

Remediation Design Statement

SeAH Monopile Facility, Teesport



L05858-CLK-XX-XX-RP-GT-0005

SeAH Wind Ltd

Remediation Design Statement

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Project
SeAH Monopile Facility, Teesport

Client Name
SeAH Wind Ltd

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Report Prepared by:	
Mark Briggs BSc MSc CGeol FGS Director Ground Engineering	

Approved for Issue by:	
Theodore Tai BEng(Hons) CEng FStructE FICE Director	

Issuing Office	
	129 Cumberland Road, Bristol, BS1 6UY Tel: +44 (0)117 929 2244
	GF Suite, Bickleigh House, Park Five Business Centre, Exeter, EX2 7HU Tel: +44 (0)1392 369098
x	7 Hatchers Mews, Bermondsey Street, London, SE1 3GS Tel: +44(0)20 7939 0959

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Appendices

- A Proposed Development Plan**
- B Soil Quality Import Criteria**

Executive Summary

Client	SeAH Wind Ltd
Site	SeAH Monopile Facility, Teesport
Location	The site is located approximately to the north east of Middlesbrough town centre. It is a development plot within the wider Teesport regenerating area. Approximate NGR for site centre is NZ 53780 21896.
Approximate area	circa 36ha
Topography	The plot is undergoing enabling earthworks. Finished level to be 9.25mAOD.
Current land use	Former steelworks land most recently occupied by slag and associated wastes. Land subject to enabling earthworks to create engineered level development platform.
Proposed development	Monopile manufacturing facility and associated ancillary buildings and infrastructure.
Remedial Requirements	<p>Provision of clean cover/capping.</p> <p>In areas of hardstanding no additional measures required.</p> <p>In areas of soft landscaping capping to comprise minimum of:</p> <ul style="list-style-type: none"> • Basal geotextile (Terram 1000 or similar); • 150mm sub soil; and • 150mm topsoil.
Remedial Controls	<p>Imported soils to form capping to meet chemical import criteria. Assessment prior to import recommended.</p> <p>Verification of placement in accordance with RMS required.</p>
Validation	Validation report required to demonstrate compliance with the RMS.

1 Introduction

In May 2022 Clarkebond (UK) Limited was commissioned by K2 Consultancy on behalf of SeAH Wind Ltd, to prepare a Remediation Design Statement for land within the Teesport regeneration area. The land proposed for development comprises a circa 36ha plot of land and includes the land parcel formerly referred to as the GE plot.

1.1 Planning History

The land benefits from planning permission reference R/2020/0357/OOM. Various investigations and technical reports were undertaken by South Tees Development Corporation to support the granting of the outline permission. Conditions associated with the permission require additional works in respect of the individual development plots covered by the overarching outline permission. With respect to ground conditions Conditions 16, 17, 21 and 25 detailed below, are pertinent.

Condition 16

Prior to the commencement of the development, or in accordance with the phasing plan agreed through discharge of condition 4, further site investigation shall be carried out and reported to the Local Planning Authority. Thereafter the development shall be implemented in accordance with the approved details and mitigation measures therein, unless otherwise agreed in writing.

REASON: To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised.

REASON FOR PRE-COMMENCEMENT: A pre-commencement condition is required because the risk from contamination will be present on the commencement of works.

Condition 17

In accordance with the phasing plan agreed through the discharge of condition 4, a Remediation Design Statement for each development plot shall be submitted to and approved in writing by the Local Planning Authority. Thereafter development will be implemented in accordance with the approved details, unless otherwise agreed in writing. 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

Condition 21

Prior to the commencement of the development, or in accordance with the phasing plan agreed through discharge of condition 4, a Piling Risk Assessment shall be submitted to and approved in writing by the Local Planning Authority. Any mitigation measures identified as part of the assessment shall be implemented throughout the construction phase of the development, unless agreed in writing.

REASON: To ensure the satisfactory implementation of the approved scheme in the interests of the amenity of the locality.

REASON FOR PRE-COMMENCEMENT: A pre-commencement condition is required so that the final details of piling are agreed in advance of this early part of development.

Condition 25

A Gas Risk Assessment shall be submitted to and approved in writing by the Local Planning Authority prior to the occupation of each building on site. Any protection measures or gas mitigation will be complied with thereafter, unless otherwise agreed in writing.

REASON: To ensure that risks from gas to the future users of the land and neighbouring land are minimised and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

Conditions 21 and 25 are addressed in specific risk assessment and reported under separate cover; these are not discussed in detail within this statement.

1.2 Proposed Development

The site is intended for development as a wind turbine monopile manufacturing facility with associated ancillary buildings. A proposed development layout is given in Appendix A. Due to the nature of the development the main structures be founded upon piles. The main manufacturing building and ancillary buildings will comprise reinforced cast in-situ concrete floors. External area will predominately be reinforced concrete slab or compacted hardcore to form laydown and storage areas for completed monopiles, prior to transport off-site. Landscaping will be located on the northern and eastern perimeter, comprising landscaping to the entrance and boundary slopes, as illustrated on the Masterplan given in Appendix A.

1.3 Scope of Works

This remediation design statement reviews the available site data, drawing from previous reports undertaken by Clarkebond and others, and provides detail on the remedial actions required pertinent for the proposed development of the site.

