

REDCAR EFW FACILITY: OUTFALL PIPE

Phase 1 Habitat Survey Briefing Note

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1 INTRODUCTION

RPS Consulting Services Ltd (RPS) was commissioned to undertake an Extended Phase 1 Habitat survey of the route of an outfall pipe for the proposed Redcar Energy Centre (REC) within the Redcar Industrial Area. The location of the proposed development and the route of the potential outfall pipe, and survey area is provided in Figure 1. The Teesmouth and Cleveland Coast SSSI borders the Application Site to the west and crosses the heavily modified shoreline where the potential outfall pipe will be located.

1.1 Proposed Works

The outfall pipe would be installed by a single excavator, which would excavate a trench approximately 900mm – 1500mm wide (subject to pipe width), install a steel drag box shutter, install bedding, lay 2.5m lengths of precast concrete pipe 300mm – 900mm wide (subject to final design), install surround and backfill. Pipe installation would proceed at a rate of approximately 20m – 30m per day and the pipe would be progressively backfilled to reinstate the ground. Excavated material would be temporarily stored on one side of the trench prior to backfill. No additional fill or topsoil would be used on site.

2 METHODOLOGY

Surveys followed the standard guidance for Phase 1 Habitat surveys (JNCC, 2010¹) with the indicative route of the outfall pipe (as provided for the proposed development's planning application) buffered by 50m. Additional time was also spent during the surveys searching for indicative signs of protected or notable species and recording the suitability of habitats to support these. Previous ecology surveys completed by RPS for the Redcar Energy Centre (REC) planning application covered the redline boundary for the REC (as shown on Figure 1) and a 100m buffer of the proposed development, the results of which were reported in the REC Ecological Technical Appendix to the EIA in July 2020. These found limited suitability for the REC site and the immediate surrounding area within the former industrial zone to support protected species, with habitats dominated by bare ground, and areas of scattered scrub and poor semi-improved grassland.

2.1 Great Crested Newts (GCN)

Habitat Suitability Assessment

A small swamp / shallow wetland to the north of the survey area, 41m from the pipe route was assessed for its suitability to support GCN. The GCN Habitat Suitability Assessment (HSA) survey uses the Habitat Suitability Index (HSI) as described in ARG UK Advice Note 5 (2010). The HSI takes into account ten key habitat criteria which influence the presence or likely absence of GCN, including factors such as the size, water quality, permanence, shading, and macrophyte cover of potential breeding ponds. The assessment also includes the quality of the surrounding terrestrial habitat which should ideally comprise a mosaic of rough grassland, scrub, and woodland, with opportunities for shelter and hibernation, as well as other potential breeding ponds. Ponds which support high densities of fish and/or waterfowl and those which are very shallow, dry-up regularly, or are polluted are generally considered to be unsuitable (Gent and Gibson, 2003).

Each criterion is scored according to its suitability and the resulting HSI scores, which are between 0 and 1, provide an indication as to the likelihood of a pond's potential to support GCN. Ponds with high scores are more likely to support GCN than those with low scores.

The HSI score bands presented in Table 1 have been developed to provide a rough guide as to the likelihood of ponds surveyed to support GCN based on their HSI scores. These scores act as a guide to the suitability of waterbodies for GCN; however, professional judgement is applied to these scores to give the final suitability of any pond assessed taking into consideration factors such as the absence of GCN in the search of records and signs of the species on site together with the substantial industrial and estuarine character of the surrounding area.

Table 1: GCN Habitat Suitability Index (HSI)

HSI Score	Pond Suitability
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

¹ JNCC (2010). Handbook for Phase 1 Habitat survey: a technique for environmental audit (revised reprint). Joint Nature Conservation Committee, Peterborough.

3 RESULTS

Table 2 below summarises the habitats recorded during the Phase 1 Habitat survey of the potential outfall pipe route and the aggregate area these covered within the survey buffer.

Table 2: Phase 1 Habitats identified during the course of the survey and their aggregate area.

