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Shadow HRA

Michael Colliery Outfall

George Leslie Ltd

GEORGE LESLIE LTD
CIVIL ENGINEERING CONTRACTORS

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Executive Summary

The project is to install a permanent system to pump water from the former Michael Colliery, replacing the current temporary system. The site lies adjacent and within the Firth of Forth Special Protection Area (SPA) and there is the potential for development in this area to impact the SPA and its designated features. This document is a Shadow Habitats Regulations Appraisal (SHRA) in order to provide information in a format to allow the Competent Authority to undertake the Habitats Regulations Appraisal required under the Conservation (Natural Habitats, &c) Regulations 1994 (as amended).

The Firth of Forth SPA is a large SPA covering the intertidal and inshore areas of the Firth of Forth, which is designated primarily for its important waterbird populations, both wintering and passage species. Due to time constraints, no surveys were undertaken to support this SHRA and the assessment is based on Wetland Bird Survey (WeBS) data.

Following the screening stage of the SHRA, it was considered that the area provides supporting habitat to a number of species for which the SPA has been designated and it was concluded there is a likely significant effect on the SPA bird populations, triggering the need for Appropriate Assessment.

The Appropriate Assessment concluded that the works may have some localised effects, however, these would not negatively impact conservation objectives of the SPA and as such there would be no adverse effect on the integrity of the SPA as a result of the project.

1 Introduction and background

There is a requirement to pump water from the former Michael Colliery, located near East Wemyss, Fife. The project proposed here is to develop a permanent pumping system to replace the temporary one which is currently in use.

Because the site is adjacent to the Firth of Forth Special Protection Area, a Habitats Regulations Appraisal will be required.

Atmos Consulting Ltd have been commissioned by George Leslie Ltd to undertake a Shadow Habitats Regulations Appraisal for the works to be done. This it to provide information in a format to allow the Competent Authority to undertake the Habitats Regulations Appraisal required under the Conservation (Natural Habitats, &c) Regulations 1994 (as amended).

1.1 Background

The site lies adjacent and within the Firth of Forth Special Protection Area (SPA). As such, there is the potential for development in this area to impact on the SPA and its designated features.

In Article 6(3) of the EC Council Directive 92/43/EEC[1], on the conservation of natural habitats and of wild fauna and flora – The Habitats Directive, any project or plan which is not directly connected with or necessary to the management of a European site but would be likely to have a significant effect either alone or in combination with other plans or projects shall be subject to an Appropriate Assessment of its implications for the European site in view of that site's conservation objectives. In light of the findings and subject to the provisions of Article 6(4) of the Habitats Directive, the Competent Authority shall agree to the plan or project only after ensuring that it will not affect the integrity of the European site. Whilst mitigation may be taken into account at the Appropriate Assessment stage it is not to be considered when initially screening the project in order to determine whether or not an Appropriate Assessment is needed.

Article 6(4) makes provision that if a negative assessment is made of the implications of the project on the site, and in the absence of other alternative solutions, the plan or project can go ahead for imperative reasons of overriding interest (IROPI) but that compensatory measures must be taken to ensure that the overall coherence of the site is protected/maintained. A distinction is to be drawn between mitigation and compensation.

Since this is a project, as defined by the Habitats Directive, and transposed into Scottish law in Conservation (Natural Habitats, &c) Regulations 1994 (as amended), which is not directly connected with or necessary to the management of the Firth of Forth SPA, then a Habitats Regulations Assessment (HRA) will be required. This will be carried out by the Competent Authority, advised by the Statutory Nature Conservation Body (in this case NatureScot).

[1] Although the UK has now left the EU, the Habitats Directive provisions remain in force through Scots Law

The purpose of this report, is to carry out a shadow HRA, to present the required information to the Competent Authority and NatureScot. To do this, four stages of assessment will be carried out:

- Screening – is there a likely significant effect on the SPA as a result of the project?
- Appropriate Assessment
- Assessment of Alternatives
- Finalisation of HRA

1.1.1 Firth of Forth SPA

The Firth of Forth SPA is a large SPA covering the intertidal and inshore areas of the Firth of Forth, which is designated primarily for its important waterbird populations, both wintering and passage species.

Table 1 shows the qualifying features of the Firth of Forth SPA.

Table 1: Qualifying features of Firth of Forth SPA

Species	Scientific name	Population	Reason for inclusion	Population at time of designation (individuals unless specified)
Bar-tailed godwit	*Limosa lapponica*	Non-breeding	Annex 4.1	1974
Cormorant	*Phalacrocorax carbo*	Non-breeding	Annex 4.2 Assemblage	682
Common scoter	*Melanitta nigra*	Non-breeding	Annex 4.2 Assemblage	2880
Curlew	*Numenius arquata*	Non-breeding	Annex 4.2 Assemblage	1928
Dunlin	*Calidris alpine*	Non-breeding	Annex 4.2 Assemblage	9514
Eider	*Somateria mollissima*	Non-breeding	Annex 4.2 Assemblage	9400
Golden plover	*Pluvialis apricaria*	Non-breeding	Annex 4.1	2949
Goldeneye	*Bucephala clangula*	Non-breeding	Annex 4.2 Assemblage	3004
Great crested grebe	*Podiceps cristatus*	Non-breeding	Annex 4.2 Assemblage	720
Grey plover	*Pluvialis squatarola*	Non-breeding	Annex 4.2 Assemblage	724
Knot	*Calidris canutus*	Non-breeding	Annex 4.2	9258
Lapwing	*Vanellus vanellus*	Non-breeding	Annex 4.2 Assemblage	4148
Long-tailed duck	*Clangula hyemalis*	Non-breeding	Annex 4.2 Assemblage	1045
Mallard	*Anas platyrhynchus*	Non-breeding	Annex 4.2 Assemblage	2564
Oystercatcher	*Haematopus ostralegus*	Non-breeding	Annex 4.2 Assemblage	7846
Pink-footed goose	*Anser brachyrhynchus*	Non-breeding	Annex 4.2	10852

Species	Scientific name	Population	Reason for inclusion	Population at time of designation (individuals unless specified)
Red-breasted merganser	*Mergus serrator*	Non-breeding	Annex 4.2 Assemblage	670
Red-throated diver	*Gavia stellata*	Non-breeding	Annex 4.1	90
Redshank	*Tringa totanus*	Non-breeding	Annex 4.2	4341
Ringed plover	*Charadrius hiaticula*	Non-breeding	Annex 4.2 Assemblage	328
Sandwich tern	*Sterna sandvicensis*	Passage	Annex 4.1	1617
Scaup	*Aythya marila*	Non-breeding	Annex 4.2 Assemblage	437
Shelduck	*Tadorna tadorna*	Non-breeding	Annex 4.2	4509
Slavonian grebe	*Podiceps auratus*	Non-breeding	Annex 4.1	84
Turnstone	*Arenaria interpres*	Non-breeding	Annex 4.2	860
Velvet scoter	*Melanitta fusca*	Non-breeding	Annex 4.2 Assemblage	635
Wigeon	*Anas Penelope*	Non-breeding	Annex 4.2 Assemblage	2139
Waterbird assemblage	*>20000*	Non-breeding		95000

The coastline along this stretch of coast comprises of mainly rocky substrate interspersed with sand; there is little finer grained material present which likely reduces food availability when compared with other area of the Forth comprising of mudflat. The 5 m depth contour lies about 175 m from shore, but then much of the area lies less than 10 m in depth beyond that point.

Conservation objectives

The SPA has the following conservation objectives.

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species as a viable component of the site
  - Distribution of the species within site
  - Distribution and extent of habitats supporting the species
  - Structure, function and supporting processes of habitats supporting the species
  - No significant disturbance of the species

1.1.2 The project

Pumping from the former Michael Colliery is required to manage the water level within the mine and to prevent uncontrolled release of mine waters. The pumping has been

ongoing using a temporary system. This project will involve the creation of a permanent pumping system which will replace the temporary system, discharging water pumped to a point 25 m below Mean Low Water Springs.

As part of this, the onshore site will be cleared of existing infrastructure and the construction of a pumping station, control building, working platform, outfall pipe line and outfall.

1.1.3 Baseline bird population

Due to time constraints, no surveys were undertaken to support this SHRA; instead Wetland Bird Survey (WeBS) data was obtained from the WeBS secretariat for the periods and areas outlined in Table 2 and shown on Figure 1.

Table 2: WeBS sectors

WeBs tide and/or sector reference	Sector name	Location relative to site	Time period for data collection
Low tide - BF052		West of site	2003/04[2]
Low tide - BF053		At site	2003/04
Low tide - BF054		East of site	2003/04
High tide	Dysart to East Wemyss	West of site	Aug 2014 – May 2019
High tide	East Wemyss to River Leven West Bank	East of site	

Low tide usage

Table 3 shows the species which were recorded across the three low tide sectors. Fourteen SPA species were never recorded (Red-throated diver, Slavonian grebe, Golden plover, Bar-tailed godwit, Sandwich tern, Pink-footed goose, Shelduck, Scaup, Great-crested grebe, Grey plover, Dunlin, Lapwing, Mallard, Wigeon).

Table 3: Species occurrence at low tide

Species	Scientific name	BF052 (west)	BF053 (centre)	BF054 (east)
SPA species				
Eider	*Somateria mollissima*	X	X	X
Common scoter	*Melanitta nigra*	X		
Velvet scoter	*Melanitta fusca*		X	
Long-tailed duck	*Clangula hyemalis*	X		
Goldeneye	*Bucephala clangula*	X	X	
Red-breasted merganser	*Mergus serrator*	X	X	
Cormorant	*Phalacrocorax carbo*	X	X	X
Oystercatcher	*Haematopus*	X	X	X

[2] 2003/04 was the last time the Firth of Forth was subject to a low tide count so represents the most recent data available

Species	Scientific name	BF052 (west)	BF053 (centre)	BF054 (east)
	ostralegus			
Ringed plover	*Charadrius hiaticula*		X	
Curlew	*Numenius arquata*	X	X	X
Turnstone	*Arenaria interpres*		X	X
Knot	*Calidris canutus*	X	X	
Redshank	*Tringa totanus*	X	X	X
Non-SPA species				
Heron	Ardea cinerea	X	X	X
Shag	Phalacrocorax aristotelis	X	X	X
Black-headed gull	Chroicocephalus ridibundus	X	X	
Common gull	Larus canus		X	
Great black-backed gull	Larus marinus	X	X	
Herring gull	Larus argentatus	X	X	

Table 4 shows the mean count and the mean peak count for SPA species in each sector. Blank cells indicate the species was not recorded in this sector.

Both the sector which contains the site (BF053) and the sector to the west of the site (BF052) held higher numbers than the eastern sector (BF054) which held only small numbers of most species. However, bird numbers were generally low, with only Eider and Oystercatcher present in larger numbers.

In terms of importance to SPA species, the number of waders present was generally low suggesting that this is not an area of important to feeding waders. Oystercatcher numbers rose from west to east, with highest numbers present in the eastern most sector, but this was the only species recorded persistently in larger numbers. This likely reflects the substrate present, which will favour species which prefer to or can feed on a more rocky substrate.

Eider were present in all three sectors with numbers falling from west to east. The number of birds present in the western sector was a relatively large proportion of the SPA population. Smaller number of sea duck were also present.

