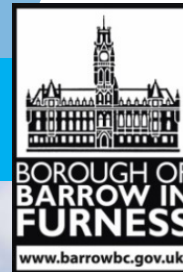


Suitable Areas for Wind Energy

Technical Document



July 2018 Update



Barrow Borough Local Plan

Working together to support sustainable development within the Borough of Barrow-in-Furness



Contents

1	Background	3
1.1	Purpose of this Paper	3
1.2	Historical Context	3
1.3	Wind Energy Schemes in Barrow Borough	4
2	Policy Context	5
2.2	National Policy	5
2.3	Overarching National Policy Statement for Energy (EN-1) & National Policy Statement for Renewable Energy Infrastructure (EN-3)	5
2.4	National Planning Practice Guidance (NPPG)	6
2.5	Other Policy Considerations	6
2.6	Sub-Regional Policy Considerations	7
2.7	Local Considerations	7
3	Moving Forward – the Emerging Local Plan	9
4	Identifying Suitable Locations	11
4.1	Methodology	11
4.2	The Potential for Wind Energy - Capacity	15
4.3	Cumbria Wind Energy SPD	16
4.4	Landscape Sensitivity and Capacity	17
4.5	Landscape Types	17
4.6	Cumulative Impacts	20
4.7	Other Pre-application Considerations	24
5	Recommendations	29
5.1	Summary	29
	Appendices	31

List of Figures

Figure 1: Estimated Mean Wind Speeds.....	16
Figure 2: Landscape Sensitivity Capacity	17
Figure 3: Overall Significance of Landscape Effects from All Scales of Vertical Infrastructure .	22
Figure 4: Overall Significance of Visual Effects from All Scales of Vertical Infrastructure.....	23

List of Tables

Table 1: Designations and Constraints Considered During Assessment.....	12
Table 2: Barrow Commercial Wind Capacity.....	16

1 Background

1.1 Purpose of this Paper

- 1.1.1 Onshore wind turbine installations are the most established large-scale source of renewable energy in the UK¹.
- 1.1.2 Renewable energy will continue to play an important role in the delivery of the nation's energy needs in order to ensure that the UK meets its climate change targets as agreed at international level.
- 1.1.3 The Borough of Barrow in Furness is on the North West coast which provides a reliable wind resource that has proven attractive to wind energy companies over the past 25 years. The emerging Local Plan continues to support onshore wind developments, subject to certain criteria, and this document identifies broad areas where such developments will be suitable in principle.
- 1.1.4 Barrow Borough Council (The Council) is responsible for determining applications for onshore renewable energy schemes up to 50MW generation capacity. The Planning Inspectorate will determine applications for installations with a generation capacity greater than the 50MW threshold.
- 1.1.5 Wind turbines can form a very visible feature in the landscape due primarily to their rotating blades, although the sensitivity of landscapes and the size of wind turbines varies. Common concerns relating to onshore wind projects are the impact upon landscape character, effects on wildlife, and residential amenity arising from issues such as noise and shadow flicker.
- 1.1.6 Most wind turbines will require planning permission, however some domestic micro-wind turbines (upto 50kw) may not require planning permission under Permitted Development Rights. Please visit the Planning Portal website for further information.

1.2 Historical Context

- 1.2.1 The UK is committed to reducing its greenhouse gas emissions by 80% by 2050² and obtaining at least 15% of its energy from renewable sources by 2020³. These important landmark commitments were made against the background of a range of national legislation and guidance on renewable energy which have their origins in the 1997 Kyoto Agreement, leading, in the early part of this century, to a flurry of new legislation, with particular importance being the EU Renewable Directives 2001 and 2009. These sought to identify the now accepted renewable source generation targets for member states.
- 1.2.2 Taking the EU Directives forward was the role of The Department for Energy & Climate Change (DECC) which produced a UK Renewable Energy Strategy in 2009 identifying potential measures to meet these commitments. One key point in the

¹ National Policy Statement for Renewable Energy Infrastructure (EN-3) – June 2011

² Climate Change Act 2008

³ European Renewable Energy Directive 2009

strategy was that it confirmed the expectation that the main renewable resource would be wind power, both onshore and offshore.

- 1.2.3 During the period 2000-2010 the Crown Estate issued a series of 3 licensing rounds for offshore sites. A number of sites off the coastline of Barrow Borough were included within these rounds, Walney being granted an extension to its original Round 2 license in 2010.

1.3 Wind Energy Schemes in Barrow Borough

- 1.3.1 There have been two on-shore windfarms developed within the Borough. The first was Far Old Park located in an upland area east of Ireleth. This started generating power in 1999, consisting of 7 turbines with a total output of 4.62Mw and is currently operated by E.ON Climate & Renewables UK Ltd. The second is at Harlock Hill which is a 5 turbine scheme of 11.5Mw capacity operated by Baywind/Infinergy. The site straddles the boundary with South Lakeland District Council (SLDC), and as part of the project an older 1996 development located just over the boundary in SLDC, operated by Baywind Energy was replaced.
- 1.3.2 There are a number of single turbines operating across the Borough of varying sizes and output. Many were approved during 2008-2012, with a rush of applications arising from temporary government incentives in the form of subsidies for producers of wind energy. Following the ending of such subsidies the number of applications fell significantly.
- 1.3.3 During the period 2005-2014 a series of windfarms were constructed off the Borough's coast with 270 turbines of various sizes creating a total annual capacity of just under 1 gigawatt. In comparison, during January 2017, the UK generated some 14.5 gigawatts, two thirds arising from onshore installations, making the country the worlds 6th largest generator.⁴

⁴ Figures at 2017 GWEC

2 Policy Context

2.1.1 This section examines the current policy framework against which all onshore applications for wind turbines are considered. National policy adopts a positive approach to renewable energy, principally as a direct result of wider environmental initiatives to meet internationally agreed targets. Local Plans are recognised as a suitable vehicle to deliver these targets.

2.2 National Policy

2.2.1 Sustainable development is the “golden thread” running through the NPPF and thus at the heart of the planning system. Paragraph 8 identifies the environmental role of Planning in helping adapt to climate change by encouraging the movement to a low carbon economy. Furthermore there are twelve principles in paragraph 17 which underpin policy making and decision taking. These include the transition to a low carbon economy by encouraging the use of renewable resources including the development of renewable energy. Also relevant are the references to conserving and enhancing the natural environment and the conservation of heritage assets.

2.2.2 Chapter 14 of the NPPF refers directly to the “challenge of climate change”, with paragraph 93 confirming the need to support the delivery of renewable and low carbon energy and infrastructure. There is confirmation in paragraph 149 that planning authorities should adopt proactive strategies to mitigate and adapt to climate change. There is also an air of caution that planning policies should ensure that potentially adverse impacts, for example upon landscapes and heritage assets, are properly addressed (e.g. via cumulative landscape and visual impact studies).

2.2.3 The Framework seeks to ensure the protection and enhancement of valued landscapes and states at paragraph 170 that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes. It confirms a requirement for Local Planning Authorities to set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and appropriate weight is given to their importance and the contribution that they make to wider ecological networks.

2.2.4 Advice in paragraph 151 suggests that, through the Local Plan process, Suitable Areas where renewable energy development is appropriate should be identified.

2.3 Overarching National Policy Statement for Energy (EN-1) & National Policy Statement for Renewable Energy Infrastructure (EN-3)

2.3.1 EN-1 and EN-3 provide the basis for decisions by the Infrastructure Planning Commission (IPC) on applications it receives for nationally significant renewable energy infrastructure, including onshore wind developments over 50mw. Whilst smaller turbines are more likely to be proposed in the Borough, the policy statements are still useful as they provide an overview of relevant factors that can

influence onshore wind site selection and has therefore helped to shape the methodology for identifying Suitable Areas within the Borough.

2.4 National Planning Practice Guidance (NPPG)

2.4.1 From 2014, updated guidance within the NPPG stresses the important role of the planning system in the delivery of new renewable and low carbon energy infrastructure, in those locations where the localised environmental impact is acceptable. The guidance also reaffirms the role of local plans in delivering development that has community backing. It replicates the NPPF document by encouraging the provision of positive strategies as a means of achieving this, but with the caution that this does not override valid environmental and community concerns. Strategies should consider the local potential for renewables taking into account matters such as the range and falling costs of available technology, their varied impacts upon differing locations, and the need to avoid the imposition of any quotas upon delivery.

2.4.2 The NPPG offers support for clear criteria based policies for renewable energy in Local Plans and states that the following factors should be taken into account in developing policies:

- Cumulative impacts, particularly on landscape and local amenity;
- Local topography;
- Heritage assets and their setting;
- The increased sensitivity of National Parks and Areas of Outstanding Natural Beauty;
- The importance of protecting local amenity.

2.4.3 There is also specific reference to the need to avoid the use of arbitrary buffer zones which can be viewed as a blunt instrument to prevent renewable schemes. Distance is part of the assessment of the potential impacts arising from a scheme but the local context of topography, local environmental matters and adjacent land uses, all have a role to play. An exception is made for set back distances that are recognised safety criteria.

2.5 Other Policy Considerations

2.5.1 The NPPG was followed by a Ministerial Statement⁵ in 2015 which introduces provision for local people to have the final say on wind farm applications. The guidance states that planning authorities should only grant planning permission for wind turbines provided that:

- The development is in an area identified as suitable for wind energy development in a Local Plan,

⁵ Rt Hon Greg Clark MP 18 June 2015

- If, following consultation, it can be demonstrated that the material impacts identified by the affected local communities have been fully addressed and the proposal has their backing.

2.6 Sub-Regional Considerations

- 2.6.1 Cumbria County Council, in conjunction with four rural Cumbrian Districts and the National Park Authority, produced the Cumbria Wind Energy Supplementary Planning Document (SPD) in 2007. Recognising the potential of Cumbria's wind resource to deliver national targets, the role of the document was to provide robust and consistent guidance to all authorities in the determination of wind energy proposals. It would also serve as a blueprint for subsequent Plan policies.
- 2.6.2 Part 1 of the SPD provides guidance across a number of factors including aircraft and radar, biodiversity, community benefits, cultural heritage, highways, local amenity, local economy, soils and hydrology and telecommunication. The SPD does not specify minimum separation distances but does state that suitable distances between turbines and homes must be established to avoid unacceptable noise impacts. Part 2 of the SPD includes an assessment of the capacity of Cumbria's varied landscapes to accommodate wind energy development.
- 2.6.3 The SPD document was subsequently adopted by the various authorities over 2007-2008. The Council supported the document in principle and it became a material consideration for related applications. Cumbria County Council produced further regional documents relating to landscape character⁶ and to the visual impacts of wind turbines⁷. These are discussed further in Sections 4.2-4.6 of this document.

2.7 Local Considerations

- 2.7.1 The Council is currently producing a new Local Plan which is in the advanced stages of the examination process; this is discussed further in Section 3. Earlier drafts of this technical document have informed the relevant sections of the Local Plan, including the Proposals Map.
- 2.7.2 Within the current Local Plan⁸ there are two Saved Policies relevant to wind energy; Policy D46 and Policy D47. Policy D46 identifies an "Area of Least Constraint" where wind development will be permitted subject to certain criteria being met. The "Area of Least Constraint" is defined on the current Local Plan Proposals Map. Policy D47 provides a list of criteria against which all wind related applications are judged. These policies will be replaced by policies within the emerging Local Plan following its adoption.

⁶ Cumbria Landscape Character Guidance and Toolkit (2011)

⁷ Cumbria Cumulative Impacts of Vertical Infrastructure Study (2014)

⁸ Local Plan Review 1996-2006

POLICY D46

Development of wind turbines in the Borough will be permitted in the Area of Least Constraint defined on the Proposals Map, subject to details of the number, scale, design and location being acceptable.

POLICY D47

The acceptability of wind energy installations will be judged according to whether the number, location, siting, size and design of proposals can be shown to satisfy the following criteria:

- a) An Environmental Impact Assessment is undertaken where the proposal is considered by the Authority to be significant in relation to its environmental impact. This must be adequate to assist the Authority to assess whether the energy contribution and other benefits outweigh any significant adverse effect on;
 - 1. The character and appearance of the landscape, nature conservation, archaeological or geological interests;
 - 2. The amenity of residential properties by reason of visual impact, noise, shadow flicker or reflected light;
- b) The proposal would not unduly dominate the appearance or visual amenities or setting of a settlement or part thereof, or intrude on the enjoyment of publicly accessible spaces within it;
- c) The proposal would not cause significant damage to a site of international, national or local nature conservation importance;
- d) Effective measures are available to overcome any significant electromagnetic interference to transmitting or receiving equipment;
- e) All associated power lines, both on-site and off-site, are placed underground or do not appear prominent in the landscape;
- f) Adequate access for construction traffic is available or could be provided without harm to highway safety, visual amenity or nature conservation interests;
- g) The proposal, when assessed in the context of existing, proposed or permitted wind energy schemes, would not result in a cumulative visual effect which would have a significant adverse impact on the character and appearance of the area; and
- h) Realistic proposals are in place for the removal of redundant wind turbines and the restoration of the site.

