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Screening for Appropriate Assessment

Tellus G8: Dublin City urban soil sampling survey

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Foreword

This screening assessment to determine the need for an appropriate assessment has been made in respect of the Tellus soil sampling survey in line with the requirements of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

The soil sampling is to take place across Dublin City. This will involve collecting soil samples at a density of one sample per 0.25 km² (or four samples per 1 km²)

Verdict

The survey area encompasses a small number of SAC and SPA's, in most cases sample locations can be chosen for the shallow soil samples that lie outside each SAC & SPA.

The collection of shallow soil samples is deemed not to pose a risk to any of the SAC's and SPA listed within the survey area.

Disclaimer

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1 Introduction

Tellus is a national programme to gather geochemical and geophysical data across the island of Ireland. The survey examines the chemical and physical properties of our soils, rocks and waters to inform the management of Ireland's environment and natural resources. The project is managed by the Geological Survey, Ireland and is funded by the Department of the Environment, Climate and Communications (DECC).

For more information on the Tellus Project please visit www.gsi.ie/tellus

2 Survey Area

The survey area for the G8 soil sampling block includes Dublin City. A total of 882 unique survey grid cells have been defined in the Dublin urban survey area 'G8'. The urban survey will continue on from where the Tellus peri-urban survey ended, which nominally used the M50 motorway as a mapped boundary feature

The G8 survey area is shown in Figure 1.

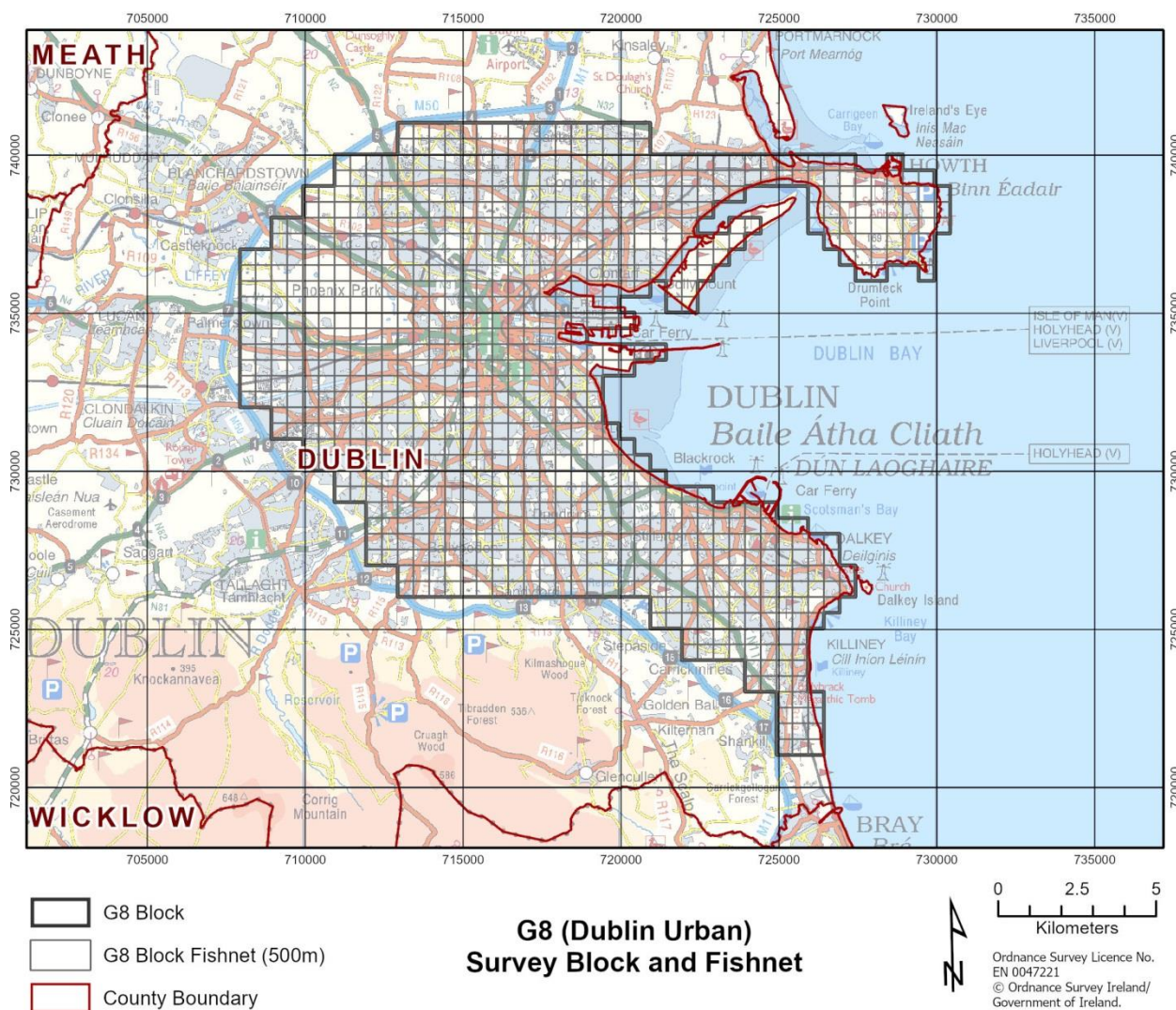


Figure 1: G8 Survey location map

3 Project Description

Tellus is a national airborne geophysical and ground geochemical survey managed by the Geological Survey Ireland and funded by the Department of Environment, Climate and Communications.