Habitat Code	Phase 1 Habitat	Area (m2)
B2.2	Neutral grassland – semi-improved	44539.82
F1	Swamp	496.86
G1.6	Standing Water - brackish	1718.83
H1	Intertidal	1222.44
H4	Boulders/rocks above high tide mark	275.20
I2.2	Artificial - spoil	24388.08
J3.6	Buildings	4090.26
J4	Bare ground	29749.84
Total		106481.33

The pipeline route has been proposed through the area of lowest sensitivity, between two internal access roads, adjacent to a fence line until it terminates at the shoreline of Tees Bay where there is an existing outfall pipe located (Photo 1). The outfall area comprises pebbles at the lower shoreline with boulders and debris located at the top of the bank. Further west of this the area becomes intertidal with areas of standing water. The majority of the Survey Area is comprised of spoil and bare ground. A strip of semi-improved grassland (Photo 2) with occasional low-growing scrub including dog rose and Japanese rose is present within the centre of the Survey Area. The quality of grassland habitat declines eastward across the survey area. An extended species list for these areas is provided in Appendix B. There are a few buildings and built structures/features within the survey area (Photo 3). A small area of swamp or shallow wetland is located at the northern extremity of the buffer, approximately 41m from the pipe route (Photo 4).



Photo 1: Location of the terminal end of the potential outfall pipe.



Photo 2: Semi-improved neutral grassland habitat within the survey area.



Photo 3: Buildings and bare ground within the survey area



Photo 4: Area of wetland 41m to the north of the pipeline route

3.1 Protected Species

Ecological records within a 2km radius of the site were requested from Environmental Records Information Centre North East (ERIC NE) biological records service as part of the previous ecological assessment of the REC site. Data requests were limited to records for protected species recorded within the last ten years and sites of nature conservation interest. No records of GCN were returned, though records of small heath and wall butterfly, grey and common seal and brown hare were returned.

No signs of protected species were recorded during the surveys with limited habitat suitable of supporting protected species recorded. A small swamp or shallow wetland area was identified to the north of the site during the survey and was assessed for its potential to support GCN. A detailed description of the wetland can be found below in Table 3 with full results of the HSI shown in Table 4.

The areas of grassland offer suitable foraging habitat for the dingy skipper butterfly. This is a UKBAP species listed in Section 41 of the NERC Act considered of principal importance for the conservation of biodiversity in England. Suitable conditions for the species occur where foodplants grow in a sparse sward, often with patches of bare ground in a sunny, sheltered situation. Taller vegetation is also required for shelter and roosting.

The majority of habitat within the survey area (spoil and bare ground) offers limited suitable potential to support any protected species. This is in line with the findings of previous ecology surveys conducted for the proposed development's planning application (RPS, 2020²).

² RPS (2020). Redcar Energy Centre: Appendix 7.2 - Ecology Technical Appendix

Table 3: Swamp Assessed for Suitability to Support GCN


Description	Grid reference	Photo Reference
<p>An area of wetland supporting species including <i>Typha psp.</i>, <i>Phragmites australis</i>, <i>Carex sp.</i>, <i>Mentha aquatica</i> and <i>Juncus spp.</i> It is a pond at the end stage of succession. No waterfowl were recorded at the time of survey and due to the dense vegetation of the swamp it is considered that fish are unlikely. Vegetation cover was 80% whilst there was less than 10% visible water. There is 100% shade on the water from the emerging vegetation. Although the water quality appeared good the water may well be saline due to the coastal setting. It is isolated from other water bodies by the Tees Estuary and Tees Mouth as well the bare ground and spoil expanses which dominate the industrial setting. There is limited terrestrial habitat connectivity along the narrow grassland strip running eastwards to the next closest waterbody 950m east. It is separated from the pipeline route by semi-improved grassland and a strip of bare ground.</p>	NZ 55094 26023	

Table 4: Habitat Suitability Index

Water body	Location (SI ₁)	Pond Area (SI ₂)	Permanence (SI ₃)	Water Quality (SI ₄)	Shade (SI ₅)	Waterfowl (SI ₆)	Fish (SI ₇)	Pond count (SI ₈)	Terrestrial habitat (SI ₉)	Macrophytes (SI ₁₀)	HSI Score	Pond suitability
Wetland	A1	3500m ² 0	Never dries 0.90	Good 1.00	100% 0.2	Absent 1	Absent 1	2 0.55	Moderate 0.67	100% 0.8	0.65	Average

Whilst the swamp was determined to provide Average suitability for GCN based on the HSI scoring matrix, given that it is highly isolated due to the barriers to GCN movement caused by the coastal setting, surrounding industrialised land use and habitat types and considering the lack of historical records, the likelihood of GCN presence is considered to be very low.