In assessing the proposals against the requirements of this policy, full account will be taken of proposed mitigating measures, and of the County-wide Supplementary Planning Guidance “Wind Energy Development in Cumbria”.

3 Moving Forward – the Emerging Local Plan

- 3.1.1 The emerging Local Plan confirms the Council's commitment to facilitating energy schemes without unacceptable impacts upon amenity, biodiversity, landscape and heritage. This is in accordance with the NPPF which requires planning authorities to have a positive strategy to promote energy from renewable and low carbon sources.
- 3.1.2 The NPPF also recommends that planning authorities consider identifying Suitable Areas for renewable and low carbon energy sources and supporting infrastructure, where this would help secure the development of such sources (paragraph 151).
- 3.1.3 The above guidance is supported by the Ministerial Statement⁹ which resulted in the NPPG being amended to confirm that planning authorities should only grant consent if the location was within an area previously identified as suitable in a Local Plan.
- 3.1.4 In light of this the Council started the process of identifying Suitable Areas for wind energy in the Borough.
- 3.1.5 Other approaches were considered but were subsequently discounted as being unsound:
- **Do Nothing:** The Local Planning Authority would not prepare a map which indicates the areas where wind energy developments may be supported. This would be contrary to the NPPF and the Ministerial Statement and may leave the Plan open to challenge.
 - **Allocate everywhere:** Whilst technically meeting the national advice this would leave the Authority at risk of dealing with numerous applications and potentially a large appeal casebook for those locations subsequently found to be unsuitable for various reasons.
- 3.1.6 The methodology for identifying Suitable Areas for wind energy development is discussed in section 4 and Suitable Areas for Wind Energy in Barrow Borough are shown on the emerging Local Plan Proposals Map. Linked to this is draft Local Plan Policy C6 "Renewable and Low Carbon Energy Proposals", which is reproduced on page 10.
- 3.1.7 Where a site has been identified as a Suitable Area for Wind Energy, this does not indicate that planning permission for turbines will automatically be granted. Applications should include supporting information to show that their proposal accords with the appropriate policies in the Development Plan, national policy and with the guidance within this document.

⁹ Rt Hon Greg Clark MP 18 June 2015

Policy C6: Renewable and Low Carbon Energy Proposals

In order to contribute towards the achievement of national renewable energy targets the Council will support development of renewable energy provided that:

- a) Measures are taken to avoid and where appropriate mitigate any unacceptable negative impacts of the effects on local amenity resulting from development, construction and operation of the renewable energy schemes;
- b) The proposal on its own, or in combination with other development, will not unduly impact on the landscape or seascape and the development would not give rise to an unacceptable adverse cumulative impact when considered in the context of other existing or consented installations;
- c) Large scale renewable energy developments (i.e. development that generates more than 10 MW), where appropriate make provision for community benefits over the period of the development. Such benefits will directly relate to the development;
- d) For proposals involving Wind Energy developments, the development is located in a 'suitable area' (identified on the Proposals Map), considers the issues set out in the Suitable Areas for Wind Energy Technical Document and following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed; and
- e) The proposal complies with the relevant policies in the Development Plan.

4 Identifying Suitable Locations

4.1 Methodology

- 4.1.1 The NPPG acknowledges that there are no hard and fast rules regarding how Suitable Areas should be identified however the NPPF suggests basing the methodology on the advice within the National Policy Statement for Energy (EN-1) including the relevant section of the Overarching National Policy Statement for Renewable Energy (EN-3).
- 4.1.2 EN-1, although focussed on the larger schemes that would be dealt with by the Planning Inspectorate rather than the Local Planning Authority,¹⁰ provides useful guidance in the form of a set of factors that may influence energy operators site selection¹¹. Consequently using the same format is likely to provide a robust template for a Local Planning Authority in formulating its Strategy.
- 4.1.3 When identifying Suitable Areas, the Council carried out a “sifting process” which involved identifying and mapping a number of constraints to wind developments such as nature designations and removing them from the Suitable Area. Relevant County Council documents which assessed capacity in terms of both wind speeds and landscape sensitivity were also considered. A full list of the constraints considered is included in Table 1 along with the Council’s response to the constraint (e.g. removal of the constrained area from the Suitable Area).
- 4.1.4 It is important to recognise that the national guidance refers to the identification of broad areas and not specific sites. It is the role of the applicant to establish specific sites, taking into account the additional constraints and considerations listed in Section 4.7.

¹⁰ Localism Act 2011 made Planning Inspectorate responsible for determination of Nationally Significant projects i.e. onshore wind with an output greater than 50Mw

¹¹ Section 2.7 “Onshore Wind”

Table 1: Designations and Constraints Considered During Assessment

Designation / Constraint	Comments	Relevant Appendix
Wind Speeds	<p>The capacity for wind development in terms of wind speeds is identified in the Cumbria Wind Energy Supplementary Planning Document (2007) and Cumbria Renewable Energy Capacity and Deployment Study (2011). A summary of these documents is provided in sections 4.2 and 4.3.</p> <p>Wind speeds in the majority of the Borough are in excess of 6.5m/s due primarily to its coastal location. No adjustments to the Suitable Area are therefore necessary on these grounds although wind speeds should be considered when identifying specific sites.</p>	N./A
Landscape Character	<p>The Cumbria Landscape Character Guidance and Toolkit (2011) identifies a variety of landscape character areas in the Borough and assesses the sensitivity of each and its capacity to accommodate wind developments. A summary of the document is included in sections 4.4 and 4.5 of this document.</p> <p>Areas identified as having no capacity for wind developments due to the sensitivity of the landscape have been excluded from the Suitable Area.</p>	B
Cumulative Impacts of vertical infrastructure: Landscape effects	<p>The Cumbria Cumulative Impacts of Vertical Infrastructure Study shows that the Borough is experiencing, to varying degrees, cumulative landscape effects arising from vertical infrastructure. The Council considered removing areas identified by the CIVI as experiencing “significant” or above cumulative landscape effects, however landscape impacts can vary significantly depending upon the exact siting and nature of individual proposals. Rather than exclude such areas from the Suitable Area, it is considered more appropriate to consider this constraint on a case by case basis. Applicants should therefore give consideration to the CIVI document as well as guidance within the NPPG (particularly paragraphs 22 and 23) when assessing cumulative impacts.</p>	N/A
Cumulative Impacts of vertical infrastructure: Visual effects	<p>The Cumbria Cumulative Impacts of Vertical Infrastructure Study 2014 shows that the Borough is experiencing, to varying degrees, cumulative visual effects arising from vertical infrastructure. Whilst the CIVI identifies parts of the Borough where there may be significant cumulative visual effects, visual impacts can vary significantly depending upon the exact siting and nature of individual proposals. Rather than exclude such areas from the suitable area, it is considered more appropriate to consider this constraint on a case by case basis.</p>	N/A
Nationally Important Nature Conservation	<p>These are areas designated nationally for their valuable natural features and are protected by:</p> <ul style="list-style-type: none"> • Wildlife & Countryside Act 1981 • Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, commonly known as the Habitats Directive. 	L, N, O

<p>Sites Sites of Special Scientific Interest Natura 2000 Sites</p>	<ul style="list-style-type: none"> • Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds, commonly known as the Birds Directive. • Conservation of Habitats and Species Regulations 2010 (as amended). <p>They have been removed from the Suitable Area due to the increased risk of risk of bird strikes and disturbance during roosting and breeding periods that wind turbines would bring, in the interests of biodiversity protection.</p> <p>A buffer of 250m has been applied.</p>	
<p>Local Geological Sites</p>	<p>These are areas designated for their geological interests. They have been removed from the Suitable Area as turbine developments are likely to be intrusive upon their character arising from damage and /or disruption to geological features.</p>	<p>K</p>
<p>Health & Safety Executive (HSE) constraints; (HSE Explosives, HSE Nuclear Licensed, HSE Major Pipelines buffer, HSE Hazardous Substances)</p>	<p>These are sites with potential major hazards due to volume of stored materials and/or processes carried out. There are likely to be potential conflicts between these uses and wind developments due to issues such as topple distances therefore these areas have been removed from the Suitable Area as a safety procedure.</p>	<p>F, G, H, I</p>
<p>Defence Estates</p>	<p>This constraint is based on MOD advice to safeguard defence facilities eg. air safety and protecting radar and communications installations from interference caused by blade movements. Such areas have been excluded from the Suitable Area.</p>	<p>D</p>
<p>Scheduled Ancient Monuments & Conservation Areas</p>	<p>These sites have been removed from the Suitable Area in the interests of protecting the historic environment and local amenity in accordance with;</p> <ul style="list-style-type: none"> • National Heritage Act 1983. • Ancient Monuments and Archaeological Areas Act of 1979. • Planning (Listed Buildings and Conservation Areas) Act 1990. 	<p>E, J</p>

Wildlife Corridors	These areas are recognised for their ecological value. As wind developments are likely to sever connectivity for species movements these areas have been excluded from the Suitable Area.	M
Built up Areas (including proposed housing allocations) and Development Cordons	The built up areas of Barrow and Dalton, taking into account proposed housing allocations, have been excluded from the Suitable Area, along with land within the Development Cordons identified in the emerging Local Plan. Locating wind turbines within such areas would have safety implications e.g. due to topple distances and raises a number of issues such as shadow flicker and noise (ETSU-R-97).	C
Small slivers removed typically less than 0.5 hectares	These areas have been removed from the Suitable Area as considered unviable for commercial wind energy schemes and are also likely to have access and/or topography constraints.	N/A
Areas covering waterbodies, rail and roads	These areas have been excluded from the Suitable Area taking into account safety considerations and to prevent water pollution.	N/A

4.2 The Potential for Wind Energy - Capacity

Cumbria Renewable Energy Capacity and Deployment Study (2011)

- 4.2.1 The Study considers renewable energy potential across Cumbria and provides evidence to support policies within Local Plans. It considers an extensive range of renewable energy sources, and translates potential into a realistic deployable capacity up to 2030, in order to help Cumbria contribute towards the national renewable energy and climate change targets. The Study revealed that Cumbria as a whole has a substantial potential renewable energy resource with commercial wind energy (defined as schemes >100kW) forming a key source, amounting to 63% of the overall identified potential capacity.
- 4.2.2 The document confirms the assertion that Barrow is considered to be the “Gateway to Britain’s Energy Coast”¹², due to the ongoing development of offshore wind farms in the east Irish Sea. However, the overall potential renewable energy resource (eg solar, hydro, biomass etc.) is 191.9Mw, amounting to only 4% of the Cumbrian renewable total. Breaking this down into its component parts, the potential commercial wind resource was assessed at 47.8Mw out of a total of 3266 Mw.¹³ This equates to just over 1%.
- 4.2.3 Using this as a base figure a series of other factors had to be introduced. The study recognised the landscape capacity constraints across the whole County which limit the potential for commercial wind farm development and undertook further assessment taking into account the guidance in the Cumbria Wind Energy SPD. The headline assumptions were:
- Three turbine sizes (large 2.5 Mw, medium 1 Mw and small 0.5Mw)
 - 5m/s wind speed
 - Different densities per square km dependent upon landscape, bird sensitivity and turbine size
 - Amount of non accessible areas (roads railways steep slopes, water bodies etc)
 - Exclusion areas (Designated sites, heritage assets etc)
- 4.2.4 The results of the amended capacity assessment show a total reduction in potential capacity as shown below. The study indicates that whilst there was a near 25% reduction in potential capacity, the percentage of the contribution to the County total did not alter, which could indicate that other parts of the County are more sensitive to commercial onshore wind schemes.