The geochemical programme collects regional soils samples at a density of one sample per 4 km². In urban areas a higher sampling density of one sample per 0.25 km² is used. These samples are then analysed for a number of different chemical elements allow geochemical variations to be mapped. All data collected and resultant maps are made freely available to the public. The data supports work in the geological, agricultural, mineral and environmental sectors.

Soil sampling in the G8 Block (Dublin City) involves the collection of soil samples from approx. 882 sites. The sample density is one sample per 0.25 km² (or 4 samples per 1 km²). Guidance will be provided in advance on what grounds are covered by any stakeholder groups from whom we have

expressed permission to sample e.g., local county councils, OPW, Port Authority. Training will also be provided on making appropriate site selections from a geochemical perspective but also on how and when ad hoc permissions may have to be sought in the field on the day of sampling. All samplers must abide by signage observed on site, whether this relates to health and safety, biosecurity or trespassing etc.

3.1 Survey Activity

The soil sampling survey involves teams of two samplers collecting soil samples from each of the predefined survey grids. Two sample depths are collected: a surface soil sample (labelled **A**) at 5-20 cm and a deeper soil sample (labelled **S**) at 25-50 cm. A third sample, if available will also be collected. This will comprise a vegetation sample from the same location as the soil sample, typically grass or weeds found next to the auger holes. Woody samples from trees or shrubs will not be collected. This sample will form part of a collaborative project between Tellus and the Trinity College Dublin Botany Department to investigate baseline chemical levels in urban vegetation samples.

Samplers will be instructed to collect samples from each pre-planned grid cell, but exact locations will be chosen by the samplers on site, deciding on the best available site depending on local features and accessibility and following permission from the landowner, if applicable.

Samples are collected using an auger. The auger makes a hole approximately 5cm in diameter. Each sample is made of a composite of material from auger flights taken from 5 holes distributed within an area (where possible) of approximately 20 m x 20 m. Vegetation samples will be collected using a pair of scissors to remove green leaf material from grass and weed. Material will be stored and dried in paper envelopes.

It is estimated that the 3 field teams working in pairs, will take approximately 4-5 weeks to complete the works.

4 SACs & SPAs

There are a number of Special Areas of Conservation (SAC) and Special Protection Areas (SPA) within the survey area with a 2 km buffer applied. A 2-kilometre buffer was applied to ensure any impacted Natural 2000 sites would be included in the screening process. These are mostly focussed along coastal regions. Table 1 & 2 below list all the SAC's & SPA's in the area and are also shown in Figure 2.

Table 1: List of SAC's within G9 survey block

SITECODE	SITE_NAME
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199	Baldoyle Bay SAC
202	Howth Head SAC
2193	Ireland's Eye SAC
3000	Rockabill to Dalkey Island SAC
206	North Dublin Bay SAC
210	South Dublin Bay SAC

Table 2: List of SPA within G9 survey block

SITECODE	SITE_NAME
4006	North Bull Island SPA
4016	Baldoyle Bay SPA
4024	South Dublin Bay and River Tolka Estuary SPA
4113	Howth Head Coast SPA
4117	Ireland's Eye SPA
4172	Dalkey Islands SPA

