

Our ref: JER10061

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Date: 29 March 2023

Via Email:
environmental.protection@redcar-cleveland.gov.uk

Dear Sir/Madam,

REDCAR ENERGY CENTRE – CONTAMINATED LAND PLANNING CONDITION

Redcar and Cleveland Borough Council

1 INTRODUCTION

RPS has been commissioned by Redcar Holdings Limited, to prepare and submit the technical matters required to discharge the pre-commencement planning conditions at the Redcar Energy Centre to the extent required to allow the permission to be lawfully implemented. This letter refers only to pre-commencement Condition 3, relating to ground conditions.

The letter considers if the available information pertaining to the ground conditions at the site provides sufficient confidence in relation to the contamination status of the site and the risk to receptors such that elements of the scheme can be delivered as an early phase of development. Where this is the case we would propose that Condition 3 is partially discharged in order to allow a material operation to take place to implement the permission.

The area considered within this letter is set out upon the plan presented within *Enclosure A*.

The remainder of this letter sets out the assessments considered, key findings, conclusions and recommendations.

2 ASSESSMENTS CONSIDERED

RPS has undertaken a detailed review of the previous assessment reports and wider available information that provide information in support of the discharge of Condition 3. The available assessment reports and information considered during our review are listed below:

- RPS, Phase 1 Preliminary Risk Assessment, June 2020 (owned by Redcar Holdings Ltd);
- RPS, Redcar Energy Centre Environmental Statement – Chapter 9: Geology, Hydrogeology and Contamination, July 2020 (owned by Redcar Holdings Ltd);
- Solmek, Phase 1: Desk Study, September 2021 (owned by Redcar Holdings Ltd);
- Solmek, Contamination Assessment Report, 2022 (owned by Redcar Holdings Ltd);

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- Tees Water Body WFD Information (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/WaterBody/GB510302509900>); and
- Tees Estuary (S Bank) Water Body WFD Information (<https://environment.data.gov.uk/catchment-planning/WaterBody/GB103025072320>).

A detailed review of the above reports and information is presented within Enclosure B. The key findings of the assessment are detailed in the following section.

3 KEY FINDINGS

The available reports have identified that the site has been subject to previous potentially contaminative land uses, including:

- Land reclamation (from the Tees Estuary) using spent coke and steel works waste.
- Teesside Works, with buildings identified in the north of the site (partial historical mapping details long rectangular buildings in the south eastern area (1980 – present), railway sidings, conveyors, roadways and auxiliary buildings (1980 – 1991).

Additionally a series of tanks are located circa 10 m to the east of the site (offsite).

Other than in respects to the tanks located to the east of the site, the historical mapping indicates that these activities were distributed across the northern part of the site with no particular focus. Whilst there are no maps for the south of the site it is considered likely that the Teesside Works extended into the south of the site. There are no records of pollution incidents on or adjacent to the site.

The site is underlain by superficial deposits comprising Tidal Flat Deposits which are classified as a Secondary Undifferentiated Aquifer, with the underlying bedrock of the Mercia Mudstone classified as a Secondary B Aquifer. There are no groundwater abstractions within 2 km of the site. The available ground investigation information indicates the presence of a perched discontinuous pockets of groundwater at the base of the Made Ground, sitting on top of the Tidal Flat Deposits. Given the wider industrial nature of the area and significant land reclamation it is considered that groundwater in the area does not represent a viable resource and should be considered a pathway rather than a receptor.

The River Tees estuary has multiple environmental designations associated with coastal habitats; with a Site of Special Scientific Interest (SSSI) on the northern site boundary; Special Protection Area (SPA) 78 m to the northwest of the site and a Ramsar Site 78 m to the northwest of the site. It is expected that whilst there will be some connectivity between the perched water at the site and the surface water to the north, that there will be limited flow and therefore the potential for migration of contaminants will be limited. It is considered that any contribution the site may be making to contaminant loadings within the River Tees will be minimal in the context of the wider area.

Whilst there are multiple coastal designations to the north of the site (SSSI, SPA and RAMSAR) indicating that surface water is a sensitive receptor, it is important to consider the Water Framework Directive (WFD) status and objectives. The WFD catchment data indicates that whilst the two local surface water bodies Tees Estuary South Bank (Ref. GB103025072320) and the Tees Water Body (Ref: GB510302509900) fail the chemical quality standards for a small number of contaminants, that

- Those failures identified in the Tees Estuary South can be attributed to 'Natural Conditions'; and
- Improvement is not considered to be required under the WFD within the Tees Water Body as it would be technically infeasible, disproportionately expensive or the failure can be attributed to 'Natural Conditions'.

In this context there is no specific WFD driver for remediation to protect surface waters.

It is considered that the above partly reflects the significant industrial legacy of the area and the presence of widespread diffuse levels of contamination.

The ground investigation undertaken at the site comprised the excavation of 19 no. trial pits advanced across site with testing of 18 no. soil samples for a range of determinants, including metals, inorganic compounds, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, and asbestos identification. During the investigation, other than the general presence of ash and clinker within the Made Ground, there was limited evidence of olfactory evidence of contamination within TP01, TP02 and TP07. The laboratory testing has identified minimal contamination, with five no. exceedances of the consultants selected guidance assessment criteria for the protection of human health for a commercial land use for Dibenzo(a,h) Anthracene and one no. exceedance for soluble sulphate. No further exceedances were identified and levels of other inorganic and organic contaminants were typically low, with the majority of contaminants having maximum concentrations at least an order of magnitude lower than the selected human health screening criteria. The exceptions to this were for arsenic, benzo(a)pyrene and benzo(b)fluoranthene, which whilst lower than the screening criteria, had maximum concentrations of the same order of magnitude as the screening criteria. Light end volatile Total Petroleum Hydrocarbons (TPH) were typically absent and on the limited number of occasions where they were identified were at least two orders of magnitude lower than the screening criteria. The chemical testing did not target the limited evidence of olfactory evidence of contamination within TP01, TP02 and TP07.

The ground investigation undertaken has provided a reasonable coverage of the site and demonstrated a simple ground model of a mixed Made Ground overlying Tidal Flat Deposits. The investigation works did not identify significantly elevated contaminant concentrations or areas of gross visual or olfactory evidence of contamination that are considered to warrant further specific investigation. The investigation did not include gas or groundwater monitoring.

4 CONCLUSIONS AND RECOMMENDATIONS

When the available data is considered with respects to Condition 3 and the potential for a phased start to development it is considered that the available ground investigation data adequately characterises the soil based contaminant concentrations to the extent required to define appropriate mitigation measures for the protection of human health. The data supports that contaminant concentrations are typically considerably below the screening criteria and there is no evidence to suggest the presence of volatile contaminants. It is considered that further specific investigation is not required to assess the risk to human health and that any risks can be addressed through implementation of a capping / cover system. A discovery strategy should be agreed for the site and further assessment should be undertaken where any further evidence of contaminant is encountered during the construction works. The discovery strategy should allow for targeting of the mild olfactory evidence of contamination within trial pits TP01, TP02 and TP07 where works are proposed in these area.