Table 4: Occurrence of SPA species at low tide

Species	SPA Population	BF052				BF053				BF054			
		Mean count	% SPA Population	Peak count	% SPA population	Mean count	% SPA Population	Peak count	% SPA population	Mean count	% SPA Population	Peak count	% SPA population
Eider	9400	226	2.40	263	2.80	100	1.06	140	1.49	6	0.06	22	0.23
Common Scoter	2880	21	0.73	47	1.63								
Velvet Scoter	635					4	0.63	10	1.57				
Long-tailed Duck	1045	2	0.19	5	0.48								
Goldeneye	3004	1	0.03	2	0.07	1	0.03	5	0.17				
Red-breasted Merganser	670	3	0.45	7	1.04	1	0.15	4	0.60				
Cormorant	682	5	0.73	6	0.88					1	0.15	2	0.29
Oystercatcher	7846	34	0.43	65	0.83	72	0.92	82	1.05	96	1.22	121	1.54
Ringed Plover	328					1	0.30	2	0.61				
Curlew	1928	5	0.26	9	0.47	5	0.26	7	0.36	7	0.36	10	0.52
Turnstone	860					7	0.81	12	1.40	2	0.23	5	0.58
Knot	9258	15	0.16	60	0.65	4	0.04	9	0.10				
Redshank	4341	12	0.28	20	0.46	13	0.30	19	0.44	22	0.51	32	0.74

High tide use

High tide data is rather more extensive and current than low tide data, comprising a five year span between 2014 and 2019. It shows the distribution of birds around a high tide point so provides limited information on feeding areas for waders, but can highlight roost points and also feeding areas for other species such as sea ducks.

Table 5 shows the overall high tide occurrence for species across the two sectors. A total of 39 species were recorded, of which twenty were species for which the SPA has been designated.

Table 5: Species occurrence at high tide

Species	Scientific name	Dysart to East Wemyss	East Wemyss to River Leven
SPA species			
Wigeon	*Anas penelope*	X	X
Mallard	*Anas platyrhynchos*	X	
Scaup	*Aythya marila*	X	
Eider	*Somateria mollissima*	X	X
Velvet Scoter	*Melanitta fusca*	X	X
Common Scoter	*Melanitta nigra*	X	X
Long-tailed duck	*Clangula hyemalis*	X	X
Goldeneye	*Bucephala clangula*	X	X
Red-breasted Merganser	*Mergus serrator*	X	X
Red-throated Diver	*Gavia stellata*	X	X
Slavonian grebe	*Podiceps auritus*	X	X
Cormorant	*Phalacrocorax carbo*	X	X
Oystercatcher	*Haematopus ostralegus*	X	X
Grey plover	*Pluvialis squatarola*	X	
Curlew	*Numenius arquata*	X	X
Turnstone	*Arenaria interpres*	X	X
Knot	*Calidris canutus*	X	
Dunlin	*Calidris alpina*	X	
Redshank	*Tringa totanus*	X	X
Sandwich tern	*Sterna sandvicensis*	X	X
Non SPA species			
Brent Goose	*Branta bernicla*		X
Whooper Swan	*Cygnus cygnus*	X	
Mute Swan	*Cygnus olor*		X
Teal	*Anas crecca*	X	X
Tufted Duck	*Aythya fuligula*		X
Goosander	*Mergus merganser*	X	X
Black-throated Diver	*Gavia arctica*	X	X
Great Northern Diver	*Gavia immer*	X	X

Species	Scientific name	Dysart to East Wemyss	East Wemyss to River Leven
Red-necked grebe	*Podiceps grisegena*	X	
Little Grebe	*Tachybaptus ruficollis*		X
Grey heron	*Ardea cinerea*	X	X
Shag	*Phalacrocorax aristotelis*	X	X
Whimbrel	*Numenius phaeopus*	X	
Sanderling	*Calidris alba*	X	
Purple sandpiper	*Calidris maritima*	X	
Common Sandpiper	*Actitis hypoleucos*		X
Mediterranean Gull	*Larus melanocephalus*		X
Common tern	*Sterna hirundo*	X	X
Arctic tern	*Sterna paradisaea*	X	

There was a larger number of species recorded during the high tide data but since this encompassed five years of surveys, this would be expected as there is more opportunity to record infrequently occurring species.

Table 6 shows the mean count and the mean peak count for SPA species in each sector. Blank cells indicate the species was not recorded in this sector. Coloured cells indicate proportions of SPA populates greater than 1%; these are intended not as a hard and fast boundary but to enable patterns of use to be identified which could indicate species for which the area represents supporting habitat.

Table 6: Occurrence of SPA species at high tide

		Dysart to E Wemyss				E Wemyss to River Leven			
Species	SPA Popn	Mean count	% SPA Popn	Peak count	% SPA Popn	Mean count	% SPA Popn	Peak count	% SPA Popn
Wigeon	2139	0.02	0.00	0.2	0.01	0.04	0.00	0.40	0.02
Mallard	2564	0.12	0.00	1.2	0.05				
Scaup	437	0.04	0.01	0.4	0.09				
Eider	9400	407.34	4.33	814.2	8.66	143.01	1.52	250.20	2.66
Velvet Scoter	635	6.76	1.06	35.4	5.57	4.33	0.68	29.20	4.60
Common Scoter	2880	27.9	0.97	190.6	6.62	41.33	1.43	224.20	7.78
Long-tailed duck	1045	16.54	1.58	119.6	11.44	4.66	0.45	24.20	2.32
Goldeneye	3004	0.28	0.01	1.4	0.05	0.24	0.01	2.40	0.08
Red-breasted Merganser	670	2.84	0.42	11	1.64	3.91	0.58	13.20	1.97
Red-throated Diver	90	2.68	2.98	13	14.44	0.34	0.38	2.00	2.22
Slavonian grebe	84	0.06	0.07	0.6	0.71	0.02	0.02	0.00	0.00
Cormorant	682	11.48	1.68	25	3.67	10.48	1.54	25.00	3.67
Oystercatcher	7846	66.44	0.85	134.8	1.72	23.21	0.30	65.80	0.84

		Dysart to E Wemyss				E Wemyss to River Leven			
Grey plover	724	0.02	0.00	0.2	0.03				
Curlew	1928	16.18	0.84	39.4	2.04	3.60	0.18	16.60	0.84
Turnstone	860	39.34	4.57	83.4	9.70	6.27	0.73	22.80	2.65
Knot	9258	0.02	0.00	0.2	0.00				
Dunlin	9514	0.08	0.00	0.6	0.01				
Redshank	4341	11.36	0.26	31.6	0.73	1.61	0.04	11.40	0.26
Sandwich tern	1617	4.74	0.29	38.8	2.40	4.43	0.27	20.80	1.29

There were significant levels of seaducks and waders, with higher numbers present in the western sector than in the eastern sector. However both sectors held relatively large proportions of the SPA population both as mean counts and also as peak counts.

Large proportions of offshore seaducks were present in both sectors, but particularly in the western sector. As such, the area is considered to provide supporting habitat for Eider, Velvet scoter, Common scoter and Long-tailed duck. While there was more limited consistent use of the eastern sector, as indicated by a lower mean occurrence, peak occurrence was relatively high.

High consistent use of Red-throated diver was recorded in the west with more limited use in the east, but nevertheless enough to be considered that the area provides supporting habitat for this species. Similarly Cormorant were consistently recorded feeding in small but significant numbers across both sectors.

Wader use was rather more limited, with Turnstone the only species consistently recorded in levels which suggest the area provides supporting habitat to that species.

For a few species, Red-breasted merganser, Oystercatcher, Curlew and Sandwich tern, peak counts could represent a large proportion of the SPA population but were not consistently used in high enough numbers to represent supporting habitat. However, it should be remembered that at times when peak numbers occur, that the area could provide key resources at those times and as such impacts on those species should also be considered.

There is one caution with this data and that is that the WeBS data represent the bird numbers present across a wider area than the area of the works. As such, it is likely that the numbers associated with the immediate area of the works is likely to hold fewer birds than detailed here, but with no direct observations of the area, by assuming all birds recorded within the WeBS sector are potentially affected provides a conservative approach.

2 Stage 1- Screening

In the first stage of HRA, a project is screened to establish if there will be a likely significant effect, either alone or in combination with other proposals/projects with potential to have an effect upon the SPA. In reaching this conclusion it is settled law that a precautionary approach should be taken to this assessment and that a LSE should be assumed unless the risk can be excluded. Essentially, this test of likely significant effect (LSE) determines whether the second stage of the process, Appropriate Assessment (AA) is required. Where no LSE is identified, then AA is not required; conversely, where LSE is identified, then AA is required to determine if there will be adverse impacts which would prevent the conservation objectives from being met.

The works consist of the removal of existing on shore infrastructure and the construction of new onshore infrastructure as well as the replacement of an offshore temporary pipeline/outfall with a permanent outfall at 25 m below Mean Water Spring Lows.

The onshore area consists of scrub and what appears to be recreational paths through the area, with existing buildings in place. This means the area does not contain habitat which would support species for which the SPA is designated.

There is therefore potential for disturbance effects both onshore and offshore during the construction period due to the presence of the construction which is required in these areas, and the presence of construction staff and machinery associated with the works. There may also be water quality issues associated with removal and construction of the pipeline/outfall and disturbance of the sea bed resulting in increased turbidity during the works. This could result in some displacement for particularly sea ducks and associated species such as Red-throated diver and Cormorant.

Following construction, there are not considered any potential for impacts once the outfall becomes operational because it is replacing an existing outfall. As such, the operational effects are not considered to vary greatly from the current situation, and there is therefore no potential for likely significant operational effects.

Because the area provides supporting habitat to a number of species for which the SPA has been designated (detailed in section 1.1.13) this means there is a likely significant effect on the SPA bird populations, as a result of construction disturbance and displacement. This could potentially affect the following species:

- Eider
- Common scoter
- Velvet scoter
- Long-tailed duck
- Red-throated diver
- Cormorant
- Oystercatcher
- Turnstone

In addition because potentially significant numbers of Curlew, Red-breasted merganser and Sandwich Tern can occur from time to time, potential effects on these species also need to be considered.

An Appropriate Assessment is therefore required to determine whether the project would have an adverse effect on the integrity of the SPA.

3 Stage 2 Appropriate Assessment

The working area is relatively limited, comprising approximately 063 ha of intertidal area within the red line boundary between the mean low tide water mark and boundary with the upper limit of the beach, with an additional 0.12 ha below the mean low tide mark. Above the beach, the works area encompasses an area of 1.3 ha; this includes an area encircled by the red line boundary which is within the red line boundary but is not within it. This area does not include access to the site, which would be taken via an existing unclassified road.

As such, with works confined to a relatively small area then any effects will similarly have a relatively small area of impact. Disturbance impacts are likely to be greater on waders and birds on the shore because of the greater exposure (with more works to be undertaken on shore). Additionally waders may quit an area entirely which is subject to ongoing disturbance, whereas sea ducks may remain in the area, particularly for shore-based disturbance, but move off from the disturbance to maintain what they consider to be a safe distance.

Works will be carried out commencing during the mid/late breeding season with limited working during the winter period. This will also reduce the effects on some SPA designated species; Table 7 shows the months with the top three mean highest counts for each species of concern.