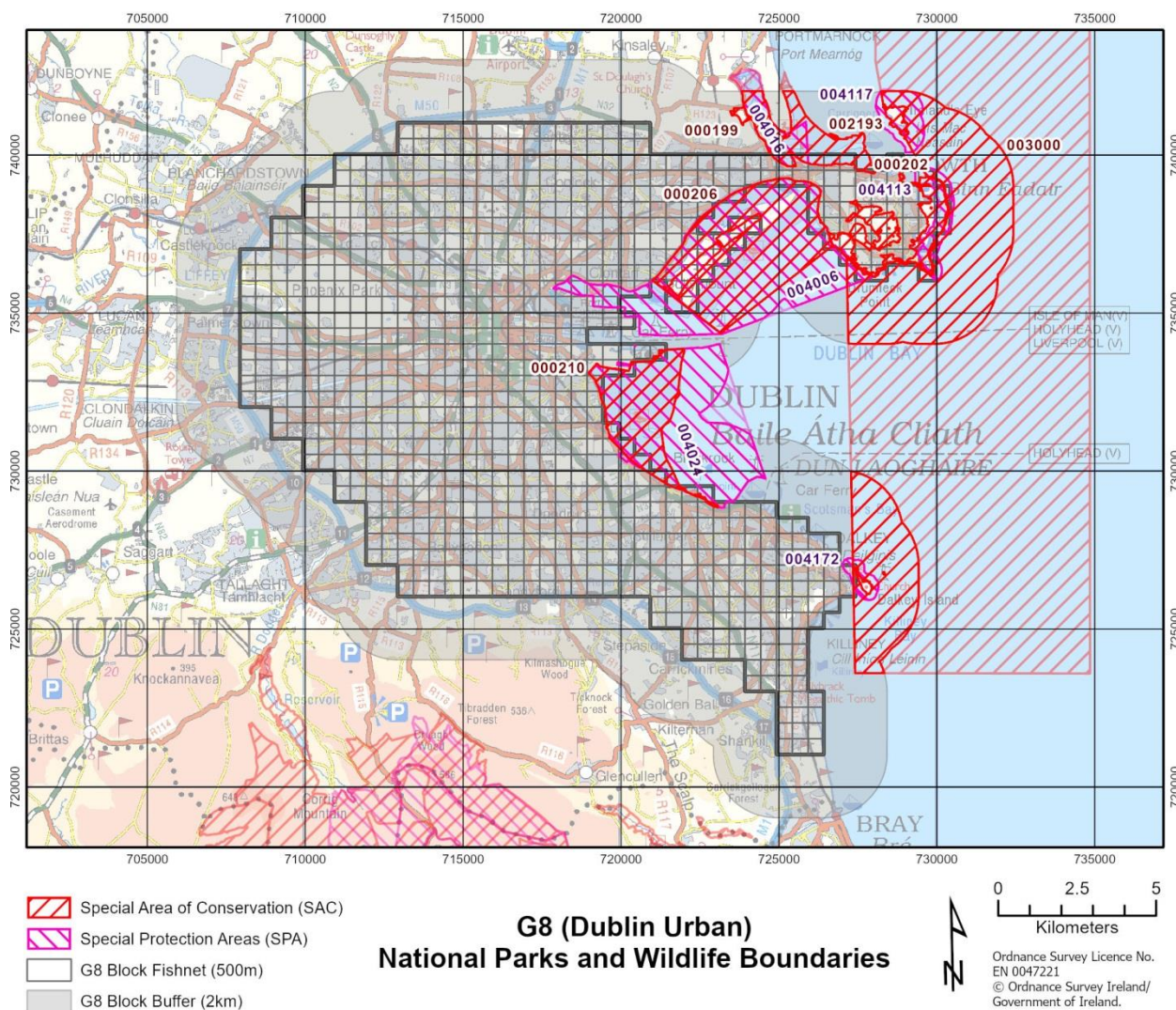


Figure 2: Map of G8 Survey block and corresponding SPA and SAC locations

5 Assessment of Likely Impact

Based on a review of sampling activities and guidance outlined in Appendix 1 taken from 'Assessment of effects – Geochemical surveying (Shallow soils)' taken from 'Expert Environmental Guidance on Exploration Methodologies; Part Two Geochemical Survey' produced by SLR for the Department of Communications, Climate Action and Environment, (the previous department name for DECC), two potential hazards arising from geochemical soil sampling were identified, these being:

- damage and/or disturbance of habitats; and
- noise and visual disturbance.

Section 8 of this document highlights the screening process for all qualifying interests of the SAC's and SPA within and 2km from the survey area. Where SLR in the Expert Environmental Guidance on Exploration Methodologies; Part Two Geochemical Survey' have designated "Likely Significant

Effects Uncertain” on any qualifying interest further information on why the qualifying interest was screened is provided.

The sampling activities will not result in any significant change to the site(s) or negatively impact the site in terms of habitat loss, fragmentation, disruption, disturbance or change key hydrogeological, ecological or hydrochemical characteristics of conservation value. It is not thought that soil sampling across the area will have any cumulative impacts as a whole.

6 Mitigation

All samplers will be issued detailed basemap layers that show the location of SPA and SAC. Sites should be selected by samplers to avoid these areas where possible. In locations where an entire grid square is covered by SPA or SAC a suitable site should be selected for sampling. Samplers should minimise any impact from driving and approaching the site on foot. Priority should be made for open public areas if permission is required this should be sought from the landowner prior to sampling. Intertidal zones, marshes, sand mud flats and cliff faces should be avoided.

7 Conclusions & Statement

The screening for an appropriate assessment is considered to incorporate all the relevant requirements of the EC DG Environment guidance document, ‘Assessment of plans and projects significantly affecting Natura 2000 site – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC’. The nature and extent of the proposed works is minor and temporary in duration. It is considered that the proposed works do not include any element that has the potential to significantly alter the favourable conservation objectives associated with the species and habitats, or, interfere with the key relationships that define the structure or function of the site(s).

8 Screening of Relevant Natura 2000 Sites

The following tables show the qualifying interest for each SAC and SPA within the survey area.

Table 3 : Qualifying interest for each SAC within the survey area along with potential hazards arising from sampling

Natura 2000 Site	Qualifying Interest	Interaction with Survey area	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Screened out? Y/N
Baldoyle Bay SAC (000199)	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In
	Salicornia and other annuals colonising mud and sand [1310]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In
	Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In
	Mediterranean salt meadows (Juncetalia maritimi) [1410]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In
Howth Head SAC (000202)	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In
	European dry heaths [4030]	Overlap but avoidable - No sampling in coastal, intertidal zones	N	N	Screened In

Ireland's Eye SAC (002193)	Perennial vegetation of stony banks [1220]	No overlap	N	N	Out
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	N	N	Out
	Annual vegetation of drift lines [1210]	No overlap	N	N	Out
Rockabill to Dalkey Island SAC (003000)	Reefs [1170]	No Overlap	N	N	Out
	Phocoena phocoena (Harbour Porpoise) [1351]	No Overlap	N	N	Out
North Dublin Bay SAC (000206)	Mudflats and sandflats not covered by seawater at low tide [1140]	No Overlap	N	N	Out
	Annual vegetation of drift lines [1210]	No Overlap	N	N	Out
	Salicornia and other annuals colonising mud and sand [1310]	No Overlap	N	N	Out
	Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330]	No Overlap	N	N	Out
	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No Overlap	N	N	Out
	Embryonic shifting dunes [2110]	No Overlap	N	N	Out
	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No Overlap	N	N	Out
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No Overlap	N	N	Out
	Humid dune slacks [2190]	No Overlap	N	N	Out
	Petalophyllum ralfsii (Petalwort) [1395]	No Overlap	N	N	Out
South Dublin Bay SAC (000210)	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap but avoidable m- No sampling in coastal,	N	N	Out

		intertidal zones			
	Annual vegetation of drift lines [1210]	Overlap but avoidable m- No sampling in coastal, intertidal zones	N	N	Out
	Salicornia and other annuals colonising mud and sand [1310]	Overlap but avoidable m- No sampling in coastal, intertidal zones	N	N	Out
	Embryonic shifting dunes [2110]	Overlap but avoidable m- No sampling in coastal, intertidal zones	N	N	Out

