Environmental Impact Assessment Report

NISA

North Irish Sea Array

Volume 10: Appendices (Onshore)

Appendix 23.5
Annex 1 Habitat Quadrat and Assessment Sheets

Statkraft

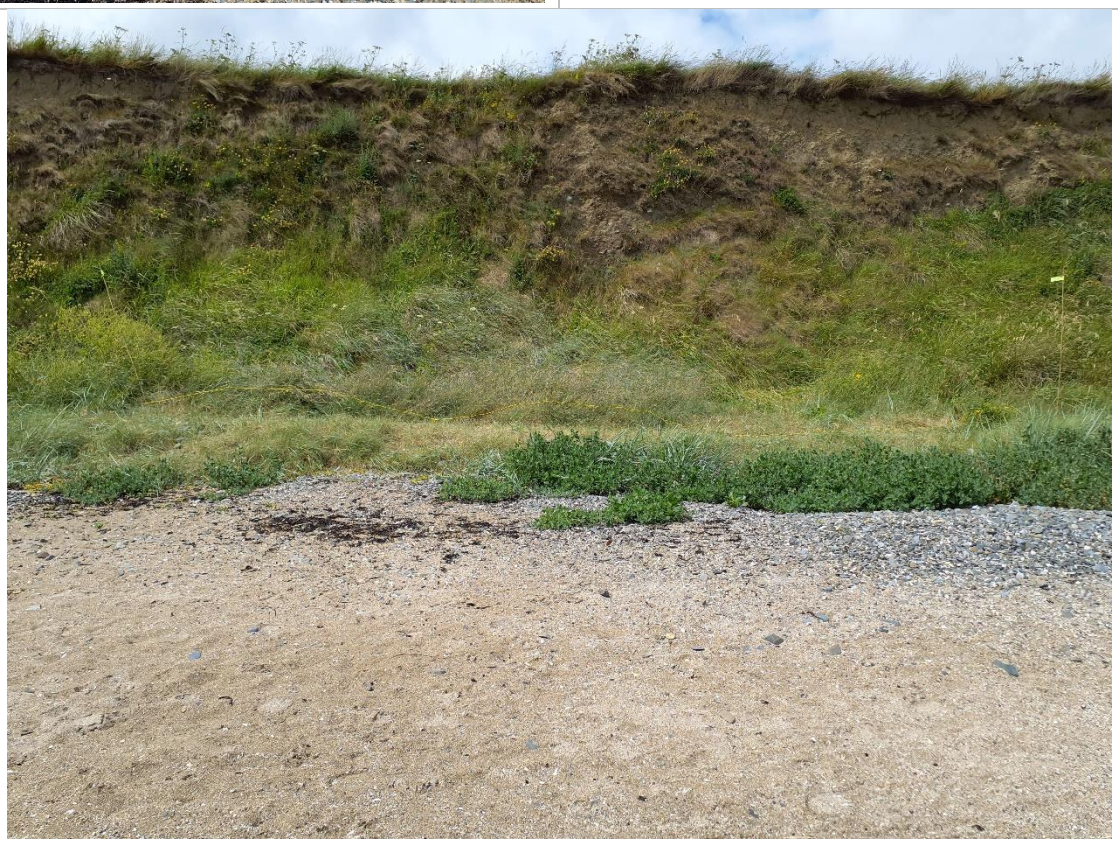
CIP Copenhagen Infrastructure Partners

GoBe APEMGroup

ARUP

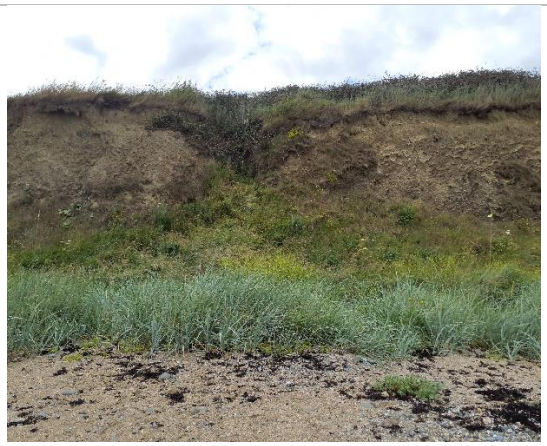
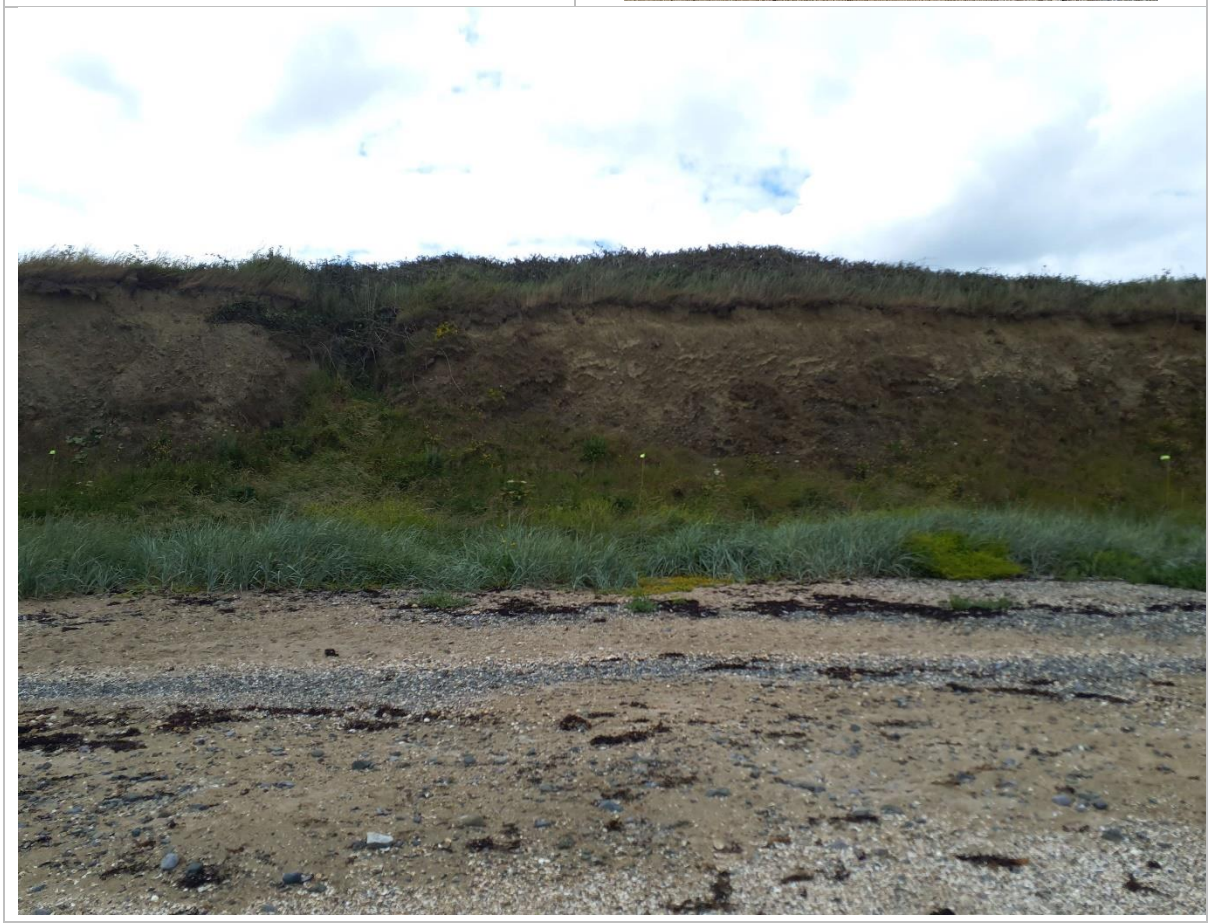
Appendix 23.5 Annex 1 Habitat Quadrat and Assessment sheets

Vegetated Sea cliffs of the Atlantic and Baltic coasts (1230) – Swath 1

Swath 1	**Location (IG): O 19882 64895**
	
	
Date	30/06/2022
GPS reading	Lat: 53.62035 Lon: -6.188768
Size m^2	100
Soft pioneer bare soil %	30
Soft pioneer herbaceous cover %	30
Soft pioneer graminoid cover %	55
Coastal grassland bare soil %	40
Coastal grassland herbaceous cover %	26