¹² Furness Enterprise

¹³ Table 5-4 Cumbria Renewable Energy & Capacity Study

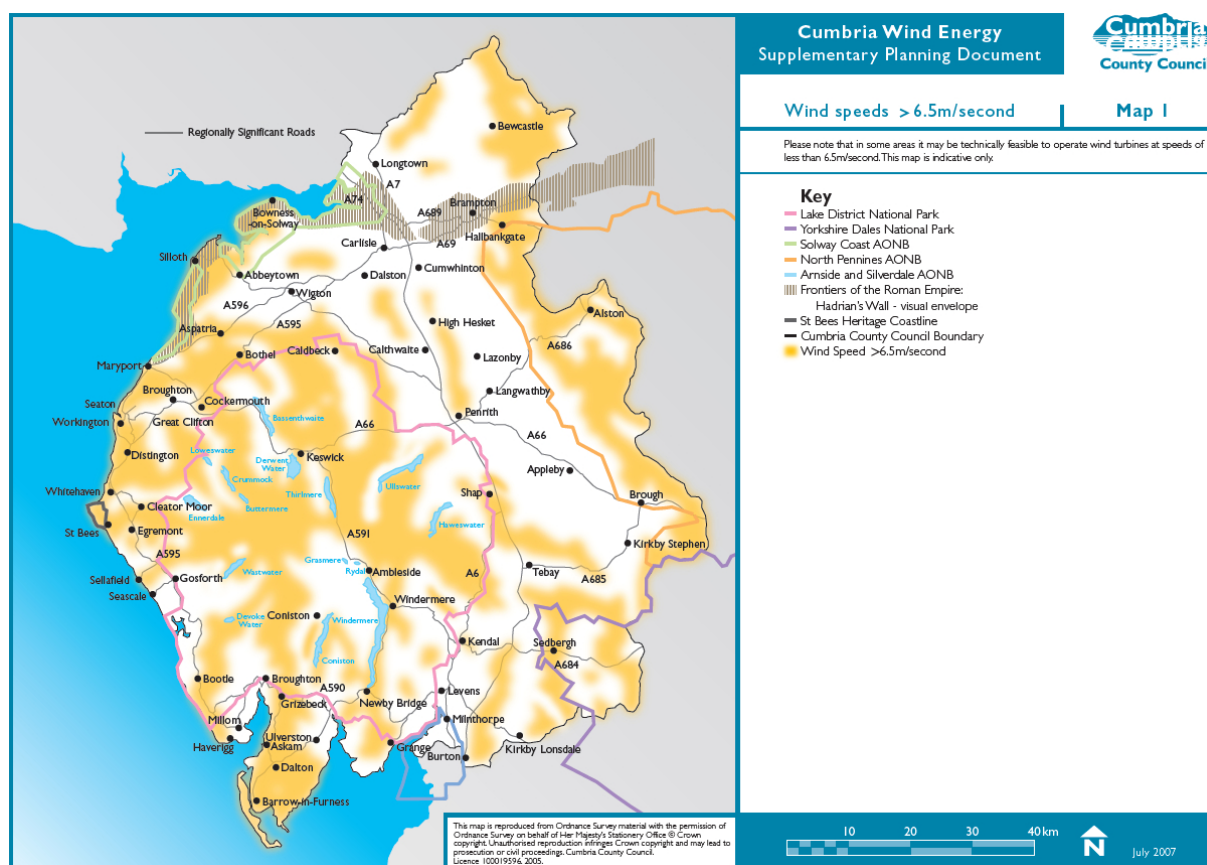
Table 2: Barrow Commercial Wind Capacity

Barrow Commercial Wind Capacity	Large(MW)	Medium (MW)	Small (MW)	Total (MW)	% of County total
Initial Technical Assessment	9.3	1.3	9.7	20.4	1
Assessment incorporating landscape Capacity considerations	6.5	0.9	8.0	15.4	1
% reduction	30.1%	30.7%	17.5%	24.5%	

4.3 Cumbria Wind Energy SPD

4.3.1 The Cumbria Wind Energy SPD gives a generalised overview of the overall wind resource in the County. It explains that due to the prevailing wind direction the wind resource in Cumbria is greatest on west facing upland sites and along the coast.

Figure 1: Estimated Mean Wind Speeds



Source: Cumbria County Council

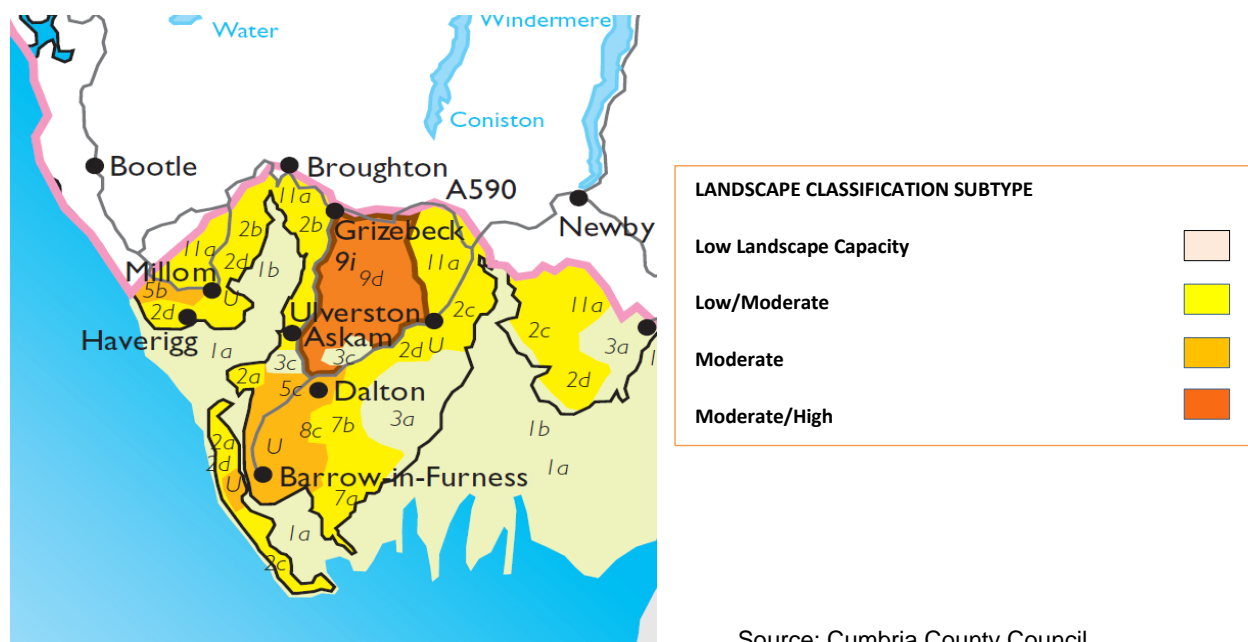
4.3.2 Figure 1 above (Map 1 of the SPD) shows estimated mean wind speeds in metres per second for values over 6.5metres/second noting that the windiest locations are often within the upland areas of the National Parks. The SPD also confirms the policy restrictions placed on wind energy schemes in such locations, a factor borne out in the 2011 Deployment Study where the County's resource potential was curtailed once landscape constraints were factored in. The map shows that almost the entire Borrough, principally due to its position located on the South West

peninsula enjoys a wind speed over 6.5m per second, therefore there is no justification to reduce the Suitable Area to take account of wind speeds.

4.4 Landscape Sensitivity and Capacity

- 4.4.1 Pylons, telecom masts and wind turbines, (collectively called vertical infrastructure) are a common feature in most areas. Turbines can have a greater visual impact due to their moving parts. The physical appearance of wind turbines set within rural landscapes means that this is a major consideration in the determination of planning applications. In making judgements on overall landscape sensitivity, consideration needs to be given to both the sensitivity of landscape character and visual sensitivity.
- 4.4.2 The Borough exhibits a mix of landscape character outside of the urban areas ranging from the dunes and beaches in the west to the rolling lowlands and drumlin fields in the east and the uplands and moorlands towards the north east. Each landscape type has a measured sensitivity capacity for being able to accommodate wind turbines. This is reproduced in the map extract below.
- 4.4.3 As stated in Table 1, areas where there is no capacity for wind developments due to in terms of landscape sensitivity have been mapped (see Appendix B) and discounted from the Suitable Area.

Figure 2: Landscape Sensitivity Capacity



Source: Cumbria County Council

4.5 Landscape Types

Landscape type 2 Coastal Margins (sub types 2a Dunes and Beaches and 2d Coastal Urban Fringe):

- 4.5.1 These are mainly flat open areas incorporating diverse characteristics from coastal margin to urban settlement edge.
- 4.5.2 Sub type 2a Dunes & Beaches is found around the Duddon Estuary consisting of dunes and flat raised beaches dominating semi natural grassland and isolated settlements linked by small roads and tracks;
- Energy infrastructure including tidal, large scale wind and pylons could be considered in the adjacent estuary and bay areas. These could have significant effects on natural coastal processes, habitats and the open seascape character.
 - New facilities within these areas should be carefully sited so as to minimise their landscape and visual effects on this undeveloped natural seascape.
 - Major and minor energy infrastructure in adjacent landscapes could compromise the remote qualities of these areas.
- 4.5.3 Sub Type 2d Coastal Urban Fringe encompasses Walney Island. It comprises of flat or gently undulating low lying land that is characterised by significant human intervention, in the form of urban industrial and leisure related development. The area is rich in ecology and heritage.
- Roads, railways, buildings and derelict sites detract from the open views of the beaches and sea.
 - The views across adjacent landscapes to open sea and expansive sky are sensitive to new development that would enclose or interrupt these views.
 - New or upgraded energy infrastructure could affect the character of the less well developed parts of the coastal fringe.
- 4.5.4 In terms of capacity the Coastal Margins group is judged to have a low/moderate capacity capable of accommodating a small group (3/5 turbines) with a large group (6/9 turbines) in extensive parts.

Landscape Type 3 Coastal Limestone (sub type 3c Disturbed Areas):

- 4.5.5 These form part of the unique Morecambe Bay limestones ranging from semi natural habitats to rolling landscapes and areas characterised by irregular man made landforms arising from early industrial activity.
- 4.5.6 Sub type 3c Disturbed Areas is found in 3 small areas north of Dalton in Furness. It is an undulating landform of glacial origin, with patchy woodlands and marsh areas, but also featuring abandoned and restored mine workings, quarries and reclaimed farmland.
- Landscapes should be restored and only high quality development of traditional character encouraged.
 - Little scope for large scale projects due to ecological and landscape sensitivities.
 - Enhance nature conservation value through increased planting and manage recreational pressures through sensitive designs.

4.5.7 In capacity terms the Coastal Limestone group is judged to have no capacity with all group types being inappropriate.

Landscape Type 5 Lowland (sub types 5b Low Farmland and 5c Rolling Lowland):

4.5.8 These areas include extensive areas of lowland pasture with some sub types being influenced by 20th century development.

4.5.9 Sub type 5b is found to the north of the town of Barrow and is characterised by intensely farmed undulating topography of an open nature.

- Energy infrastructure needs to be carefully managed to prevent this sub type becoming an energy landscape with prominent locations avoided and suitable mitigation employed such as strengthening green infrastructure e.g. woodlands.

4.5.10 Sub type 5c is found in the north east of Barrow and consists of a rolling topography of agricultural landscape, with irregular field patterns and varying levels of woodland and hedgerow.

- Subject to pressures for urban growth due to proximity to key towns, which if not carefully managed could erode the landscape character. Landscape and biodiversity enhancements should be sought as considerations of new development on the settlement edge.
- Potential upgrades to the electricity network could result in adverse landscape impacts.
- Energy infrastructure including large scale wind energy generation, pylons and substations should be carefully sited and designed to prevent this sub type becoming a wind energy landscape. Prominent locations should be avoided and appropriate mitigation should be included to minimise adverse affects.

4.5.11 The Lowland group is judged to have a moderate capacity for small groups of turbines.

Landscape Type 7 Drumlins (sub type 7a Low Drumlins and 7b Drumlin Fields):

4.5.12 A significant area of drumlins runs along the eastern boundary of the Borough from Lindal through to Rampside. These form a tract of rounded hills of varying height but are often steeply sided.

4.5.13 Sub Type 7a Low Drumlins is found in a small area north east of Rampside and the parallel alignment of broad rounded low hills gives a distinct grain to the landscape. Agricultural pasture is the dominant land use with irregular field patterns separated by small stone banks topped with hedgerows, and scattered farms linked by narrow lanes.

- There is pressure across the County for wind related schemes in locations where this sub type occurs.
- Some potential for wind related projects but subject to the avoidance of placing large scale infrastructure in locations within open and prominent positions where it could degrade the rural character.