Table 4: Qualifying interest for each SPA within the survey area along with potential hazards arising from sampling

Natura 2000 Site	Qualifying Interest	Interaction with Survey area	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Screened in/Out
North Bull Island SPA (004006)	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Overlap but avoidable	N	N	Screened In
	Shelduck (<i>Tadorna tadorna</i>) [A048]	Overlap but avoidable	N	N	Screened In
	Teal (<i>Anas crecca</i>) [A052]	Overlap but avoidable	N	N	Screened In
	Pintail (<i>Anas acuta</i>) [A054]	Overlap but avoidable	N	N	Screened In
	Shoveler (<i>Anas clypeata</i>) [A056]	Overlap but avoidable	N	N	Screened In
	Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Overlap but avoidable	N	N	Screened In
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Overlap but avoidable	N	N	Screened In

	Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Overlap but avoidable	N	N	Screened In
	Knot (<i>Calidris canutus</i>) [A143]	Overlap but avoidable	N	N	Screened In
	Sanderling (<i>Calidris alba</i>) [A144]	Overlap but avoidable	N	N	Screened In
	Dunlin (<i>Calidris alpina</i>) [A149]	Overlap but avoidable	N	N	Screened In
	Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Overlap but avoidable	N	N	Screened In
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Overlap but avoidable	N	N	Screened In
	Curlew (<i>Numenius arquata</i>) [A160]	Overlap but avoidable	N	N	Screened In
	Redshank (<i>Tringa totanus</i>) [A162]	Overlap but avoidable	N	N	Screened In
	Turnstone (<i>Arenaria interpres</i>) [A169]	Overlap but avoidable	N	N	Screened In
	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Overlap but avoidable	N	N	Screened In
	Wetland and Waterbirds [A999]	Overlap but avoidable	N	N	Screened In
	Wigeon (<i>Anas penelope</i>) [A050]	Overlap but avoidable	N	N	Screened In
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Overlap but avoidable	N	N	Screened In
	Lapwing (<i>Vanellus vanellus</i>) [A142]	Overlap but avoidable	N	N	Screened In
	Dunlin (<i>Calidris alpina</i>) [A149]	Overlap but avoidable	N	N	Screened In
	Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Overlap but avoidable	N	N	Screened In
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Overlap but avoidable	N	N	Screened In
	Curlew (<i>Numenius arquata</i>) [A160]	Overlap but avoidable	N	N	Screened In
	Redshank (<i>Tringa totanus</i>) [A162]	Overlap but avoidable	N	N	Screened In
	Wetland and Waterbirds [A999]	Overlap but avoidable	N	N	Screened In

Baldoyle Bay SPA (004016)	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Overlap but avoidable	N	N	Screened In
	Shelduck (<i>Tadorna tadorna</i>) [A048]	Overlap but avoidable	N	N	Screened In
	Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Overlap but avoidable	N	N	Screened In
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Overlap but avoidable	N	N	Screened In
	Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Overlap but avoidable	N	N	Screened In
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Overlap but avoidable	N	N	Screened In
	Wetland and Waterbirds [A999]	Overlap but avoidable	N	N	Screened In
South Dublin Bay and River Tolka Estuary SPA (004024)	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	No overlap	N	N	Out
	Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	No overlap	N	N	Out
	Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	No overlap	N	N	Out
	Grey Plover (<i>Pluvialis squatarola</i>) [A141]	No overlap	N	N	Out
	Knot (<i>Calidris canutus</i>) [A143]	No overlap	N	N	Out
	Sanderling (<i>Calidris alba</i>) [A144]	No overlap	N	N	Out
	Dunlin (<i>Calidris alpina</i>) [A149]	No overlap	N	N	Out
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	No overlap	N	N	Out
	Redshank (<i>Tringa totanus</i>) [A162]	No overlap	N	N	Out
	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	No overlap	N	N	Out
	Roseate Tern (<i>Sterna dougallii</i>) [A192]	No overlap	N	N	Out
	Common Tern (<i>Sterna</i>	No overlap	N	N	Out

	hirundo) [A193]				
	Arctic Tern (Sterna paradisaea) [A194]	No overlap	N	N	Out
	Wetland and Waterbirds [A999]	No overlap	N	N	Out
Howth Head Coast SPA (004113)	Kittiwake (Rissa tridactyla) [A188]	No overlap	N	N	Out
Ireland's Eye SPA (004117)	Cormorant (Phalacrocorax carbo) [A017]	No overlap	N	N	Out
	Herring Gull (Larus argentatus) [A184]	No overlap	N	N	Out
	Kittiwake (Rissa tridactyla) [A188]	No overlap	N	N	Out
	Guillemot (Uria aalge) [A199]	No overlap	N	N	Out
	Razorbill (Alca torda) [A200]	No overlap	N	N	Out
Dalkey Islands SPA (004172)	Roseate Tern (Sterna dougallii) [A192]	No overlap	N	N	Out
	Common Tern (Sterna hirundo) [A193]	No overlap	N	N	Out
	Arctic Tern (Sterna paradisaea) [A194]	No Overlap	N	N	Out

The survey area encompasses all of the above SAC and SPA's, however, in most cases sample locations can be chosen for the soil samples that lie outside each SAC & SPA. In most cases SPA's and the SAC's lie outside the survey areas of interest in coastal or marine areas. No sampling will be carried out in coastal / intertidal zones. From a health and safety point of view all samples will be taken from dry land and away from sea edges, cliffs, mudflats, marshes and intertidal zones.