Coastal grassland graminoid cover %	30		
Coastal grassland Shrub/ericoid cover %	1		
No. plant species in quadrat	27		
Species	**% cover**	**DOMIN**	**Zone**
Anthyllis vulneraria	15	5	Soft cliff pioneer
Atriplex prostrata	25	5	Soft cliff pioneer
Honckenya peploides	10	4	Soft cliff pioneer
Beta vulgaris	5	4	Soft cliff pioneer
Brassica spp.	3	3	Soft cliff pioneer
Cirsium vulgare	1	3	Soft cliff pioneer
Centaurea nigra	5	4	Soft cliff pioneer
Daucus carota	1	3	Soft cliff pioneer
Galium aparine	2	3	Soft cliff pioneer
Galium verum	5	4	Soft cliff pioneer
Heracleum sphondylium	3	3	Soft cliff pioneer
Hypochaeris radicata	2	3	Soft cliff pioneer
Plantago lanceolata	1	3	Soft cliff pioneer
Potentilla reptans	3	3	Soft cliff pioneer
Sonchus arvensis	3	3	Soft cliff pioneer
Taraxacum spp.	1	3	Soft cliff pioneer
Tripleurospermum maritimum	2	3	Soft cliff pioneer
Agrostis stolonifera	3	3	Soft cliff pioneer
Ammophila arenaria	20	5	Soft cliff pioneer
Arrhenatherum elatius	5	4	Soft cliff pioneer
Dactylis glomerata	5	4	Soft cliff pioneer
Elymus repens	13	5	Soft cliff pioneer
Festuca rubra	25	5	Soft cliff pioneer
Holcus lanatus	5	4	Soft cliff pioneer
Leymus arenarius	18	5	Soft cliff pioneer
Anthyllis vulneraria	10	4	Coastal grassland on soft cliffs
Centaurea nigra	5	4	Coastal grassland on soft cliffs
Daucus carota	2	3	Coastal grassland on soft cliffs
Heracleum sphondylium	2	3	Coastal grassland on soft cliffs
Hypochaeris radicata	3	3	Coastal grassland on soft cliffs
Jacobaea vulgaris	1	3	Coastal grassland on soft cliffs
Plantago lanceolata	1	3	Coastal grassland on soft cliffs
Potentilla reptans	2	3	Coastal grassland on soft cliffs
Agrostis stolonifera	5	4	Coastal grassland on soft cliffs
Festuca rubra	25	5	Coastal grassland on soft cliffs
Hedera helix	1	3	Coastal grassland on soft cliffs

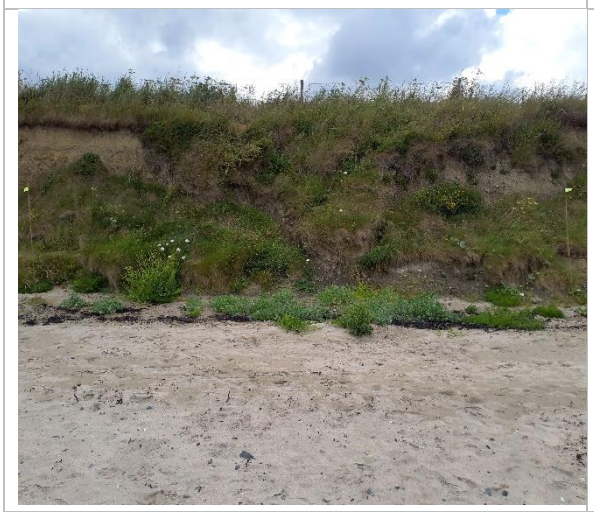
Vegetated Sea cliffs of the Atlantic and Baltic coasts (1230) – Swath 2

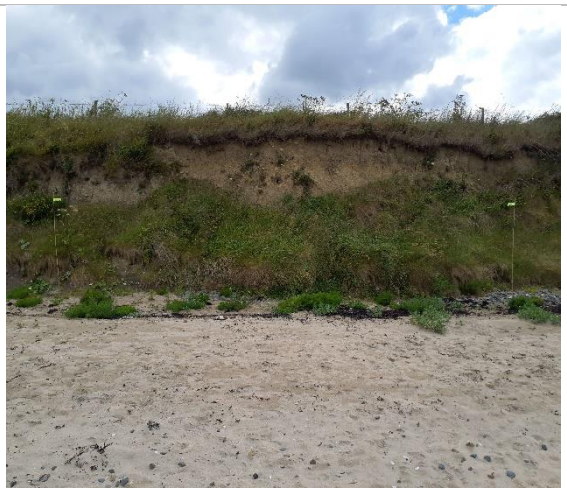
Swath 2	**Location (IG): O 19870 65042**
	