1.4 Limitations

This report is provided for the benefit only of the party to whom it is addressed and we do not accept responsibility to any third party for the whole or any part of the contents and we exercise no duty of care in relation to this report to any third party.

2 Site Setting

Site Address: Teesworks, Redcar Gate, Trunk Road, Redcar TS10 5QW

National Grid Reference: NZ 53692 21928

The site is located to the north east of Middlesbrough town centre as shown on Figure 2.1 below. The proposed development area is outlined in red.



Figure 2.1 Site Location

2.1 Site Description

The Teesworks area is undergoing extensive remediation and enabling works as part of the regeneration of the former former steelworks and associated industry and infrastructure. The proposed development area has undergone remediation as part of the enabling works in advance of construction. The remedial works have required the excavation of the near surface materials to approximately two metres below proposed final level. The resultant void has been backfilled using crushed slag materials derived from

processing on site materials, interlayered with mudstone. The backfilling has been undertaken in a controlled engineering manner to produce a development platform.

During the course of the remediation a watching brief was maintained. The remedial Specification required removal of grossly contaminated materials if encountered. At the time of writing the remedial works are ongoing, although it is understood no significant contamination has been identified to date.

Upon the completion of the remedial works the development platform will comprise a nominally level area lying at approximately 9.25m AOD.

To the north east of the plot is the High Tip landfill, a licenced landfill to accept a variety of commercial and residential wastes. It is understood from previous investigations, and by direct observation, that the landfill is in reality a land raise with the significant portion of landfill rising above the prevailing ground level.

To the north west of the plot regeneration works comprising the construction of a new quay are underway. The works comprise the creation of a new piled quay wall and associated laydown area.

3 Review of Existing Site Data

3.1 Historic Reports

The SeAH development area and the wider area of Teesworks has been subject to a number of ground investigations and assessment in preparation of the land for redevelopment. The following reports, in date order, have been supplied by Teesworks for information:

- South Tees Industrial Area – Site C – Ground Investigation (1999) prepared for English Partnerships by AEG (Ref 1715H)
- Soil and Groundwater Baseline Characterisation Study, Teesside Works (July 2004) Vol 1-3, prepared for CORUS UK Ltd by Enviros (Ref: CO0520017A)
- TS4 South Bank – Phase 1 Geo-Environmental Desk Study (2017) prepared for Homes and Communities Agency by CH2M HILL
- Former Steelworks Land, South Tees Outline Remediation Strategy (July 2019) prepared for South Tees Development Corporation by Wood Environment & Infrastructure Solutions UK Limited (Ref: 41825-WOOD-XX-XX-RP-OC-0002_A_P02)
- DRAFT - SOUTH BANK AREA A, FORMER STEELWORKS, REDCAR Phase II Environmental Site Assessment (March 2021) prepared for South Tees Development Corporation by Arcadis (Ref: 10035117-AUK-XX-XX-RP-ZZ-0192-01-SBA_ESA)
- South Bank Area C, Teesworks, Redcar: Phase II Environmental Site Assessment (August 2021) prepared for South Tees Development Corporation by Arcadis (Ref: 10035117-AUK-XX-XX-RP-ZZ-0318-02-SBC_ESA)
- South Bank, Teesworks, Redcar: Detailed Quantitative Risk Assessment (Sept 2021) prepared for South Tees Development Corporation by Arcadis (Ref: 10035117-AUK-XX-XX-RP-ZZ-0331-02-SB_DQRA)
- Geo-environmental Assessment of the GE Plot, South Bank, Teesworks (December 2021) prepared for South Tees Development Corporation by Arcadis (Ref 10035117-AUK-XX-XX-RP-ZZ-0395-01-GE Plot).
- Geo-environmental Assessment of the GE Plot, South Bank, Teesworks (March 2022) prepared for South Tees Development Corporation by Arcadis (Report Ref: 10035117-AUK-XX-XX-RP-ZZ-0395-02-GE Plot)
- South Bank Initial Site Priority Area – Teesworks DRAFT INTERIM - Remediation and Earthworks Verification Report (March 2022) prepared for South Tees Development Corporation by Arcadis (Ref: 10035117-AUK-XX-XX-RP-ZZ-0468-01-SB Priority Verification).

3.2 Outline Remediation Strategy

Reports prior to the granting of planning permission in July 2020 formed the basis for the planning submission. Of particular note within the supplied data is the Outline Remediation Strategy prepared by Wood in 2019. This document undertook a comprehensive review of the data available at that time and proposed a framework for remediation within the anticipated various phases of redevelopment. The document proposes overarching approach to remediation across Teesworks, which is summarised in the following report extract (Report Ref 41825-WOOD-XX-XX-RP-OC-0002_A_P02, Pg 99):

For future developments regulated under the planning regime a design statement will be submitted to support the specific planning application, specifying the form of development and the manner in which the site will be remediated to render it suitable for use. The design statement as a minimum should include:

- *Plan of the proposed development.*
- *Details of proposed capping, including use of concrete slab, highway, hard standing and capping of open space.*
- *Any notable variations and associated mitigation from the outline remediation strategy.*

Additional ground investigation and/or site specific risk assessment may be required to inform the above.

This approach has become embedded in the outline planning permission, with Condition 17 specifically referring to a Remediation Design Statement. It is noted that the overarching strategy, given the presumed commercial/industrial use of the land, is one of provision of a suitable capping.