Appendix 1 provides a detailed examination of the impact of soil sampling for geochemical surveying.

Screening conclusions

Following the initial screening of all potentially impacted Natura 2000 sites by the proposed survey operations, the following sites have been screened-in for potential overlap with the survey area, however, in most cases sample locations can be chosen for the soil samples that lie outside each SAC & SPA. The collection of shallow soil samples is not thought to pose any significant risk to any of the SAC's and SPA listed within the survey area. Appendix 1 provides a detailed examination of the impact of soil sampling for geochemical surveying. The below table summarises the Natura 2000 sites where there is overlap:

Natura 2000 sites screened in for Appropriate Assessment:

- Baldoyle Bay SAC (000199)
- Howth Head SAC (000202)
- North Bull Island SPA (004006)
- Baldoyle Bay SPA (004016)

Qualifying interests to be assessed in Natura Impact Statement:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- European dry heaths [4030]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (*Calidris canutus*) [A143]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]

- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Wetland and Waterbirds [A999]
- Wigeon (*Anas penelope*) [A050]

9. Natura Impact Statement

From the screening report a number of Natura 2000 sites have been screened in. In most cases soil samples can be taken from locations where no impact is likely. However, in some grid squares sampling may take place within a European site. This will be shown as a data layer on the survey digital data capture tablets carried by each sampler. Allowing samplers to clearly identified potential areas within each grid cell.

These sites are further reviewed in tables 5 and 6 below for SAC and SPA sites and their qualifying interests respectively. The potential impact, along with mitigation measures and verdict is given. Reference is also made to Appendix 1: The assessment of effects of geochemical soil sampling.

Table 5: Screened in SAC and corresponding qualifying interest, mitigation measures and resultant impact.

Natura 2000 Site	Qualifying Interest	Potential Impact	Mitigation Measures	Comment / verdict
Baldoyle Bay SAC (000199)	Mudflats and sandflats not covered by seawater at low tide [1140]	Disturbance from samplers walking and digging holes?	Samplers not to access area	No impact
	Salicornia and other annuals colonising mud and sand [1310]	Disturbance from samplers walking and digging holes?	Samplers to choose site with the least impact. Avoid sand dunes, marshes, intertidal zones and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations Significant effects not likely.
	Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330]	Disturbance from samplers walking and digging holes?	Samplers to choose site with the least impact. Avoid sand dunes, marshes, intertidal zones and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations Significant effects not likely.
	Mediterranean salt meadows (Juncetalia maritimi) [1410]	Disturbance from samplers walking and digging holes?	Samplers to choose site with the least impact. Avoid sand dunes, marshes, intertidal zones and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations Significant effects not likely.

Howth Head SAC (000202)	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Disturbance from samplers walking and digging holes?	Samplers to choose site with the least impact. Avoid sand dunes, marshes, intertidal zones and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations Significant effects not likely.
	European dry heaths [4030]	Disturbance from samplers walking and digging holes?	Samplers to choose site with the least impact. Avoid sand dunes, marshes, intertidal zones and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations Significant effects not likely

Table 6: showing the qualifying interest for each SPA within the survey area along with potential hazards arising from sampling

Natura 2000 Site	Qualifying Interest	Potential Impact	Mitigation Measures	Comment / verdict
North Bull Island SPA (004006)	Light-bellied Brent Goose (Branta bernicla hrota) [A046]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Shelduck (Tadorna tadorna) [A048]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones,	Minimal impact, the activity is not significantly intrusive. The activity not

			marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Teal (<i>Anas crecca</i>) [A052]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Pintail (<i>Anas acuta</i>) [A054]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Shoveler (<i>Anas clypeata</i>) [A056]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Oystercatcher (<i>Haematopus</i>	Disturbance from	Avoid known breeding sites, avoid	Minimal impact, the activity is not

	ostralegus) [A130]	samplers walking	forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Golden Plover (Pluvialis apricaria) [A140]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Grey Plover (Pluvialis squatarola) [A141]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Knot (Calidris canutus) [A143]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.

	Sanderling (<i>Calidris alba</i>) [A144]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Dunlin (<i>Calidris alpina</i>) [A149]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.

			ecological advice. See Appendix 1.	
	Curlew (<i>Numenius arquata</i>) [A160]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Redshank (<i>Tringa totanus</i>) [A162]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Turnstone (<i>Arenaria interpres</i>) [A169]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant

			suitability of a site they should seek ecological advice. See Appendix 1.	effects not likely.
	Wetland and Waterbirds [A999]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Wigeon (Anas penelope) [A050]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Golden Plover (Pluvialis apricaria) [A140]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Lapwing (Vanellus vanellus) [A142]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant

			guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	effects not likely.
	Dunlin (<i>Calidris alpina</i>) [A149]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Curlew (<i>Numenius arquata</i>) [A160]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} ,1hr AQTAG09

			access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	thresholds. Therefore significant effects not likely.
	Redshank (<i>Tringa totanus</i>) [A162]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Wetland and Waterbirds [A999]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
Baldoyle Bay SPA (004016)	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq,1hr} AQTAG09 thresholds. Therefore significant effects not likely.
	Shelduck (<i>Tadorna tadorna</i>) [A048]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB

			minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Disturbance from	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones,	Minimal impact, the activity is not significantly intrusive. The activity not

		samplers walking	marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.
	Wetland and Waterbirds [A999]	Disturbance from samplers walking Disturbance from samplers walking	Avoid known breeding sites, avoid forestry, cliff faces rivers, intertidal zones, marshes and waterways. Maintain minimum noise disturbance, no vehicles access. Samplers to follow ecological guidance, If samplers are unsure on suitability of a site they should seek ecological advice. See Appendix 1.	Minimal impact, the activity is not significantly intrusive. The activity not likely to exceed noise levels of 80dB LA _{max} and 55dB LA _{eq} , 1hr AQTAG09 thresholds. Therefore significant effects not likely.