4.5.14 Sub Type 7b Drumlin Field covers a large band running from Lindal along the eastern Borough boundary with South Lakeland as far as the coast road near

Rampside. Key characteristics are the strong pastoral field pattern split by mature hedgerows.

- Large scale infrastructure projects that cut across the grain of the hills often dominate the drumlin landscape.
- Development on prominent hill tops should be avoided.
- Tall structures such as wind turbines should not be located in open and prominent areas where it could degrade the rural character.

4.5.15 The Drumlins group is judged to have a low/moderate capacity with potential for single turbines or a small group.

Landscape Type 9 Intermediate Moorland & Plateau (sub type 9d Ridges):

4.5.16 These areas are found in the north east of the Borough beyond Askam and Ireleth consisting of medium to large scale landscapes with wide horizons.

4.5.17 Sub Type 9d Ridges consists of distinct ridges with rounded hill summits. The landscape is a mix of moorland and managed farmland but large scale pylons and turbines form prominent vertical features.

- Upland locations offer higher wind speeds hence they are attractive for wind energy development
- The siting of large scale infrastructure in open and prominent areas should be avoided where it could degrade the open and expansive character
- The expansion of existing projects should be carefully managed in order to protect the landscape as the cumulative impact could be significantly harmful on the landscape character.

4.5.18 The Moorland group has a moderate/high capacity varying between small groups on the low plateaus to a large group, exceptionally a small farm of 16-25 turbines, on the Intermediate Moorland.

4.6 Cumulative Impacts

Cumbria Cumulative Impacts of Vertical Infrastructure Study (CIVI)¹⁴

4.6.1 In 2013 Cumbria County Council commissioned a report that analysed the cumulative impacts of onshore vertical infrastructure¹⁵ developments across the County and in neighbouring areas. The document recognises the pressure for renewable schemes due to the unique topography and position of the County, the cumulative impact of established schemes and potential future schemes.

4.6.2 The study considers the sensitivity of the landscape and the people using it to changes arising from existing vertical infrastructure developments. It combines these to provide an assessment of the relative significance of cumulative impacts upon landscape character and visual amenity across the county to date, and

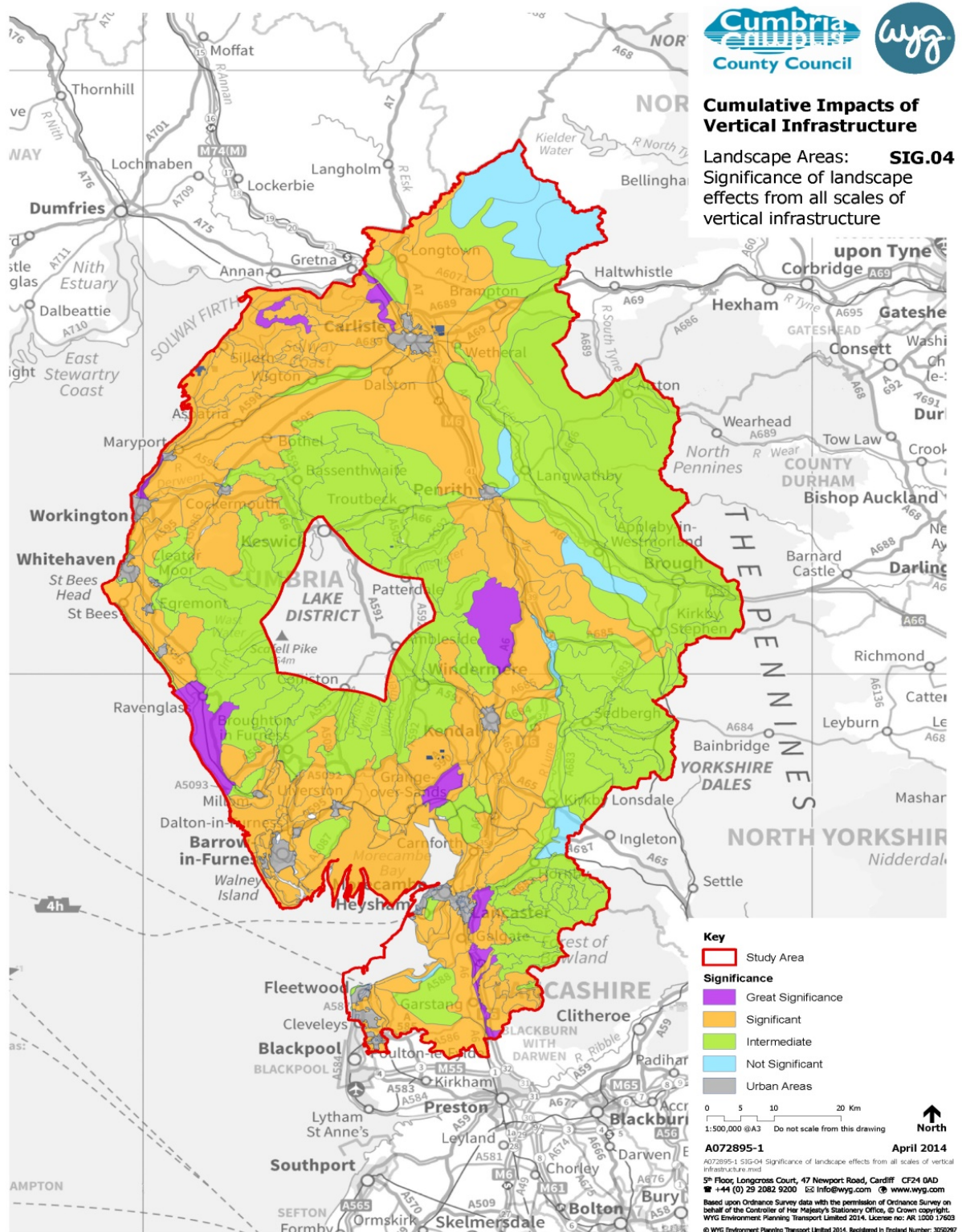
¹⁴ Published 2014 by Cumbria CC, authored by WYG consultants.

¹⁵ Classed as energy and communications development characterised by vertical elements: principally wind turbines, communication masts and pylons carrying power lines, over 15m in height. Buildings such as generator halls were excluded.

provides detailed guidance on how cumulative impacts of future proposals can be assessed by developers and planning authorities.

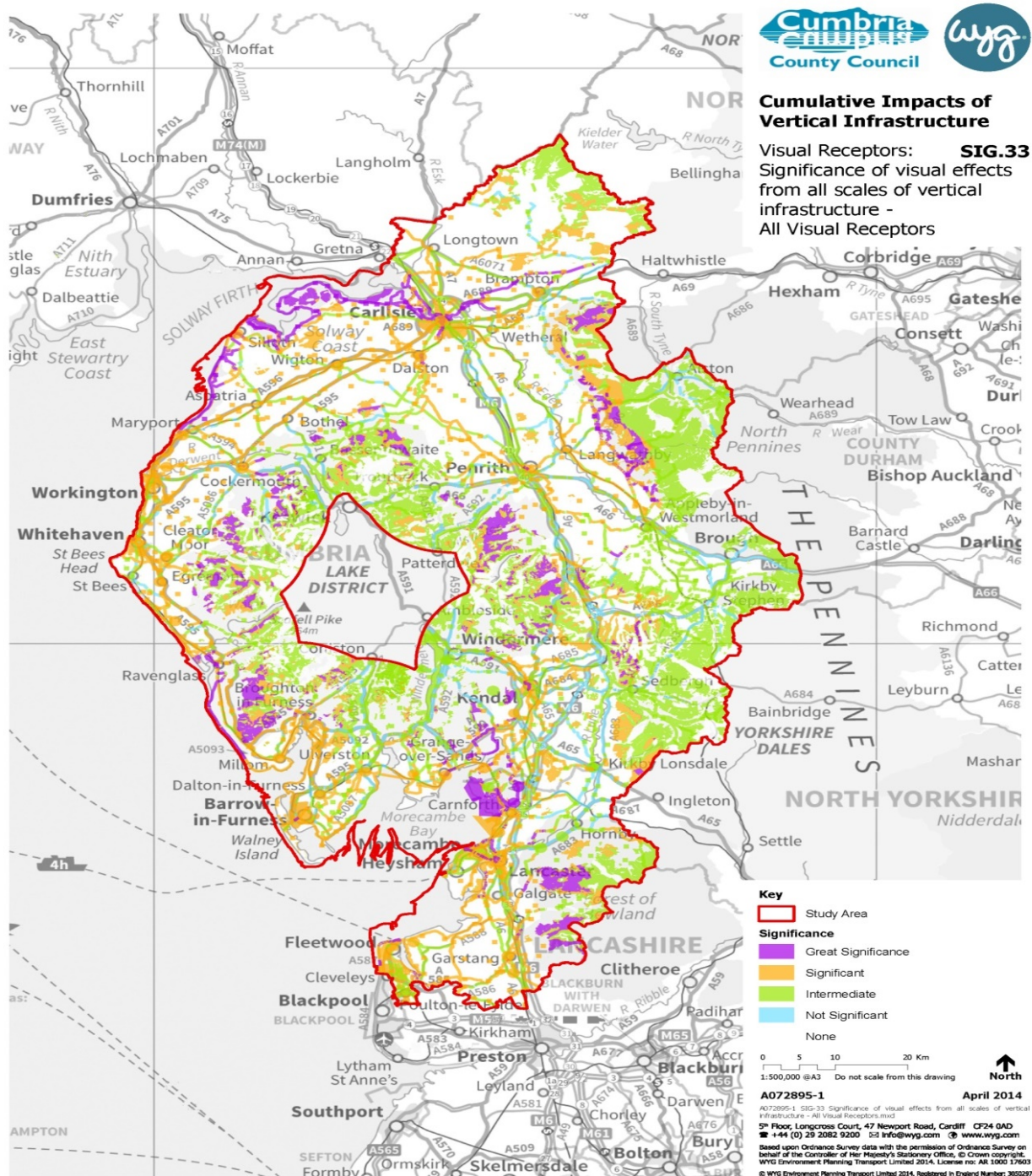
- 4.6.3 Figures 3 and 4 are taken from the CIVI document; Map SIG04 identifies the overall significance of landscape effects from all scales of vertical infrastructure. It shows that a large proportion of the Borough is already affected significantly by the cumulative impacts of vertical infrastructure and in those areas additional turbines could increase effects on the landscape.
- 4.6.4 Given the above, the Council considered removing areas from the Suitable Area where significant cumulative landscape effects are identified, as other Cumbrian authorities have done. It decided against this as overall cumulative effects are best considered when determining the exact location, density and size of proposed turbines and some existing vertical infrastructure may be replaced by underground cables as part of the North West Coastal Connections project. It is therefore vital that cumulative impacts are considered prior to the submission of a planning application to ensure effects are avoided or minimised.
- 4.6.5 Map SIG33 identifies the overall significance of visual effects from all scales of vertical infrastructure. As stated in Table 1 the Suitable Area has not been adjusted to take into account this constraint therefore the issue will also need consideration prior to the submission of a planning application.

Figure 3: Overall Significance of Landscape Effects from All Scales of Vertical Infrastructure



Source: Cumbria County Council

Figure 4: Overall Significance of Visual Effects from All Scales of Vertical Infrastructure



Source: Cumbria County Council

4.7 Additional Pre-application Considerations

- 4.7.1 There are a number of other factors which must be taken into account when identifying specific sites for wind turbines regardless of whether they are within a Suitable Area or not. Many of these factors are identified within the National Policy Statement and NPPG however it would not be feasible or appropriate to undertake in-depth assessments of each during the identification of broad Suitable Areas.
- 4.7.2 Applications may be refused if any of the constraints listed below cannot be overcome or mitigated even if the proposal is within a Suitable Area. The Council offers a pre-application advice service which developers are encouraged to use.

Overhead Electrical Lines

- 4.7.3 When determining the location of turbines, consideration must be given to existing overhead electrical lines and the relevant industry standard must be followed (Electricity Networks Association Engineering Recommendation L44 Separation between Wind Turbines and Overhead Lines, Principles of Good Practice” as adopted by National Grid). Given the uncertainty over existing lines which may be altered/replaced over time as part of the North West Coastal Connections proposals, it was not considered appropriate to exclude corridors around existing lines from the Suitable Area.

North West Coastal Connections Proposed Corridor

- 4.7.4 This is a nationally significant infrastructure project which will introduce a network of new high voltage power cables across the Borough. Consideration should be given to the proposed route of the corridor and whether this would be compromised by new or extended turbine development. When considering impacts consideration must be given to current industry standards including the document “Electricity Networks Association Engineering Turbines and Overhead Lines, Principles of Good Practice” as adopted by National Grid. Early discussion with National Grid is also encouraged.