3.2 Invasive Species

Invasive species including Japanese rose (Photo 5) and wall cotoneaster (Photo 6) were recorded towards the west of the site where the outfall pipe will be located. An additional stand of Japanese rose was located further east toward the centre of the site. A record of montbretia was also recorded just north of the 50m buffer.



Photo 5: Japanese rose present within the site.



Photo 6: Wall cotoneaster present within the site.

3.3 Limitations

The grassland on site has been mapped as semi-improved neutral though indicator species including yarrow (*Achillea millefolium*), bird's foot trefoil (*Lotus corniculatus*) and narrow leaved ragwort (*Senecio inaequidens*) were recorded on site indicate that the habitat could be unimproved grassland. Due to the industrial setting, the grassland is almost certainly semi-improved. The survey was conducted in late October meaning that many plants within the survey area had died back for autumn. However, given the nature of the proposed work as detailed in Section 1.1; i.e. being temporary and fully reversable, this is not considered to materially alter the recommendations of the report. An extended species list for these areas is provided in Appendix B.

4 DISCUSSION AND CONCLUSIONS

The site sits on a well-studied stretch of coastline and no records of GCN were returned from the records search in the last 10 years (RPS, 2020). Whilst the swamp was determined to provide Average suitability for GCN based on the HSI scoping matrix, given that it is highly isolated due to the barriers to GCN movement caused by the coastal setting and surrounding industrialised land use and habitat types and the lack of historical records, the likelihood of GCN presence is considered to be very low.

The swamp is in the latter stages of succession, being dominated by dense common reed and bulrush, though a small patch of open water does exist within the centre of the swamp. Without management, the habitat suitability for GCN is likely to deteriorate in the coming years as the density of vegetation increases and open water, an important resource for displaying male newts during the breeding season, diminishes.

The proposed works involve the construction of an outfall pipe, discharging to the Tees Mouth. The excavation for the pipeline would be approximately 0.9m – 1.5m wide along the route (Figure 1). The works are temporary, entirely reversible, do not affect potential GCN hibernation habitat and can be undertaken in such a way as to avoid any impact on GCN.

Taking into consideration the very low likelihood of GCN presence in the swamp together with the proposed methodology for the construction works, the separation distance and the temporary and entirely reversible nature of the works during the construction phase the resulting residual effects to GCN during the construction and operational phases is assessed to be neutral/negligible.

The Teesmouth and Cleveland Coast SSSI borders the Application Site to the west and crosses the shoreline where the potential outfall pipe will be located. The shoreline is considered to offer suitable habitat for species associated with the Teesmouth and Cleveland Coast SSSI. The Tees is heavily modified and the few semi-natural habitats that remain are nestled amongst industrial development including the busy container ports. The area comprises rocks which may provide winter habitat for bird species, however the Tees Estuary is a heavily modified water body and the drainage outfall is proposed in a location of the Tees Estuary shoreline that is already affected by hard engineering structures so in terms of physical changes to the shoreline from the outfall there will be no further impact on what is an already altered section of the coastline. As such, the construction of the outfall is not considered likely to be significant from a habitat loss perspective.

The areas of grassland within the survey area were assessed as offering suitable foraging habitat for the dingy skipper butterfly. The installation of the pipe route will affect only a small part of the area surveyed and will be temporary and reversible. The turfs will be stored on site to enable rapid recovery of the disturbed vegetation, with the ground being reinstated progressively during construction. Where the works lead to additional patches of bare ground, this is considered favourable for dingy skipper. As such, the residual effects of the proposed works during the construction and operational phase are neutral/slight beneficial for dingy skipper butterfly.

Care should be taken during the construction of the pipe and outfall to avoid spreading the identified invasive species.

In summary, therefore, the survey area was found to be generally low in ecological value and it is concluded that there is no ecological constraint to the proposed route or outfall location.