Note

- i) Samples are to use the supplied digital data capture devices to identify grid squares or sample locations that overlap with designated areas.
- ii) Samplers should follow ecological guidance where applicable.
- iii) In areas where samplers are unsure as to the specifics of a site, independent ecological advice should be sort.
- iv) If a sample site is shown to overlap with areas known to contain protected flora that appropriate ecological advice is sort.

Appendix 1

ASSESSMENT OF EFFECTS: GEOCHEMICAL SURVEYING (SHALLOW SOILS)

Taken from Expert Environmental Guidance on Exploration Methodologies; Part Two Geochemical Survey' produced by SLR for the Department of Communications, Climate Action and Environment

The following provides an assessment of likely significant effects of shallow soil geochemical sampling on a Special Area of Conservation (SAC; and a Special Protection Area (SPA; Section 6.4), respectively, during Geochemical Surveying (Shallow Soils).

A1 Potential Hazards – Geochemical Surveying (Shallow Soils)

This section identifies the potential hazards (i.e. the pathways) through which Geochemical Surveying (Shallow Soils) activities may have the potential risk exposure of likely significant effects on Natura 2000 sites. This essentially is a preliminary assessment of risk and probability (see Chapter 4 above).

Table 5 provides a preliminary risk assessment of Geochemical Surveying (Shallow Soil) activities (without the application of standard operating procedures designed to avoid or reduce significant effects).

Table A1: Preliminary Risk Assessment - Geochemical Surveying (Shallow Soils)

Potential Hazard	SAC		SPA	
	Annex I Habitats	Annex II Species	Qualifying Birds	Wetlands
Direct Loss of Habitat	Not likely	Not likely	Not likely	Not Likely
Damage and/or Disturbance of Habitats causing a change in the Vegetation Community or where there would be an Effect on the Population Status of an Individual or Group of Species	Unlikely	Extremely Unlikely to Unlikely depending upon species	Unlikely	Extremely unlikely
Habitat Fragmentation	Not likely	Not likely	Not likely	Not Likely
Disturbance (Noise and Visual Disturbance) Low Levels from one or two persons, High from Mechanised Sampling.	Not applicable	Unlikely	Unlikely	Not applicable
Disturbance (Lighting)	Not likely	Not likely	Not likely	Not Likely
Changes in Air Quality (Deposition of Dust)	Not likely	Not likely	Not likely	Not Likely
Changes in Air Quality (Emissions to Air)	Not likely	Not likely	Not likely	Not Likely
Alteration to Hydrological Regime	Not likely	Not likely	Not likely	Not Likely
Alteration to Hydrogeological Regime	Not likely	Not likely	Not likely	Not Likely
Changes in Surface Water Quality	Not likely	Not Likely	Not Likely	Not Likely
Increase in Sedimentation	Extremely unlikely	Extremely unlikely	Extremely unlikely	Extremely unlikely

Changes in Groundwater Quality	Not likely	Not likely	Not likely	Not Likely
Introduction and spread of Non-Native Species	Extremely unlikely	Extremely unlikely	Extremely unlikely	Extremely unlikely

Based on the risk assessment in Table 5, the potential hazards required for any further consideration as part of the screening matrix include:

- **damage and/or disturbance of habitats; and**
- **noise and visual disturbance.**

A1.1 Damage and/or Disturbance of Habitats

Geochemical Surveying (Shallow Soils) is not likely to result in any direct loss of habitat but may result in the damage and disturbance of habitats during the walkover of a site and removal of samples. In most cases the effects are likely to be temporary and reversible in nature except for the most sensitive of habitats.

The damage and disturbance of sensitive habitats can result in a change in the physical attributes of the habitat and its associated vegetation communities. Stresses induced by changes in physical attributes, e.g. trampling, which can increase soil compaction and create gaps which may allow stress tolerant species to dominate. Such occurrences can result in changes to the structure and species composition within a particular area. For some habitats any changes in key indicator plant species can alter the classification given to any particularly vegetation community.

Any damage and disturbance to habitats can have a direct impact on individual populations of qualifying species, or on other individual and/or groups of species that any qualifying species is dependent upon, i.e. food source, or indirectly by increasing levels of stress placed upon populations of some species.

The damage and disturbance of habitats outside the defined boundary of a Natura 2000 site may also have an impact on habitats that can be considered to contribute to the habitat resource of any qualifying habitats. Damage to those external habitats can also affect widely-ranging species that may lose part of breeding/foraging range and therefore individuals' fitness may be affected. These effects can ultimately result in increased mortality or productivity reduction.

Where a qualifying species may be wide ranging it is important to consider the site of any proposed exploration activity and its connectivity with a Natura 2000 site. This is especially important in relation to the potential dispersal and foraging distances that some species of birds may travel outside the boundary of a SPA. Where relevant, guidance published by Scottish Natural Heritage (SNH) ⁶ should be used to determine the core ranges for many species.