3.3 Additional Ground Investigations

The SeAH plot lies within the South Bank area of Teesworks, incorporating an area of land formerly referred to as the GE Plot. As alluded to within the outline remedial strategy additional ground investigation and risk assessments have been undertaken by Arcadis on behalf of the South Tees Development Corporation for the South Bank area. These reports build upon the historic works to develop the understanding of the site condition. The purpose of the reports was to quantify land and groundwater contamination arising from the former use of the land, inform risk assessments and subsequent remedial requirements.

A further ground investigation has been undertaken by Clarkebond (Ref: L05858-CLK-XX-XX-RP-GT-0004 P02, dated May 2022) primarily focussed on providing geotechnical design details for the proposed development, while also verifying the previous ground appraisals and validating of the previous findings.

3.3.1 Data applicability

Where technical assessments have been presented within historic reports, the methodologies adopted are have been reviewed by Clarkebond and are considered appropriate and in line with either current UK guidance. The outcomes of the associated risk assessments and technical appraisals are therefore considered applicable to the assessment of the site and have been adopted within the following sections.

3.4 Ground Model

This remedial strategy does not review each report in detail; the reader may consult the original text if further details are required. However, the current and historic reporting have been used to develop a conceptual ground model for the development plot which has been used to assess if the remedial strategy originally presented in the outline strategy remains suitably protective of human health and controlled waters.

The land was reclaimed by tipping steel and refractory works waste deposits on the estuary (the Bran Sands) from approximately 1900 to 1914. The thickness of the deposits below the site of interest is typically 8m, reflecting the tipping on land that has been assumed to originally lie at around 1m AOD.

The made ground materials are underlain by a thin veneer of normally consolidated alluvial deposits, comprising the tidal flat deposits. These deposits are primarily granular in nature, comprising a silty

sand and gravel deposit typically less than one metre thick below the majority of the site. The deposit was not encountered across the entire footprint of the development area, possibly reflecting variable deposition or the result of the original made ground tipping process.

Underlying the alluvial deposits are glaciolacustrine deposits, which are more cohesive in nature. These soils are principally laminated clays with sand and silt dustings on laminate, thereby forming distinct partings which are observed within samples recovered during ground investigation. The combined thickness of the alluvial and glaciolacustrine deposits is approximately 6m, although again this varies across the length of the site.

Underlying the softer superficial deposits lies a mantle of glacial till (boulder clay). This is a cohesive deposit comprising a firm to very stiff sandy gravelly clay with boulders and cobbles. The glacial till varied in thickness, but is typically 6-7m thick and encountered consistently across the site.

Underlying the superficial deposits strata from the Mercia Mudstone Formation are present. This comprised a very weak to weak mudstone in its upper weathered zone, becoming less weathered with depth. Weathering grades have varied from iv(a) near the contact with the overlying superficial deposits, to i/ii at depth, typically 10m or more below the superficial deposits.

The site does not lie in a Radon protection area.

Given the coastal location of the site adjacent to the River Tees, groundwater is present at shallow depth. The groundwater has been shown to be brackish in nature and to lie at between 1 to 2m AOD across the site. Some variation in groundwater has been noted, likely resulting from variable permeabilities in the made ground and the underlying tidal flat deposits. Prior to tipping it would be anticipated that the Bran Sands would have been characterised by a shallow groundwater that was tidally influenced, and the site observations are consistent with this.

3.5 Soil and Groundwater Contamination

The site is part of a wide area formerly used for iron and steel making, with associated support industries. As expected, legacy contamination has been identified within the ground comprising a mix of elevated metals (as maybe anticipated given the nature of the works) hydrocarbons and asbestos within the made ground, with contamination within groundwater typically associated with NAPL which has migrated from point sources associated with specific industry processes.

Where NAPL has been identified during ground investigation, subsequent monitoring of installations has indicated minimal free product. This suggests that while contamination has occurred it primarily manifests itself as an extended smear zone and relatively immobile contaminant residue producing a limited dissolved phase. For the purposes of a ground model this may be characterised as localised hotspots from by relatively immobile contaminants. Specific to the SeAH plot, the South Bank Coke Ovens, located on the southern margin of the development area, is the principal area of concern.

A controlled waters DQRA has demonstrated groundwater beneath the site, and indeed the wider South Bank Area, to not be a receptor, principally on the basis the groundwater is brackish and unlikely to form either a portable or industrial process source. The primary controlled water receptor is there for the River Tees.

Immediately to the North East of the site lies the High Tip landfill. This is a licenced landfill which has received a wide mix of wastes, including commercial, industrial and domestic. However, it is noteworthy that the landfill is principally a land raise with tipping having formed a significant mound to the North East of the site. Gas monitoring has indicated that while the site has the potential to be a source of land of permanent gases, these are not migrating laterally into the SeAH site.

3.6 Enabling Earthworks

A programme of enabling earthworks is being undertaken by Teesworks across the SeAH development plot. The earthworks are complete below the proposed main building footprints, with works to the proposed laydown areas ongoing at the time of writing. These works comprise the bulk excavation the near surface made ground for processing and recompaction in an engineered manner. The works are intended to improve the geotechnical performance of the soils, while also remediating the soils by means of removal of cross contaminants, if encountered.