It is considered that the risk from ground gas can not be assessed with the currently available information and that the advancement of gas monitoring boreholes and a programme of gas monitoring is required to assess the need for and scope of gas mitigation. It is proposed that a series of nine boreholes are advanced at the site, penetrating the full thickness of the Made Ground and upper horizons of the Tidal Flat Deposits. Consistent with the guidance set out in CIRIA 665, and a Generation Potential Source of High and a Development Sensitivity of Low, it is considered that 12 gas monitoring rounds are required over 6 months. It is not considered that the requirement for further gas monitoring precludes the phased start to development, provided that the development undertaken in advance of the monitoring does not include enclosed structures.

It is considered that the risk to controlled waters can be considered low with the currently available data for the following reasons:

- The investigation data indicates that there is a lack of a source of gross soil contamination.
- The contaminants that have been identified are relatively low mobility.
- Groundwater is not considered to be a sensitive receptor given the aquifer status of the underlying deposits and the industrialised nature of the wider area.

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- The investigation works indicate an absence of a continuous shallow water table within the Made Ground, indicating limited connectivity to the surface water features in proximity to the site.
- Whilst there are coastal SSSI, SPA and RAMSAR sites close to the site there are no WFD objectives for improvement of chemical quality.
- The wider area has a long industrial heritage with widespread diffuse contamination sources similar to those identified at the site.
- The development proposals will include the construction of low permeability hardstanding and a sealed drainage system across the majority of the site which will reduce infiltration and the leaching of contaminants generating betterment through development.

On the basis of the above it is considered that further investigation or assessment is not required in relation to controlled waters and that the risk can be adequately addressed through implementation of a suitable discovery strategy during redevelopment.

In conclusion it is considered that the available data and level of risk to receptors does not preclude a phased start to development. A detailed discovery strategy should be developed and agreed prior to construction works setting out the lines of evidence that would be considered indicative of contamination requiring further characterisation and assessment.

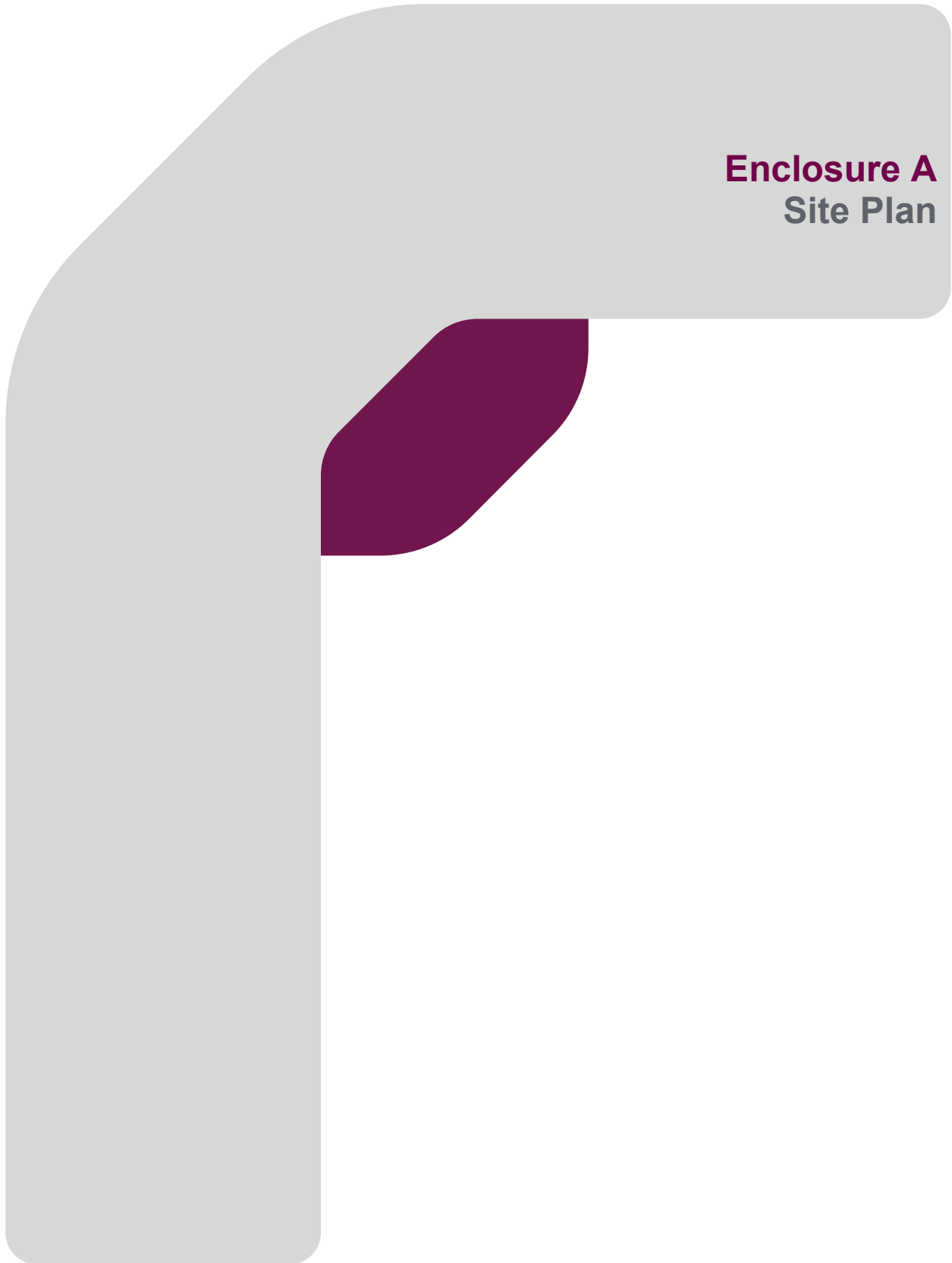
Yours sincerely,
for RPS Consulting Services Ltd

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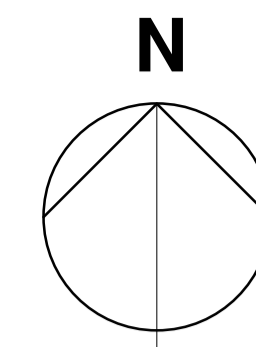
ENCLOSURES

Enclosure A Site Plan
Enclosure B Report Summary

Enclosure A
Site Plan



REFER TO LANDSCAPE STRATEGY



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Notes

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Key

- Concrete
- Landscaped Area
- Trees & Shrubs
- Aggregate Crushed Stone
- Footpath



P05	Landscape amended to north boundary, additional notes added	ET	ET	21/07/20
P04	IBA Layout amended	ET	TFH	12/06/20
P03	REC & MRF positions amended, attenuation added	ET	TFH	14/02/20
P02	66 kV Substation added, site area amended	ET	TFH	19/06/19
P01	Initial Issue	ET	TFH	26/04/19
Rev	Description	By	Ckd	Date



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Client

Project **Redcar Energy Centre**

Title **Proposed Site Plan**

Status **Preliminary** Scale @ A1 **1 : 1000** Date Created **18/04/19**
 Task Team Manager **TFH** Information Author **ET** Task Information Manager **TFH**

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Project Code - Originator - Zone - Level - Type - Role - Drawing Number

RPS Project Number **NK019216** Suitability **S0** Revision **P05**
rpsgroup.com

Proposed Site Plan
1 : 1000





Enclosure B
Report Summary

DETAILED REPORT REVIEW: REDCAR ENERGY CENTRE

1 INTRODUCTION (INC. USE OF SITE AND GENERAL PROCESSES)

The site is situated on the shore edge of the Teesmouth Estuary, at the northwestern extent of the Redcar Steelworks. The site is irregularly shaped, with an area of approximately 10.1 ha and currently comprises generally undeveloped land, with a pipeline gantry encroaching onto the site from the steelworks to the east. Most recently the site has been used for the storage of materials associated with the Redcar Bulk Terminal to the west. These activities pre date the intrusive ground investigation works.