	
Date	30/06/2022
GPS reading	Lat: 53.62167 Lon: -6.188898
Size m²	100
Slope (degrees)	5
Soft pioneer bare soil %	25
Soft pioneer herbaceous cover %	30
Soft pioneer graminoid cover %	50
Coastal grassland bare soil %	12

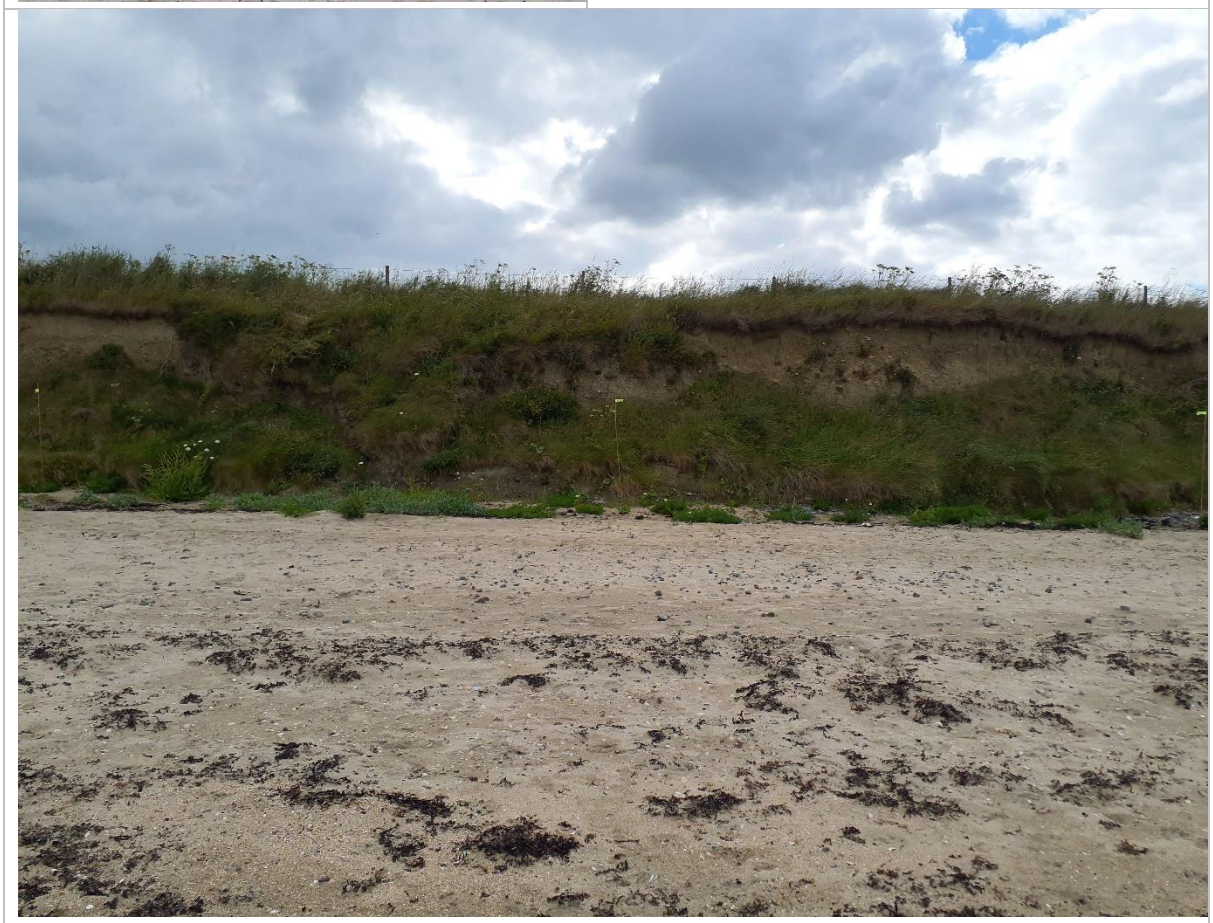
Coastal grassland herbaceous cover %	8		
Coastal grassland graminoid cover %	30		
Coastal grassland Shrub/ericoid cover %	50		
No. plant species in quadrat	32		
Species	**% cover**	**DOMIN**	**LEVEL**
Anthyllis vulneraria	3	3	Soft cliff pioneer
Atriplex prostrata	5	4	Soft cliff pioneer
Beta vulgaris	8	4	Soft cliff pioneer
Brassica spp.	9	4	Soft cliff pioneer
Centaurea nigra	5	4	Soft cliff pioneer
Cirsium arvense	2	3	Soft cliff pioneer
Daucus carota	5	4	Soft cliff pioneer
Galium aparine	1	3	Soft cliff pioneer
Galium verum	3	3	Soft cliff pioneer
Heracleum sphondylium	1	3	Soft cliff pioneer
Honckenya peploides	3	3	Soft cliff pioneer
Hypochaeris radicata	1	3	Soft cliff pioneer
Lotus corniculatus	1	3	Soft cliff pioneer
Plantago lanceolata	2	3	Soft cliff pioneer
Potentilla anserina	1	3	Soft cliff pioneer