The works comprise the excavation of made ground to 7.5m AoD, nominally 2m below the current surface, and placement of interlayered mudstone and processed slag, to form a final layer of 9.25m AoD. This will therefore result in the creation of a 1.75m engineered layer, prior to any construction activity.

The fill is being laid to a Specification derived from the Specification for Highway Works, which places limited on both geotechnical and contamination parameters. For the purposes of this remedial strategy, only soils suitable for use in an industrial land use setting are permitted to be used within the earthworks, on the assumption that a capping will be adopted as part of the subsequent build. The earthworks are subject to verification by Arcadis, who at the time of writing, have issued an interim draft verification report for the earthworks (Ref 10035117-AUK-XX-XX-RP-ZZ-0468-01-SB Priority Verification). The verification testing has demonstrated placement in accordance with the Specification.

3.7 Remedial strategy requirements

An initial assessment of site condition was presented in the 2019 outline remedial strategy for the site, which formed part of the application to gain outline planning permission. In recognition of the likely industrial/commercial land use of the area the strategy proposed remedial actions to address risks to human health associated with the near surface made ground materials. This took the form of providing a capping to break potential exposure pathways, although it was recognised that given the likely form of development this may well comprise concrete and hard standing across the majority of the development. No remedial actions were anticipated with respect to controlled waters.

The additional ground investigation pertinent to the SeAH development plot have confirmed the conclusions drawn from the initial data review in 2019, with subsequent plot specific detailed risk assessments confirming the appropriateness of provision of a capping layer. A controlled waters risk assessment has demonstrated specific remedial measures for controlled waters are not required.

In addition to the assessments of the made ground in its in-situ condition, the site has also been subject to the enabling earthwork, ensuring consistency and known conditions with the upper near surface soils.

Given the above a remedial strategy comprising capping for the protection of human health is considered appropriate for the proposed development. No remedial measures with respect to controlled waters or ground gases is considered necessary.

The implementation of this strategy is outlined in the following Sections.

4 Detailed Remedial Strategy

4.1 Capping/Clean Cover

In order to mitigate the risk associated with the constituent parts of the engineered earthworks there is a requirement for a clean cover system to be installed. The form of the capping will be dependent on the nature of the development, ie hard or soft cover.

4.1.1 Hardstanding

Where hardstanding is proposed a minimum thickness of 300mm is required. This may comprise sub-base material and any overlying concrete slab or paved areas. Where hardstand is present no additional remedial actions are necessary.

4.1.2 Soft Cover/Landscaping

An engineered clean cover system comprising a minimum of 300mm of subsoil/topsoil in areas of soft landscaping or soft cover areas is required. The clean cover system should comprise (described from the base up) the following:

- Basal geotextile (Terram 1000 or similar);
- 150mm sub soil; and
- 150mm topsoil.

The above is considered a minimum thickness for protection of human health. Should deep rooting shrubs or trees be proposed, they should be planted within a deepened tree pit, lined with a geotextile as above, but extended to an appropriate depth to permit planting and allow sufficient over lapping on the membrane as required. The advice of the landscape architect should be followed with respect to the depth of growing medium required.

No subsoil or topsoil is present within the development area. As such suitable soils will require to be imported into the site for use. It is recommended soils are suitable for use in a residential public open space are imported, as detailed in Section 5.2 and Appendix B.

4.2 Arisings

Construction activity will result in the creation of arisings. These will be generated for either shallow excavations, ie less than 2m and therefore effectively within the engineered earthworks, or deeper works such as deep service installation and pile installation.

4.2.1 Shallow excavations

Arisings generated from within the engineered earthworks will represent waste materials. As such they may fall under the remit of a Material Management Plan (developed in accordance with the Definition of Waste Code of Practice) and therefore may be suitable for reuse within either the SeAH development or the wider Teesport works, subject to the detail of the MMP (See Section 5). If the materials are retained within the SeAH site they would be subject to the same capping requirement as if in-situ, ie placed under hardstanding or an appropriate capping. If placed elsewhere within the Teesport development, their use and appropriate management would be dictated by the receiving development plot.

Should an MMP not be applicable the materials will require disposal from site as a waste, in accordance with appropriate waste management legislation.

4.2.2 Deep excavations/pile arisings

Arisings generated from below the engineered platform will comprise a mixture of in-situ made ground, and if from sufficient depth, natural soils. Where segregation of the material type is possible this should be undertaken.

If made ground is segregated and re-use is proposed, then they will require to be adequately characterised to demonstrate they pose no greater environmental risk than the ground conditions as proven during the historic investigations, ie they are free from gross contaminants, particularly organic contaminants. Testing should be undertaken at a rate of 1 sample per 250m³, with analysis for the suite of potential contaminants as detailed in Appendix B.

Subject to appropriate planning for their re-use from a waste management perspective, as detailed above, they would require capping in accordance with the overarching capping requirements. Care would be needed to ensure that if significant volumes of slag material are reused that consideration is given to the heave/expansion potential, in addition to the geoenvironmental considerations.

If made ground is disposed off site it would be classed as a waste and require handling in accordance with applicable waste legislation.