Table 7: Peak occurrence of SPA species

	East	West
Eider	Jul, Aug, Sep	Aug, Mar, Apr
Velvet Scoter	Feb, Mar Apr	Jan, Feb, May
Common Scoter	Jan, Feb, Mar	Dec, Jan, Apr
Long-tailed Duck	Jan, Feb, Apr	Oct, Jan, Feb
Red-breasted Merganser	Nov, Dec, Mar	Dec, Mar, Apr
Red-throated Diver	Jan, Feb, Mar	Nov, Feb, Mar
Cormorant	Sep, Oct, Dec	Nov, Dec, Jan
Oystercatcher	Nov, Dec, Feb	Nov, Dec, Jan
Curlew	Nov, Dec, Feb	Aug, Jan, Feb
Turnstone	Nov, Dec, Mar	Feb, Mar, Apr
Sandwich Tern	Mar, Apr	Jul, Aug

Species where one or more month of peak occurrence coincides with the likely occurrence of the works are highlighted in pale blue. The species most exposed is likely to be Eider; relatively large concentrations occur offshore around the breeding season; birds in late summer could be post breeding accumulations and could involve moult flocks and/or young birds being present. At the same time, potential for disturbance or displacement will be limited by the short term nature of the works, lasting less than one season and the limited area they encompass; Eider would only be affected while offshore works are occurring and disturbance is likely to be relatively limited.

Long-tailed duck generally occur in highest numbers outwith the period when works could be expected to occur; however there is an accumulation in the area in October as well. Similarly Curlew also show a similar pattern with a peak in August, probably

related to migration and post breeding dispersal, but all other months of occurrence being in the winter period, and is probably related to over-wintering birds.

Cormorant numbers were relatively consistent throughout the year, but higher numbers were present in September and October in the western sector.

Finally Sandwich tern are a breeding season only species; data was not available for the western section for June and July but highest numbers occurred at the beginning of the breeding season for the western sector and post breeding season for the eastern sector.

The pattern of use of the site is therefore not consistent throughout the year which is likely reflective of occurrence of the species at that point (e.g. the arrival and departure of wintering/migrating birds) but may also be driven by local influences, such as variable localised food availability. It is use driven local influences which have the potential to cause adverse impacts on the SPA species if birds are unable to access limited resources in this area while the works are ongoing. At the same time, the localised nature of the works versus the counts which are covering a much greater area than the works themselves, means impacts would be on a subset of the birds present within the sector; areas such as the mouth of the River Leven are known to hold higher bird concentrations. There is nothing within this area to suggest it is sufficiently different from the surrounding area to allow a reason for any loci of bird activity to be identified.

The works are also being carried out relatively close to the low tide mark; the shallower water which diving birds may prefer to feed in continues out to about 175 m from shore and so birds would not be excluded from the shallower water in this area by the works.

In terms of increased turbidity during the works which may restrict visibility, the substrate present (rock/sand, rather than mud) would reduce the extent of turbidity as a result of the works, although there would likely be an increase while works were going ahead. It would be expected that effects would be very short term, related to the duration of the works themselves and would have no ongoing effect.

As a result, although there could be localised disturbance and displacement effects, these are likely to be short term, not extending beyond the start of winter, and of limited geographical extent. Effects would also therefore be of limited duration and extent and would be temporary; following construction there would be no change to the current situation.

Taking this into consideration, Table 8 reviews the conservation objectives against the project.

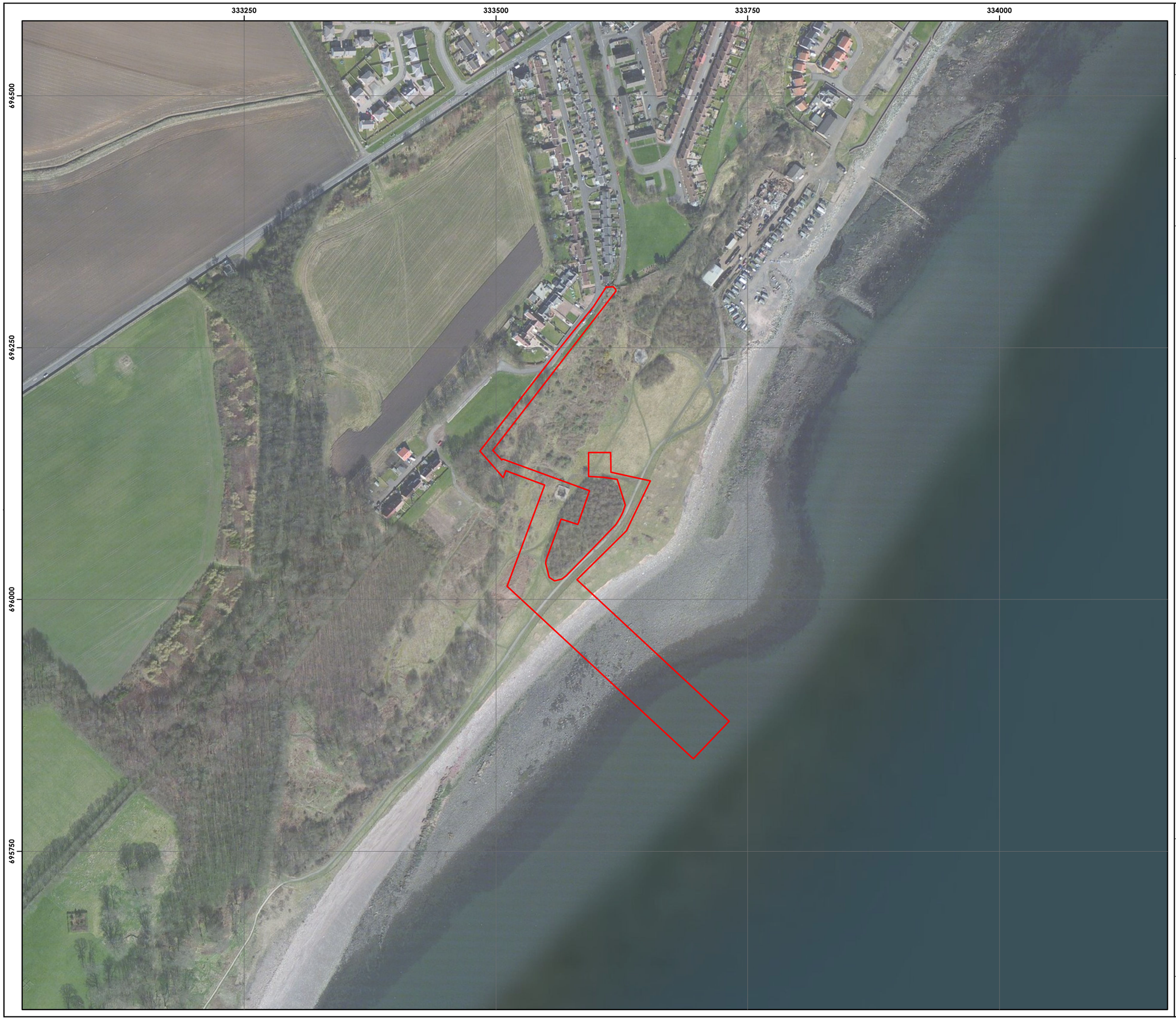
Table 8: Review of conservation objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained	There would be no deterioration of habitats; onshore works are in areas where there is not supporting habitat for SPA species. There would be short term and highly localised effects on intertidal and offshore areas, but these would recover and the ability to support species would not be affected. There would be no significant disturbance to qualifying species. The conservation objective would be met.

To ensure for the qualifying species that the following are maintained in the long term:	
Population of the species as a viable component of the site	There would be no increased mortality as a a result of the project. The conservation objective would be met.
Distribution of the species within site	There could be some highly localised displacement effects over short periods of time as a result of the project. This would not affect the distribution to a level where the conservation objective would not be met.
Distribution and extent of habitats supporting the species	While there could be some short term and highly localised effects on habitats, those which support the species would recover following construction and so the distribution and extent of habitats would remain unchanged. The conservation objective would be met.
Structure, function and supporting processes of habitats supporting the species	There would be no adverse effects on the structure, function and supporting processes of the habitats supporting the species. The conservation objective would be met.
No significant disturbance of the species	There would be localised disturbance of species present in the area during the works.

4 Conclusions

Although a likely significant effect was identified for a number of species for which the SPA has been designated, due to the nature of the works (including the timing and geographical extent and the short duration) there may be some localised effects. These effects would, however, not rise to the level where the conservation objectives of the SPA would not be met and as such, there would be no adverse effect on the integrity of the SPA as a result of the project.



Michael Colliery

Location Plan

Key

Site boundary

atmos CONSULTING

0 25 50 100

Meters

N

Scale @ A3:

1:3,500

15/04/2021 60353/BP/003a

Drawn by: KM Checked by: Approved by:

Michael Colliery Preliminary Ecological Appraisal

Draft Report

April 2019

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Revision history

Revision Ref/Date	Amendments	Issued to
V1.0 17/04/2019	Draft Report	David Mason (CA)

Contract

This report describes work commissioned by David Mason, on behalf of the Coal Authority

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Purpose

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Executive summary

Demobilisation works at Michael Colliery, comprising the removal of temporary pipework and Legato blocks, are not expected to have a significant ecological impact.

The site is located adjacent to the Forth Estuary, designated as SSSI, SPA and Ramsar site. Removal works will extend into the designated site for the removal of pipeline and Legato blocks, and appropriate consent has been sought for these works.

The INNS Japanese Knotweed and Giant Hogweed are found on site, adjacent to the access track from Back Dykes. Suitable INNS management will be required on site, to ensure there is no spread of INNS from site and protect site workers safety.

Precautionary measures have been recommended in order to avoid impact to other potential ecological receptors. In particular, consideration should be given to the potential presence of seals, porpoises, and Otter in the vicinity of the works. Tool box talks have been recommended for these species.

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Abbreviations

CA	Coal Authority
EAP	Environmental Action Plan
INNS	Invasive Non Native Species
NGR	National Grid Reference
PEA	Preliminary Ecological Appraisal
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TN	Target Note

1 Introduction

1.1 Project background

JBA Consulting was commissioned by The Coal Authority (CA) to undertake a Preliminary Ecological Appraisal (PEA) in relation to works at Michael Colliery, East Wemyss. The survey was commissioned to identify any likely ecological constraints during the removal of a minewater outfall pipe and Legato blocks, and propose mitigation measures in relation to the ecological receptors likely to be impacted as a result of the works if required. Furthermore, where applicable, recommendations for further surveys, such as specific species surveys, mitigation and ecological enhancements have been provided.

1.2 Site location

The Michael Colliery site is located in East Wemyss, on the Fife coast (NGR NT336961). The site encompasses beach, soft cliff and coastal grass/scrub. Footpaths cross the site, with areas of woodland also present. The location of the Michael Colliery site is shown in Figure 1-1.