The site is centred on NGR 455820 E, 525980 N, and located approximately 4.5 km west of Redcar town centre and 8.5 km northeast of Middlesborough town centre. Site topography generally rises from southwest to northeast, with c. 4m change in elevation.

The assessment has been based on the available reports and are listed below:

- RPS, Phase 1 Preliminary Risk Assessment, June 2020 (owned by Redcar Holdings Ltd);
- RPS, Redcar Energy Centre Environmental Statement – Chapter 9: Geology, Hydrogeology and Contamination, July 2020 (owned by Redcar Holdings Ltd);
- Solmek, Phase 1: Desk Study, September 2021 (owned by Redcar Holdings Ltd);
- Solmek, Contamination Assessment Report, 2022 (owned by Redcar Holdings Ltd);

2 SITE HISTORY

A review of historical maps indicates that the Assessment Site was reclaimed from the Tees Estuary in circa 1950 with the Redcar Jetty and associated Tramway crossing the southern extent of the site since prior to 1894 (Figure 1). Evidence of earthworks at the Assessment Site is indicated from 1952 (Figure 2) and is recorded as a Spoil Heap on maps dated 1967 – 1969 (Figure 2) (spent coke). A tramway spur extending across the centre of the Assessment Site, with evidence of earthworks extending from the tramway across the majority of the site, is recorded on maps between 1952 – 1969.

The earliest record of structures (other than the Jetty) onsite are from 1980, with long rectangular buildings in the southeastern area (1980 – present), and conveyors, roadways and auxiliary buildings (1980 – 1991) assumed to be associated with the steelworks site (Figure 4). Tanks are also recorded on adjacent land, approximately 10 m to the east, which are still present. The site is recorded as Teesside Works Redcar and is considered likely to have been part of the adjacent steelworks.

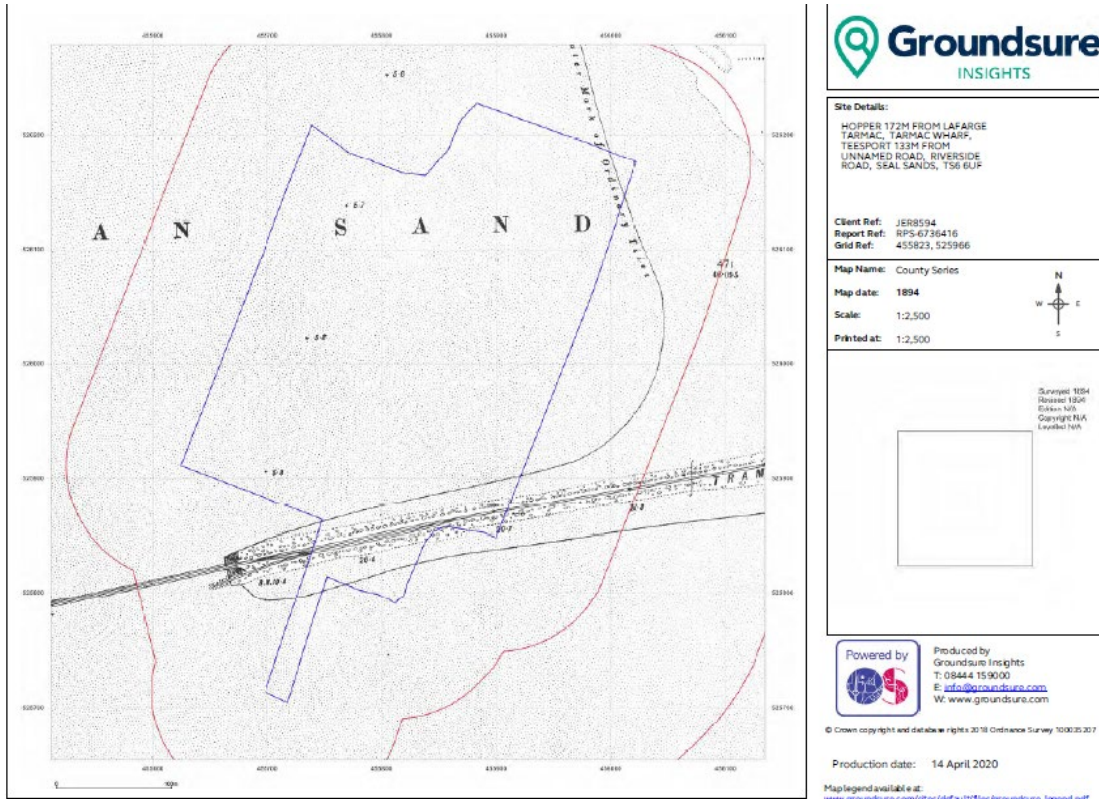


Figure 1: Historical Map Extract (1894)