Microwave Fixed Links

- 4.7.5 There is the potential for wind turbines, when poorly located, to have an impact upon electromagnetic transmissions including television and radio signals. The NPPG paragraph 17 states that “*specialist organisations responsible for the operation of electromagnetic links typically require 100m clearance either side of a line of sight link from the swept area of turbine blades*”. Applicants must consider current OFCOM industry standards and early discussions with OFCOM prior to the submission of an application are encouraged.

Walney Airfield Safeguarding Zone

- 4.7.6 Wind turbines may have an adverse effect on air traffic movement and safety. The Council will consult the Aviation Authority with regards to proposals for certain wind developments.

Shadow Flicker

- 4.7.7 This is described on the government's website¹⁶ as "*the flickering effect caused when rotating wind turbine blades periodically cast shadows through constrained openings such as the windows of neighbouring properties*". The likelihood and magnitude of shadow flicker depends on a number of conditions coinciding including the position and height of the sun, wind speed, cloudiness and position of the turbine in relation to a sensitive receptor (for example a residential property).
- 4.7.8 In November 2010, the Department of Energy and Climate Change commissioned consultants Parsons Brinckerhoff to produce a report to update the government's evidence base on shadow flicker. It concluded that as was previously stated in the NPPG, shadow flicker occurs within 130 degrees either side of north and within a distance equal to 10 rotor diameters.
- 4.7.9 Applicants should calculate the potential number of hours that shadow flicker could occur at each affected property. Using careful design and positioning of the turbines, the issue is capable of being mitigated to avoid any significant impact upon neighbours and mitigation measures may be enforced through planning conditions. Turbines can be turned off remotely at the relevant time of day/year to prevent flicker occurring for example.
- 4.7.10 In general, rotating blades should not be reflective to reduce flicker.

Safety

- 4.7.11 There are various aspects of safety when considering wind turbine proposals. In some cases these can be quite specific to the location such as in highland areas where "ice throw" from blades has been an issue, turbine heights in areas of low flying, interference with radar, or more general such as topple distances in proximity to buildings where the guide is the height to the blade tip plus 10%. The Department of Transport recommends that wind turbines should be no nearer to a road than their height plus 50 metres or a total of one and a half times their height, whichever is the lower. Further consultation should be undertaken with the Highways Authority for all other publicly maintained highways.
- 4.7.12 National guidance "Renewable and Low Carbon Energy" published in June 2015 states that; "*Safety may be an issue in certain circumstances, but risks can often be mitigated through appropriate siting and consultation with affected bodies.*"

Traffic and Transport

- 4.7.13 Applicants must ensure there is sufficient access for long and wide load movements associated with turbine parts. Abnormal loads must be transported safely in a way that minimises inconvenience to other road users and that the environmental effects of this and other construction traffic, after mitigation, are acceptable.
- 4.7.14 The impact of the development upon public footpaths and bridleways will also require consideration.

¹⁶ <https://www.gov.uk/government/news/wind-turbine-shadow-flicker-study-published>

Noise

- 4.7.15 Sources of wind turbine noise can be divided into two categories –mechanical and aerodynamic. Mechanical noise is associated with the movement of mechanical components for example within the nacelle from the gearbox and generator, whilst aerodynamic noise arises from the movement of the blade through the air, and is commonly described as “swish” or “slap”. This arises as the rear of the blade washes through the air disturbed by the leading edge. Careful design of the blade profile, essentially the trailing edge, can reduce the level of swish by reducing vibration across the blade surface.
- 4.7.16 The potential for noise from turbines is often a concern for neighbours and one way of mitigation is to ensure suitable distances between the turbine and sensitive properties. The current established recommended good practice is contained within ‘The Assessment and Rating of Noise from Wind Farms’ (ETSU-R-97), June 2013. This provides a framework for the measurement of wind farm noise and gives indicative noise levels calculated to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development. It identifies that factors such as turbine type, turbine size, and local topography all have a role to play.
- 4.7.17 There is also a growing concern regarding amplitude modulation (AM) which is a feature of the character of wind farm noise. Over the period since ETSU there have been numerous studies into AM which is caused by the cyclical nature of the blades moving through the air, and is often referred to as a “thump” at distances of up to 2km and a more localised “swish” noise in the immediate vicinity. This is frequently cited as the potential cause of reported health impacts and psychological annoyance in nearby residential properties.
- 4.7.18 In October 2016 DECC published its report into AM¹⁷. The government website states that this is not planning guidance but accepted “good practice” from the Institute of Acoustics. Developers and Planning Authorities are encouraged to consider the research if an AM planning condition would be appropriate.

Minimum Separation Distance

- 4.7.19 Focussing on the issues of shadow flicker, noise (in its various forms) safety and the visual aspects of turbines has lead many Planning Authorities to consider a policy that requires a minimum separation distance, or buffer zone, between turbines and neighbouring properties. During the period 2010-2012 a number of Private Members Bills were presented in Parliament in an attempt to provide a legal basis for separation distances between turbines and dwelling, dependent upon the size of the turbine. None progressed further than the House of Lords hence there is no set minimum distance in English planning policy.
- 4.7.20 Following the consolidation of planning guidance (NPPGs and PPSs) into the NPPF in 2012, the guidance note to PPS22 Renewable Energy remains extant. The

¹⁷ <https://www.gov.uk/government/publications/review-of-the-evidence-on-the-response-to-amplitude-modulation-from-wind-turbines>

document refers to “*The minimum desirable distance between wind turbines and occupied buildings calculated on the basis of expected noise levels and visual impact will often be greater than that necessary to meet safety requirements. Fall over distance (i.e. the height of the turbine to the tip of the blade) plus 10% is often used as a safe separation distance*” (paragraph 51).

- 4.7.21 The Welsh Assembly has adopted guidance of a 500m distance, whilst in Northern Ireland the figure is 10x the rotor size but not less than 500m. In Scotland, the policy guidance refers to a separation distance of up to 2km between areas of search and settlements, but importantly not individual dwellings, with account to be taken of local factors.
- 4.7.22 Various English Planning Authorities have sought to introduce enforceable separation distances within planning policies or supplementary guidance but generally to no avail. Milton Keynes Council had its SPD, quoting a separation distance, quashed in the High Court in mid 2013. Other Authorities have adopted separation policies but acknowledging that they have no potential weight in law. A trawl of numerous appeals shows that the Inspectorate relies upon an assessment of issues such as noise, shadow flicker, and to a lesser extent (dependent upon location), the visual impact, upon which to base a separation argument.
- 4.7.23 Members of the Council’s Planning Policy Working Group have asked for a buffer distance to be considered as part of the emerging Plan policies. The assertion in this paper is that, based upon all available information, a blanket restriction would be unworkable. Instead the policies should be clear on the extent of local constraints and take account of the issues raised by each development in order that each can be satisfactorily addressed. Working through each issue would be a more robust way of dealing with an application in order to reach an appropriate decision.

Biodiversity

- 4.7.24 Whilst the mapping exercise has excluded areas designated for nature, including Natura 2000 Sites, from the Suitable Area, there is the potential for turbines located outside such areas to have a negative impact upon species in terms of bird strikes and adverse effects on bats resulting in death or injury.
- 4.7.25 Biodiversity constraints, for example bird and bat flight paths, will not be evident until detailed assessments and ecological surveys have been undertaken. Surveys will identify the ecological sensitivity of the site, the likely impact of the development and any mitigation measures.
- 4.7.26 Where necessary, and in line with national policy¹⁸ applicants should assess collision risks using the data collected from the site at the pre-application EIA stage. It may be appropriate for the assessment to include risk modelling for certain species of birds or to estimate the mortality rate of certain species of bat. The parameters should be discussed with the relevant statutory consultees.

¹⁸ National Policy Statement for Renewable Energy Infrastructure (EN-3)

- 4.7.27 Where significant harm is likely, avoidance and mitigation measures must be taken. Further information regarding the hierarchy of avoidance, mitigation and compensation measures can be found in the Council’s Biodiversity & Development Supplementary Planning Document.

Heritage

- 4.7.28 The location of ancient monuments and conservation areas have been excluded from the Suitable Area, however applicants will also need to consider the impact upon the setting of these heritage assets when drawing up proposals.
- 4.7.29 The location of Listed buildings have not been mapped as part of the exercise of identifying the Suitable Area, therefore the impact on listed buildings and their setting will need consideration before the submission of a planning application.

Green Infrastructure

- 4.7.30 The Local Plan identifies a network of green infrastructure in the Borough comprising of smaller elements (Green Wedges, Green Spaces, Green Routes and Green Links). These serve a number of purposes including to provide visual relief and space for biodiversity. Whilst development is not precluded within such areas, there are policies within the Local Plan which protect their character and integrity, such policies will require consideration when assessing suitable locations for wind turbines.

Existing Wind farms

- 4.7.31 The Borough has two existing on shore windfarms and any application for the extension to their operational life, either in their current form or a different form, would be determined in accordance with the Development Plan and any material considerations.

5 Recommendations

5.1 Summary

5.1.1 Central government makes it clear through national guidance and ministerial statements, that Planning Authorities have an essential role in helping the UK meet its global obligations on renewable energy. The NPPF¹⁹ states

“To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.”

5.1.2 This document has identified Suitable Areas for wind energy developments (see Appendix A). It also lists a number of other factors which must be considered by an applicant when identifying specific sites, including landscape and visual impacts. The identification of such areas does not infer that planning permission will be granted but it establishes a guideline that gives clarity to applicants and stakeholders alike.

5.1.3 The analysis indicates that the Borough has locational advantages in common with most of Cumbria due to suitable wind speeds, topography and coastal position. However this is countered by several layers of constraints, ranging from landscape character and capacity to restrictions arising from existing and proposed infrastructure.

5.1.4 It is considered that adopting standardised residential separation distances, which would rule out a significant proportion of wind turbine applications without assessing the site specific impacts, does not conform to the current advice within the NPPF.

5.1.5 Proposals will continue to be judged against national guidance and local planning policies at all times, including the relevant County wide documents, and it remains for applicants to demonstrate that suitable mitigation can be achieved to overcome constraints. The Authority will continue to have a positive strategy to promote renewable energy generation and to assess applications on a case-by-case basis following the adoption of the emerging Local Plan.

¹⁹ CLG (2018) National Planning Policy Framework <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Appendices

Appendix A: Suitable Areas for Wind Energy

Appendix B: Landscape Character Type 3c – Coastal Limestone (no capacity for wind energy)

Appendix C: Built up areas of Barrow & Dalton (including emerging allocations) and proposed Development Cordons