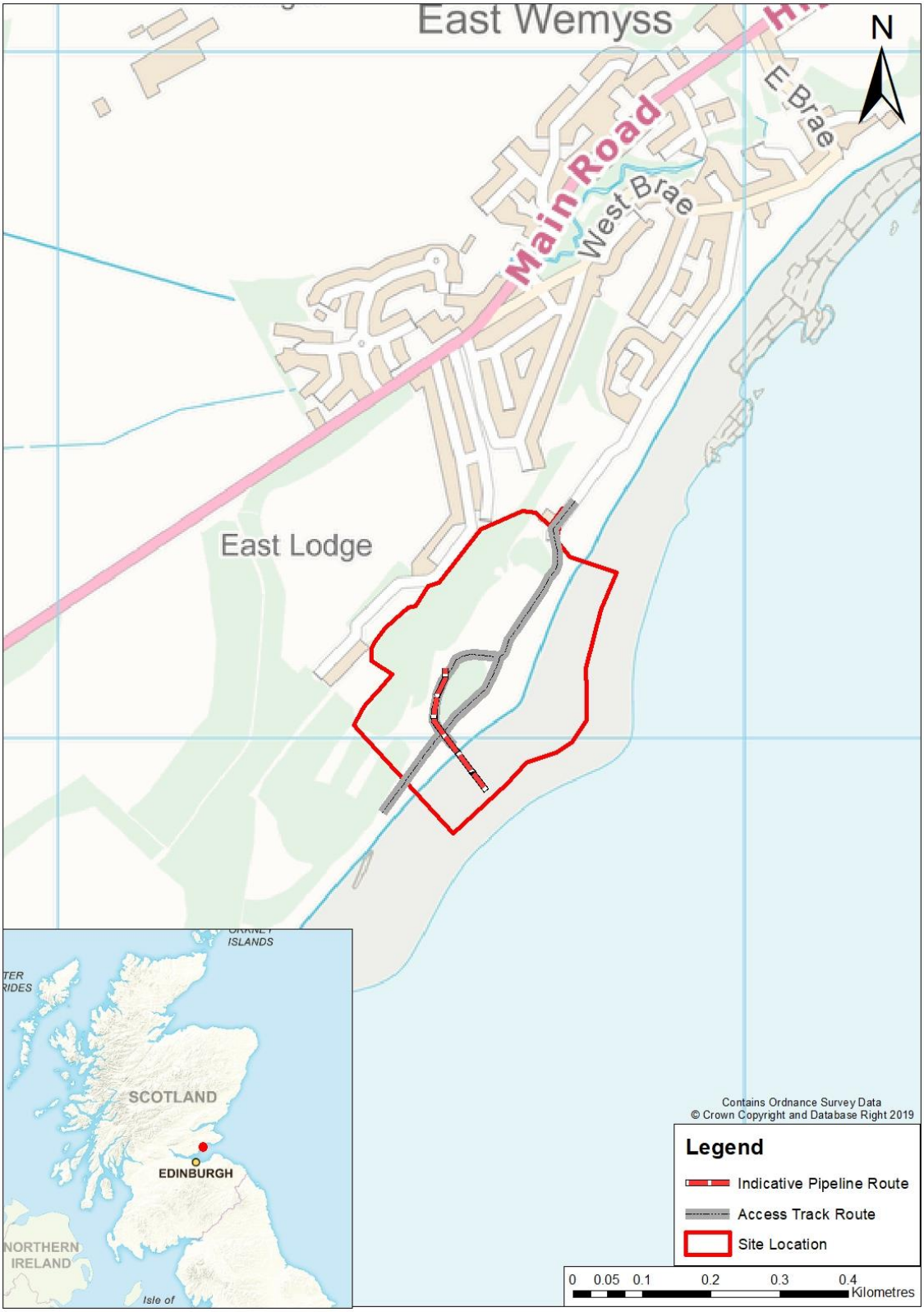


Figure 1-1: Site location plan

1.3 Proposed works

Proposed works at Michael Colliery are the removal the temporary minewater outfall pipeline (130m) and ballast (concrete Legato blocks). Access will be via the access track from Back Dykes. This removal will take place on the beach/foreshore, and removal of buried pipeline onshore, which follows the route of the gravelled footpath. Works are planned to take place in May 2019.

The site boundary for the purposes of the Preliminary Ecological Appraisal is shown in Figure 1-1, and was provided by the CA. The boundary includes the access route from Back Dykes. Any changes in scope or red line boundary will require this assessment to be updated. Engineering drawings are attached in Appendix B.

The pipeline to be removed from the beach is shown in Figure 1-2. Further photographs of the pipeline route can be found in Appendix C.

Figure 1-2. Pipeline to be removed from beach.

2 Methods

A PEA of the site has been undertaken in line with current best practice guidance (CIEEM, 2017) and included:

- A desk-based assessment to identify any records of protected and/or notable habitats and species, and designated nature conservation sites in the vicinity of the proposed works.
- A site survey comprising a Phase 1 Habitat Survey including and an assessment of the possible presence of protected or priority species, and (where relevant) an assessment of the likely importance of habitat features present for such species.
- An assessment of the potential impacts of the works on the habitats and species present at the site and the surrounding areas.

2.1 Desk-based assessment

Prior to undertaking the site survey, searches of databases containing ecological records, priority habitats, and information on statutory and non-statutory designated sites were made. The following sources were included in these searches:

- MAGIC mapping service (www.magic.gov.uk)
- Scottish Natural Heritage GIS data (http://gateway.snh.gov.uk/natural-spaces/index.jsp)
- Fife Nature Records Centre (https://beautiful.fife.scot/fife-nature-records-centre/)

Due to the size of the site, it is considered that the zone of influence would be 2km from a central point on site, and therefore the desk-based assessment was conducted within this search area.

2.2 Site survey

A site survey was undertaken on Wednesday 3 April 2019 by Assistant Analyst Andrew Robertson and Associate Director of Ecology Kieran Sheehan. The survey included the area of land within the redline boundary, comprising the access track, grassland, woodland, soft cliff and beach.

For protected and notable species, the ecologist assessed the suitability of the site and surrounding habitats to support these species. Based upon this assessment, potential constraints to the project were identified and recommendations for further survey and mitigation have been made. Legislative guidance relating to protected species is outlined in Appendix A, along with details of other relevant policy and legislation.

Given the location of the site, the habitats present and the results of the desk study, the following species were considered: Badgers *Meles meles*, bats, birds, Otters *Lutra lutra*, reptiles, seals and porpoises.

Habitats were mapped using the Phase 1 Habitat Survey methodology (JNCC, 2010), and signs or sightings of other notable species were also recorded. Target Notes (TN) cover additional important features noted during the survey. Botanical names follow Stace (2010).

Any Invasive Non-native Species (INNS) observed during the survey were recorded. For stand-forming plant species, the extents of such stands were noted.

2.3 Limitations

The habitats and species present in a given area are subject to change over time. A single field visit of this nature captures and reports the situation at the time of survey. As

such, the advice contained within this report is considered valid for a period of 12 months before an updated survey/assessment must be made by an ecologist.

Data from biological records centres or online databases is historical information, and datasets might be incomplete, inaccurate or missing. It is important to note that even where data is held, a lack of records for a defined geographical area does not necessarily mean that the species is absent; the area may simply be under-recorded. As such, records cannot be relied on and serve only as an indication of what might/ might not be found.

The survey was undertaken in early April, which is sub-optimal for botanical survey. As such, not all botanical species present may have been identified, including the extent of INNS. Fenced off compound/pumping station areas on site were not accessed, however a limited visual inspection suggested that these had little ecological value.

3 Results and Evaluation

3.1 Desk-based assessment

3.1.1 Statutory designated sites

The First of Forth is the only statutory designated protected site within or immediately adjacent to the Michael Colliery site. It is designated as a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), and Ramsar. Details of the designations are shown in Table 3-1 and Figure 3-1.

Table 3-1: Statutory designated sites within 2km of site

Site Name	Designation	Qualifying Features / Site Description	Proximity to Site
Firth of Forth	SSSI, SPA, Ramsar	Variety of geological and geomorphological features, coastal and terrestrial habitats, vascular plants, invertebrates, breeding, passage and wintering birds.	Shoreline of site.

Figure 3-1. Statutory designated sites within 2km.

3.1.2 Non-statutory designated sites

There are no non-statutory designated sites within 2km of the Michael Colliery site.

3.1.3 Protected species

The data presented below includes the location of the record, and all years in which the species was recorded in the years post-2000.

Table 3-2: Protected species records within 2km of the site

Common Name	Scientific Name	Designation	Location and Date
Birds			
Black-throated Diver	*Gavia arctica*	W&CA (1981) Sch. 1	West Wemyss, 2012
Common Scoter	*Melanitta nigra*	W&CA (1981) Sch. 1 Part I	West Wemyss, 2010,2012, 2013
Goshawk	*Accipiter gentilis*	W&CA (1981) Sch. 1 Part I, Sch. 4.	Within 2km, 2000-
Kingfisher	*Alcedo atthis*	W&CA (1981) Sch. 1 Annex 1	Within 2km, 2000-
Long-tailed Duck	*Clangula hyemalis*	W&CA (1981) Sch. 1 Part I	West Wemyss, 2010,2011,2012,2013
Mallard	*Anas platyrhynchos*	W&CA (1981) Sch. 3 Part III	Within 2km, unknown
Mediterranean Gul	*Larus melanocephalus*	W&CA (1981) Sch. 1 Part I	East Wemyss, 2018
Moorhen	*Gallinula chloropus*	W&CA (1981) Sch. 2	Within 2km, Unknown
Purple Sandpiper	*Calidris maritima*	W&CA (1981) Sch. 1 Part I	West Wemyss, 2012, 2013
Red-throated Diver	*Gavia stellata*	W&CA (1981) Sch. 1 Part I	West Wemyss, 2006, 2011, 2012, 2013
Redwing	*Turdus iliacus*	W&CA (1981) Sch. 1	Coaltown of Wemyss, 2005
Snipe	*Gallinago gallinago*	W&CA (1981) Sch. 2, Sch. 3 Part III	Within 2km, Unknown
Velvet Scoter	*Melanitta fusca*	W&CA (1981) Sch. 1 Part I	West Wemyss, 2012
White-tailed Eagle	*Haliaeetus albicilla*	W&CA (1981) Sch. 1 Part I, Sch.1A, Sch. 4, Sch.A1.	West Wemyss, 2011
Woodcock	*Scolopax rusticola*	W&CA (1981) Sch. 2, Sch 3. Part III	Within 2km, Unknown.

Common Name	Scientific Name	Designation	Location and Date
Bats			
Brown Long-eared Bat	*Plecotus auritus*	W&CA (1981) Sch. 5	Within 2km, 2016
Common Pipistrelle	*Pipistrellus pipistrellus*	W&CA (1981) Sch. 5	Within 2km, 2016
Soprano Pipistrelle	*Pipistrellus pygmaeus*	W&CA (1981) Sch. 5	Within 2000m, 2016
Mammals			
Eurasian Badger	*Meles meles*	Protection of Badgers Act 1992	Bowhouse and Wemyss Wood, 2010 and 2002
European Otter	*Lutra lutra*	W&CA (1981) Sch. 5	Buckhaven, 2014
Marine mammals			
Common Porpoise	*Phocoena phocoena*	Marine (Scotland) Act 2010	West and East Wemyss, 2005 and 2004
Common Seal	*Phoca vitulina*	Marine (Scotland) Act 2010	East Wemyss, 2004, 2005, 2013

3.1.4 Invasive non-native species

The data search from Fife Nature Records Centre returned several records of invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within 2km of the site.

The table below shows records from these sources dated post the year 2000, and includes the most recent record, and record within closest proximity to the site for each species.

