European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the habitat:

H2110 - Embryonic shifting dunes

ENGLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (England information only)**
1.2 Habitat code	**2110 - Embryonic shifting dunes**

2. Maps

2.1 Year or period	2013-
2.3 Distribution map	Yes
2.3 Distribution map Method used	Complete survey or a statistically robust estimate
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs	**Atlantic (ATL)**
3.2 Sources of information	JNCC (14/11/2017) Spreadsheet of UK SAC information as contained within the Natura 2000 standard data forms submitted to the European Union. http://jncc.defra.gov.uk/page-1461 Brownett, JM., Mills, RS,. (2017) The development and application of remote sensing to monitor sand dune habitats. Journal of Coastal Conservation, Volume 21, Number 5, page 643-656. https://link.springer.com/article/10.1007/s11852-017-0504-x JNCC (2013) 3rd UK Habitats Directive Reporting 2013. UK-level reporting information on Favourable Reference Values. http://jncc.defra.gov.uk/page-6387 Natural England (2015 unpublished) Site of Special Scientific Interest Series short review and assessment for coastal habitat features. Natural England. 2015. Coastal management theme plan (IPENSTP019) http://publications.naturalengland.org.uk/publication/6371629661683712?category=5605910663659520 Natural England. 2015.Climate change theme plan: Developing a strategic approach to climate change adaptation (IPENSTP014) http://publications.naturalengland.org.uk/publication/4954594591375360?category=5605910663659520 Natural England. 2015.Public access and disturbance theme plan: A strategic approach to identifying and addressing significant effects on the features of Natura 2000 sites (IPENSTP022) http://publications.naturalengland.org.uk/publication/6621454219083776?category=5605910663659520 Natural England. 2015. Atmospheric nitrogen theme plan: Developing a strategic approach for England's Natura 2000 sites (IPENSTP013) http://publications.naturalengland.org.uk/publication/6140185886588928?category=5605910663659520 Natural England. 2015. Diffuse water pollution theme plan: Developing a strategic approach to diffuse water pollution for England's Natura 2000 sites (IPENSTP015) http://publications.naturalengland.org.uk/publication/5848526737113088?category=5605910663659520 Natural England. 2015. Grazing Theme Plan: Developing a strategic approach for

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H2110 Embryonic shifting dunes
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http://www.mccip.org.uk/media/13315/2013arc_backingpapers_18_chab.pdf
Hansom J.D., Rennie A.F., Dunlop A. & Drummond J. (2011). A methodology to assess the causes and rates of change to Scotland's beaches and sand dunes Phase 1. Scottish Natural Heritage Commissioned Report No. 364.
Adaptation Sub Committee 2013. Managing the land in a changing climate-Adaptation Sub-Committee progress report 2013. Chapter 5 Regulating services Coastal Habitats. ASC http://www.theccc.org.uk/wp-content/uploads/2013/07/ASC-2013-Book-singles_2.pdf
Jones, L., Garbutt, A., Hansom, J. and Angus, S. (2013) Impacts of climate change on coastal habitats, MCCIP Science Review 2013, 167-179, doi:10.14465/2013.arc18.167-179
Taylor, S., Knight, M., & Harfoot, A. (2014) National Biodiversity Climate Change Vulnerability Model (NBCCVM)
http://publications.naturalengland.org.uk/publication/5069081749225472?category=10003
Natural England (2016 Unpublished). Favourable Conservation Status: England Contribution: Coastal Sand Dunes (combining 6 Annex I habitats).
Boardman, C. & Smith, P.H. 2016. Rates of spread of Rosa rugosa (Japanese Rose) determined by GIS on a coastal sand-dune system in Northwest England. J Coast Conserv (2016) 20: 281. https://doi.org/10.1007/s11852-016-0439-7
Doody, P. J. 2013. Sand dune conservation, management and restoration. Springer.
Dynamic Dunes: Daring solutions for Natura 2000 challenges. 2015. Conference presentations https://www.pwn.nl/after-congress and proceedings https://awd.waternet.nl/media/projecten/Life/PDF/Rapport conference Dynamic Dunes 2015.pdf
European Commission 2016. Second Atlantic biogeographic seminar. http://ec.europa.eu/environment/nature/natura2000/platform/events/263_second_atlantic_natura_2000_seminar_en.htm Includes the 'Dune Road Map' from the LIFE Platform meeting 2016 by Houston J. http://ec.europa.eu/environment/nature/natura2000/platform/events/258_ecology_morphology_management_of_coastal_and_inland_dunes_en.htm