Natural soils, while anticipated to be free from significant contamination, would also require assessment to demonstrate this. Testing should be undertaken at a rate of 1 sample per 500m³, the lower frequency reflecting the anticipated natural provenance of the soils. Their status as arisings would still render the soils as waste, and as such would be subject to similar controls to that of other waste arisings. Should their reuse be permitted from a waste management perspective, no additional capping would be required for their re-use, subject to chemical analysis indicating potential contaminant concentrations below this given in Appendix B.

4.3 Nuisance, Health & Safety

During the implementation of the remedial works, the contractor should ensure that appropriate measures are in place to protect local residents from nuisance. The contractor shall implement measures that protect the local environment from surface water run-off from the development, from unacceptable quantities of dust being generated during site activities and from soil being tracked into, or dropped onto, public highways.

Consequently, it is recommended that any soil export or import to site is undertaken utilising covered vehicles and that suitable road cleaning equipment is available to maintain the highways. Dust suppression systems shall be utilised as required, dependent upon site activities.

5 Management of Materials

5.1 Materials Management Plan

The reuse of site derived soils, the importation soils and the process of importing soil will need to comply with all relevant legislation. If the soils are sourced from a recognised topsoil/soil provider as part of a direct purchase arrangement, then other than keeping details of import volumes and commercial details, no specific waste management actions are required. However, if the soil is sourced from a development site or soil recycling facility the imported material may constitute a waste; under these circumstances importation should be undertaken in accordance with the “The Definition of Waste: Development Industry Code of Practice (DoWCoP), CL:AIRE (2011)” including the use of a Materials Management Plan (MMP) to demonstrate compliance. The MMP will need to be in place prior to the movement of any soils.

In addition site derived soils may be considered a waste by the Environment Agency and HMRC. Planning for soil re-use and compliance with the requirements of the DoWCoP will provide evidence that reuse of soils is not a waste disposal activity. While not formally part of the requirements of this RMS, it is recommended the Client and project team consult a Qualified Person (QP) to ensure site remediation and associated development activities are not considered a waste disposal activity.

5.2 Sourcing of Imported Materials

There is a need to import a clean growing medium to site and all imported materials should ideally be sourced from recycled sources, but also comply with the following requirements to demonstrate their suitability for re-use.

Every effort should be made to ensure imported soils are accompanied with proof of provenance to demonstrate that there is no potential for the soils to have been contaminated as a result of past land uses. A ground investigation report accompanied by a site plan showing the location of the source site, and a grid reference should be provided. This information should be obtained in advance of any chemical tests being commissioned.

Irrespective of the source of the soil the contractor shall undertake sufficient testing to demonstrate that the soils are suitable for their intended use. The amount of testing will be dictated by the source of the soils and the volume being imported, as defined in Table 5.1 below.

Geochemical data for each/any potential topsoil and subsoil source must be provided and reviewed prior to import. The minimum number of initial soil samples that should be retained (sampled at source where possible) and analysed per soil source are summarised in Table 5.1 below. Once a preferred soil source/s has/have been identified, additional verification sampling and analysis should be undertaken to ensure compliance with the soil acceptability criteria. Appropriate import criteria are given in Appendix B.

Table 5.1: Soil Sampling and Analysis Minimum Frequency

Soil Source	Potential Soil Source		Confirmed Soil Source	
	No. of Samples Retained	No. of Samples Analysed	No. of Samples Retained	No. of Samples Analysed
Greenfield Source	5 (min)	3 (min)	5 (min) or 1 per 50m ³ *	3 (min) or 1 per 100m ³ *
Brownfield, screened or manufactured soils	5 (min)	3 (min)	7 (min) or 1 per 50m ³ *	5 (min) or 1 per 100m ³ *

Note: * whichever frequency is greater.
If the initial results are variable, additional samples should be scheduled for analysis until the geochemical nature and suitability of the material has been established.

All geochemical analysis should be undertaken by an MCERTS accredited laboratory. Samples scheduled for geochemical analysis will need to be representative of the stockpile or soil source being investigated and assessed. It is recommended that the geoenvironmental specialist is consulted with respect to soil suitability.

5.3 Subsoil/Topsoil Acceptability Criteria

Geochemical soil acceptability criteria (SAC) for the imported topsoil and subsoil is specified in Appendix B. These criteria are maximum threshold concentrations that should not be exceeded. The SAC thresholds are predominantly based on the Defra Category 4 Screening Levels (C4SLs) and LQM/CIEH Suitable for Use Levels (S4ULs) for Public Open Space. Thresholds of pH, zinc, copper and nickel shall also meet the Topsoil Characteristics from 'Table 1' of the BS3882:2015; which are typically lower than the C4SL/S4ULs.

A visual/olfactory inspection of the imported topsoil and subsoil shall also be undertaken as the imported soil is being delivered/unloaded onto site and should take note of any:

- Black staining;
- Hydrocarbon (fuel/oil type) odours;
- Man-made objects (greater than 10mm diameter); and
- Fibrous materials and/or cement bonded materials.

Soils containing the above components will not be suitable as topsoil or subsoil cover soils and will not be accepted onto the site. Any 'out of specification' material (either by visual inspection and/or laboratory analysis) must be segregated and removed from site.

Stockpile management must be implemented to ensure that all potentially contaminated soils excavated on site are kept separate from imported cover soils.

5.4 Stockpiling of Materials

Any material generated from construction activities that is proposed for re-use shall be stockpiled separately by material type (i.e. topsoil, Made Ground and natural subsoil). Similarly, any materials being imported to site, for example clean topsoil, or construction aggregates, shall likewise be stockpiled separately. Stockpile management shall be undertaken in accordance with the following protocol.