Table 3-3: Invasive non-native species records within 2km of the site

Common Name	Scientific Name	Designation	Location and Date
Japanese Knotweed	*Fallopia japonica*	W & CA Schedule 9	East Wemyss School (2006), East Wemyss Church (2006), Within 2km (Unknown)
American Mink	*Neovison vison*	W & CA Schedule 9	East Wemyss Beach (2012), West Wemyss (2013).

3.2 Site survey

3.2.1 Phase 1 habitat survey

The results of the Phase 1 Habitat survey are shown in Figure 3-2. The main habitat types identified include acid grassland, intertidal habitat, and broadleaved woodland. Target notes are provided in Table 3-4.

Soft cliff is present, marking the boundary between foreshore and grassland. The soft cliff is comprised of red and blue blaes, a spent shale waste product. It is thought that the

blaes form the strata below much of the site, however the extent of this made ground is unknown. The influence of this on the habitats present is unknown.

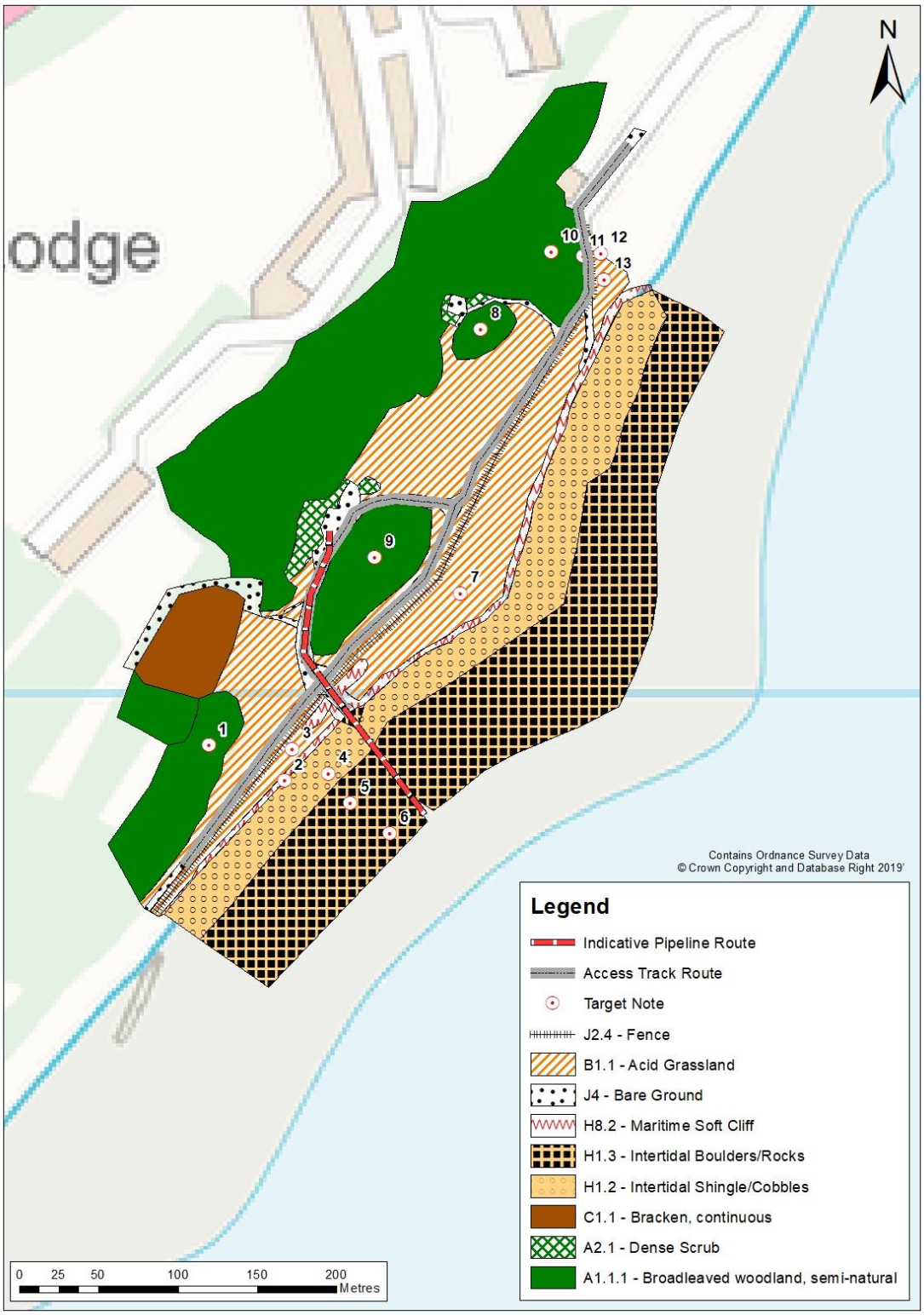


Figure 3-2. Phase 1 Habitat Map

Table 3-4: Target notes

Target Note Number	Description	Photograph
1	Sycamore woodland	N/A
2	Soft cliff comprising red and blue blaes	
3	Acid grassland – coastally influenced. Rabbit grazed.	
4	Storm beach	
5	Upper shore	
6	Middle shore	

7	Acid grassland with Sea Buckthorn	N/A
8	Sycamore, goat willow and hawthorn woodland with Burnet rose.	N/A
9	Sycamore, silver birch, goat willow woodland.	N/A
10	Sycamore/birch woodland	N/A
11	Giant hogweed west of track	N/A
12	Giant hogweed east of track	
13	Japanese knotweed east of track	

Habitats

A1.1.1 Semi-Natural Broadleaved Woodland

Areas of largely Sycamore *Acer pseudoplatanus* dominated woodland, with species such as Silver Birch *Betula pendula*, Goat Willow *Salix caprea* and Hawthorn *Crataegus monogyna* also present. Broadleaf woodland present was generally in dense stands, and provides suitable nesting features for birds as well as foraging opportunities for mammals and invertebrates.

The proposed works are located outside of woodland habitat and therefore should have no significant impact on stands of semi-natural broadleaved woodland.

B1.1 Acid Grassland

Acid grassland is present to the west of the fence which runs SW to NE along the line of the fife coastal path. Coastally influenced acid grassland is present to the east of the fence. Species present include Common Bent *Agrostis capillaris*, Tall Fescue *Festuca arundinacea*, Red Fescue *Festuca rubra*, Sheep's Fescue *Festuca Ovina*, and moss species

Pleurozium shreberi, *Hylocomium splendens* and *Rhytidiadelphus squarrosus*. Sea Buckthorn *Hippohae rhamnoides* and Blackthorn *Prunus spinosa* are also present.

The proposed works are located outside the area of acid grassland and therefore should have no significant impact on this habitat.

C1.1 Bracken

Stand of Bracken *Pteridium aquilinum* on a south facing slope, free of any woodland. Stand surrounded by Broadleaf woodland to the west, north and east, with Acid Grassland to the south.

The proposed works are located outside of this habitat and therefore should have no impact on the stand of bracken.

H1.2 Intertidal Shingle/Cobbles

Intertidal shingle and cobble are present on the storm beach and upper shore. This habitat could support macroinfauna, crustaceans, and epifauna.

The proposed works intercept this habitat. Considering this habitat is not vegetated and is considered to be fairly mobile, the works are not anticipated to change its baseline condition. This is particularly true where material is reinstated following completion of the works. Additionally, the works are temporary and small in scale.

H1.3 Intertidal Boulders/Rocks

Intertidal boulders and rocks present on middle and lower shore. This habitat could support macroinfauna, crustaceans, and epifauna.

The proposed works intercept this habitat. There is not considered to be a significant ecological impact or change in baseline status to this habitat due to the temporary nature and small scale of the works. This is particularly true where material is reinstated following completion of the works.

H8.2 Maritime Soft Cliff

Maritime soft cliff, comprised from made ground of red and blue blaes. There is no vegetation on the open face.

The proposed works intercept this habitat. Considering the absence of vegetation and natural features, the works pose no ecological impact to this habitat.

J2.4 Fence

Wire fencing running SW to NE along the coastal edge of the Fife Coastal Path, acting as a safety fence above the soft cliff. A large area of acid grassland is fenced off.

The proposed works intercept this feature But no ecological impact is anticipated.

J4 Bare Ground

Areas of hard standing and whinstone path are present throughout the site. Bare ground can provide suitable sites for basking reptiles.

The proposed works intercept this habitat but impacts will be temporary as surfacing will be reinstated following works.

3.2.2 Assessment for protected species

Plants

Considering the location of the works is confined to the unvegetated foreshore and access track, it is not expected that any protected botanical species will be impacted by the removal works.

Birds

A check for ground nesting birds was undertaken on site. No nesting birds were identified, and the route of the pipeline is not deemed suitable for use by ground nesting birds. Provided that works do not stray onto vegetated areas or require vegetation clearance, there are not expected to be any constraints relating to ground nesting birds.

Otter

No signs of Otter *Lutra lutra* were identified on site. A record from 2014 was present at Buckhaven (within 2km), and as such the presence of Otter cannot be ruled out.

Marine mammals

While no marine mammals such as Common Seal *Phocoena vitulina* or Grey Seal *Halichoerus grypus* were identified during the site survey, their presence cannot be ruled out, particularly as there are records of these species within the local area. A designated seal haul-out site is present ~10km south-west of the site, and as such the presence of seals is likely to be common in this area.

No porpoise or dolphin species were identified during the site visit, however they are known to be regularly present within the Forth Estuary. Works are not expected to involve working in water, and as such they are not expected to be impacted.

Reptiles

No signs of reptiles were identified during the site visit and there were no records identified within the desk study. The vegetation present in the grassland areas of site may be suitable habitat for reptile species and areas of bare ground could be used for basking. As works are not expected to impact any grassland areas, and basking reptiles are considered to be mobile (i.e. they can move out of harm's way) there are no expected impacts.

Bats

No signs of Bats were identified during the site visit, however there are known records present in the local area. Works are not expected to impact any trees or structures with potential for roosting habitat, and as such there are no expected impacts providing no tree clearance is required.

Badger

No signs of Badger were present on site, however there are records within 2km. The use of the site by badgers cannot be ruled out, however no works are proposed to take place within any potential Badger foraging or sett habitat, as works are limited to the intertidal beach area and gravel path.

3.2.3 Invasive non-native species

Invasive non-native species were identified at the north-eastern section of the site, either side of the access track leading from Back Dykes. INNS present include Japanese Knotweed *Fallopia japonica* and Giant Hogweed *Hercacleum mantegazzianum.* Stands of Giant Hogweed are found on both sides of the access track, while Japanese Knotweed is

found only to the east of the access track. The extent of these INNS is mapped in Figure 3-3.