Potentilla reptans	5	4	Soft cliff pioneer
Rumex crispus	1	3	Soft cliff pioneer
Sonchus arvensis	2	3	Soft cliff pioneer
Tripleurospermum spp.	2	3	Soft cliff pioneer
Tussilago farfara	1	3	Soft cliff pioneer
Ammophila arenaria	45	7	Soft cliff pioneer
Agrostis canina	10	4	Soft cliff pioneer
Agrostis stolonifera	4	3	Soft cliff pioneer
Arrhenatherum elatius	20	5	Soft cliff pioneer
Dactylis glomerata	2	3	Soft cliff pioneer
Elymus repens	7	4	Soft cliff pioneer
Festuca rubra	27	6	Soft cliff pioneer
Leymus arenaria	10	4	Soft cliff pioneer
Lolium pratensis	5	4	Soft cliff pioneer
Rubus fruticosus	3	3	Soft cliff pioneer
Anthyllis vulneraria	1	3	Coastal grassland on soft cliffs
Galium verum	5	4	Coastal grassland on soft cliffs
Potentilla reptans	1	3	Coastal grassland on soft cliffs
Sonchus arvensis	1	3	Coastal grassland on soft cliffs
Arrhenatherum elatius	10	4	Coastal grassland on soft cliffs
Festuca rubra	15	5	Coastal grassland on soft cliffs
Holcus lanatus	5	4	Coastal grassland on soft cliffs
Rubus fruticosus	50	7	Coastal grassland on soft cliffs