Appendix D: Defence Estates Plan T

Appendix E: Scheduled Ancient Monuments

Appendix F: HSE Explosives

Appendix G: HSE Hazardous Substances

Appendix H: HSE Pipelines

Appendix I: HSE Nuclear

Appendix J: Conservation Areas

Appendix K: Local Geological Sites

Appendix L: Nationally Important Nature Conservation Sites

Appendix M: Wildlife Corridors

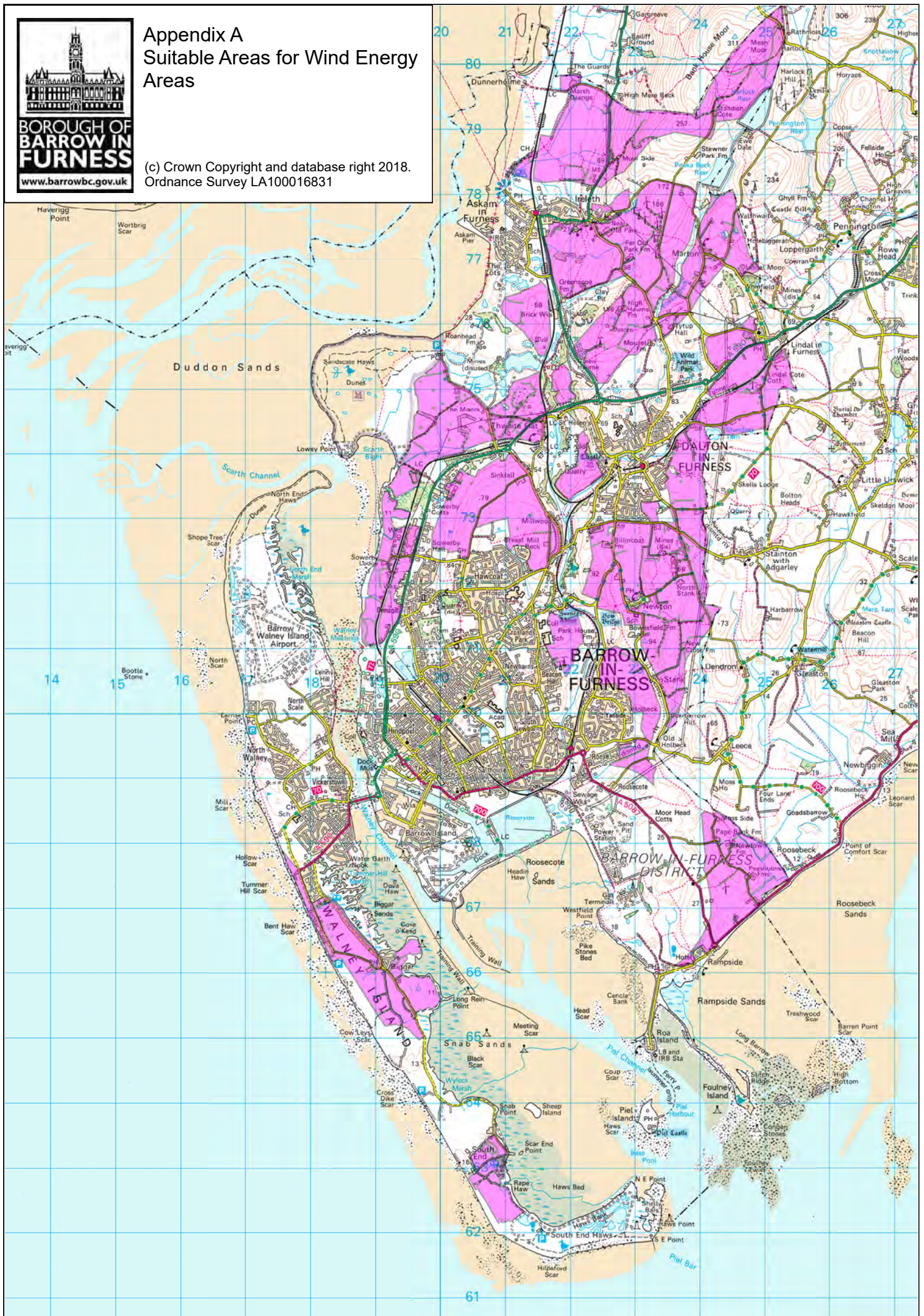
Appendix N: Natura 2000 Sites

Appendix O: Sites of Special Scientific Interest



Appendix A Suitable Areas for Wind Energy Areas

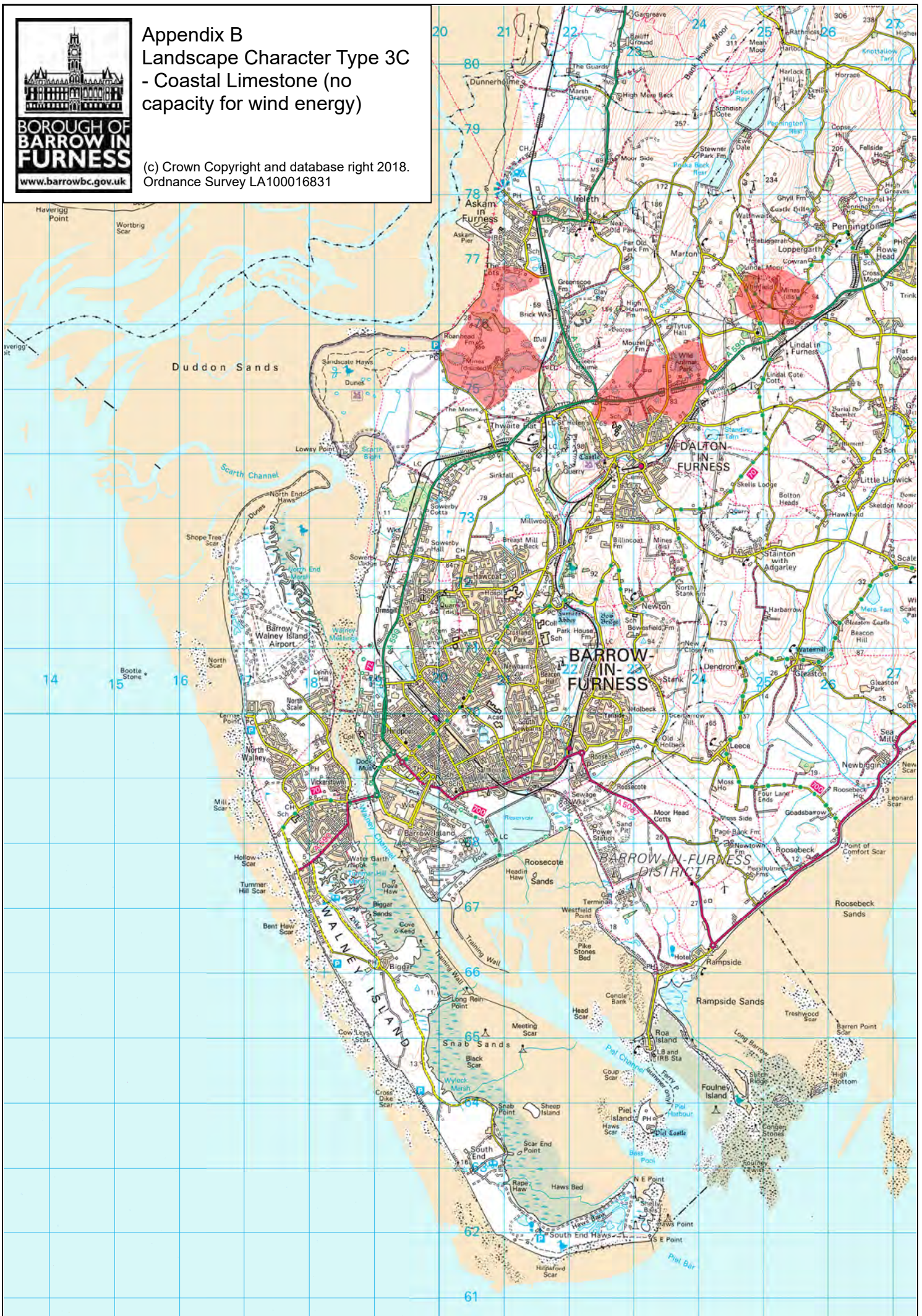
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix B
Landscape Character Type 3C
- Coastal Limestone (no
capacity for wind energy)

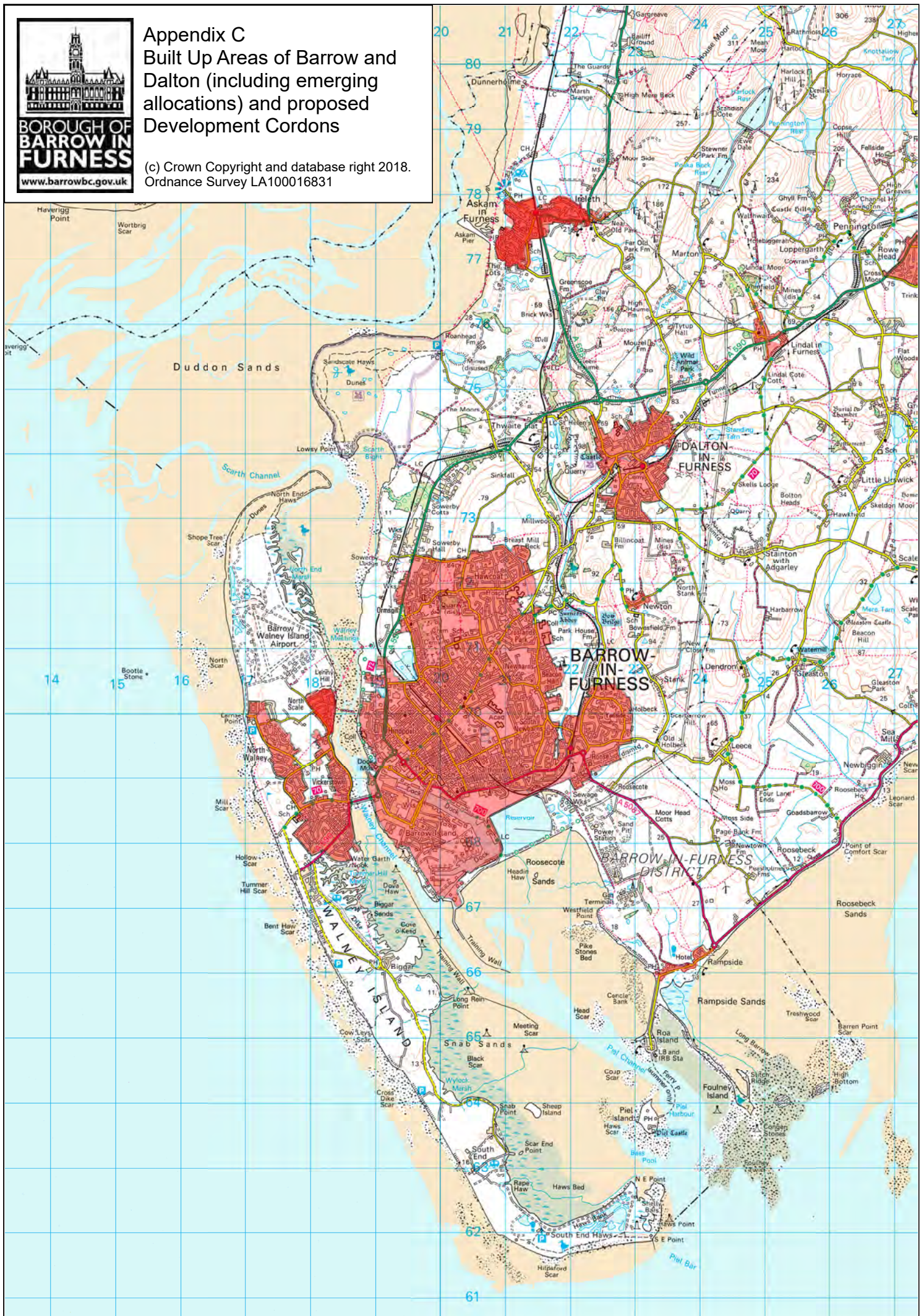
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix C Built Up Areas of Barrow and Dalton (including emerging allocations) and proposed Development Cordons

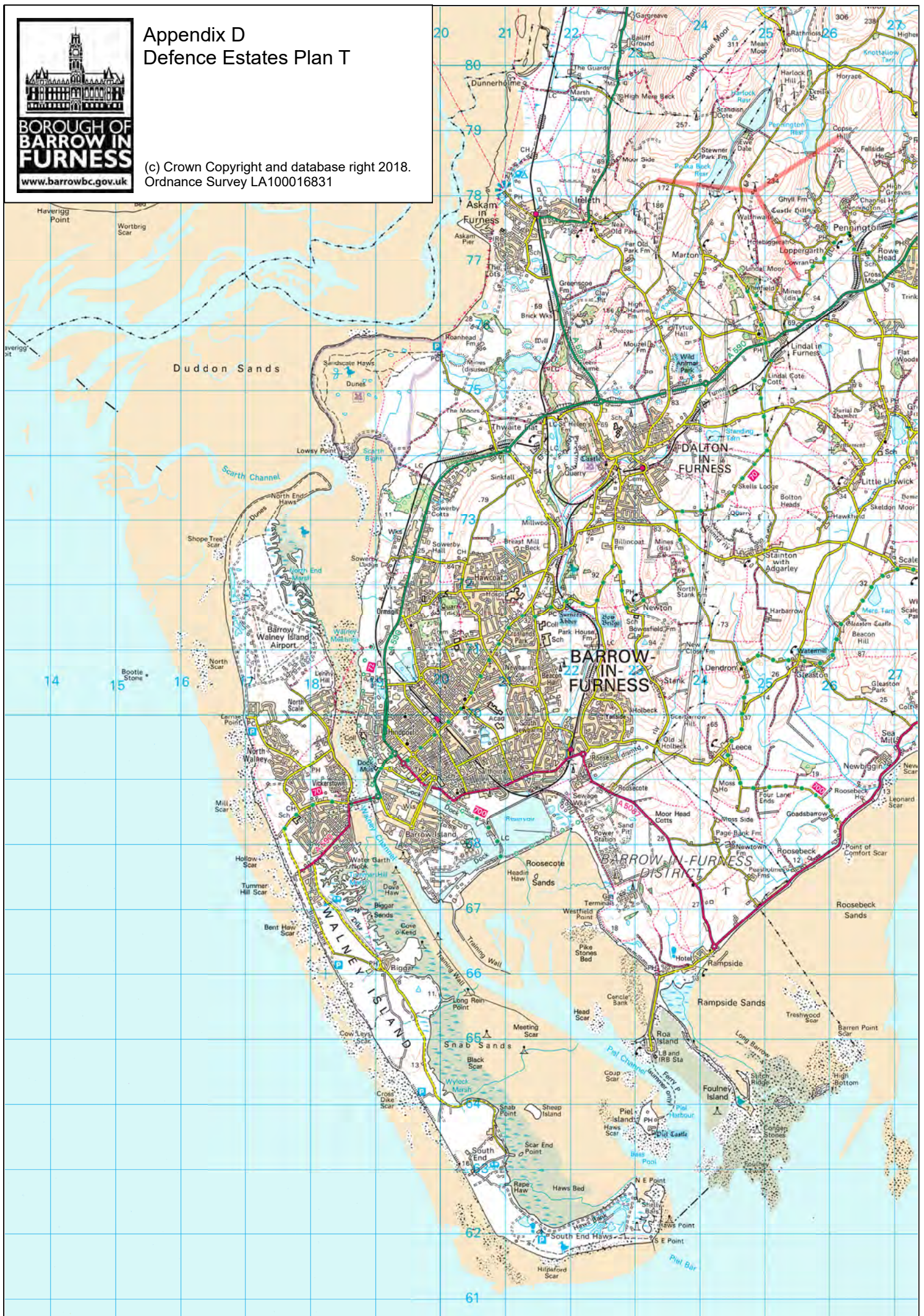
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix D Defence Estates Plan T

