trade effluent, directly or indirectly to the public sewerage system, then a Discharge Consent under Section 118 of the Water Industry Act 1991 is required from Dwr Cymru / Welsh Water. Please note that the issuing of a Discharge Consent is independent of the planning process and a consent may be refused although planning permission is granted.
- 5 The archaeological work required by condition must be undertaken to the appropriate Standard and Guidance set by Chartered Institute for Archaeologists (CIfA), (www.archaeologists.net/codes/cifa) and it is our Policy to recommend that it is carried out either by a CIfA Registered Organisation (www.archaeologists.net/ro) or an accredited MCIfA Member.
- 6 In order to ensure the road works you are required to undertake are carried out to the satisfaction of the Local Planning Authority and subsequently adopted you are advised prior to commencing any work on these works to contact the Head of Engineering and Transport Services at The Quays, Brunel Way, Baglan Energy Park, Neath, SA11 2GG (FAO Mr Justin Griffiths, telephone number (01639) 686397 or e-mail j.griffiths4@npt.gov.uk) to agree the specification, enter an adoption agreement and arrange onsite inspection of your works.
- 7 Any agreement to adopt the roads relating to this development should be entered into with the Council prior to the commencement of development. Such an agreement will be under Section 38 of the Highways Act 1980 relating to the specification, timescale and subsequent adoption of the roads and a Bond to ensure that the Authority can complete the works if the Developer defaults on the roadworks.
- 8 Prior to commencing any works on site the applicant will be required to enter into an agreement with the Authority under Section 278 of the Highway Act 1980 to carry out the works upon the existing public highway. You are advised prior to commencing any work on these works to contact the Head of Engineering and Transport Services at The Quays, Brunel Way, Baglan Energy Park, Neath, SA11 2GG (FAO Mr Justin Griffiths, telephone number (01639) 686397 or e-mail j.griffiths4@npt.gov.uk) to agree the specification, enter the agreement and arrange on site inspection of your works.
- 9 Developers' attention is drawn to the provisions of Section 278 of the Highways Act, 1980 in cases where a development would require access or other works to be carried out within the existing highway. Where highway works to benefit a development require land adjacent to an existing highway to be constructed upon

together with works on the existing public maintained highway, a hybrid S38/278 shall be used. Works that are to be undertaken within the existing public maintained highway only will require a S278 agreement. No Work shall be undertaken on the existing public maintained highway until the appropriate legal agreement has been entered into

- 10 Any works undertaken on the public highway without the appropriate legal agreement with the Highway Authority, the Highway Authority has the right to request the developer to remove and/or reinstate that part of the highway back to its original condition to the satisfaction of the Highway Authority. A plan detailing the differences between the existing and proposed highway shall be submitted to form part of the legal agreement, this should be made up of two colours, green for the proposed area to be adopted and brown for the existing highway.
- 11 Developers are reminded that consent under the Town and Country Planning Act, 1990/91, conveys no approval for works to be undertaken affecting any part of the public highway, including verges and footways. The Developer must:-(i) Obtain the approval of Neath Port Talbot County Borough Council as Highway Authority for the details of any works to be undertaken in the Public Highway.(ii) Indemnify the Authority against all claims arising from such works, including claims under the Land Compensation Act.(iii) Give not less than 1 calendar months' notice in writing of the date of commencement of the works.As part of this process you are advised that any principle contractors and/or subcontractors that are on the Local Authority's framework approved list are permitted to undertake the works on the public highway, a list of these contractors are available from the Highway Authority's Highway Development Control Section on request.
- 12 Development proposals must seek to maximise walking and cycling accessibility by prioritising the provision of appropriate on-site infrastructure and where necessary off-site infrastructure. Walking and cycling infrastructure and services should be prioritised and put in place from the outset, before people have moved in and travel patterns have been established, as per Planning Policy Wales, Edition 11 and Future Wales - the National Plan 2040. All new walking and cycling infrastructure should be built to standards set out in Welsh Government's Active Travel Guidance and off-site infrastructure should link to (where possible) routes on Neath Port Talbot Council's Active Travel Network Map. This shows where walking and cycling routes already exist (Existing Routes) and where upgrades or brand new routes are anticipated for the next 15 years (Future Routes) in built up areas. Further information on the Active Travel Guidance and Neath Port Talbot's Active Travel Network Map can be found here: www.npt.gov.uk/activetravel
- 13 All public footpaths crossing the site (in NPT - footpaths 15,32,33,34, along with an unnumbered path and Bridleway 28 Dylais Higher) shall remain open at all times with no alteration or change of condition to the PROW. Any damage caused to the Rights of Way as a result of the development hereby permitted, and notified to the developer / operator, shall be immediately rectified to the satisfaction of the LPA.
- 14 It is recommended that vegetation clearance should avoid the bird breeding season 1st March to 31st July inclusive in accordance with the Wildlife and Countryside Act 1981 (as amended). A note should be added to the planning permission, if granted, to this effect.