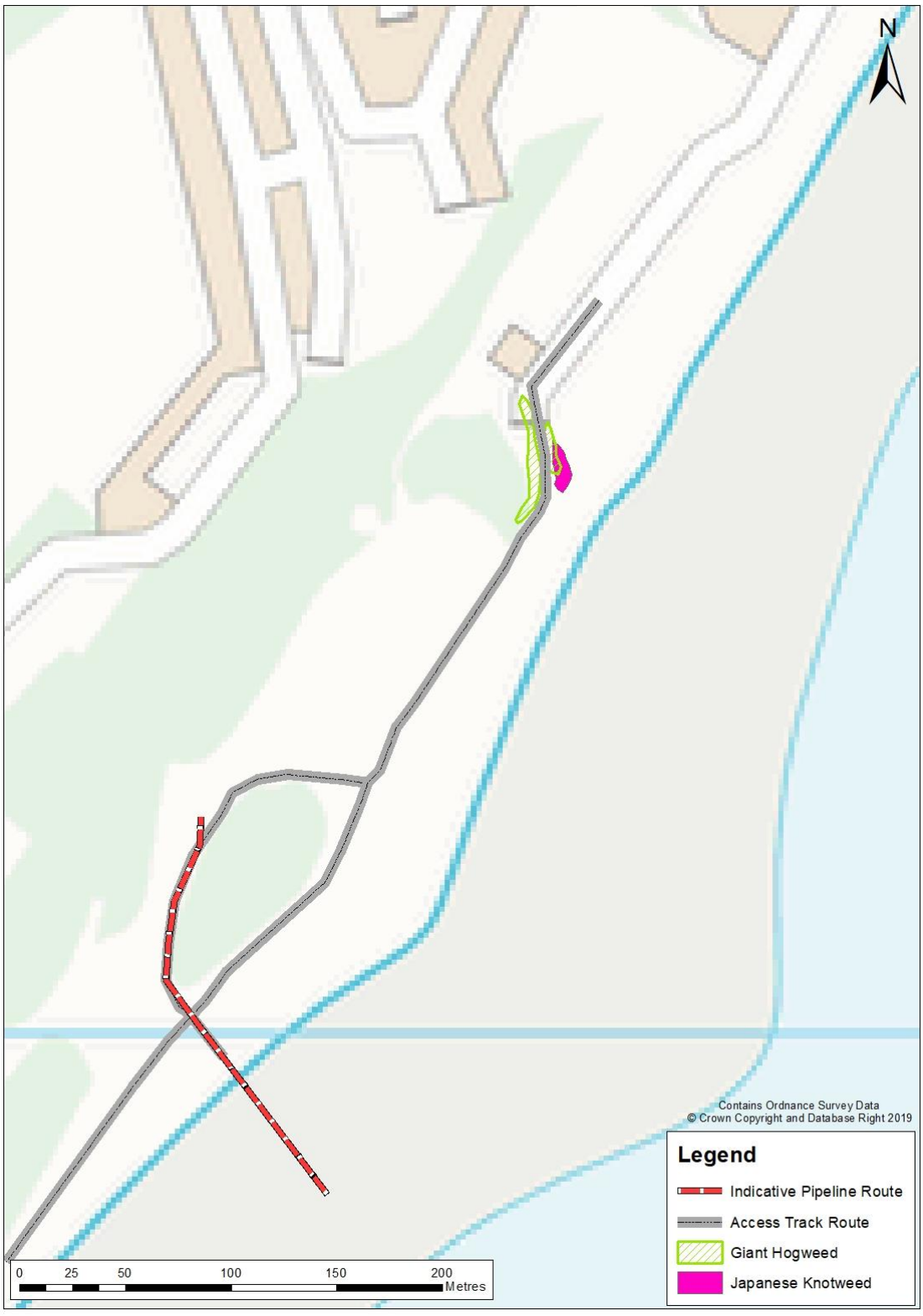


Figure 3-3. Extent of invasive non-native species identified on site.

4 Conclusions and recommendations

4.1 Conclusions

The proposed pipeline removal works at Michael Colliery will not have a significant ecological impact, provided appropriate working methods are used.

Much of the pipeline is buried under aggregate, with little vegetative cover, and as such appropriate working methods will avoid any need for vegetation clearance. The works footprint will be relatively small and access will be via the existing track thus limiting impact to ecology.

The key ecological constraint identified for the work is the presence of the INNS Japanese Knotweed and Giant Hogweed. Specific recommendations have been made below in Biosecurity (section 4.2.1). These should be adhered to prevent the intentional or reckless spread of the plants and to protect human health.

Other potential ecological receptors have been identified but it is considered unlikely that these will be encountered. Recommendations for precautionary measures have been made in relation to this low risk. These are detailed in section 4.2.3.

There is an opportunity for ecological enhancement through the eradication of INNS on site.

4.2 Recommendations

4.2.1 Biosecurity

Japanese Knotweed

Japanese Knotweed is a non-native, invasive plant that was introduced into Britain. It is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and it is an offence to cause spread of this species in the wild.

Japanese Knotweed and soil containing Japanese Knotweed material is classified as controlled waste and would need to be treated and/or disposed of in a lawful manner. Given the proximity of the species to the access route, options into the disposal and treatment of this species on site should be explored. It is recommended that advice contained within the Environment Agency's publication the Knotweed Code of Practice (3rd Revision) (Environment Agency, 2013) is followed and that a management plan is produced to address eradication and control.

As a minimum, the area should have exclusion fencing and debris netting erected around it to prevent accidental contact with the plants. Fencing should normally be erected at least 7m from Japanese Knotweed plants, or the maximum distance available. In this case the maximum distance available is limited by the location of the INNS, and as such the exclusion fencing will be required to follow the edge of the access track.

The Check-Clean-Dry approach should be followed, ensuring that all PPE and equipment is cleaned before leaving site. For more information go to: www.nonnativespecies.org/checkcleandry

Giant hogweed

Giant Hogweed is a non-native, invasive plant that was introduced into Britain. It is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and it is an offence to cause the spread of this species in the wild.

Giant Hogweed contains a toxic chemical which sensitises the skin and causes severe, long term blistering when exposed to sunlight. In addition to being potentially hazardous to health, soil and other material containing Giant Hogweed, if taken away from their point of origin is considered to be 'controlled waste' under the Environmental Protection

Act 1990 (Section 33/34) and carries a 'duty of care' regarding to disposal in an appropriate manner.

It is advised that works to eradicate this plant on site are undertaken as soon as possible. Mechanical control is not generally recommended as this can bring personnel into physical contact with the plant. However, it is the best remediation method to undertake prior to the plant flowering as chemical control is only successful during the early season (i.e. March to May).

Any persons involved in removing plants must wear PPE providing full skin coverage. The individual plants can be dug out using either a small excavator bucket, or by hand. Precautions should be taken to avoid contact throughout.

As a minimum, the area should have exclusion fencing and debris netting erected around it to prevent accidental contact with the plants. Fencing should normally be erected at least 7m from Giant Hogweed plants, or the maximum distance available. In this case the maximum distance available is limited by the location of the INNS, and as such the exclusion fencing will be required to follow the edge of the access track.

The Check-Clean-Dry approach should be followed, ensuring that all PPE and equipment is cleaned before leaving site. For more information go to: www.nonnativespecies.org/checkcleandry

4.2.2 Invasive Species Management

At this site, a 7m boundary is not feasible due to the location of INNS adjacent to the access track. As such, it is recommended that the access track be lined with heras fencing in the areas adjacent to INNS. The exclusion zone should be as large as practically possible. The Heras fencing should be covered with debris netting to ensure separation from persons/vehicles/plant using the access track and the INNS. The access track may be lined with geotextile and surfaced with aggregate to ensure plant/vehicles do not pick up debris containing plant material.

If possible, treatment of the plants using an appropriate herbicide prior to works will limit their growth and reduce impacts of INNS. An exclusion zone will still be required with treated plants.

4.2.3 General precautionary measures

General precautionary measures that should be incorporated within the scheme include:

- Abide the INNS management plan and Check, Clean. Dry best practice for all machinery, personnel, equipment, PPE.
- Conduct a daily site inspection prior to construction works starting to check for the presence of marine mammals. If seals, otters are present on land within 100m of the works, works should stop, and they should be allowed to move on without interference.
- Avoid excessive tracking up and down the beach to reduce damage to the intertidal habitats. It Is recommended that the beach material (cobbles/shoal/boulders etc) is restored after removal of the pipe and ballast.
- Limit the hours of working to daylight hours, to limit disturbance to nocturnal and crepuscular animals.
- Cap any pipes when not in use (especially at night) to prevent animals becoming trapped.

- Cover any excavations overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape.
- Ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled.
- Provide tool box talks for INNS, marine mammals, and Otter.
- The Environmental Action Plan must be abided.

4.2.4 Enhancement

Eradication of INNS on site would benefit the site ecology. This should be considered as an enhancement measure. Details of eradication and control methods should be provided within the INNS management plan.

4.2.5 Toolbox talks

Due to the potential presence of protected species, all staff working on the site should receive a toolbox talk from an ecologist on the following protected habitats and species:

- INNS (Giant hogweed and Japanese knotweed)
- Seals and porpoises
- Otter

The toolbox talk should cover recognition of the species and evidence of its presence, what to do if evidence is seen and a summary of the relevant legislation.

4.2.6 Pollution Prevention Measures

Appropriate pollution prevention measures must be implemented throughout delivery of the project. These are incorporated into the EAP and should be adhered to at all times.

Appendices

A Relevant policy and legislation

The primary legislation in Scotland covering nature conservation and wildlife protection is outlined below. The legislation discussed below is intended as a guide only and does not replace formal legal advice.

A.1 Habitats Directive and Conservation (Natural Habitats, &c.) Regulations 1994

In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2017 (in relation to reserved matters) and the 1994 Regulations. These Regulations afford protection to certain species identified in the Habitats Directive, including those requiring strict protection (European Protected Species (EPS)). Section 2.3 below provides further details on specific species.

The Habitats Regulations 1994 (as amended in Scotland) implement the species protection requirements of the Habitats Directive in Scotland on land and inshore waters (0-12 nautical miles). There are various Schedules attached to the Habitats Regulations including Schedule 2 and 4 which relates to European protected species (fauna and flora, respectively) and Schedule 3 with relates to those animals in Annex V of the Habitats and Species Directive whose natural range includes Great Britain.

The designation and protection of domestic and European Sites e.g. Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPA) and Special Areas of Conservation (SAC) falls within these Regulations.

Public bodies (including the Local Planning Authority) have a duty to have regard to the requirements of the Habitats Directive in carrying out their duties i.e. when determining a planning application.

A.2 Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (W & CA) 1981 (as amended) constitutes an important statute relating to the protection of flora, fauna and the countryside within Great Britain. Part 1 of the Act deals with the protection of wildlife. Most EPS are now covered under the Conservation of Habitats and Species Regulations (as amended) however certain species and activities are still covered by the W & CA. The W & CA also covered possession of species listed in the various schedules. In Scotland, the W & CA is amended by The Nature Conservation (Scotland) Act 2004 and The Wildlife and Natural Environment (Scotland) Act 2011.

A.3 Nature Conservation (Scotland) Act 2004

The Act serves to make provisions in relation to the conservation of biodiversity; to make further provision in relation to the conservation and enhancement of Scotland's natural features; to amend the law relating to the protection of certain birds, animals and plants; and for connected purposes. Under Section 2(4) of the Act a Scottish Biodiversity List, a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland, was compiled.

A.4 Wildlife and Natural Environment (Scotland) Act 2011

The Wildlife and Natural Environment (Scotland) Act (WANE Act) is an Act of the Scottish Parliament to make provision in connection with wildlife and the natural environment and related purposes.

A.5 Protected species

Several species are protected under UK and international legislation. In the UK, primary protection is provided under the Wildlife and Countryside Act 1981 (as amended). Species of European importance receive additional protection in England under the Conservation of Habitats and Species Regulations 2017 (as amended); others may receive protection through specific legislation. Further details on specific species and their levels of protection are provided below.