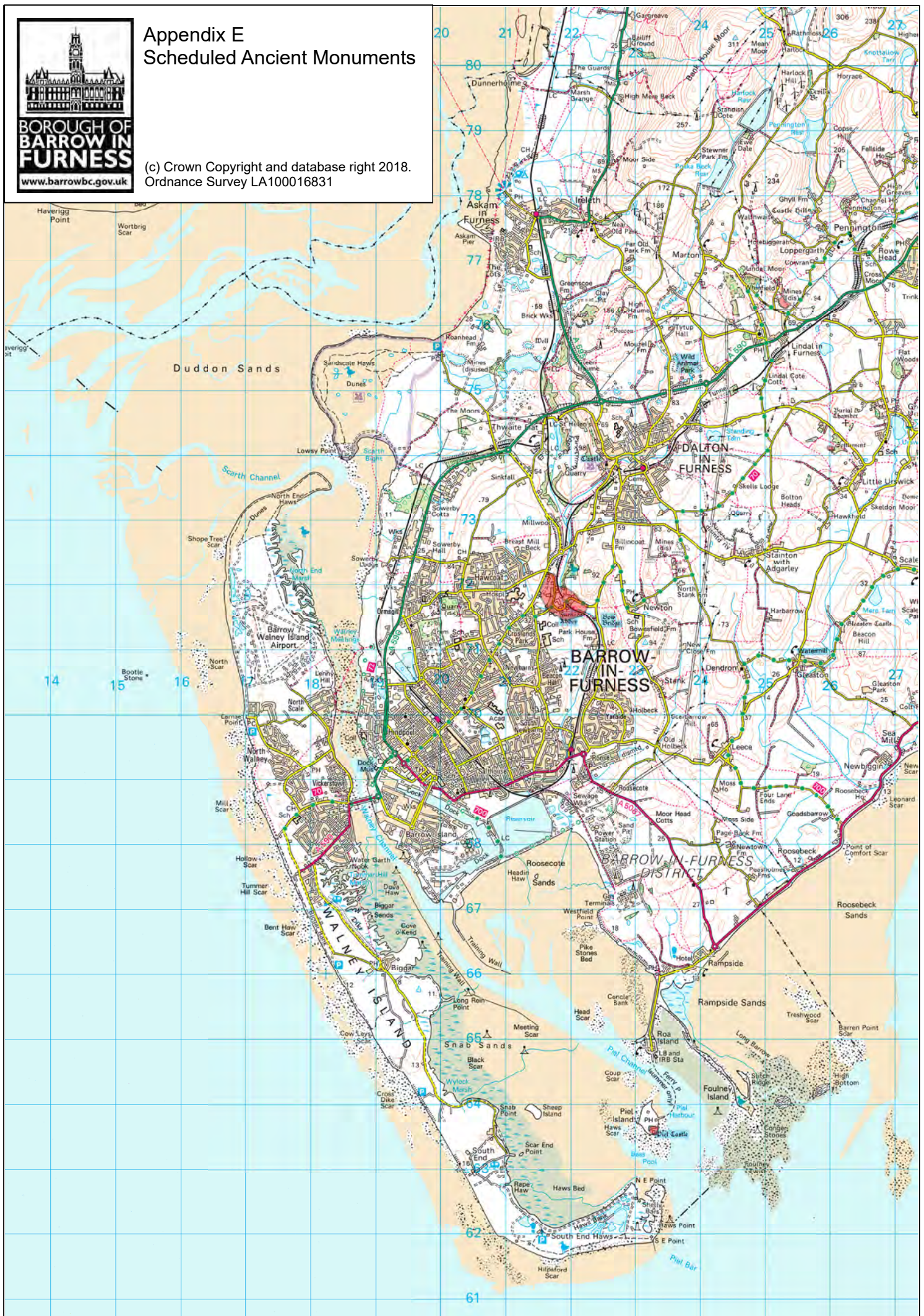
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix E Scheduled Ancient Monuments

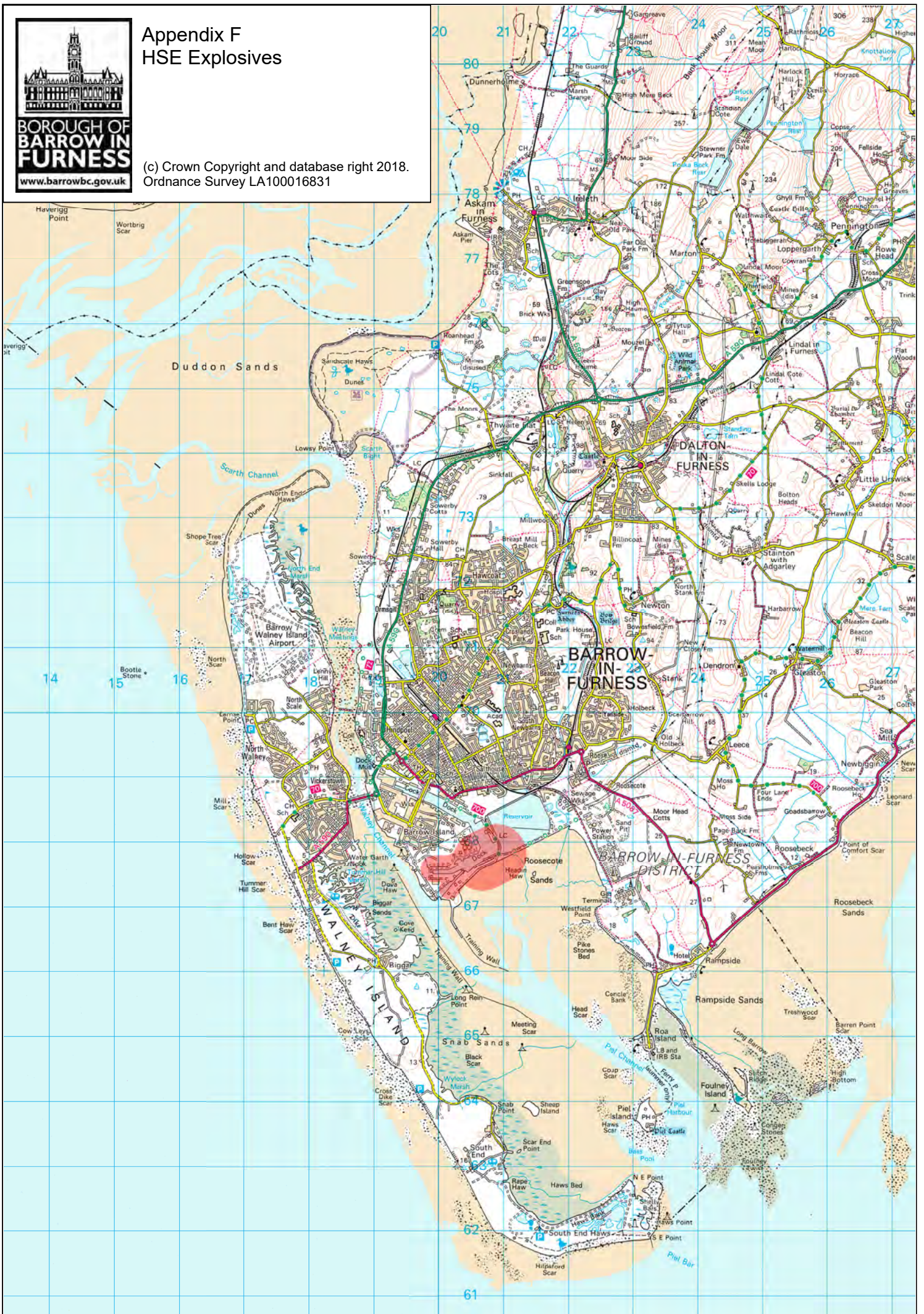
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix F HSE Explosives

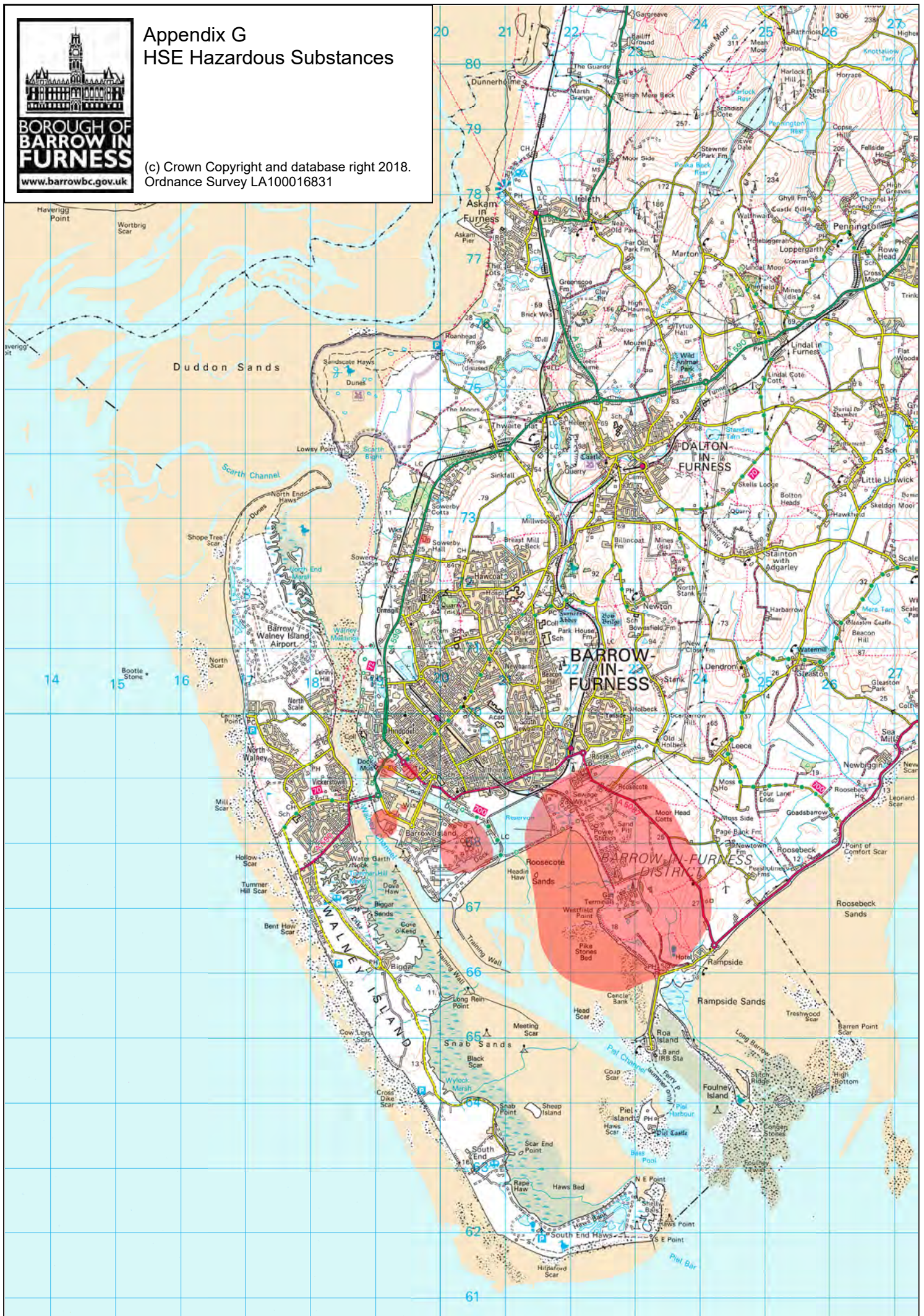
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix G HSE Hazardous Substances