The decision to recommend planning permission has been taken in accordance with Section 38 of The Planning and Compulsory Purchase Act 2004, which requires that, in determining a planning application the determination must be in accordance with the Development Plan unless material considerations indicate otherwise. The Development Plan comprises

Future Wales - the National Plan 2040 and the Neath Port Talbot Local Development Plan (2011-2026) adopted January 2016. In addition, the Council, in accordance with Section 3(3) of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, has taken all the environmental information into consideration.

Having particular regard to the advice in PPW and TAN23, along with the recent guidance on post Covid-19 recovery in Wales: Building Better Places: The Planning System Delivering Resilient and Brighter Futures, and having considered the likely significant effects of the development on the environment - which can largely be mitigated by conditions - it is concluded that in the overall planning balance the proposed GCRE would create a potentially world class facility, which would create significant social, economic, cultural and environmental benefits which would contribute towards 'reinvigorating the Valleys', and outweigh the identified impacts caused by the development.

Accordingly, the proposed development is in accordance with Policies SP1, SP2, SP3, SP4, SP6, SP11, SP14, SP15, SP16, SP20, SP21, SP22, SC1, I1, EC5, TO4, EN2, EN6, EN7, EN8, M1, M3, TR2, TR3, TR4, and BE1

It is further considered that the decision complies with Future Wales - the National Plan 2040 and the Council's well-being objectives and the sustainable development principle in accordance with the requirements of the Well-being of Future Generations (Wales) Act 2015.

Signed:



Ceri Morris – Head of Planning & Public Protection

Date: 27 July 2021

IMPORTANT:

(1) Please note that for all decisions issued after 16th March 2016 for outline or full planning permission, a revised decision notice will be issued whenever a subsequent consent is given, for example providing details of any Reserved Matters approvals (outline applications only) and/or approval of conditions (including on Reserved Matters). This will ensure that the current status of the conditions applied to a consent is clear. Accordingly you are advised to visit www.npt.gov.uk/planning to view the application documentation to see if this is the current version, or whether it has been superseded by a more up-to-date revision of this Decision Notice. For Reserved Matters approvals the revised Decision Notice will only be shown under the Outline approval.

(2) Please note that this consent is specific to the plans and particulars approved as part of the application. Any departure from the approved plans will constitute unauthorised development and may be liable to enforcement action. You (or any subsequent developer) should advise the Council of any actual or proposed variations from the approved plans immediately so that you can be advised how to best resolve the matter.

(3) In addition, any conditions that the Council has imposed on this consent will be listed above and should be read carefully. It is your (or any subsequent developers) responsibility to ensure that the terms of all conditions are met in full at the appropriate time (as outlined in the specific condition). Please note that any works carried out without compliance with the conditions attached to this approval will be entirely at the risk of the persons involved and may result in formal action being taken by the Local Planning Authority.

(4) The developer should have regard to Sections 4, 7, 8 and 8A of the Chronically Sick and Disabled Persons Act 1970 and to the British Standards Institution's Code of Practice for "Design of buildings and their approaches to meet the needs of disabled people" (BS 8300:2009+A1:2010).

(5) From 1st October 2012 it has been an offence to install a public sewer or lateral drain without having an adoption agreement in place. From the 1st October 2012 the vast majority of all existing private sewers and lateral drains which link with the public sewer network were transferred to Welsh Water. For further details on how this will affect your development please contact: Welsh Water Developer Services, PO Box 3146, Cardiff, CF30 0EH. Telephone No. 0800 9172652 or email: developer.services@dwrcymru.com.

IMPORTANT INFORMATION: TOWN AND COUNTRY PLANNING ACT 1990

The applicant's attention is drawn to the notes below.