Vegetated sea cliffs of the Atlantic and Baltic coasts (1230) – Swath 3

Swath 3	Location (IG): H 75674 90344







Date	30/06/2022
GPS reading	Lat: 53.622841 Lon: -6.188611
Size m^2	100
Soft pioneer bare soil %	40
Soft pioneer herbaceous cover %	15
Soft pioneer graminoid cover %	20
Coastal grassland bare soil %	-

Coastal grassland herbaceous cover %	31		
Coastal grassland graminoid cover %	70		
Coastal grassland Shrub/ericoid cover %	-		
No. plant species in quadrat	32		
Species	**% cover**	**DOMIN**	**LEVEL**
Achillea millefolium	1	3	Soft cliff pioneer
Atriplex prostrata	8	4	Soft cliff pioneer
Beta vulgaris	4	3	Soft cliff pioneer
Brassica spp.	1	3	Soft cliff pioneer
Centaurea nigra	3	3	Soft cliff pioneer
Centaurea jacea	2	3	Soft cliff pioneer
Cirsium arvense	2	3	Soft cliff pioneer
Daucus carota	3	3	Soft cliff pioneer
Equisetum spp.	1	3	Soft cliff pioneer
Galium aparine	1	3	Soft cliff pioneer
Heracleum sphondylium	2	3	Soft cliff pioneer
Lotus corniculatus	5	4	Soft cliff pioneer
Matricaria discoidea	1	3	Soft cliff pioneer
Ononis repens	3	3	Soft cliff pioneer
Potentilla reptans	3	3	Soft cliff pioneer
Tripleurospermum maritimum	7	4	Soft cliff pioneer
Tussilago farfara	3	3	Soft cliff pioneer
Rumex crispus	1	3	Soft cliff pioneer
Sonchus arvensis	2	3	Soft cliff pioneer
Plantago lanceolata	2	3	Soft cliff pioneer
Potentilla anserina	2	3	Soft cliff pioneer
Potentilla reptans	3	3	Soft cliff pioneer
Ammophila arenaria	1	3	Soft cliff pioneer
Agrostis canina	10	4	Soft cliff pioneer
Agrostis stolonifera	3	3	Soft cliff pioneer
Arrhenatherum elatius	3	3	Soft cliff pioneer
Dactylis glomerata	1	3	Soft cliff pioneer
Festuca rubra	3	3	Soft cliff pioneer
Leymus arenaria	1	3	Soft cliff pioneer
Lolium pratensis	5	4	Soft cliff pioneer
Rubus fruticosus	3	3	Soft cliff pioneer
Galium verum	15	5	Coastal grassland on soft cliffs
Heracleum sphondylium	10	4	Coastal grassland on soft cliffs
Plantago lanceolata	1	3	Coastal grassland on soft cliffs
Potentilla reptans	5	4	Coastal grassland on soft cliffs
Arrhenatherum elatius	40	7	Coastal grassland on soft cliffs
Agrostis stolonifera	5	4	Coastal grassland on soft cliffs
Festuca rubra	25	5	Coastal grassland on soft cliffs

Swath structural information

Site ID	1	1	1
Site Name	Balbriggan	Balbriggan	Balbriggan
Swath ID	1	2	3
Ecologist ID	JK	JK	JK
Date	30/06/22	30/06/22	30/06/22

Grid references

Swath centre	0718822 0764942	0719808 0765066	0719825 0765200
Swath LHS	0719824 0764933	0719807 0765056	0719826 0765192
Swath RHS	0719820 0764951	0719809 0765077	0719828 0765213

Cliff profiling

Cliff slope	90%	95%	90%
Height of cliff	5m	6m	3.5m
Cliff aspect	East	East	East

Cliff type

Hard cliff			
Soft cliff	Soft	Soft	Soft

Adjacent habitats

Cliff top	GS2	GS2 / bramble	GS2
Cliff base	GS2	GS2	GS2

Fauna

Rabbits	-		
Hares	-		
Anthills	-		
Solitary bee	X	X	X
Solitary wasp	?		
Sand martin		X	X
Annex I bird			
Other			
Other			

Bird colonies

Species			
Count (nests)			

Impacts

Impact code	Erosion at top 1m	Erosion & bramble on top	Bramble encroaching
% area affected		2% at top	
Intensity (H/M/L)			
+ / - / 0			
Internal/External			
Notes			

Structure and function assessment criteria

Site name: Balbriggan **Site Number:** Swath 1			**1**	**2**	**3**
Vegetation zone	**Target**	**Scale of assessment**	**Pass/fail**	**Pass/fail**	**Pass/fail**
All zones	No sea defences such as rock armour, sea walls or fences affecting the zonation, geomorphology or natural hydrology of the cliff are present. If target is failed record the cliff section(s) this occurs in	Within visible area of the site.	P	P	P
All zones	No artificial structures including piers and slipways affecting the zonation, geomorphology or natural hydrology of the cliff are present. If target is failed record the cliff section(s) this occurs in.	Within visible area of the site.	P	P	P
All zones	No access points such as paths or tracks which affect the zonation, geomorphology or natural hydrology of the cliff are present. If target is failed record the cliff section(s) this occurs in.	Within visible area of the site.	F	P	P
All zones	No non-native species are present. If target is failed record the cliff sections(s) this occurs in, the non-native species occurring and the approximate extent.	Within visible area of the site.	P	P	P
Splash zone	Number of positive indicator species present ≥ 1.	Within zone in swath.	n/a	n/a	n/a
Crevice and ledge zone	Number of positive indicator species present ≥ 4.	Within zone in swath.	n/a	n/a	n/a
Coastal grassland on hard or soft cliffs	Combined cover of *Pteridium aquilinum* and woody species (inc. *Rubus fruticosus* agg., *Ulex europaeus*, *Prunus spinosa*, *Calluna vulgaris*, *Hedera helix* etc.) is <5%.	Within zone in swath.	P	F	P
Coastal grassland on hard cliffs	No negative indicator species present	Within zone in swath.	n/a	n/a	n/a