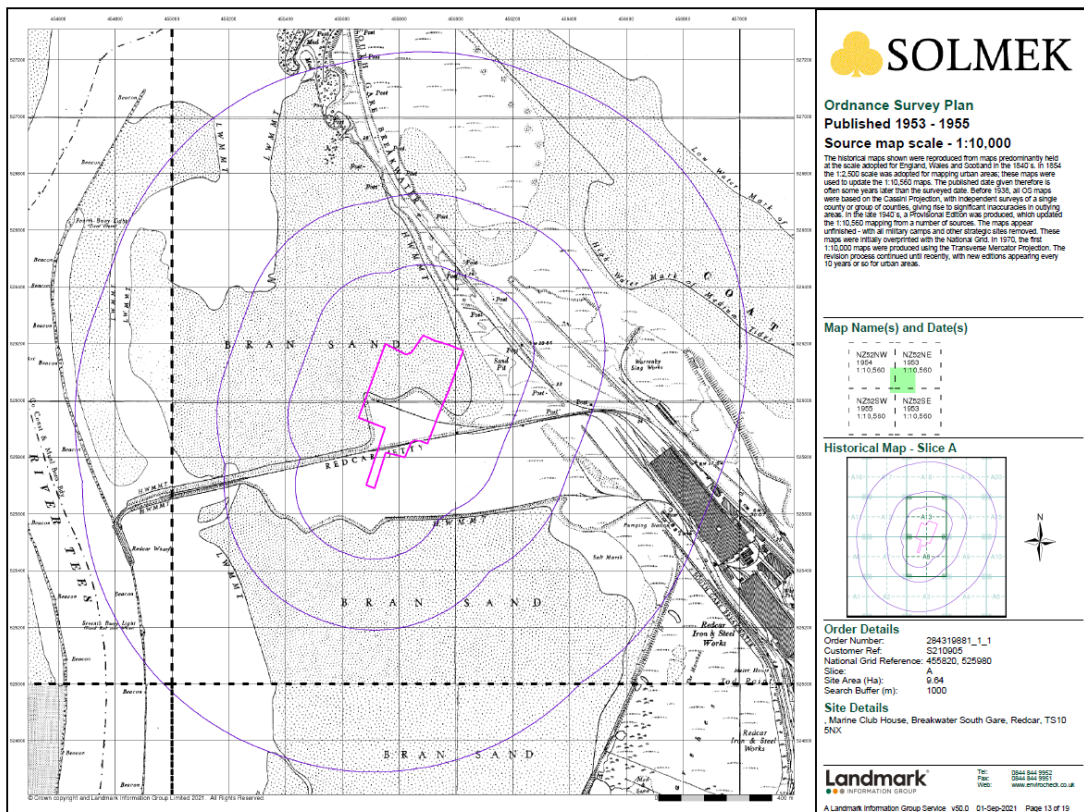


Figure 2: Historical Map Extract (1953 - 1955)

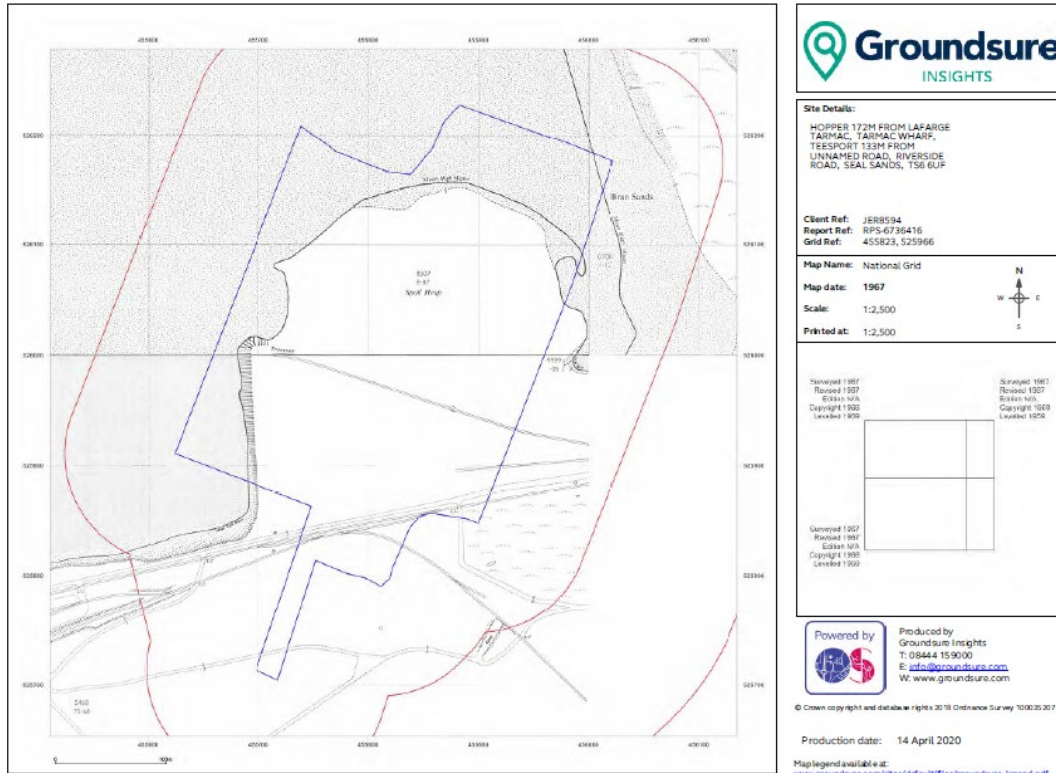


Figure 3: Historical Map Extract (1967)

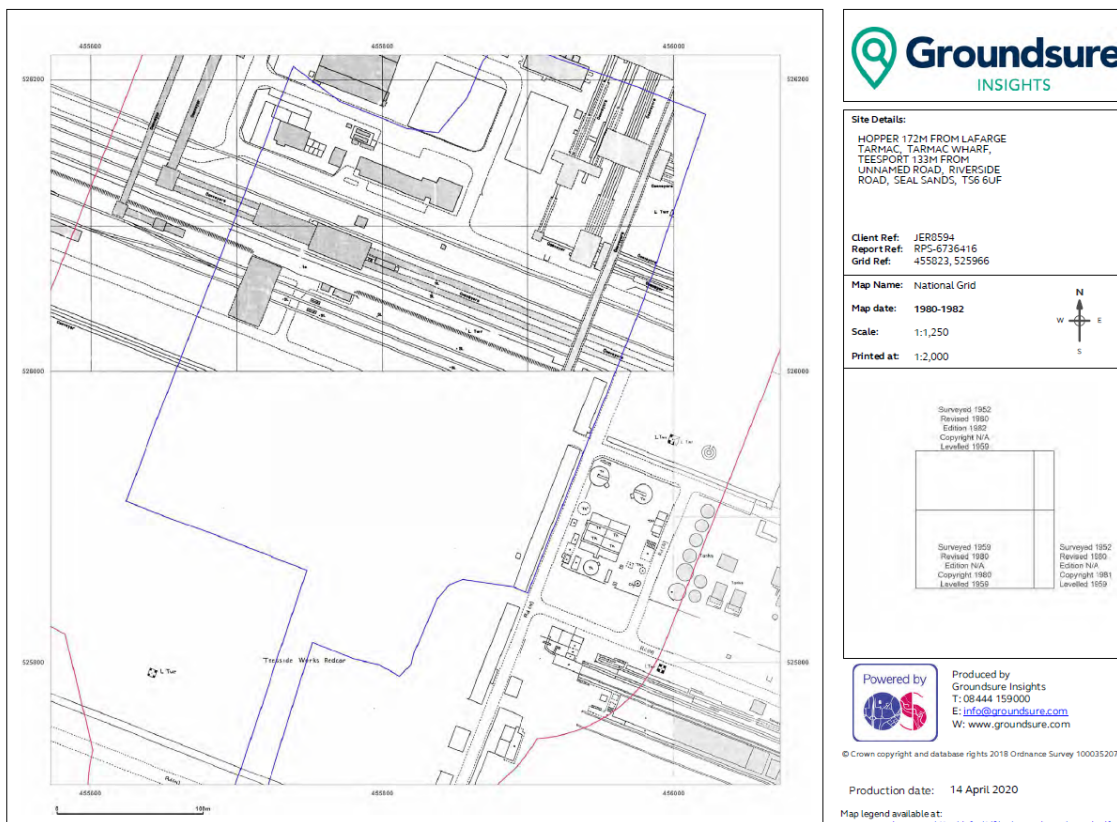


Figure 4: Historical Map Extract (1980 – 1982)

3 WIDER SETTING

Historical mapping indicates that between 1970 -1976 (Figure 5) and 1981 – 1985 (Figure 6) there was significant reclamation of land from the adjacent estuary. The mapping indicates that land up to 1 km to the south, west, and east of the site underwent some degree of reclamation, and the Teesside Works Redcar constructed in these areas. It is unclear from the mapping what materials were used for the reclamation earthworks, however given the date and proximity to the steel works it is probable that steel works waste and slag may also have been used in these areas. These mapping records therefore show that significant earthworks /reclamation works have taken place in the immediate surrounding area, resulting in large areas of Made Ground. The Made Ground underlying the Assessment Site is therefore considered to be a small part of a much larger area of Made Ground in the wider area.