- (1) If the applicant is aggrieved by the decision of the Local Planning Authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Welsh Government under Section 78 of the Town and Country Planning Act 1990 (as amended).
- (2) You can also appeal to the Welsh Government against a decision to refuse permission or grant subject to conditions in respect of applications made for :- Listed Building or Conservation Area Consent; Consent under a Tree Preservation Order; Advertisement Consent.
- (3) You can also appeal If your application for a Certificate of Lawful Existing Use or Lawful Proposed Use is partly or wholly refused or is granted differently from what you asked for (under Section 195/196) of the Town and Country Planning Act 1990 (as amended).
- (4) If you are aggrieved of the LPAs decision, the following deadlines apply for appeals to be submitted to the Welsh Government (from the date of the Council's decision):-

(1) Planning Permission (with the exception of Minor Commercial and Householder applications – see below)	Within 6 Months
(2) Householder Appeal see endnote i	Within 12 weeks
(3) Minor Commercial Appeal see endnote i	Within 12 weeks
(4) Listed Building or Conservation Area Consent appeals	Within 6 months
(5) Tree Preservation Order (TPO) Consent	Within 28 days
(6) Advertisement Consent	Within 8 weeks
(7) Certificate of Lawfulness of Existing (Section 191) or Proposed (Section 192) Use or Development	Within 6 months
(8) Hazardous Substances Consent	Within 6 months
- (5) Appeals must be made on a form which is obtainable from the Planning Inspectorate, Crown Buildings, Cathays Park, Cardiff, CF10 3NQ – Tel 0303 444 5940, or online at www.planningportal.gov.uk/pcs .
- (6) The Welsh Government has power to allow a longer period for the giving of notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances which excuse the delay in giving notice of appeal.
- (7) The Welsh Government is not required to entertain an appeal if it appears to them that permission for the proposed development could not have been granted having regard to the statutory requirements to the provisions of the development order, and to any directions given under the Order. They do not in practice refuse to entertain appeals solely because the decision of the Local Planning Authority was based on a direction given by them.
- (8) If permission to develop land is refused or granted subject to conditions, whether by the Local Planning Authority or by the Welsh Government, and the owner of the land claims that the land has become incapable of reasonable beneficial use in its existing state and cannot be rendered capable of reasonable beneficial use by the carrying out of any development which has been or would be permitted, he may serve on the County Borough Council, in which the land is situated, as the case may be, a **purchase notice** requiring that Council purchase his interest in the land in

accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

Making an Appeal

- (9) Please note that for all applications received by the LPA after 5th May 2017, it is now a requirement that any appeal made to the Planning Inspectorate (other than Householder and Minor Commercial Appeals, and appeals against refusal to grant advertisement consent) must be accompanied by all the information and evidence you intend to rely upon (a **“full statement of case”**). You must also send a copy of the notice of appeal and full statement of case to the LPA.
- (10) In addition, for ‘planning appeals’ an amendment to an application following notice of appeal may only be made to correct an error.
- (11) Additional details and information on making an appeal to the Welsh Government is available from the Planning Inspectorate at the above address and website. The relevant documents are entitled “making your planning appeal” and “planning appeals Public Local Inquiries”.
- (12) Further correspondence regarding this application should bear the reference number quoted on the top of the decision notice.

THIS NOTICE RELATES ONLY TO A PLANNING DECISION AND DOES NOT RELATE TO OTHER LEGISLATION INCLUDING ANY LEGISLATION UNDER:

- BUILDING REGULATIONS – Please contact buildingcontrol@npt.gov.uk or 01639 686949 to discuss all aspects of the service that is offered by Building Control
- HIGHWAY LEGISLATION

IF PLANNING CONSENT HAS BEEN GRANTED IT IS ADVISABLE TO ESTABLISH WHETHER ANY OTHER FORM OF CONSENT IS REQUIRED AND TO OBTAIN SUCH CONSENT BEFORE COMMENCING DEVELOPMENT

ⁱ Please see the [Town and Country Planning \(Referred Applications and Appeals Procedure\) \(Wales\) Regulations 2017](#) for appeal procedures and for full definitions of:

- *“householder application”* (essentially an application for the enlargement, improvement or other alteration of a dwellinghouse, or development within the curtilage of such a dwellinghouse, or change of use to enlarge the curtilage of a dwelling house)
- *“householder appeal”* means an appeal in relation to a householder application, but excludes an appeal against conditions on the grant of planning permission; or an appeal which is accompanied by an enforcement or listed building consent appeal.
- *“minor commercial application”* (essentially relates to existing buildings of no more than 250 square metres gross external floor space at ground floor level, currently in use for any of the purposes set out in Schedule 1A to The Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2015 which is an application for change of use from Class A1 to A2 or A3; or Class A2 to A3); or the carrying out of building or other operations to a shop front.
- *“minor commercial appeal”* means an appeal in relation to a minor commercial application but excludes an appeal against conditions on the grant of planning permission; or an appeal which is accompanied by an enforcement or listed building consent appeal.