Grazed coastal grassland on hard cliffs	Average grassland sward height is <10 cm.	Within zone in swath.	n/a	n/a	n/a
Grazed coastal grassland on hard cliffs	Number of positive indicator species present ≥ 3.	Within zone in swath.	n/a	n/a	n/a
Grazed coastal grassland on hard cliffs	Broadleaf herb component is 20 – 90%.	Within zone in swath.	n/a	n/a	n/a
Ungrazed coastal grassland on hard cliffs	Ungrazed grassland sward height is ≥ 10 cm.	Within zone in swath.	n/a	n/a	n/a
Ungrazed coastal grassland on hard cliffs	Number of positive indicator species present ≥ 2.	Within zone in swath.	n/a	n/a	n/a
Coastal grassland on soft cliffs	Number of positive indicator species present ≥ 2.	Within zone in swath.	P	P	P
Soft cliff pioneer	Number of positive indicator species present ≥ 1.	Within zone in swath.	P	P	P
Flush on soft cliff	No evidence of anthropogenic impacts on the	Within zone in swath.	n/a	n/a	n/a
Flush on soft cliff	Number of positive indicator species present ≥ 1.	Within zone in swath.	n/a	n/a	n/a
Coastal heath	Number of positive indicator species present ≥ 2.	Within zone in swath.	n/a	n/a	n/a
Coastal heath	No negative indicator species present.	Within zone in swath.	n/a	n/a	n/a
Coastal heath	Cover of *Pteridium aquilinum* < 10%.	Within zone in swath.	n/a	n/a	n/a
Coastal heath	Cover of scattered native trees, shrubs and woody climbers < 20%.	Within zone in swath.	n/a	n/a	n/a
Coastal heath	No signs of burning of heath habitat on the cliff. If target is failed record the cliff section(s) this occurs in.	Within visible area of the site.	n/a	n/a	n/a

Official Assessment Sheets for Embryonic shifting dunes (2210) as per Irish Wildlife Manual No. 75 (Delaney et al. 2013)[1]

2110 Embryonic shifting dunes

Monitoring stop data

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Positive indicator species (√ if present)																
Elytrigia juncea																
Leymus arenarius																
2a. Negative indicator species (Domin)																
Arrhenatherum elatius																
Cirsium arvense																
Cirsium vulgare																
Lolium perenne																
Senecio jacobea																
Urtica dioica																
Other:																
Other:																
2b. Highest Domin score at each stop																
3. Non-native species (Domin)																
Name of species:																
Name of species:																
4. Green shoots and flowering in flowering season (√ if present)																

Notes:

1. Calculate % of habitat by averaging mid-range values for Domin score as follows:

Domin score	Range	Mid-range value	(%)
+	A single individual,	<1% cover	0.1
1	2-3 individuals,	<1% cover	0.3
2	Several individuals,	< 1% cover	0.7
3	1-4%	cover	2
4	5-10%	cover	7
5	11-25%	cover	18
6	26-33%	cover	29.5
7	34-50%	cover	42
8	51-75%	cover	68
9	76-90%	cover	83
10	91-100%	cover	95.5