A.5.1 Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built
- take, destroy or possess the egg of any wild bird.
- Certain species receive additional protection under Schedule 1, which makes it an offence to intentionally or recklessly disturb birds and also their young at, on or near an active nest.

A.5.2 Badger

Badgers *Meles meles* are protected by the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended), Schedule 6. Under the Protection of Badgers Act, it is illegal to intentionally kill, capture, injure or ill-treat any Badger. It is also an offence to obstruct, destroy or damage a Badger sett or disturb Badgers within a sett. Disturbance is defined, for development purposes, as any activity that could damage a sett or be greater than what Badgers commonly tolerate.

A.5.3 Otter

The European Otter *Lutra lutra* is an EPS protected under the Conservation of Habitats and Species Regulations 2017 (as amended), making it an offence to:

- deliberately capture, injure or kill an Otter
- deliberately disturb an Otter such as to affect local populations or breeding success
- damage or destroy an Otter holt, possess or transport an Otter or any part of an Otter
- sell or exchange an Otter.

Otters also receive protection under the Wildlife and Countryside Act 1981 (as amended), this makes it an offence to:

- intentionally or recklessly disturb any Otter whilst within a holt
- intentionally or recklessly obstruct access to a holt.

A.5.4 Seals and porpoises

In Scottish inshore waters, it is an offence under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) to intentionally or recklessly:

- kill, injure or capture a cetacean
- disturb or harass a cetacean

It is also an offence to:

- damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly)
- keep, transport, sell or exchange, or offer for sale or exchange any cetacean (or any part or derivative of one) obtained after 10 June 1994

Seals are also listed under the Marine (Scotland) Act 2010 making it an offence to

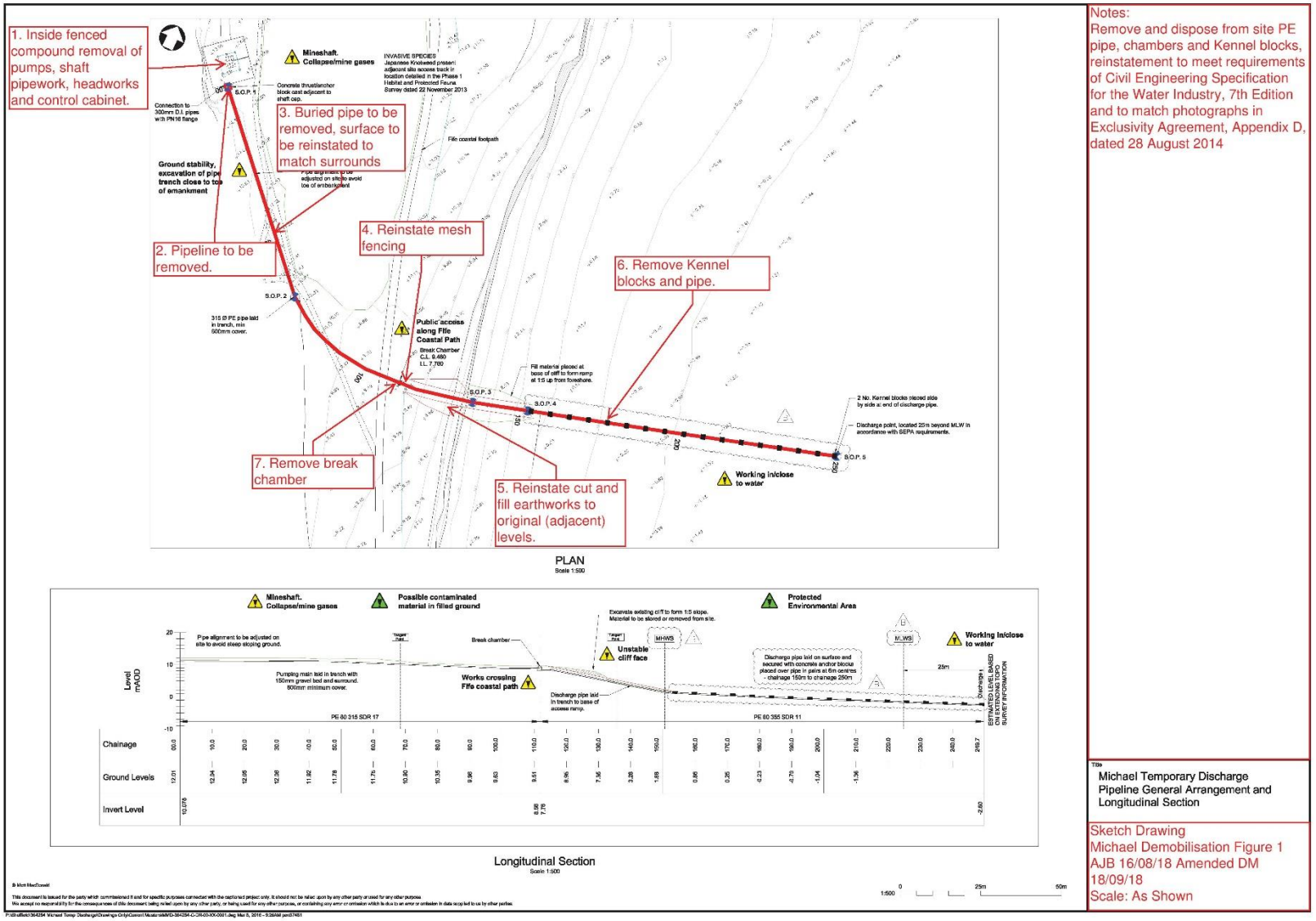
- Kill, injure or take a live seal (intentionally or recklessly)

A.5.5 Invasive non-native species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) lists plant species, groups of plants and animal species for which it is illegal to plant, release, allow to escape or cause to spread into the wild. Examples of species listed on Schedule 9, which are most likely to be encountered, include Japanese Knotweed *Fallopia japonica*, Himalayan Balsam *Impatiens glandulifera* and Giant Hogweed *Heracleum mantegazzanum*.

Some species are also classed as 'controlled waste' under the Environmental Protection Act 1990 and must be disposed of properly (i.e. Japanese Knotweed and Giant Hogweed). These provisions mean that, if these species occur on a site proposed for development or other work which may disturb the ground, control of these species is likely to be required.

B Appendix B - Engineering Drawings



Notes:
Remove and dispose from site PE pipe, chambers and Kennel blocks, reinstatement to meet requirements of Civil Engineering Specification for the Water Industry, 7th Edition and to match photographs in Exclusivity Agreement, Appendix D, dated 28 August 2014

Title
Michael Temporary Discharge Pipeline General Arrangement and Longitudinal Section

Sketch Drawing
Michael Demobilisation Figure 1
AJB 16/08/18 Amended DM 18/09/18
Scale: As Shown

C Appendix C – Photographic Plates (Pipeline route)

Description and Location	Photograph
NT335960 Track to pumping station (Buried pipeline) looking north	
NGR NT335960 Access track to beach (buried pipeline) looking south east.	

NGR NT335960 Rock armour and excavation through cliff to beach looking south east.	
NGR NT335959 Pipeline on beach looking south east.	

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60353

Technical Report

Michael Colliery

Protected Species Survey

GEORGE LESLIE LTD
CIVIL ENGINEERING CONTRACTORS

March 2021

Contents

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Tables

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1.1	01/03/2021	For internal review
1.2	10/03/2021	Client issue

1 Introduction

1.1 Terms of Reference

In February 2021, Atmos Consulting Ltd. was commissioned by George Leslie Ltd. to undertake a protected species survey at the site of the former Michael Colliery, East Wemyss, Fife (hereafter referred to as the "Site").

1.2 Site Location and Description

The Michael Colliery site is located on the Fife coast, adjacent to the southern edge of the village of East Wemyss (National Grid Reference (NGR) NT 33600 96100) (Appendix A, Figure 1 refers).

The site encompasses beach, soft cliff, and coastal grass and scrub, merging into broad-leaved woodland away from the coast. A number of footpaths cross the site, the most notable being the Fife Coastal Path.

1.3 Proposed Development

The proposed works involve the removal and replacement of the existing temporary transfer pipe and sea outfall, conveying water from No. 2 shaft at the former Michael Colliery to a discharge point 25m beyond Mean Low Water Springs (MLWS) in the Firth of Forth, with a permanent installation.

1.4 Objectives

The objective of the study was to undertake a protected species survey of the Site and a buffer of 250m (reduced to a distance of 100m offshore), where access allowed, to record any evidence indicating the presence of protected species which could represent a constraint to the development.

2 Legislation

2.1 European Protected Species

Otter *Lutra lutra* and all bat species are European Protected Species (EPS), listed in Annexe IV of the EC Habitats Directive and are fully protected in the UK under the Conservation (Natural Habitats, etc.) Regulations 1994 (the Habitats Regulations), as amended. The legislation specifies a number of offences which includes to deliberately or recklessly capture, kill, injure or disturb EPS (while using a resting place), or to damage or destroy breeding sites or resting places. It is also an offence to disturb a EPS in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species or to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

2.2 Badger

Badger *Meles meles* and their setts are fully protected by the Protection of Badgers Act 1992 (as amended by the Wildlife and Natural Environment Act 2011).

It is an offence to:

- Wilfully kill, injure, take or attempt to kill a badger,
- Possess a dead badger or any part of a dead badger,
- Cruelly ill-treat a badger, use badger tongs in the course of killing, taking or attempting to kill a badger, dig for a badger,
- Possess, sell or offer for sale any live badger, or mark, tag or ring a badger.

It is also a crime to:

- Interfere with a badger sett by intentionally or recklessly causing or allowing damage to a sett or any part of it, destruction of a sett, obstruction of a sett access, or any entrance of it,
- Allowing a dog to enter a sett, or disturb a badger when it is occupying a sett.

A badger sett is defined in law as any structure or place which displays signs of current use by a badger.

2.3 Seals and Porpoises

In Scottish inshore waters, it is an offence under the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended) to intentionally or recklessly:

- Kill, injure or capture a cetacean; and
- Disturb or harass a cetacean.

It is also an offence to:

- Damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly);
- Keep, transport, sell or exchange, or offer for sale or exchange any cetacean (or any part or derivative of one) obtained after 10 June 1994.

Seals are also listed under the Marine (Scotland) Act 2010 making it an offence to:

- Kill, injure or take a live seal (intentionally or recklessly).

2.4 Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- Intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built;
- Take, destroy or possess the egg of any wild bird; and
- Certain species receive additional protection under Schedule 1, which makes it an offence to intentionally or recklessly disturb birds and also their young at, on or near an active nest.

3 Methodology

3.1 Desk Study

Prior to field surveys being undertaken, a desk top review of datasets freely available for commercial use on the National Biodiversity Network (NBN) Atlas was undertaken within 2km of the Site and dated within the last 15 years.

3.2 Field Surveys

Field surveys were undertaken on the 23rd February 2021. Surveys followed the methodologies described below for the main target species and were carried out across an area comprising the Site and a 250m buffer (reduced to a distance of 100m offshore) (Figure 1, Appendix A refers).