Appendix C. Discovery Strategy

DISCOVERY STRATEGY – CONTAMINATED MATERIALS

PREDEVELOPMENT REMEDIATION EARTHWORKS

SITE: Zone 1A

DISPLAY & AWARENESS

- The Discovery Strategy must be placed on the **Health & Safety Notice Board** and/or displayed in a prominent area where all site staff are able to consult the document at any time; and
- Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the discovery strategy.

HOW TO IDENTIFY POTENTIAL CONTAMINATED MATERIAL

- Looks oily and has an oily odour;
- Solvent type odour;
- Discolouration (e.g. blue colour);
- Man-made materials in fill;
- Contains fragments of coal, coke or clinker;
- Subsurface brick and concrete structures;
- Asbestos cement;
- Fibrous material;
- Asbestos lagging or Asbestos Insulation Board.

(Examples only – This list is not exhaustive. If in any doubt, ask the Site Supervisor).

PROCEDURE

If unexpected evidence of contamination is found, the following procedure shall be adhered to, including:

1. All site works in the vicinity of the suspected contamination should stop;
2. Site personnel to inform Site Supervisor;
3. Visual and olfactory observations of the condition of the ground and the extent of contamination should be made and the risk assessment for working in the affected area should be updated as necessary;
4. In the presence of a suitably qualified geo-environmental engineer, investigation works shall commence using visual and olfactory observations, to delineate the area over which contaminated materials are present. Samples will be taken if necessary;
5. Should it be appropriate in the context of the remediation strategy and/or perceived risk of unexpected contamination, the affected material may be excavated and placed in a stockpile on a suitable impermeable surface. This should be suitably controlled with no addition to, or removal of, the stockpile while chemical analysis is being undertaken. Alternatively, the material should remain in situ until laboratory test results have been obtained;
6. A photographic record should also be made of relevant observations;
7. Test results will be compared to current assessment criteria suitable for future use of the area of the site affected;
8. The material should either be removed for disposal to a licensed waste management facility or remediated to agreed assessment criteria.

All works should be completed in general accordance with the Remediation Method Statement.

UNEXPECTED TANKS

It is possible that underground tanks, which have not been identified by the investigation to date, may be present. The following procedures are to be adhered to if tanks are identified:

1. All site works at the position of the suspected tank should stop;
2. A description of the tank should be made by the site geo-environmental engineer including; condition and surroundings, along with visual and olfactory observations should any contents in the tank be apparent. A photographic record should also be made of any observations;
3. The tanks position and depth should be determined and marked on a plan of the site;
4. During the presence of a suitably qualified geo-environmental engineer, investigation works should be undertaken to obtain samples of any liquid or sludge contents and to establish the dimensions of the tank;
5. Test results will be used to determine the appropriate disposal or treatment option for the tank contents;
6. The tank contents will be removed and either treated or removed to a suitable licenced disposal facility;
7. Once the tank has been emptied, the structure can be removed and any contamination of the surrounding soil addressed;
8. Excavation and remediation of any contaminated soils shall be in accordance with the Remediation Method Statement.