2. No failures = Favourable, 1-2 failures = Unfavourable - Inadequate, 3+ failures = Unfavourable – Bad

General site observations →

Habitat assessment for the site

Habitat assessment criteria	Habitat assessment scores		Required to pass	Result (pass/fail)
1. Positive indicator species	% frequency		*At least one species present in more than 40% of stops*	
Elytrigia juncea				
Leymus arenarius				
2a. Negative indicator species	% frequency	% of habitat[1]	*No species present in more than 60% of stops and combined cover of negative indicators 5% or less and highest Domin score 5 or less*	
Arrhenatherum elatius				
Cirsium arvense				
Cirsium vulgare				
Lolium perenne				
Senecio jacobea				
Urtica dioica				
Other:				
Other:				
2b. Highest Domin score across all stops				
3. Non-native species	% frequency		*No species present in more than 20% of stops*	
Name of species:				
Name of species:				
4. Flowering/fruiting of *Elytrigia juncea* or *Leymus arenarius* (% frequency)			*Observed in more than 40% of stops*	
5. Rare species	% frequency		*No declines since the last assessment*	
6a. Coastal defences built pre-designation which currently affect the habitat due to modification of these structures or changes to the sediment cycle at the site (presence/absence)			*Both absent*	
6b. Post-designation anthropogenic impacts on the substrate/mobility of the system (e.g. new stabilisation works, sediment extraction) (presence/absence)				
7. Disturbance (e.g. trampling, vehicle damage, removal of substrate) affecting the habitat (% of habitat)			*No more than 20% of habitat*	
			No. of criteria failed	
			Habitat assessment[2]	

Official Assessment Sheets for Perennial vegetation of stony banks (1220) as per Irish Wildlife Manual No. 75 (Delaney et al. 2013)[1]

1220 Perennial vegetation of stony banks

Monitoring stop data																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Positive indicator species (√ if present)																
Beta vulgaris ssp. *maritima*																
Crithmum maritimum																
Glaucium flavum																
Honckenya peploides																
Leymus arenarius																
Rumex crispus																
Silene uniflora																
Cochlearia officinalis																
Raphanus raphanistrum																
Sonchus arvensis																
Potentilla anserina																
2. Negative indicator species (Domin)																
Cirsium arvense																
Cirsium vulgare																
Lolium perenne																
Senecio jacobea																
Urtica dioica																
Other:																
2b. Highest Domin score at each stop																
3. Non-native species (Domin)																
Centranthus ruber																
Other:																

Habitat assessment at the site level				
Habitat assessment criteria	**Habitat assessment scores**		**Required to pass**	**Result (pass/fail)**
1. Positive indicator species	**% frequency**		*At least two species present in more than 60% of stops and two other species present in more than 40% of stops or for beach-fringing communities, at least two species present in more than 40% of stops and one other species present in more than 20% of stops*	
Beta vulgaris ssp. *maritima*				
Crithmum maritimum				
Glaucium flavum				
Honckenya peploides				
Leymus arenarius				
Rumex crispus				
Silene uniflora				
Cochlearia officinalis				
Raphanus raphanistrum				
Sonchus arvensis				
Potentilla anserina				
2a. Negative indicator species	**% frequency**	**% of habitat[1]**	*No species present in more than 60% of stops and combined cover of negative indicators 5% or less and highest Domin score 5 or less*	
Cirsium arvense				
Cirsium vulgare				
Lolium perenne				
Senecio jacobea				
Urtica dioica				
Other:				
2b. Highest Domin score across all stops				
3. Non-native species	**% frequency**		*No species present in more than 20% of stops*	
Centranthus ruber				
Other:				

[1] Delaney, A., Devaney, F.M, Martin, J.M. and Barron, S.J. (2013). Monitoring survey of Annex I sand dune habitats in Ireland. Irish Wildlife Manuals, No. 75. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Notes:

1. Calculate % of habitat by averaging mid-range values for Domin score as follows:

Domin score	Range	Mid-range value (%)
+	A single individual,	<1% cover 0.1
1	2-3 individuals,	<1% cover 0.3
2	Several individuals,	< 1% cover 0.7
3	1-4%	cover 2
4	5-10%	cover 7
5	11-25%	cover 18
6	26-33%	cover 29.5
7	34-50%	cover 42
8	51-75%	cover 68
9	76-90%	cover 83
10	91-100%	cover 95.5

2. No failures = Favourable, 1-2 failures = Unfavourable - Inadequate, 3+ failures = Unfavourable – Bad

General site observations →

4. Rare species	% frequency	*No declines since last assessment*	
5a. Coastal defences built pre-designation which currently affect the habitat due to modification of these structures or changes to the sediment cycle at the site (presence/absence)		*Both absent*	
5b. Post-designation anthropogenic impacts on the substrate/mobility of the system (e.g. new stabilisation works, sediment extraction) (presence/absence)			
6. Disturbance (e.g. trampling, vehicle damage, removal of substrate) affecting the habitat (% of habitat)		*No more than 20% of habitat*	
		No. of criteria failed	
		Habitat assessment[2]	