- Separate stockpiles shall be created for each material type, whether site won materials or imported materials and shall be appropriately labelled / identified on site.
- Stockpiles shall not be cross-contaminated, double handing shall be avoided and stockpiles shall remain quarantined until ready for use.
- Topsoil shall not be placed during or after heavy or prolonged periods of rainfall.
- For imported materials, copies of the carrier's Consignment Notes shall be retained on site and made available for inspection by the supervising consultant and for inclusion within the Verification Report.
- A record of all imported materials (i.e. deliveries) shall be maintained by the Site Manager recording details of material type, source of the imported material, and consignment note reference numbers. In addition, the Site Manager shall record the status of each stockpile, in terms of material type, source site, volume and intended use on site.

6 Verification and Reporting

This RMS has identified actions that will be required to ensure the development is 'suitable for use' and is compliant with the imposed planning conditions. The remedial activities will need to be verified and reported to demonstrate that the Remediation Method Statement has been fully implemented and to provide a permanent record of the remedial works undertaken on-site.

The verification report shall form part of the Health and Safety File for the scheme and will also need to include relevant details to ensure that the remedial measures are maintained during the site operation. The report should also describe any key details that would be relevant to the redevelopment of the soft landscaping should this be proposed in the future.

The groundworks contractor shall employ a suitably qualified independent geo-environmental consultant to undertake the verification visits as outlined below.

6.1 Verification Activities

It is proposed that the remedial works are verified by a suitably qualified person. This may be the site Agent, a suitably qualified geo-environmental engineer on a visiting basis or a combination of the two. The following verification activities will need to be undertaken and recorded:

- Inspection, sampling, analysis and assessment of proposed imported subsoil and topsoil to confirm suitability;
- Inspection of placed cover soils to confirm the presence of the basal membrane, overlain by the required cover depth/thickness (based on inspection pits, with photographs showing a scaled marker indicating that the necessary thickness has been achieved).

6.2 Verification Reporting

Final records will require formalising in the form of a Verification Report. The Verification Report will need to include:

- Material placement records;
- Geochemical analyses and approval documentation for all identified sources of imported topsoil and subsoil materials;
- Chain of custody for all soil samples analysed and assessed;
- Delivery notes for all imported capping materials;
- Copy of the Materials Management Plan (if used);
- Site Manager's records of material management and materials on-site;
- Plans indicating locations for cover soils thickness verification, supported by photographic record of each verification location, undertaken on requisite frequency;
- Written summary of the works verified;
- Records of any deviations/soil quality failures and the actions/measures taken to rectify/address these issues;
- Copies of all appropriate correspondence, Regulators agreements, waste transfer records;
- Summary of remedial work undertaken regarding any variations to the RMS required (including any actions undertaken on the basis of unexpected contamination encountered during the course of the works); and

- Written statement that verification consultant believes remedial works were undertaken in accordance with the RMS, based on the inspection work which was carried out.

7 Protocol if Unexpected Contamination is Encountered

7.1 General

As with any site, potential exists for encountering materials that were not recorded during the original site investigation works. While the creation of the engineered platform reduces the risk significantly, the risk remains for arisings from depth

Should any previously unidentified material suspected (by visual or olfactory means) of being contaminated be encountered during the development of the site, then the following protocol should be implemented:

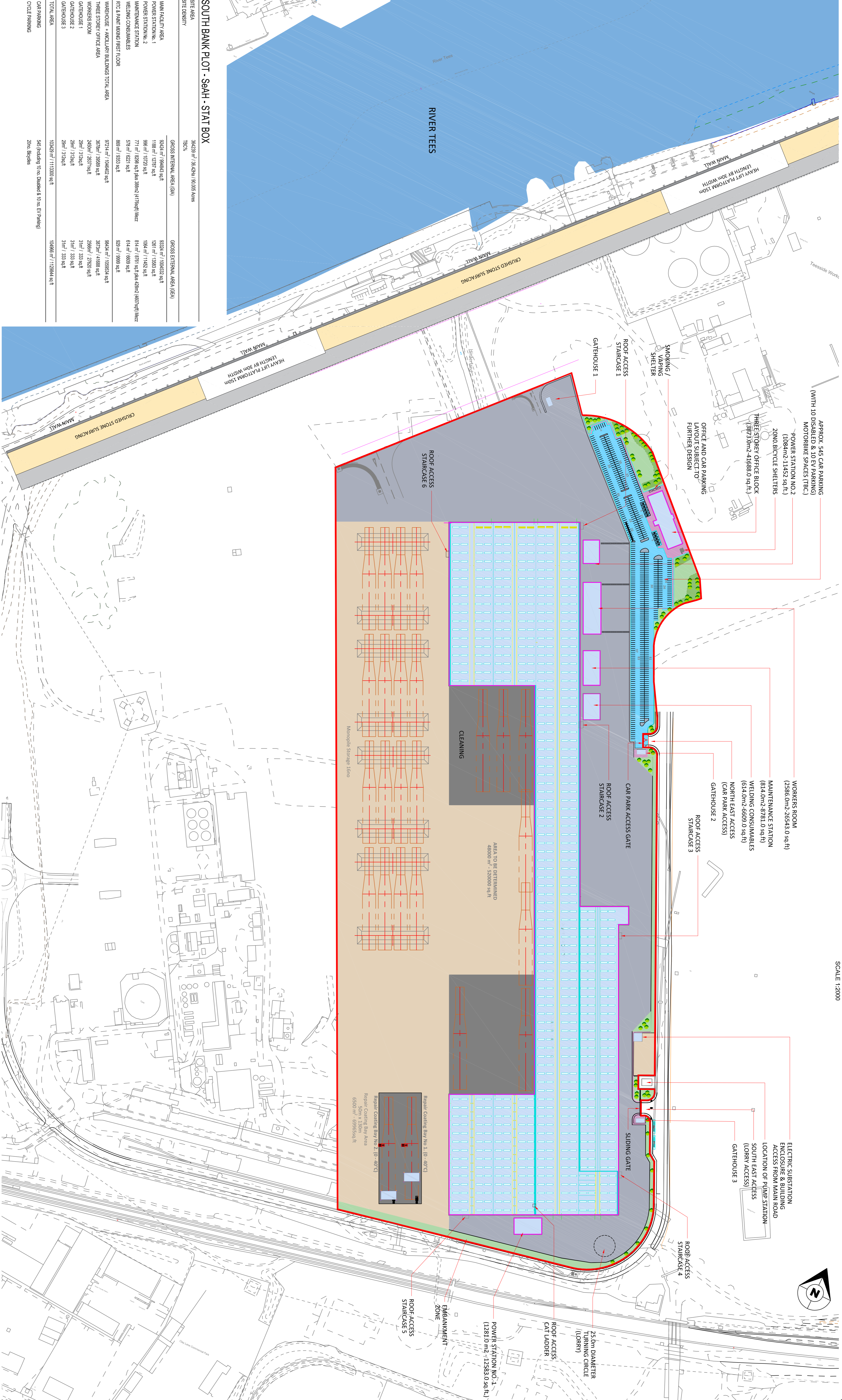
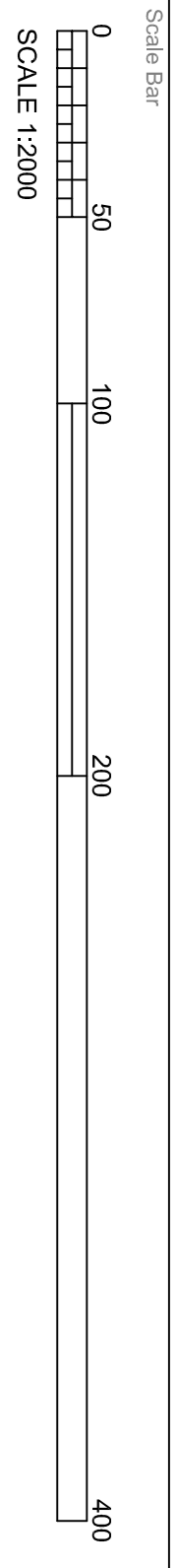
- Site activities in the immediate vicinity shall cease and Clarkebond or other geoenvironmental specialist shall be contacted and provided with a summary of the observations made;
- Clarkebond or other geoenvironmental specialist to attend site and undertake appropriate investigations to establish the extent of the materials in question, including chemical assessment of the soils. Depending upon the extent and hence volume of material present, the materials may be removed and temporarily stockpiled (on heavy grade polythene sheeting) to enable construction activities to continue;
- The resultant chemical analyses shall be compared with the appropriate trigger concentrations for the land use in question. The findings and recommendations shall be discussed and agreed with the relevant Regulator(s); and
- Update to this RMS if required. In the majority of cases it would be proposed that unexpected contaminative issues are dealt with via independent correspondence, but upon occasion it may be necessary to revisit and update the RMS.

Prior to implementing any amendments to the remedial strategy, as presented within this RMS, the regulators shall be consulted and the amendments agreed in writing.

Appendices

- A Proposed Development Plan**
- B Soil Quality Import Criteria**

A Proposed Development Plan



SOUTH BANK PLOT - SEAH - STAT BOX

SITE AREA	180%	100%
35429 m ² / 86.24ha / 30,005 Acre		
MAIN FACILITY AREA		
POWER STATION NO. 1	8524 m ² / 99443 sq.ft	8524 m ² / 100452 sq.ft
POWER STATION NO. 2	1188 m ² / 12787 sq.ft	1261 m ² / 13583 sq.ft
MAINTENANCE STATION	996 m ² / 10720 sq.ft	1064 m ² / 11452 sq.ft
WELDING CONSUMABLES	771 m ² / 8328 sq.ft plus 389m ² (4178sqft) Mezz	814 m ² / 8761 sq.ft plus 429m ² (4607 sqft) Mezz
WATERWORKS + ANGLIAR BUILDINGS TOTAL AREA	578 m ² / 6221 sq.ft	614 m ² / 6609 sq.ft
THREE STOREY OFFICE AREA	889 m ² / 9551 sq.ft	929 m ² / 9999 sq.ft
WORKERS ROOM	9714 m ² / 104642 sq.ft	9824 m ² / 105934 sq.ft
WONKERS ROOM	3670m ² / 39519 sq.ft	3873m ² / 41898 sq.ft
GATEHOUSE 1	2456m ² / 26371 sq.ft	2568m ² / 27620 sq.ft
GATEHOUSE 2	29m ² / 312sq.ft	31m ² / 333 sq.ft
GATEHOUSE 3	29m ² / 312sq.ft	31m ² / 333 sq.ft
TOTAL AREA	10429 m² / 113300 sq.ft	10486 m² / 112844 sq.ft
OAD PARKING	546 (including 10 no Disabled & 10 no EV Parking)	
CYCLE PARKING	20no Bicycles	

Drawn to scale 1:2000
 All dimensions are in meters unless otherwise stated.
 Construction must check all dimensions on site.
 The drawing is copyright and is for use on this site only.
 For other information refer to the latest revision of any cross-referenced drawings.