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

Natural England and RSPB, 2014. Climate Change Adaptation Manual. Natural England report 546
Mossman HL, Grant A & Davy AJ. (2013) Implications of climate change for coastal and inter-tidal habitats in the UK. Terrestrial biodiversity climate change impacts report card technical paper. Biodiversity Report Card paper 10
The UK National Ecosystem Assessment Technical Report 2011 Chapter 11: Jones, L. et al. Coastal Margins. The UK National Ecosystem Assessment UNEP-WCMC, Cambridge. http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=dNI5e5W5I5Q%3D&tabid=82
Jones, L., Hall, J., Strachan, I., Field, C., Rowe, E., Stevens, C.J., Caporn, S.J.M., Mitchell, R., Britton, A., Smith, R., Bealey, B., Masante, D., Hewison, R., Hicks, K., Whitfield, C. & Mountford, E. 2016. A decision framework to attribute atmospheric nitrogen deposition as a threat to or cause of unfavourable habitat condition on protected sites. JNCC Report No. 579. JNCC, Peterborough

4. Range

4.1 Surface area (in km²)			
4.2 Short-term trend Period			
4.3 Short-term trend Direction	Stable (0)		
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum	
4.5 Short-term trend Method used			
4.6 Long-term trend Period			
4.7 Long-term trend Direction			
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum	
4.9 Long-term trend Method used			
4.10 Favourable reference range	a) Area (km²) b) Operator c) Unknown No d) Method		
4.11 Change and reason for change in surface area of range	No change The change is mainly due to:		
4.12 Additional information			

5. Area covered by habitat

5.1 Year or period	2013-2018		
5.2 Surface area (in km²)	a) Minimum 1	b) Maximum 2	c) Best single value 1.5
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Based mainly on expert opinion with very limited data		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Uncertain (u)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Insufficient or no data available		
5.9 Long-term trend Period			
5.10 Long-term trend Direction			
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

5.12 Long-term trend Method used		
5.13 Favourable reference area	a) Area (km²)	
	b) Operator	
	c) Unknown	No
	d) Method	
5.14 Change and reason for change in surface area of range	No change	
	The change is mainly due to:	
5.15 Additional information		

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum	0.51	Maximum	1
	b) Area in not-good condition (km²)	Minimum	0.19	Maximum	0.38
	c) Area where condition is not known (km²)	Minimum	0.3	Maximum	0.62
6.2 Condition of habitat Method used	Based mainly on extrapolation from a limited amount of data				
6.3 Short-term trend of habitat area in good condition Period	2007-2018				
6.4 Short-term trend of habitat area in good condition Direction	Uncertain (u)				
6.5 Short-term trend of habitat area in good condition Method used	Insufficient or no data available				
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?		No		
6.7 Typical species Method used					
6.8 Additional information					

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Development and maintenance of beach areas for tourism and recreation incl. beach nourishment and beach cleaning (F06)	H
Sports, tourism and leisure activities (F07)	H
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Wind, wave and tidal power, including infrastructure (D01)	M
Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization) (L01)	M

Sea-level and wave exposure changes due to climate change (N04)	M

Threat	Ranking
Development and maintenance of beach areas for tourism and recreation incl. beach nourishment and beach cleaning (F06)	H
Sports, tourism and leisure activities (F07)	H
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Wind, wave and tidal power, including infrastructure (D01)	M
Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization) (L01)	M
Sea-level and wave exposure changes due to climate change (N04)	M

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken	Maintain the current range, population and/or habitat for the species	
8.3 Location of the measures taken	Both inside and outside Natura 2000	
8.4 Response to the measures	Medium-term results (within the next two reporting periods, 2019-2030)	
8.5 List of main conservation measures		