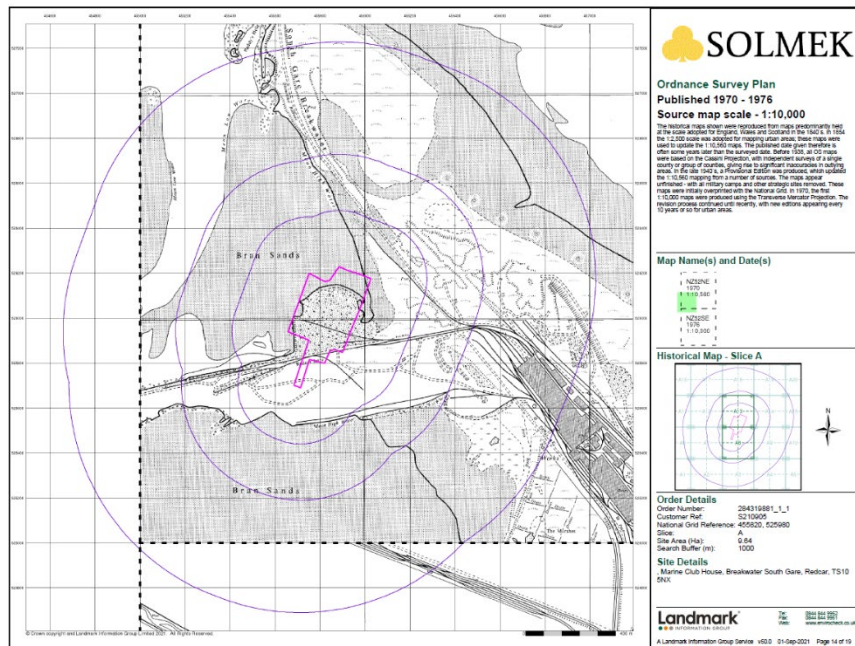


Figure 5: Historical Map Extract (1970 – 1976)

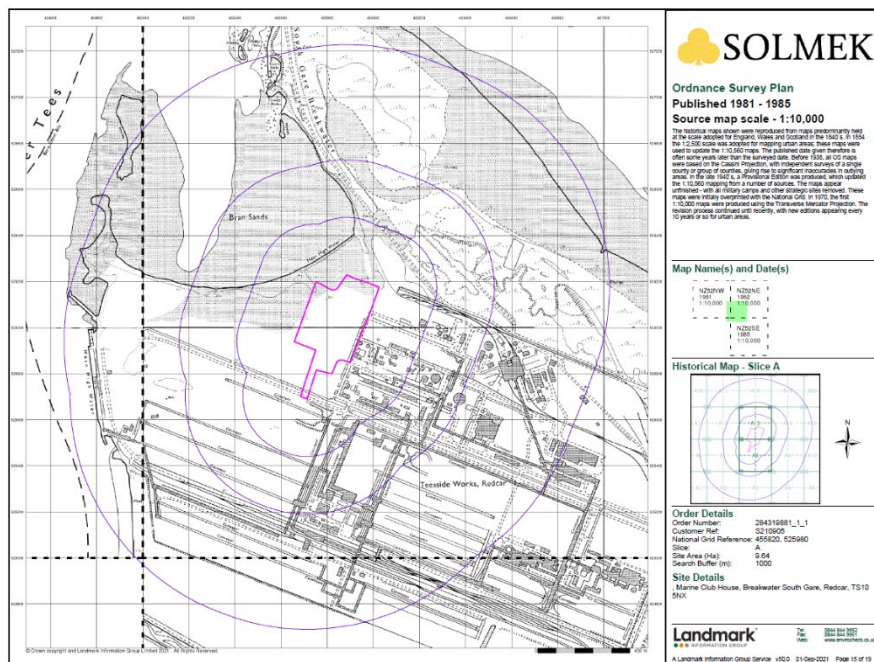


Figure 6: Historical Map Extract (1981 – 1985)

Additionally, the records suggest that the landfilling activities in the area extend significantly beyond the site as detailed on Figure 7.