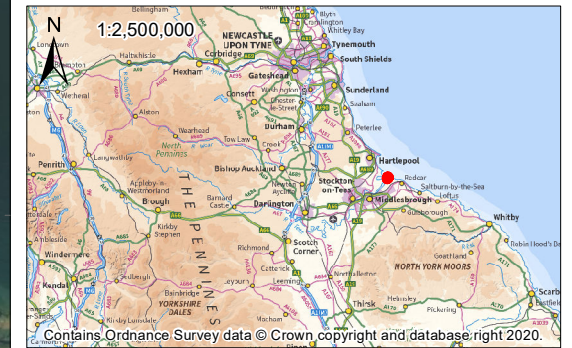


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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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- Legend**
- Site boundary
 - Indicative outfall pipeline route
 - Extended phase 1 habitat survey area (50m buffer)



Rev	Description	By	CB	Date

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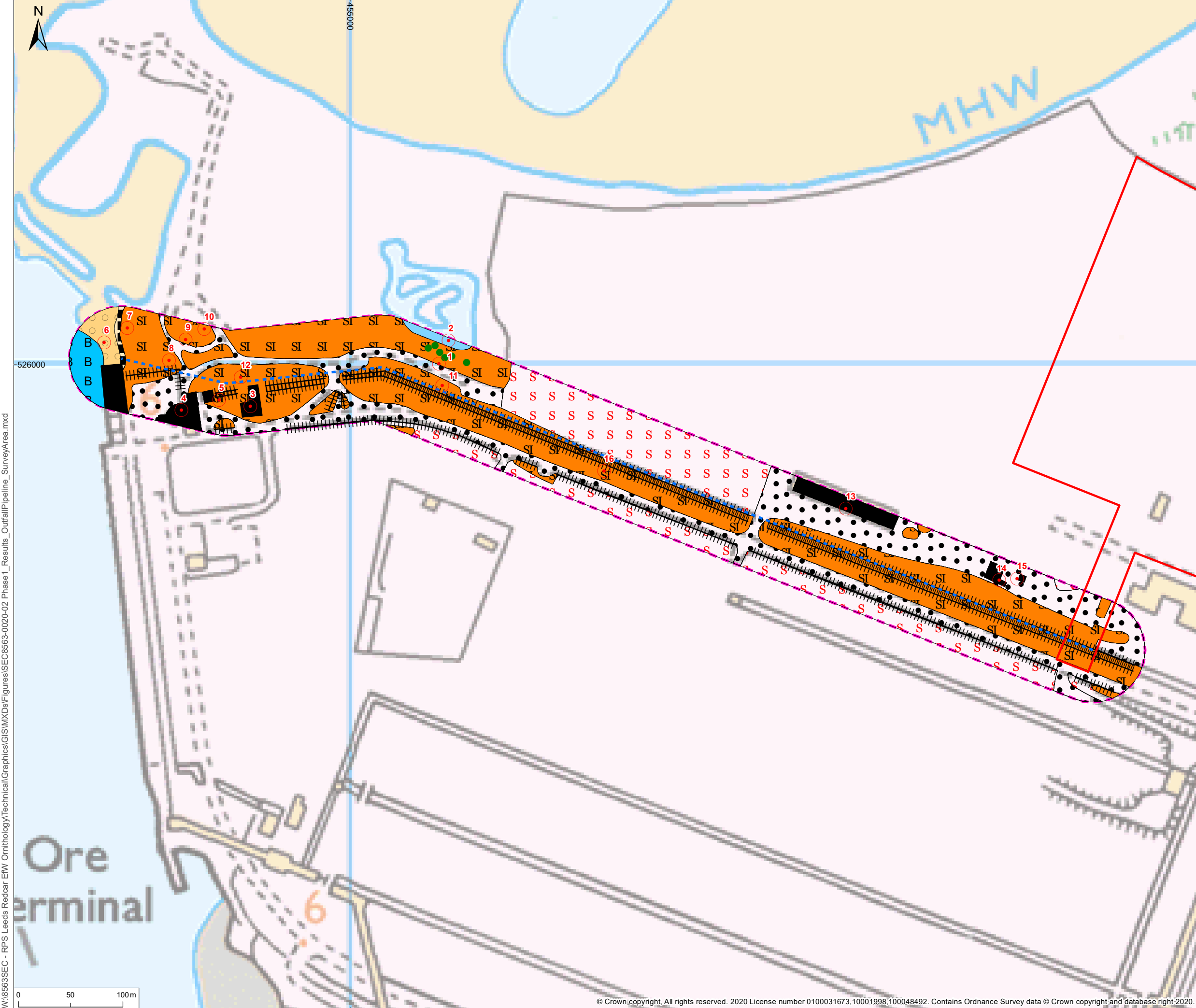
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Project Redcar Energy Centre