3.2.1 Otter

The otter survey followed standard methodologies (Purseglove, 1995; Chanin, 2003; Bang and Dahlstrøm, 2006; Muir and Morris, 2013). As actual otter sightings are unlikely, the survey concentrated on locating field signs indicating otter presence or use. Such field signs include:

- Spraints;
- Footprints;
- Feeding remains – such as partially eaten fish or frogs;
- Slides / haul-outs – routes into and out of the water, which are usually associated with terrestrial routes, such as short cuts around meanders or along traditionally used otter paths / routes;
- Couches – resting place usually associated with cover, such as dense scrub, rushes or reed, flood debris or fallen trees;
- Holts – resting site with one or more chamber; and
- Natal holts – used for breeding.

3.2.2 Preliminary Bat Roost Assessment

A preliminary roost assessment (PRA) for bats was undertaken of trees along and adjacent to the proposed route of the pipeline in accordance with the methodology and guidance described in Collins (2016). (Built structures were not considered as none are present within the survey area.)

The method involves a detailed inspection of the tree from ground level, recording any potential roost features (PRF) such as:

- Woodpecker holes;
- Rot holes;
- Hazard beams;
- Other vertical or horizontal cracks and splits (such as frost-cracks) in stems or branches;
- Partially detached bark;

- Knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar;
- Man-made holes (eg. cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt-rots;
- Double-leaders forming compression forks with included bark and potential cavities;
- Gaps between overlapping stems or branches;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bat, bird or dormouse boxes.

Signs of a bat roost, besides the actual presence of bats, include:

- Bat droppings in, around or below a PRF;
- Odour emanating from a PRF;
- Audible squeaking at dusk or in warm weather; and
- Staining below the PRF.

3.2.3 Badger

A badger survey was carried out in accordance with the methodology described in SNH (2003) and Harris *et al*., (1989).

Within the survey area all fence lines, woodland and scrub habitats were systematically surveyed for evidence of badgers in the form of:

- Faeces: badgers usually deposit faeces in characteristic excavated pits, so-called latrines, concentrations of which are typically found at home range boundaries;
- Setts: entrances comprising either single isolated holes or a series of holes, likely to be interconnected underground;
- Paths: tracks between setts or leading to feeding areas;
- Scratching posts: evidence of scratching at the base of tree trunks;
- Snuffle holes: small scrapes where badgers have searched for insects, earthworms and plant tubers;
- Day nests: bundles of grass and other vegetation where badgers may sleep above ground;
- Hair traces: notably the distinct badger guard hairs; and
- Footprints.

When a sett is located the level of use and how active the sett is can be assessed using the following criteria:

- Number of well-used holes with one or more of the following: well-worn entrance, freshly excavated soil, bedding material);
- Number of partially used holes as indicated by leaves or twigs in the entrance and / or mosses and other plants growing in or around the entrance; and
- Number of disused holes that are partially or completely blocked, with considerable amounts of excavation being required for reoccupation.

3.2.4 Seals and Porpoises

A survey for marine mammals (eg. cetaceans and pinnipeds) was undertaken. Given the limited scale of the proposed development, the survey methodology was adapted from that described in Macleod *et al*. (2011) and Sparling *et al*. (2011).

A single vantage point survey of one hour duration was undertaken from high ground immediately to the west of No. 2 shaft. The survey area focussed on the rocky coastline on and immediately adjacent to the existing pipeline / proposed pipeline route and extended to a distance of approximately 100m offshore.

3.2.5 Birds

During a systematic walk through the survey area, all observations of Annex I[1] and / or Schedule 1[2] listed species were recorded.

3.3 Limitations

The surveys were undertaken during early spring under suitable weather conditions with all appropriate species being active during these times. No significant limitations were identified.

[1] Annex I of the EC Birds Directive (2009/147/EC)

[2] Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)

4 Results

4.1 Desk Study

In relation to protected mammal species, a search of the NBN Atlas for the last 15 years within a 2km radius of No. 2 shaft and the existing pipeline showed no records for species listed under Schedule 5 of the Wildlife and Countryside Act 1981 (undertaken under licence CC-BY, OGL, CC0).

In relation to birds, a search of the NBN Atlas for the last 15 years within a 2km radius of No. 2 shaft and the existing pipeline showed 8 records for species listed either on Annex I of the EC Birds Directive (2009/14/EC) and / or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (Table 1 refers).

Table 1: Recorded Bird Species (data from NBN Atlas)

Species	Annex I	Schedule 1
Black-throated diver *Gavia arctica* [1]	X	X
Common scoter *Melanitta nigra* [1]		X
Great northern diver *Gavia immer* [1]	X	X
Long-tailed duck *Clangula hyemalis* [1]		X
Mediterranean gull *Ichthyaetus melanocephalus* [1]		X
Red-throated diver *Gavia stellata* [1]	X	X
Sandwich tern *Sterna* sandvicensis [1]	X	
Velvet scoter *Melanitta fusca* [1]		X

[1] Data sourced from Birds (BTO / JNCC / RSPB Partnership)

4.2 Field Survey

4.2.1 Otter

No field signs of otter were recorded.

As the coastline at this location is a narrow shingle strip, signs such as footprints would not be discernible (Plate 1, Table 2, Appendix B refers). Between No. 2 shaft and the coastline, there is a wide track and stands of dense scrub thicket (Plate 2, Table 2, Appendix B refers). Judging by the number of prints in the mud, the track is commonly used by dog walkers and the occasional vehicle; as such field signs of otter are not discernible.

There were a number of animal tracks leading in and out of the dense scrub thicket. These were followed as far as possible but no signs of otter were recorded.

4.2.2 Preliminary Bat Roost Assessment

It is anticipated that no tree or scrub clearance will be required by the proposed works. To the west and east of No. 2 shaft, there are stands of dense scrub thicket consisting of silver birch *Betula pendula*, goat willow *Salix caprea* and hawthorn *Crataegus monogyna*. The trees are little more than saplings with smooth bark and are classified as offering negligible potential for bat roosts (Plate 3, Table 2, Appendix B refers).

4.2.3 Badger

No field signs of badger were recorded.

4.2.4 Seals and Porpoises

Two common seal *Phoca vituline* were seen approximately 75m offshore. There was no evidence of any haul out sites on the coastline on or immediately adjacent to the pipeline.

4.2.5 Birds

No Annex I and / or Schedule 1 listed species were observed during the walkover survey.

Species recorded include black-headed gull *Chroicocephalus ridibundus*, cormorant *Phalacrocorax carbo*, oystercatcher *Haematopus ostralegus*, robin *Erithacus rubecula* and tree sparrow *Passer montanus*.

5 Conclusion

No signs of protected species were identified during the survey and no further mitigation is required prior to the initial site works proceeding. Staff should however remain vigilant for breeding birds. If bird breeding is suspected, work should cease in the immediate vicinity until advice is taken from a competent ecologist. Prior to the main works proceeding, it is recommended that this survey is repeated.

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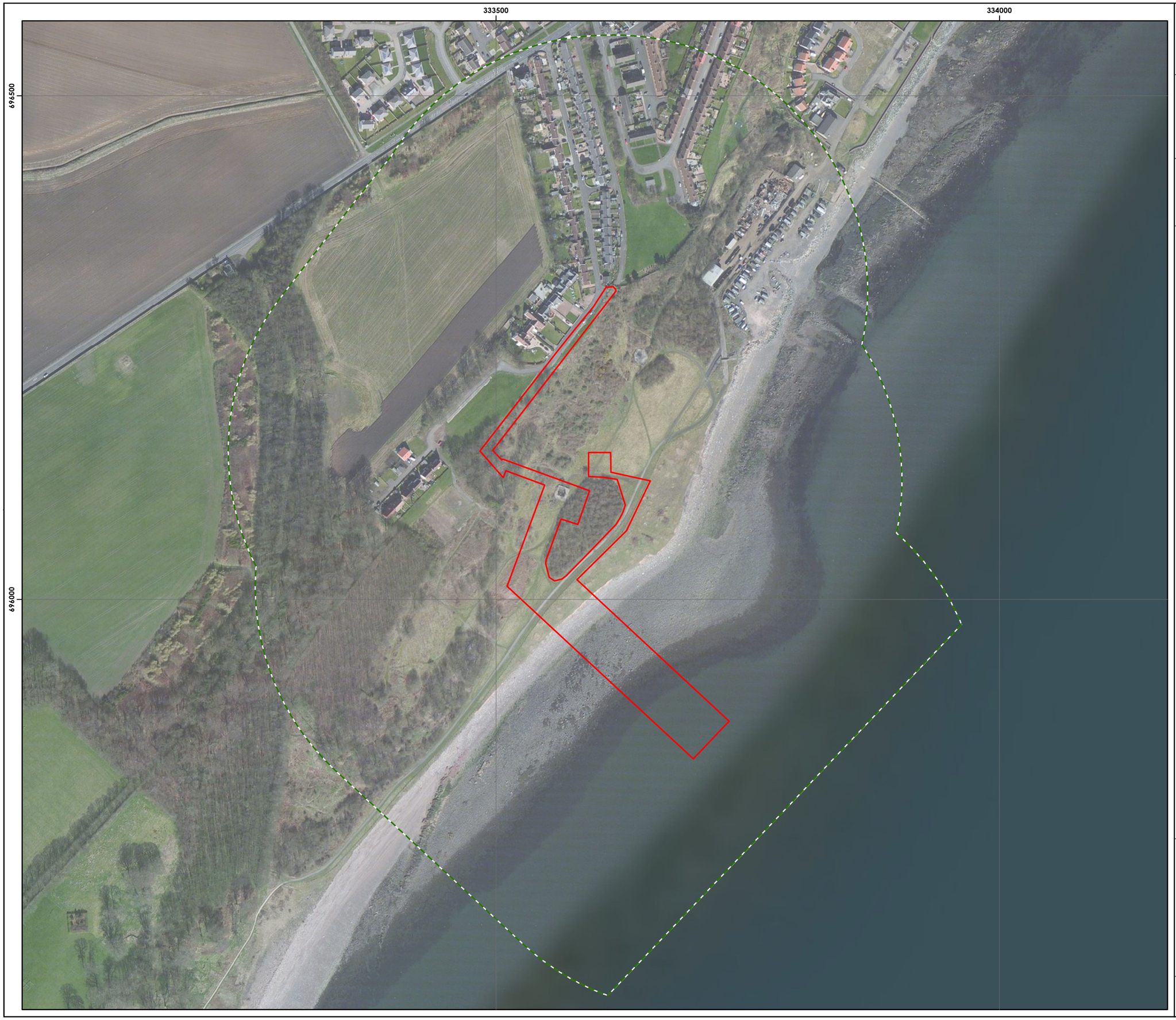
Appendices

Appendix A. Figure

Michael Colliery

Figure 1 Survey Area



Key

- Contractors working area
- Survey Area

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0 50 100 200

Meters

N

Scale @ A3:

1:3,500

01/03/2021 60353/EC/002a

Drawn by: KM Checked by: TH Approved by: JW

Appendix B. Photographs

Table 2: Photographic Plates

Photographic Plates, Description and Grid Reference	Photograph
Plate 1 Coastline at discharge point, highlighting the rocky nature of the shore. NGR: NT 33566 96005	
Plate 2 Muddy footpath and stand of dense scrub thicket between No. 2 shaft and the coastline. NGR: NT 33566 96005	

Photographic Plates, Description and Grid Reference	Photograph
Plate 3 Dense stand of scrub thicket. NGR: NT 33576 96077