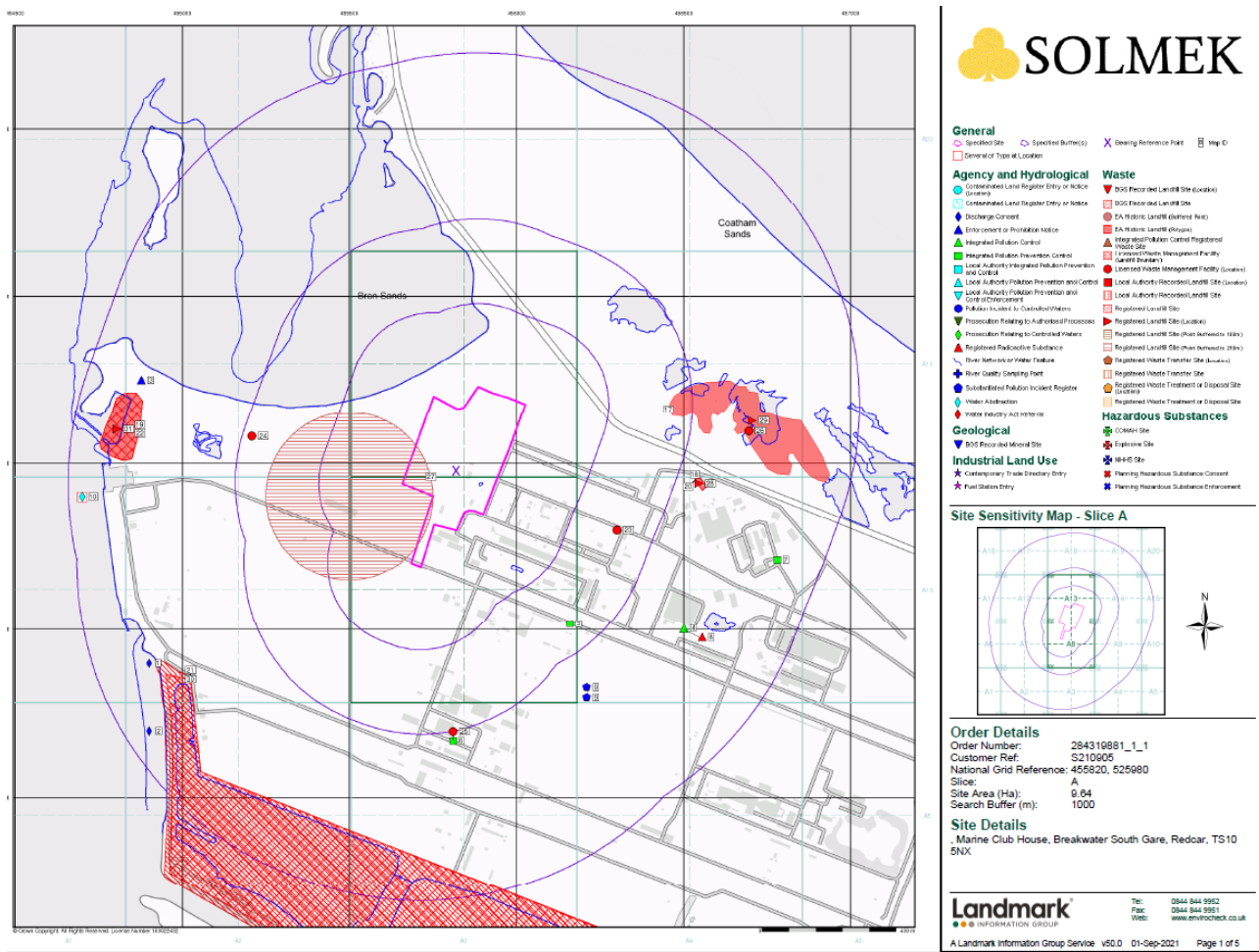


Figure 7: Landfill Records

4 SITE INFRASTRUCTURE

A number of small corrugated metal buildings are located in the eastern part of the site.

Although not confirmed, it is anticipated there may be a number of buried pipelines, drainage infrastructure and relict underground obstructions associated with past uses.

5 AUTHORISED PROCESSES AND POLLUTION INCIDENTS

5.1 Landfills and Waste Sites

The Solmek Phase 1 report indicates that a landfill was recorded onsite for the disposal of spent coke from the adjacent former steel works.

Historical mapping indicates the Assessment Site has been reclaimed from the foreshore and some maps identify the site at a spoil heap and refuse or slag heap (1970 – 1976). Anecdotal information suggest that steelworks waste in the form of slag was tipped onto the Assessment Site during the reclamation process.

5.2 COMAH Sites

The Assessment site is currently located within an operational COMAH facility. This relates to the South Teesside Company Limited, a COMAH Upper Tier Operator.

5.3 Discharge Consents and Permits

No discharge consents or processes regulated by an Environmental Permit are recorded for the Assessment Site.

5.4 Pollution Incidents

Environment Agency data indicates that there are no records of 'major' or 'significant' pollution incidents within 500 metres of the Application Site.

6 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

6.1 Geology

Made Ground

Made Ground was encountered at all exploratory locations completed as part of the Solmek Contamination Assessment report, 2022.

Where the base of Made Ground strata was proven, depths ranged between 2.50 m below ground level (bgl) to 5.50 m bgl. Maximum depth of Made Ground was not confirmed in exploratory positions TP03, TP06, TP11, and TP18, where exploratory holes were terminated within the Made Ground strata at depths ranging between 5.00 m and 5.50 m bgl.

Made Ground generally comprised of sandy gravel/gravelly sand with variable cobble and boulder content, with the gravel comprising of ash, brick, slag, concrete, with metal, glass and plastic inclusions locally. Bands of fused slag were also encountered at a number of locations.

A sulphurous odour was generally noted throughout the Made Ground.

Tidal Flat Deposits

Tidal Flat Deposits are indicated to underlie the site. These are generally recorded as locally clayey / silty gravelly sand across the Assessment Site, with cohesive deposits of firm to stiff sandy gravelly clay (less than 1.00 m thick) recorded at TP07 and TP15. These deposits were confirmed to a maximum depths of 5.90 m bgl with a total proven thickness of between 0.20 m to >0.80 m.

Bedrock

Bedrock was not encountered during the Solmek investigation, however desk study information indicates the Assessment Site to be underlain by bedrock of the Mercia Mudstone Group, described as dominantly red, occasionally green-grey mudstone and siltstone.

Groundwater

No groundwater monitoring wells have been installed at the Assessment Site as part of ground investigation works to date. However, groundwater strikes were encountered circa 50% of trial pits, which ranged in depths of between 3.70 m and 5.50 m bgl. The majority of groundwater strikes were identified at the boundary between Made Ground and the underlying Tidal Flat Deposits. This indicates that a discontinuous perched system is present, sitting on top of the Tidal Flat Deposits. This is slightly inconsistent with description of the Tidal Flats Deposits which are described as a Sand deposit.

It should be noted that due to the proximity of the Assessment Site to the estuary there may be a tidal influence on groundwater levels.

6.2 Hydrogeology

The superficial Tidal Flat Deposits are classified as a Secondary Undifferentiated Aquifer, with the underlying bedrock of the Mercia Mudstone classified as a Secondary B Aquifer. Given the aquifer designations and the absence of groundwater abstractions within a 2 km radius, these aquifers are considered to be of low sensitivity.

6.3 Hydrology

The nearest surface water body to the Assessment Site is the River Tees, located 870 m west of the site. This is classified within the Northumbria River Basin Management Plan as having chemical status of fail and ecological status of moderate.

The Water Framework Directive data for the two closest water features indicates that:

- The Tees Estuary South Bank (Ref. GB103025072320):
 - Fails with respects chemical status for the following contaminants:
 - Priority Hazardous Substances.
 - Mercury.
 - Polybrominated diphenyl ethers (PBDE).
 - Whilst there are objectives to meet good status in relation to the above they are not being implemented for the following reasons:
 - Natural conditions: Chemical status recovery time.
- The Tees Water Body (Ref: GB510302509900):
 - Fails with respects chemical status for the following contaminants:
 - Priority hazardous substances.
 - Benzo(g-h-i)perylene.
 - Mercury.
 - Polybrominated diphenyl ethers (PBDE).
 - Tributyltin Compounds.
 - Cypermethrin (Priority).
 - Whilst there are objectives to meet good status in relation to the above they are not being implemented for the following reasons:
 - Technically infeasible: No known technical solution is available.
 - Natural conditions: Chemical status recovery time.
 - Disproportionately expensive: Disproportionate burdens.

Based on the above the WFD does not require an improvement of the chemical status of these water bodies.

7 ECOLOGICAL RECEPTORS

The Assessment Site is located near a number of ecologically sensitive wetland sites that constitute as environmental receptors, shown in Figure 8. These are listed below:

- Site of Special Scientific Interest (SSSI) – The Teesmouth and Cleveland Coast, located beyond the Assessment site's northern boundary;
- Special Protection Area (SPA) – The Teesmouth and Cleveland Coast, located 78 m northwest of the Application Site; and

- Ramsar Site – The Teesmouth and Cleveland Coast, located 78 m northwest of the Application Site.

8 GEOLOGICAL DESIGNATIONS

The Assessment Site is located near a sensitive geological area:

- Site of Special Scientific Interest (SSSI) – The Redcar Rocks, located 448 metres from the Assessment Site and overlaps with the Teesmouth and Cleveland Coast SSSI.