Improvement of habitat of species from the directives (CS03)
Management, control or eradication of other invasive alien species (CI03)
Manage changes in hydrological and coastal systems and regimes for construction and development (CF10)
Manage/reduce/eliminate diffuse pollution to surface or ground waters from resource exploitation and energy production (CC09)
Implement climate change adaptation measures (CN02)

8.6 Additional information

9. Future prospects

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

9.1 Future prospects of parameters	a) Range b) Area c) Structure and functions
9.2 Additional information	

10. Conclusions

10.1. Range	
10.2. Area	
10.3. Specific structure and functions (incl. typical species)	
10.4. Future prospects	
10.5 Overall assessment of Conservation Status	
10.6 Overall trend in Conservation Status	
10.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status No change The change is mainly due to:
10.8 Additional information	

11. Natura 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (in km² in biogeographical/ marine region)	a) Minimum b) Maximum c) Best single value 1
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Based mainly on extrapolation from a limited amount of data
11.4 Short-term trend of habitat area in good condition within the network Direction	Stable (0)
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on extrapolation from a limited amount of data
11.6 Additional information	Area used is taken from JNCC SAC data, derived from Standard Data Forms. 100% of habitat in SACs (2013 Audit).

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

Distribution Map

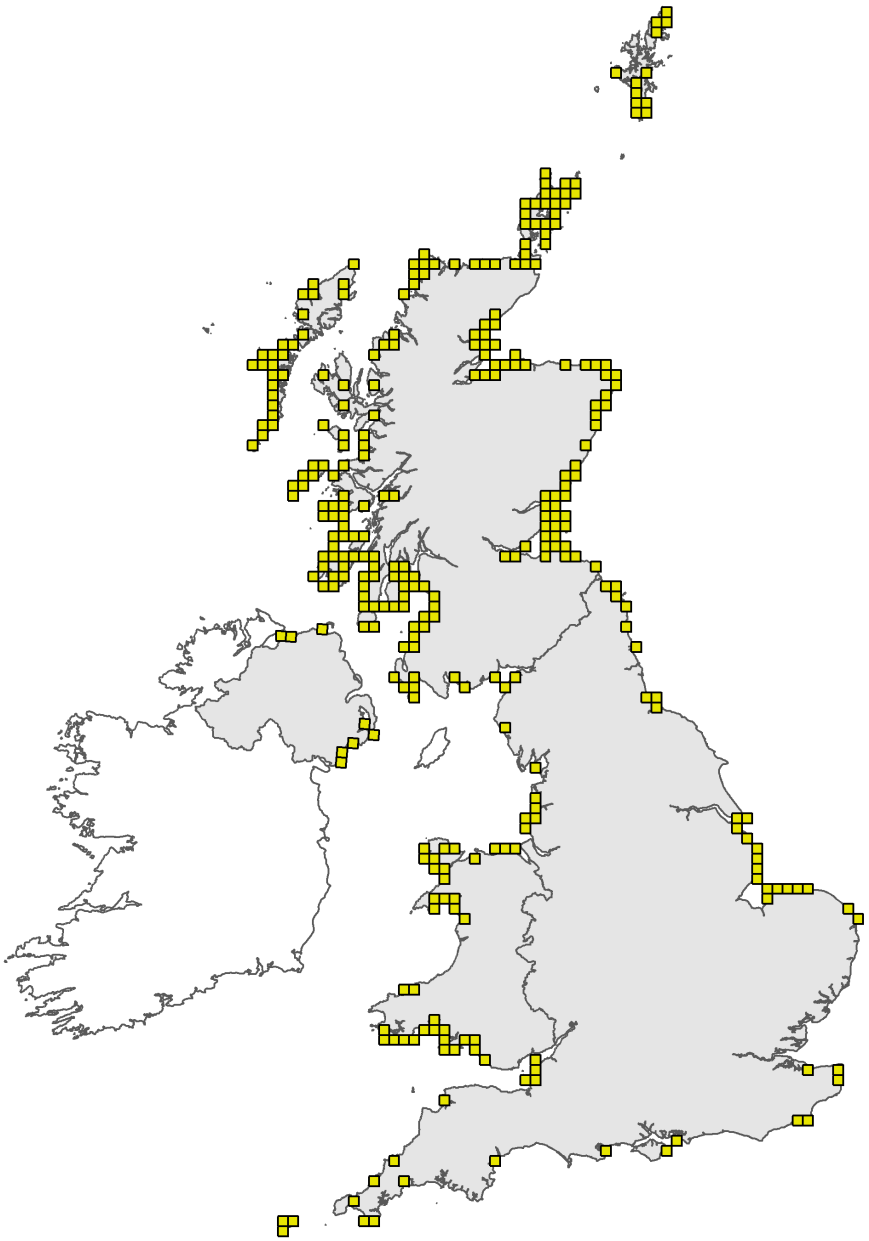

Figure 1: UK distribution map for H2110 - Embryonic shifting dunes. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

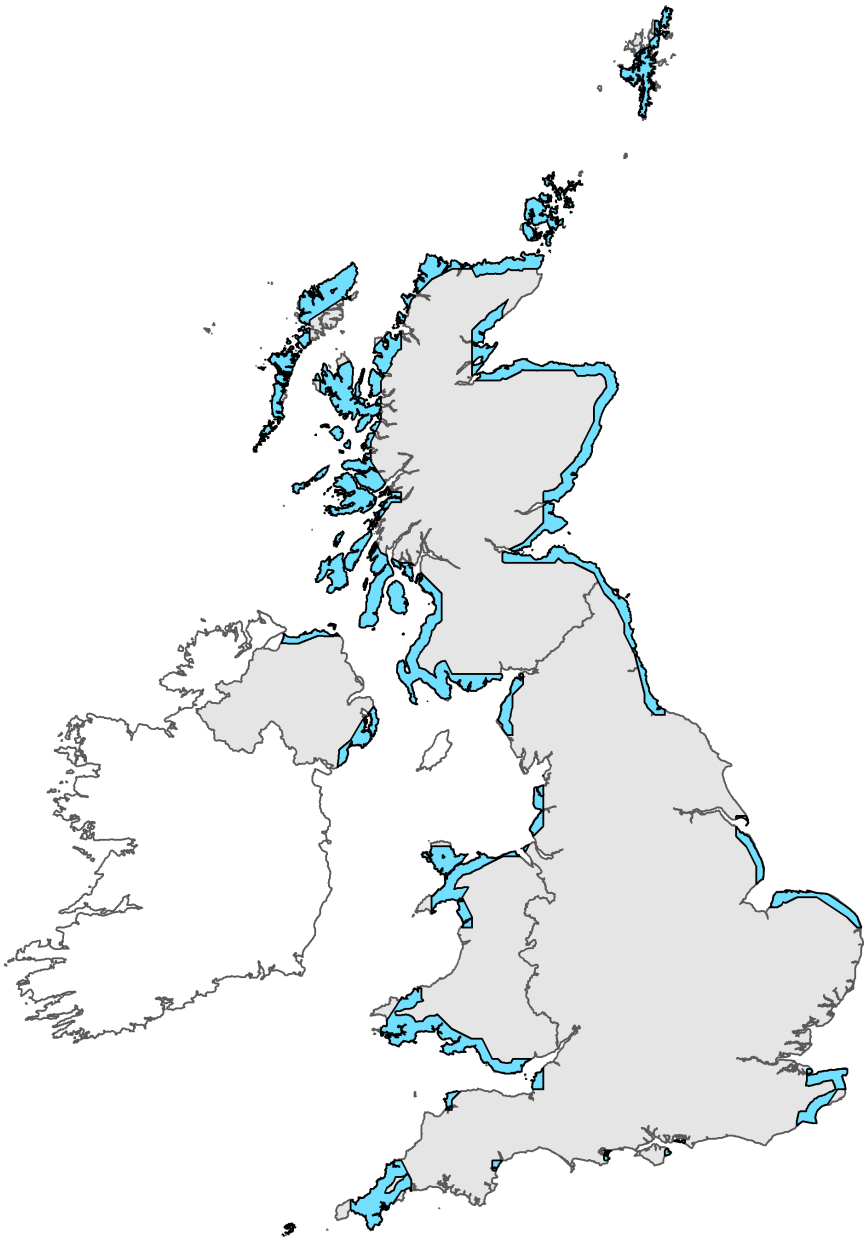

Figure 2: UK range map for H2110 - Embryonic shifting dunes. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Habitat code: 2110

Field label	Note
2.2 Distribution map	2013 UK Habitat Reporting data used. Terrestrial Habitat 10km Square Distribution Map and Data Sources.
2.3 Distribution map; Method used	Map derived from data provided by JNCC Terrestrial Habitat 10-km Square Distribution Map Data and Sources. No new locations have been recorded since 2013.