A1.2 Noise and Visual Disturbance

Increases in human disturbance can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing. Human disturbance particularly includes noise and visual disturbance from human activity from Geochemical Surveying (Shallow Soils).

The response of individual species to increased levels of human disturbance will depend upon a number of factors. The factors include:

- sensitivity;
- reproductive status;
- previous exposure to human disturbance;
- behaviour during the event;
- species tolerance to disturbance;
- location in relation to the source;
- availability of alternative nearby habitat; and
- environmental factors (e.g. topography, vegetation and atmospheric conditions which can influence noise levels).

⁶ Scottish Natural Heritage (2013). *Assessing Connectivity with Special Protection Areas (SPAs)*. Scottish Natural Heritage.

The level of disturbance will also be dependent upon the existing ambient noise levels and maximum noise levels.

It is generally accepted that for noise and visual disturbance, certain species or groups of species can be impacted upon up to a distance of 300m from source for high level and discontinuous disturbance. These distances are reduced for low level and/or continuous disturbance levels. However, where specific guidance indicates otherwise, the potential zone of an activity can increase, depending upon the susceptibility of a particular species to disturbance. High levels of noise and visual disturbance have the potential to significantly increase the distance where species may alter their behaviour.

Where noise levels are below 80dB L_{Amax} and 55dB L_{Aeq} , 1hr measured at a nest site for birds or other feature used by wildlife it is considered unlikely that it will have an adverse impact on any such species, in accordance with guidance produced by Air Quality Technical Advisory Group (AQTAG09)⁷.

Geochemical Surveying (Shallow Soils) will generally produce low levels of noise and visual disturbance and will typically be below the AQTAG threshold levels.

A2 Potential Zone of Influence

Based on the nature of the exploration activity and on the potential hazards it is considered that the distance for which any Geochemical Surveying (Shallow Soils) should be evaluated in terms of Natura 2000 sites is up to a maximum radius of 1km based on the full extent of the licensable exploration activity.

A3 Special Areas of Conservation

The potential for likely significant effects of Geochemical Surveying (Shallow Soils) on a SAC or candidate SAC (cSAC) are considered separately under *Annex 1 Habitats* and *Annex II Species* below. Please refer to Table 1 in Chapter 4.0 for colour codes. Table 6 below provides an overview as to whether activities associated with Geochemical Surveying (Shallow Soils) are likely to have significant effects on individual Annex I habitats for which a SAC or cSAC may be designated as being of European importance.

Where it is identified that there is a probable risk and the possibility or uncertainty of likely significant effects then further information is likely to be required by the EMD in making its determination. The level of information and details of standard operating procedures to be followed will have to be appropriate for any activities and in relation to the individual qualifying Annex I habitat concerned. The information and standard operating procedures will also have to be appropriate for the Natura 2000 site which may be impacted upon.

Where no likely significant effects have been identified but there is a risk of an adverse effect on sensitive features the EMD may require further information. The information required will be on a site by site basis, to be submitted by the applicant in order to completely satisfy EMD that the activities will have no likely significant effects on certain qualifying Annex I habitats.

⁷ Ormerod, L., Goodlad, N. and Horton, K. (2005). *AQTAG09 – Guidance on the Effects of Industrial Noise on Wildlife*. Air

Table 6 Screening of Likely Significant Effects of Geochemical Sampling (Shallow Soils) on Annex I Habitats

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
FRESHWATER					
3110	Oligotrophic waters containing very few minerals of sandy plains: <i>Littorelletalia uniflorae</i>	Access & Egress	Potential exposure to hazard where activity may occur around the margins of lakes where some, but not all, vegetation zones are present.		
		Operation	Activity not considered significantly intrusive where there would be any changes in the structure and composition or extent of any vegetation community over normal natural variations in the marginal zone. Significant effects not likely.		
		Abstraction & Return			
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	Access & Egress	Potential exposure to hazard where activity may occur around the margins of lakes and interface between water and land supporting vegetation communities associated with this habitat-type.		
		Operation	Activity but not significantly intrusive where there would be any changes in the structure and composition or extent of any vegetation community present in the interface area between water and land over normal natural variations. Significant effects not likely.		
		Abstraction & Return			
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	Access & Egress	Potential exposure to hazard where activity may occur around the margins of lakes where some, but not all, vegetation zones are present.		
		Operation	Activity not significantly intrusive where there would be any changes in the <i>Chara</i> community structure and composition or extent of any vegetation community over normal natural variations in the marginal zone. Significant effects not likely.		
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation	Access & Egress	Potential exposure to hazard where activity may occur around the margins of lakes where some, but not all, vegetation zones are present.		
		Operation	Activity not considered significantly intrusive where there would be any changes in the structure and composition or extent of any vegetation community over normal natural variations in the marginal zone. Significant effects not likely.		
		Abstraction & Return			
3160	Natural dystrophic lakes and ponds	Access & Egress	Potential exposure to hazard where activity may occur on the edge of fringing habitat typically associated with floating carpets of vegetation.		Proposer of activity may be required to provide further information on standard operating procedures to be implemented to avoid and/or minimise disturbance and damage of this habitat-type to satisfy no LSE.
		Operation	Activity with potential to be intrusive but unlikely to change the structure and composition or extent of any vegetation community over normal natural variations and which would be anticipated to recover relatively quickly from any disturbance. Significant effects not likely.		
		Abstraction & Return			
3180	Turloughs	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Access & Egress			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation			
		Abstraction & Return			
3270	Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	Access & Egress			
		Operation			
		Abstraction & Return			
GRASSLAND AND MARSH					
6130	Calaminarian grasslands of the <i>Violetalia calaminariae</i>	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			
6230	Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
6410	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
6510	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
HEATH					
4010	Northern Atlantic wet heaths with <i>Erica tetralix</i>	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		Proposer of activity may be required to provide further information on standard operating procedures to be implemented to avoid and/or minimise disturbance and damage of this habitat-type to satisfy no LSE.
		Operation			
		Abstraction & Return			
4030	European dry heaths	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
4060	Alpine and Boreal heaths	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of		