This SSSI is also shown on Figure 8.

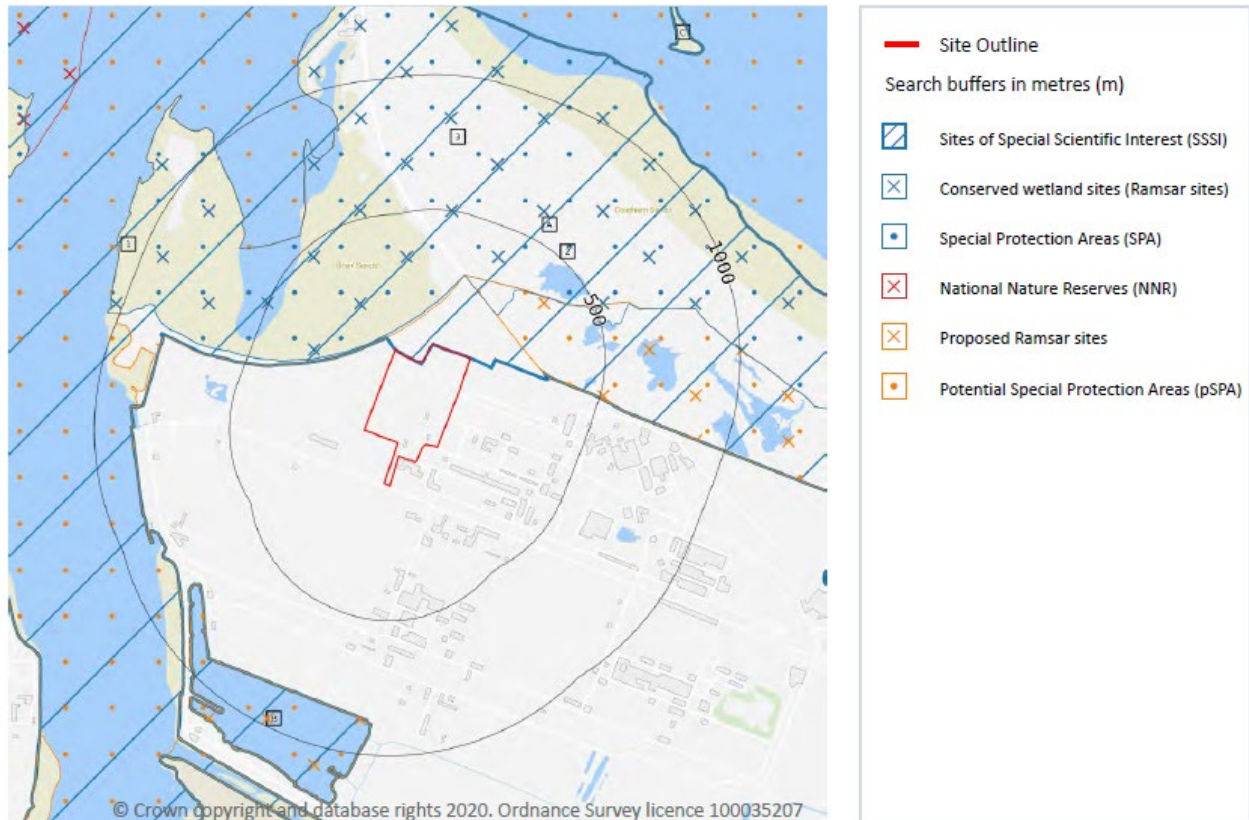


Figure 8: Ecologically Sensitive Sites

9 POTENTIAL SOURCES OF CONTAMINATION

On-Site Sources – Current

- Various sheds, cabins, containers, skip and vehicle storage presents a potential source of contamination.
- Relict infrastructure associated with the steel works such as pipelines and drainage infrastructure.
- Significant thicknesses of made ground from historical land use and earthworks/tipping of material

On-Site Sources – Historical

- Tramway/railway infrastructure in the central and southern areas of the site
- Tipping of materials during the 1950s and 1960s (recorded as a landfill for processed coke from the adjacent steelworks), likely to include process coke, ash, clinker and slag.
- Conveyors, buildings, and roadways associated with the wider steel works recorded across the Assessment Site

Off-Site Sources – Current

- Adjacent steel works featuring tanks (10 m to the southeast), pipelines, conveyors etc (recently closed)

Off-Site Sources – Historical

- Long history of heavy industry including steel making on adjacent land
- Large areas of tipping of waste material from the adjacent steel works site.
- Storage of process materials associated with the steelworks
- Railways, roadways and other infrastructure associated with the steelworks

The above sources are considered to represent potential sources of a wide range of contaminants including metals, inorganic compounds, acids, alkalis, organic solvents, PCBs, polycyclic aromatic hydrocarbons, petroleum hydrocarbons, and asbestos.

There is also potential for ground gas generating sources to be present associated with the onsite and offsite infilling of land and tipping of material from the adjacent steel works.

Although contamination sources have been identified they cannot be attributed to specific areas of the site. Instead, contamination is expected more generally across the site, predominantly due to infilling of land and tipping of material from the adjacent steel works.

10 GROUND INVESTIGATION WORKS UNDERTAKEN

Recommended GI Works

The Phase 1 Desk Study and Preliminary Risk Assessments undertaken by RPS and Solmek identified a number of potentially active pollutant linkages which required further assessment through a Phase 2 Geo-environmental Site Investigation. Generally, a low to moderate risk was provided for various receptors. The Phase 1 reports did not identify specific features present onsite that could be a potential source of contamination. Instead, the Phase 1 reports identified that contamination would be present generally across the site, predominantly due to infilling of land and tipping of material from the adjacent steel works. In the absence of specific features representing a potential source of contamination, a non-targeted investigation was undertaken. Both reports recommended the following works were undertaken:

- Advancement of a combination of shallow and deep trial pits and boreholes across the site targeting identified potential sources and pollutant linkages
- Installation of groundwater and ground gas monitoring wells
- Collection of soil and groundwater samples for chemical analyses for contaminants of concern
- Ground gas monitoring
- Assessment of ground conditions and generic quantitative risk assessment of soil and groundwater chemical analysis results, and recommendations (where necessary) for remediation/mitigation measures to ensure that any identified potential pollutant linkages are not active upon redevelopment of the site.

GI Works Undertaken to Date

Ground investigation works were undertaken by Solmek between 8th and 10th of June 2022 and included the following:

- 19 no. machine excavated trial pits (TP01 and TP19) were dug to a maximum depth of 5.90 m bgl. A non-targeted investigation method was used, with investigation positions located to provide geographical coverage rather than targeting particular potential contaminative features.
- The base of the Made Ground strata was proven in the majority of exploratory locations, with the exception of positions TP03, TP06, TP11, and TP18 which were terminated within Made Ground

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- Collection and analysis of 18 no. soil samples from the Made Ground and tested for metals, inorganic determinants, TPH's, PAH's and asbestos identification screening.
- Collection and analysis of soil samples from the Made Ground for Waste Acceptance Criteria (WAC) testing.
- Results were compared to relevant Guidance Acceptance Criteria for a Commercial end land use.
- No analysis was undertaken of the underlying superficial deposits.