LOCATION PLAN:

NO.	DATE	DESCRIPTION	BY	CHKD BY
01	20/07/2022	PLANNING SIZE WITH REVISIONS TO THE GUN AND GUN SITE BOX	N/A	N/A
02	25/07/2022	PLANNING SIZE WITH REVISIONS TO THE GUN AND GUN SITE BOX	N/A	N/A
03	25/07/2022	PLANNING SIZE WITH REVISIONS TO THE GUN AND GUN SITE BOX	N/A	N/A

PROJECT TITLE		DRAWING TITLE	
Seah STDC South Bank Monopile Manufacturing Facility		Proposed Masterplan	
DATE	SCALE	DRAWN BY	CHECKED BY
14/02/2022	1 : 2000	LD	RB
DATE	SCALE	DRAWN BY	CHECKED BY
14/02/2022	50	LD	RB
DATE	SCALE	DRAWN BY	CHECKED BY
14/02/2022	50	LD	RB

CLIENT

AshtonSmith
 Beyond Design
 Ashton Smith, Boulevard House, 2 Victoria Avenue, Thornaby, North Yorkshire, YO26 6JL
 Tel: 01323 52882 Fax: 01323 52854
 www.ashtonsmith.com

JOB NO. 22016

B Soil Quality Import Criteria

Determinands	Import Criteria GAC (mg/kg)			Reference	
Metals					
Arsenic	79			C4SL	
Cadmium	120			LQM/CIEH + CLEA 1.07	
Mercury	120			LQM/CIEH + CLEA 1.07	
Chromium	Cr (VI)	23		C4SL	
	Cr (III)	1,500		LQM/CIEH + CLEA 1.07	
Selenium	1100			LQM/CIEH + CLEA 1.07	
Lead	630			C4SL	
Nickel	75			BS3882:2015	
Copper	135			BS3882:2015	
Zinc	200			BS3882:2015	
Organics					
PAH					
Acenaphthene	15,000			LQM/CIEH + CLEA 1.07	
Acenaphthylene	15,000				
Anthracene	74,000				
Benz(a)anthracene	29				
Benzo(a)pyrene	10				
Benzo(b)fluoranthene	7.1				
Benzo(ghi)perylene	640				
Benzo(k)fluoranthene	190				
Chrysene	57				
Dibenz(a,h)anthracene	0.57				
Fluoranthene	3,100				
Fluorene	9,000				
Indeno(1,2,3,cd)pyrene	82				
Naphthalene	4,900				
Phenanthrene	3,100				
Pyrene	7,400				
Total PAH	100			Limit set to be protective of amenity use	
Petroleum Hydrocarbons					
	Soil Organic Matter (SOM)			LQM/CIEH + CLEA 1.07.	
	1%	2.5%	6%		
Aliphatics EC5-EC6	570000	590000	600000		
Aliphatics >EC6-EC8	600000	610000	620000		
Aliphatics >EC8-EC10	13000	13000	13000		
Aliphatics >EC10-EC12	13000	13000	13000		
Aliphatics >EC12-EC16	13000	13000	13000		
Aliphatics >EC16-EC35	250000	250000	250000		
Aliphatics >EC35-EC44	250000	250000	250000		
Aromatics EC5-EC7	56000	56000	56000		
Aromatics >EC7-EC8	56000	56000	56000		
Aromatics >EC8-EC10	5000	5000	5000		
Aromatics >EC10-EC12	5000	5000	5000		
Aromatics >EC12-EC16	5000	5000	5000		
Aromatics >EC16-EC21	3800	3800	3800		
Aromatics >EC21-EC35	3800	3800	3800		
Aromatics >EC35-EC44	3800	3800	3800		
All >EC44-EC70	3800	3800	3800		
Total TPH Sum	1000				Total sum of TPH limit set to be protective of amenity use.

Other		
Visual assessment	Soils to be free from : <ul style="list-style-type: none"> • Black staining; • Hydrocarbon (fuel/oil type) odours; • Man-made objects (greater than 10mm diameter); and • Fibrous materials and/or cement bonded materials. 	
pH	>6, <9	
Asbestos	<0.001%	



clarkebond

MULTIDISCIPLINARY ENGINEERING CONSULTANTS

The Cocoa House
129 Cumberland Road
Bristol
BS1 6UY

tel: +44 (0)117 929 2244

GF Suite
Bickleigh House
Park Five Business Centre
Exeter EX2 7HU

tel: +44 (0)1392 369098

7 Hatchers Mews
Bermondsey Street
London
SE1 3GS

tel: +44(0)20 7939 0959

www.clarkebond.com