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation	any associated vegetation community over normal natural variations. Significant effects not likely.		
		Abstraction & Return			
PEATLANDS					
7110	Active raised bogs	Access & Egress			
		Operation			
		Abstraction & Return			
7120	Degraded raised bogs still capable of natural regeneration	Access & Egress			
		Operation			
		Abstraction & Return			
7130	Blanket bogs	Access & Egress			
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			
7140	Transition mires and quaking bogs	Access & Egress			
		Operation			
		Abstraction & Return			
7150	Depressions on peat substrates of the <i>Rhynchosporion</i>	Access & Egress			
		Operation			
		Abstraction & Return			
7210	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
7220	Petrifying springs with tufa formation (<i>Cratoneurion</i>)	Access & Egress	Activity with potential to be intrusive on a habitat highly sensitive to disturbance and which may be susceptible to footfall. Habitat likely to recover relatively quickly providing other physical attributes not altered through the proposed activities. Significant effects uncertain.		Proposer of activity should provide further information on standard operating procedures to be implemented to avoid and/or minimise disturbance and damage of this habitat-type in order for EMD to be satisfied of no LSE. These habitats typically cover small areas where it should be possible to avoid these point or linear formations.
		Operation			
		Abstraction & Return			
7230	Alkaline fens	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
WOODLAND AND SCRUB					
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of		

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation	any associated vegetation community over normal natural variations. Significant effects not likely.		
		Abstraction & Return			
91D0	Bog woodland	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
91J0	<i>Taxus baccata</i> woods of the British Isles	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			
EXPOSED ROCK/DISTURBED GROUND					
8110	Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)	Access & Egress			
		Operation			
		Abstraction & Return			
8120	Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietia rotundifolia</i>)	Access & Egress			
		Operation			
		Abstraction & Return			
8210	Calcareous rocky slopes with chasmophytic vegetation	Access & Egress			
		Operation			
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
8220	Siliceous rocky slopes with chasmophytic vegetation	Access & Egress			
		Operation			
		Abstraction & Return			
8240	Limestone pavements	Access & Egress			
		Operation			
		Abstraction & Return			
8310	Caves not open to the public	Access & Egress	Potential exposure to hazard and which may susceptible to disturbance especially where sensitive species of moss or algae may be present on the rock / cave soils. Habitat likely to recover relatively quickly providing other physical attributes not altered through the proposed activities. Significant effects uncertain.		Proposer of activity should provide further information on standard operating procedures to be implemented to avoid and/or minimise disturbance and damage of this habitat-type in order for EMD to be satisfied of no LSE.
		Operation			
		Abstraction & Return			It should be possible to avoid, as far as practically possible, areas where mosses and algal carpets are present.
MARINE, COASTAL AND HALOPHYTIC HABITATS					
1110	Sandbanks which are slightly covered by sea water all the time	Access & Egress			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation			
		Abstraction & Return			
1130	Estuaries	Access & Egress			
		Operation			
		Abstraction & Return			
1140	Mudflats and sandflats not covered by seawater at low tide	Access & Egress			
		Operation			
		Abstraction & Return			
1150	Coastal lagoons	Access & Egress			
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			
1160	Large shallow inlets and bays	Access & Egress			
		Operation			
		Abstraction & Return			
1170	Reefs	Access & Egress			
		Operation			
		Abstraction & Return			
1210	Annual vegetation of drift lines	Access & Egress			
		Operation			
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
1220	Perennial vegetation of stony banks	Access & Egress			
		Operation			
		Abstraction & Return			
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
1310	<i>Salicornia</i> and other annuals colonising mud and sand	Access & Egress			
		Operation			
		Abstraction & Return			
1320	<i>Spartina</i> swards (<i>Spartinion maritimae</i>)	Access & Egress			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation			
		Abstraction & Return			
1330	Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	Access & Egress			
		Operation			
		Abstraction & Return			
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Access & Egress			
		Operation			
		Abstraction & Return			
1420	Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			
8330	Submerged or partially submerged sea caves	Access & Egress			
		Operation			
		Abstraction & Return			
COASTAL SAND DUNES					
2110	Embryonic shifting dunes	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
2130	Fixed dunes with herbaceous vegetation ("grey dunes")	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
2140	Decalcified fixed dunes with <i>Empetrum nigrum</i>	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
2150	Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
2160	Dunes with <i>Hippophae rhamnoides</i>	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of		

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Operation	any associated vegetation community over normal natural variations. Significant effects not likely.		
		Abstraction & Return			
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
2190	Humid dune slacks	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			
		Abstraction & Return			
21A0	Machairs	Access & Egress	Potential exposure to hazard but activity not significantly intrusive to change the structure and composition or extent of any associated vegetation community over normal natural variations. Significant effects not likely.		
		Operation			

EU Code	Habitat	Geochemical Sampling (Shallow Soils)	Damage and/or Disturbance of Habitats	Noise and Visual Disturbance	Areas of influence and items to note
		Abstraction & Return			