11 PROVEN CONTAMINATION AT THE ASSESSMENT SITE

11.1 Soil Contamination

During the Solmek ground investigation olfactory signs of contamination were noted within both the Made Ground and underlying superficial deposits, across the site. A sulphurous odour was recorded within Made Ground and a chemical odour was recorded within superficial deposits within TP01 and TP02 in the south of the site. There was no recorded evidence of oil staining or significant visual evidence of contamination.

Generally low levels of contamination have been identified within site soils, with only six exceedances of the relevant GAC for a commercial end use recorded out of the 18 no. samples analysed. One no. sample recorded a sulphate concentration above the GAC for a commercial end use, with exceedances of the dibenz(a,h)anthracene GAC recorded at five no. locations. The recorded exceedances are listed in Table 1 and their location shown on Figure 1 below. As stated above, in the absence of specific contaminative features onsite these exceedances are attributed to the infilling of land and tipping of material from the adjacent steel works shown to have occurred across the site.

No further exceedances were identified and levels of other inorganic and organic contaminants were typically low, with the majority of contaminants having maximum concentrations at least an order of magnitude lower than the selected human health screening criteria. The exceptions to this were for arsenic, benzo(a)pyrene and benzo(b)fluoranthene, which whilst lower than the screening criteria, had maximum concentrations of the same order of magnitude as the screening criteria. Light end volatile Total Petroleum Hydrocarbons (TPH) were typically absent and on the limited number of occasions where they were identified were at least two orders of magnitude lower than the screening criteria.

The updated conceptual model produced by Solmek following the ground investigation assigned the following risk ratings to the identified pollutant linkages between soil contamination and the following receptors:

- Future site users: Moderate risk – localised contamination encountered will be mitigated by proposed structure footprint/hardstanding
- Users during development (construction workers): High risk – Mitigation measures required during construction such as PPE
- Users of surrounding land: Moderate – Mitigation measures required such as damping down to suppress dust generation
- Superficial Aquifer: Low – Low sensitivity aquifer therefore not considered to be at risk from encountered contamination. However, no chemical analyses of superficial soils or groundwater samples was undertaken to inform the assessment.
- Bedrock Aquifer: Low – Low sensitivity aquifer therefore not considered to be at risk from encountered contamination. However, no chemical analyses of superficial soils or groundwater samples was undertaken to inform the assessment.

Table 1– Evidence of Contamination within Solmek Ground Investigation 2022

Exploratory Hole	Contamination of Concern	Depth (m bgl)	Stratum	Assessment Criteria – Commercial at 6% SOM (mg/kg unless otherwise stated)	Concentration (mg/kg unless otherwise stated)
TP03	Sulphate	1.80 – 1.90	Made Ground - Granular	2000 (mg/l)	2200 (mg/l)
TP01	Dibenzo(a,h) Anthracene	0.10 – 0.20	Made Ground - Granular	3.6	7.7
TP05	Dibenzo(a,h) Anthracene	2.50 – 2.70	Made Ground - Granular	3.6	4.2
TP07	Dibenzo(a,h) Anthracene	3.10 – 3.20	Made Ground - Granular	3.6	5.4
TP10	Dibenzo(a,h) Anthracene	0.70 – 0.80	Made Ground - Granular	3.6	5.5
TP11	Dibenzo(a,h) Anthracene	3.70 – 3.80	Made Ground - Granular	3.6	4.5

The locations of these exceedances are set out in Figure 9.

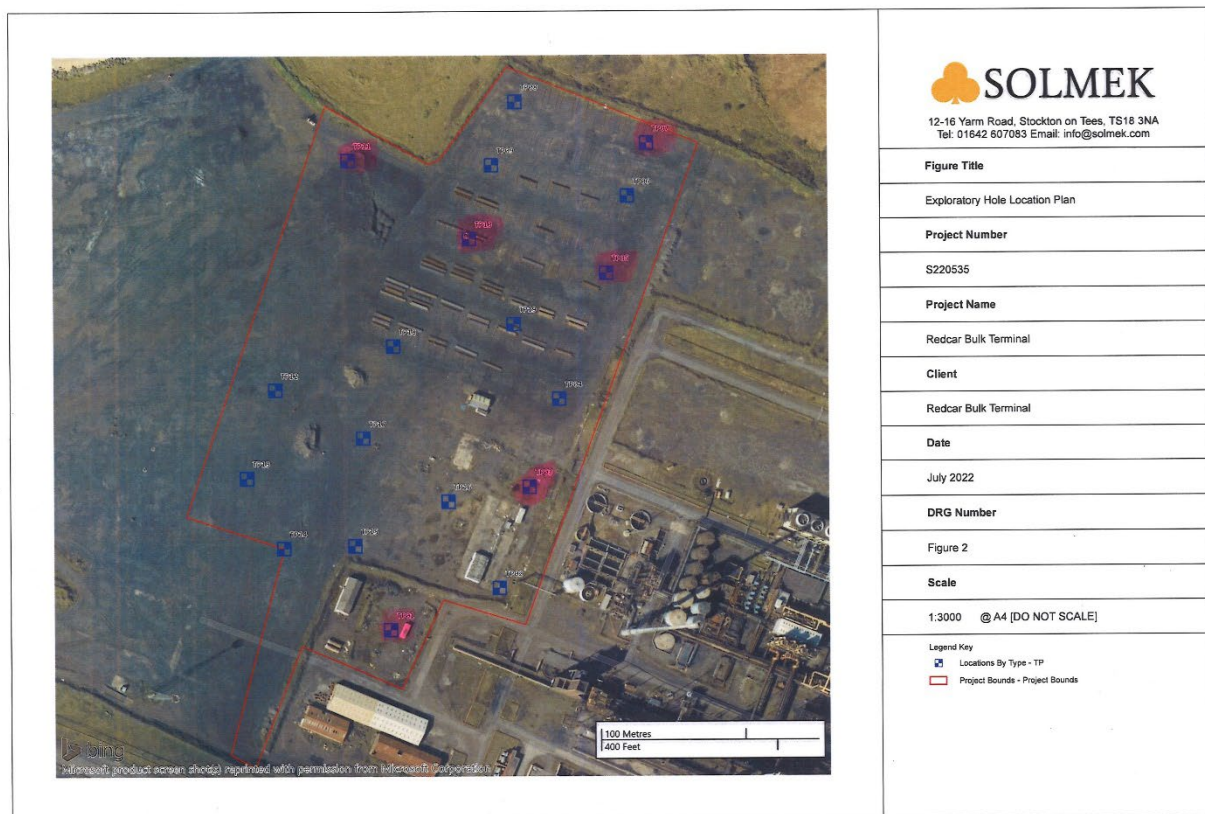


Figure 9: Exploratory Hole Plan Highlighting Locations of exceedances

Two of the above exceedances (TP01 and TP07) are within the trial pits with identified olfactory evidence of contamination, albeit at different depths.

11.2 Groundwater Contamination

No groundwater monitoring wells were installed as part of the Solmek ground investigation therefore no analyses of groundwater samples have been undertaken.