Title Site Location and Survey Area

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- Legend**
- Site boundary
 - Indicative outfall pipeline route
 - Extended phase 1 habitat survey area (50m buffer)
- Phase 1 Survey Results**
- B2.2 - Neutral grassland - semi-improved
 - F1 - Swamp
 - G1.6 - Standing water - brackish
 - H1.2 - Intertidal - shingles/cobbles
 - H4 - Boulders/rocks above high tide mark
 - I2.2 - Spoil
 - J3.6 - Buildings
 - J4 - Bare ground
 - J2.4 - Fence
 - A3.1 - Broadleaved Parkland/scattered trees
 - Target note

Rev	Description	By	CB	Date



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 Title Phase 1 Habitat Survey Results

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Project Number	Scale @ A3	Date Created
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Figure Number		Rev
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Appendix A

Target Notes

Target Notes				
Ref	TN ID	Easting	Northing	Note
1	1	455085	526001	A small copse of semi-mature trees including <i>Fraxinus excelsior</i> , <i>Acer pseudo-platanus</i> and <i>Salix</i> sp.
2	2	455094	526023	An area of swamp supporting species including <i>Typha</i> sp., <i>Phragmites australis</i> , <i>Carex</i> sp., <i>Mentha aquatica</i> and <i>Juncus</i> sp. No waterfowl were recorded, and due to the nature of the wetland it is considered that fish are unlikely. Vegetation cover was 80% whilst there was less than 10% over the surface of the wetland. The water quality appeared good.
3	3	454904	525960	A connecting point for a number of underground pipes
4	4	454838	525956	An industrial building of corrugated metal and brick construction with a flat roof.
5	5	454874	525966	A small industrial building of brick construction with a flat roof.
6	6	454764	526021	An area of shore along the Tees Estuary. The habitats present comprise pebbles at the lower shore with boulders and debris at the top of the bank. There is a small existing outfall into the river at this point.
7	7	454786	526035	Small stands of Japanese rose
8	8	454826	526004	A small stand of Japanese rose
9	9	454842	26024	A small stand of wall cotoneaster
10	10	454860	526034	A small stand of wall cotoneaster
11	11	455088	525980	A small stand of Japanese rose
12	12	454895	525988	A small stand of marram grass
13	13	455475	525862	An industrial building of sheet material construction. It has a pitched, corrugated sheet roof.
14	14	455622	525793	A small weighbridge
15	15	455639	525795	A lighting tower
16	16	455243	525898	Areas of good quality semi-improved grassland, potentially unimproved grassland, are present across the site though reducing in quality towards the east of the survey area.

Appendix B

Species List

Species List	
Habitat	Semi-improved neutral grassland
Yarrow	<i>Achillea millefolium</i>
White clover	<i>Trifolium repens</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Black medick	<i>Medicago lupulina</i>
Daisy	<i>Bellis perennis</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Scentless mayweed	<i>Tripleurospermum inodorum</i>
Common restharrow	<i>Ononis repens</i>
Narrow leaved ragwort	<i>Senecio inaequidens</i>
Cock's foot	<i>Dactylis glomerata</i>
Fescue	<i>Festuca sp.</i>
Meadow grass	<i>Poa sp.</i>
Dandelion agg.	<i>Taraxacum officinale</i>
Bramble	<i>Rubus fruticosus</i>
Spear thistle	<i>Cirsium vulgare</i>
Common toadflax	<i>Linaria vulgaris</i>
Perennial wall rocket	<i>Diplotaxis tenuifolia</i>
Colt's foot	<i>Tussilago farfara</i>
Yellow wort	<i>Blackstonia perfoliata</i>
Salad burnet	<i>Sanguisorba minor</i>
Dog rose	<i>Rosa canina</i>
Willow sp.	<i>Salix sp.</i>
Bush vetch	<i>Vicia sepium</i>
Mugwort	<i>Artemisia vulgaris</i>
Broadleaved willowherb	<i>Epilobium montanum</i>
Rosebay willowherb	<i>Chamaenerion angustifolium</i>
Japanese rose	<i>Rosa rugosa</i>