Appendix D. Remediation Criteria

D.1. Soils: Atkins SSV for Commercial Landuse 1% SOM

Determinand	Unit	GAC
Acenaphthene	mg/kg	83600
Acenaphthylene	mg/kg	83600
Anthracene	mg/kg	535000
Benzo[a]pyrene	mg/kg	76.3
Fluoranthene	mg/kg	72200
Fluorene	mg/kg	66500
Naphthalene	mg/kg	90.1
Phenanthrene	mg/kg	535000
Pyrene	mg/kg	54100
Aliphatic TPH >C5-C6	mg/kg	4490
Aliphatic TPH >C6-C8	mg/kg	10400
Aliphatic TPH >C8-C10	mg/kg	1370
Aliphatic TPH >C10-C12	mg/kg	7900
Aliphatic TPH >C12-C16	mg/kg	34000
Aliphatic TPH >C16-C21	mg/kg	3620000
Aliphatic TPH >C21-C35	mg/kg	3620000
Aromatic TPH >C5-C7	mg/kg	12.5
Aromatic TPH >C7-C8	mg/kg	27900
Aromatic TPH >C8-C10	mg/kg	2210
Aromatic TPH >C10-C12	mg/kg	12300
Aromatic TPH >C12-C16	mg/kg	41300
Aromatic TPH >C16-C21	mg/kg	28400
Aromatic TPH >C21-C35	mg/kg	28400
Asbestos Identification (Fill <1m from surface)	-	NAD
Asbestos (Fill > 1m from surface)	%	<0.1%
Benzene	mg/kg	12.5
Ethylbenzene	mg/kg	7660
Toluene	mg/kg	27900
m & p-Xylene	mg/kg	2720
o-Xylene	mg/kg	3030

Determinand	Unit	GAC
Arsenic	mg/kg	635
Cadmium	mg/kg	410
Chromium	mg/kg	208000
Chromium (Hexavalent)	mg/kg	49.1
Copper	mg/kg	106000
Lead	mg/kg	2310
Mercury	mg/kg	<0.05
Nickel	mg/kg	1770
Selenium	mg/kg	13000
Vanadium	mg/kg	7490
Zinc	mg/kg	1100000
Cyanide (Free)	mg/kg	373
pH	-	9-11

D.2. Controlled Waters / Leachability: Freshwater EQS

Determinand	Unit	GAC
Acenaphthene	mg/l	See BaP
Acenaphthylene	mg/l	See BaP
Anthracene	mg/l	0.0001
Arsenic (Dissolved)	mg/l	0.05
Benzo[a]anthracene	mg/l	See BaP
Benzo[a]pyrene	mg/l	1.70E-07
Benzo[b]fluoranthene	mg/l	See BaP
Benzo[g,h,i]perylene	mg/l	See BaP
Benzo[k]fluoranthene	mg/l	See BaP
Boron	mg/l	2
Cadmium (Dissolved)	mg/l	8.00E-05
Chromium (III)	mg/l	0.0047
Chromium (Hexavalent)	mg/l	0.0034
Chrysene	mg/l	See BaP
Chloride	mg/l	250
Copper (Dissolved)	mg/l	0.001
Cyanide (Free)	mg/l	0.001
Cyanide (Total)	mg/l	0.001
Dibenz(a,h)Anthracene	mg/l	See BaP
Fluoranthene	mg/l	6.30E-06
Fluorene	mg/l	See BaP
Indeno[1,2,3-c,d]Pyrene	mg/l	See BaP
Lead (Dissolved)	mg/l	0.0012
Manganese (Dissolved)	mg/l	0.123
Mercury (Dissolved)	mg/l	7.00E-05
Naphthalene	mg/l	0.002
Nickel (Dissolved)	mg/l	0.004
Phenanthrene	mg/l	See BaP
Pyrene	mg/l	See BaP
Sulphate	mg/l	400
Total Phenols	mg/l	0.0077
Vanadium (Dissolved)	mg/l	0.02
Zinc (Dissolved)	mg/l	0.0137
pH	-	6-9

Aliphatic TPH >C5-C6	mg/l	0.01
Aliphatic TPH >C6-C8	mg/l	0.01
Aliphatic TPH >C8-C10	mg/l	0.01
Aliphatic TPH >C10-C12	mg/l	0.01
Aliphatic TPH >C12-C16	mg/l	0.01
Aliphatic TPH >C16-C21	mg/l	0.01
Aliphatic TPH >C21-C35	mg/l	0.01
Aliphatic TPH >C35-C44	mg/l	0.01
Aromatic TPH >C5-C7	mg/l	0.01
Aromatic TPH >C7-C8	mg/l	0.01
Aromatic TPH >C8-C10	mg/l	0.01
Aromatic TPH >C10-C12	mg/l	0.01
Aromatic TPH >C12-C16	mg/l	0.01
Aromatic TPH >C16-C21	mg/l	0.01
Aromatic TPH >C21-C35	mg/l	0.01
Aromatic TPH >C35-C44	mg/l	0.01

James Wilson, Associate Environmental Consultant
Atkins Limited
Two Chamberlain Square
Paradise Circus
Birmingham
B3 3AX

James.Wilson@Atkinsglobal.com

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