Habitat code: 2110 Region code: ATL

Field label	Note
4.12 Additional information	It was identified in the Natural England SSSI review of coastal habitats (2015 unpublished) that there is an estimated 4361 ha of Coastal Habitat within the Priority Habitat Inventory that is not currently Annex I habitat but, has the potential to change through management.
5.2 Surface area	Area figures derived from JNCC (14/11/2017) Habitats and Species interest features for SAC. Natura 2000 Standard Data Form.
5.4 Surface area; Method used	Download Natura 200 summary data spreadsheet
6.2 Condition of habitat; Method used	The 2013 reports were used and the 2013 range information provided by JNCC. SSSI reporting data was obtained from Natural England's, aggregated to feature level by data analyst. Some of the SSSI data has poor correspondence with Annex I features, and unit area was not equivalent to habitat area. Information from previous reporting rounds and the SAC data used to check for anomalies, and adjusted figures using expert judgement.
6.4 Short term trend of habitat area in good condition; Direction	1/4 or greater of all Annex I coastal sand dune habitats were not assessed under the SSSI condition assessment monitoring programme to assign condition to the feature and hence condition unknown.
6.8 Additional information	Sand dunes are one of the terrestrial N2K sites identified in 2015 as in poor condition. Reasons for unfavourable condition of all sites is due to diffuse pollution; water levels/drainage, grazing, invasive species (scrub).
7.3 Additional information	For most coastal sand dunes in England the issue of coastal erosion due to insufficient sand supply lead to concerns of how resilient these habitats will be in the future to the potential impacts of climate change (RSL, increase in storms, etc.). In recent decades a dynamic approach to coastal dune management has gained recognition and LIFE projects have been at the forefront of developing new approaches to rejuvenating and restoring dune habitats.
7.3 Additional information	Threats to coastal and inland dunes in northwest Europe include loss and fragmentation of habitats, reduction in area of open sand, succession to scrub and woodland and impact of invasive alien species. Problems are exacerbated in many regions due to Nitrogen deposition. In recent decades a dynamic approach to coastal dune management has gained recognition and LIFE projects have been at the forefront of developing new approaches to rejuvenating and restoring dune habitats.
7.3 Additional information	NE (2015) Improvement Programme for England's Natura 2000 Sites (IPENS) Programme Report: a summary of the programme findings (NE601) states '...threats are known to be the greatest for coastal, ...habitats due to their direct dependence on coastal processes, hydrology and temperature.'

7.3 Additional information	NE (2015) Climate change theme plan. Developing a strategic approach to climate change adaptation states sand dunes have a medium relative sensitivity to climate change.
9.1 Future prospects of parameters	Given the extent of N critical load exceedance across England, it is likely that the future trend in structure & functions for this habitat should be VERY NEGATIVE, unless (i) habitat condition is already mostly unfavourable and unlikely to deteriorate any further or much further, and/or (ii) specific targeted measures to reduce N deposition impacts and their effectiveness can be demonstrated (see UK Approach document). A negative trend has been assigned because, although much of the habitat is in unfavourable condition, it can still deteriorate further - particularly due to the ephemeral nature of this habitat.
10.3 Specific structure and functions	Data as of 4/7/18 based on Reportable Condition of Annex 1 habitats within SSSI units, specifically Annex 1 feature. All Dune Habitat types areas are based on coastal sand dunes PHI within each SSSI unit.
11.4 Short term trend of habitat area in good condition within the network; Direction	A higher area of habitat in the network has been assessed as 'favourable' and 'recovering' compared to the area assessed as 'not assesed', if recovery continues there is an expectation of improvement in the habitat. in the absence of further information this has been determined to be at least 'stable'