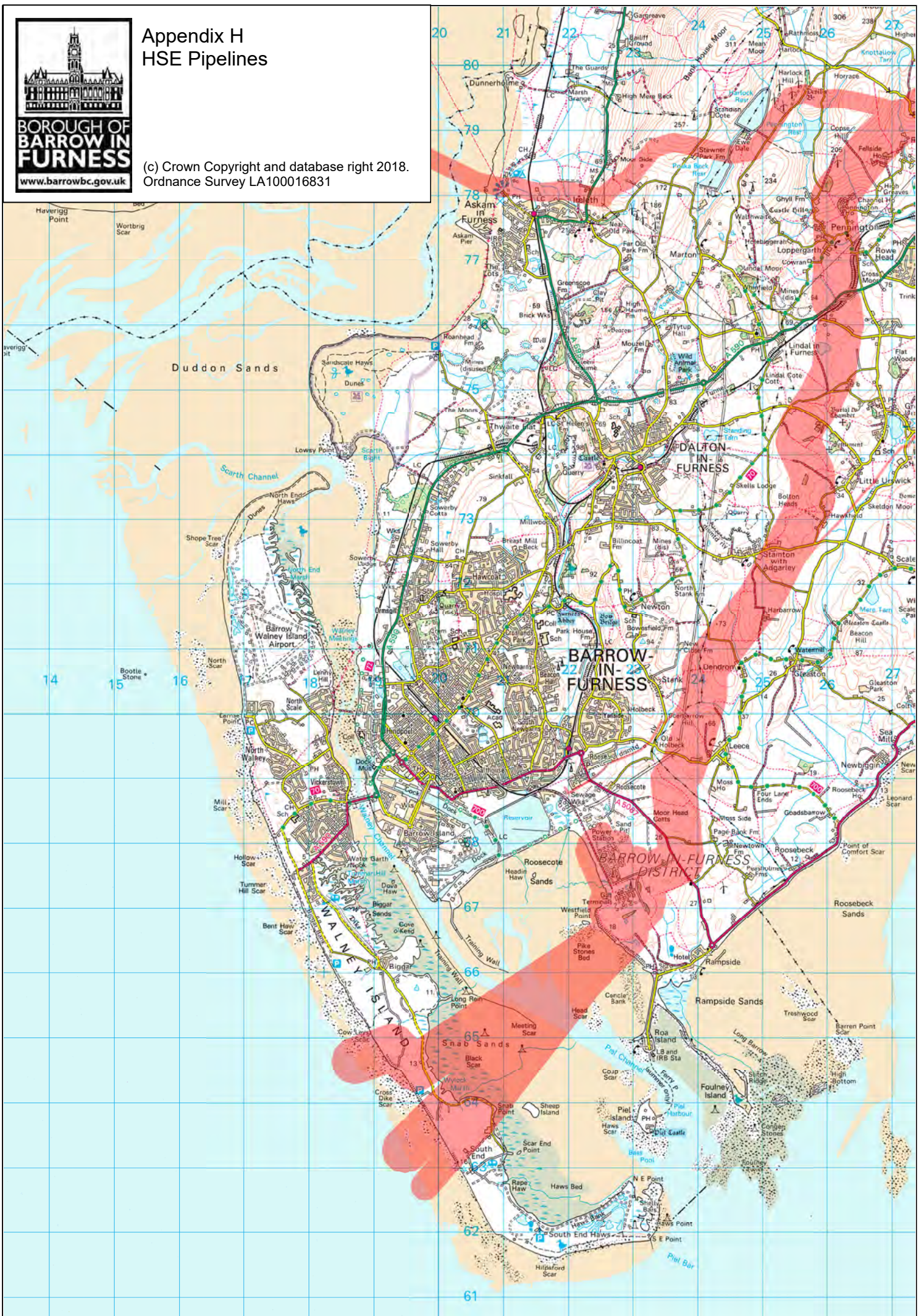
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix H HSE Pipelines

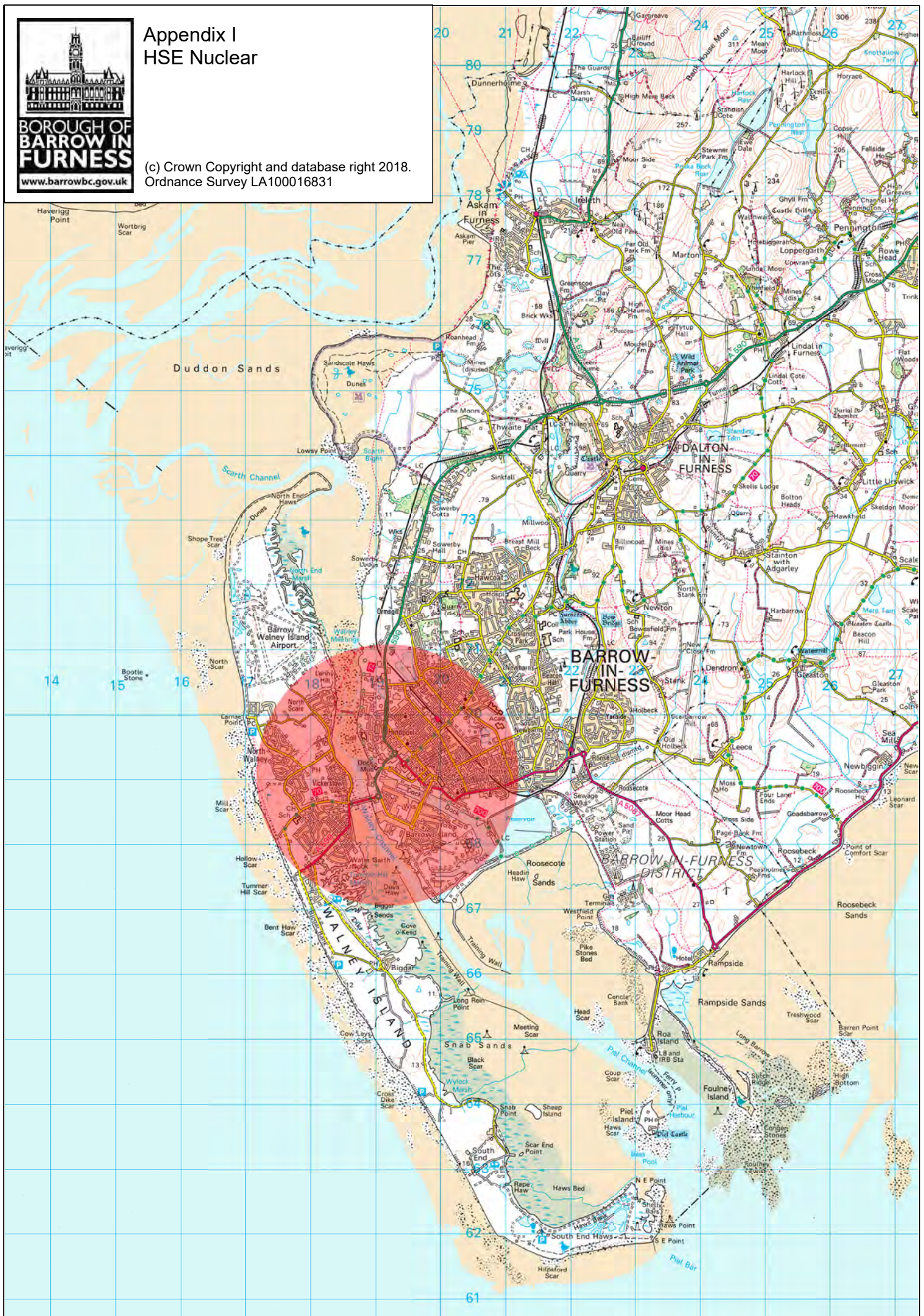
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix I HSE Nuclear

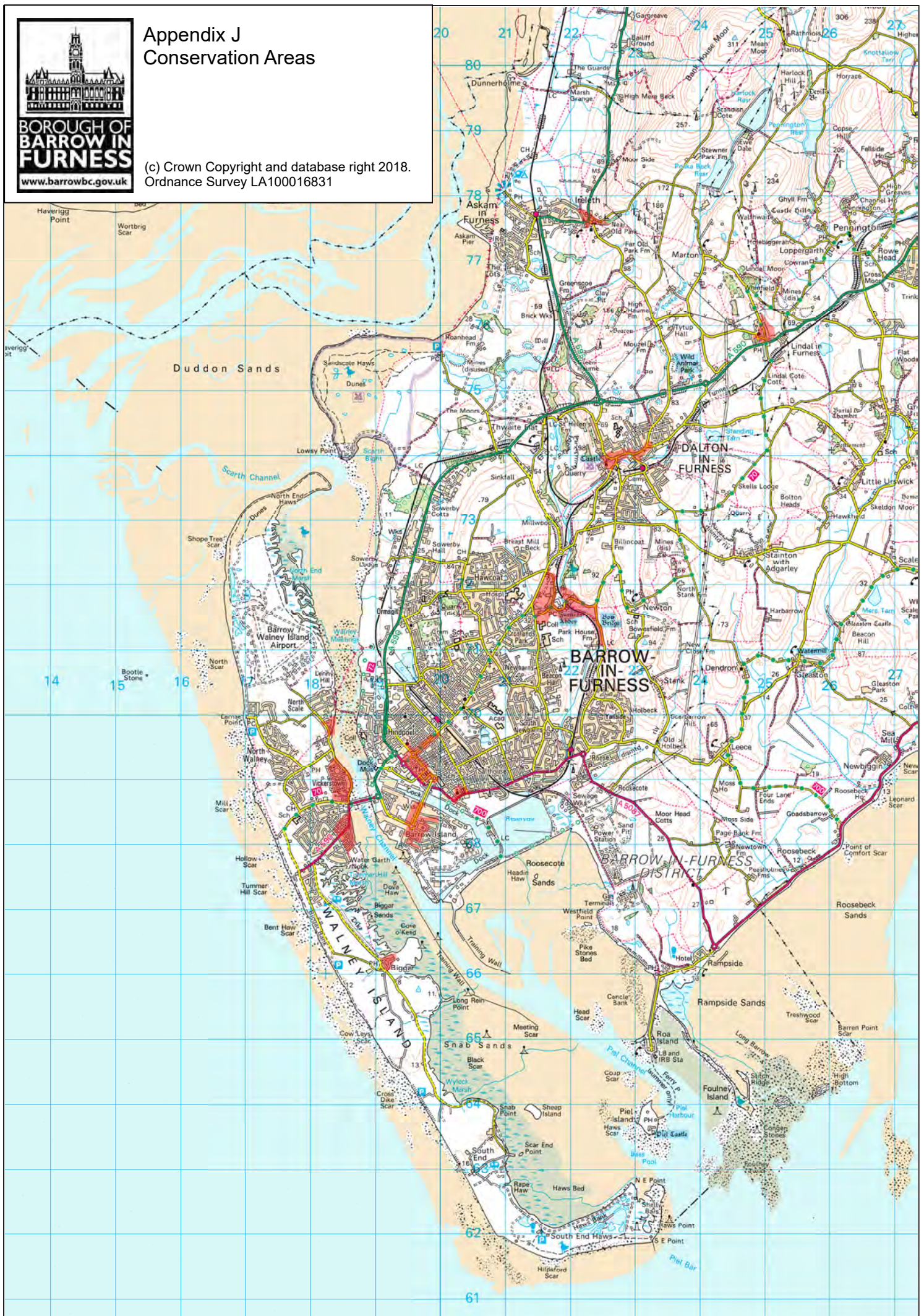
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix J Conservation Areas

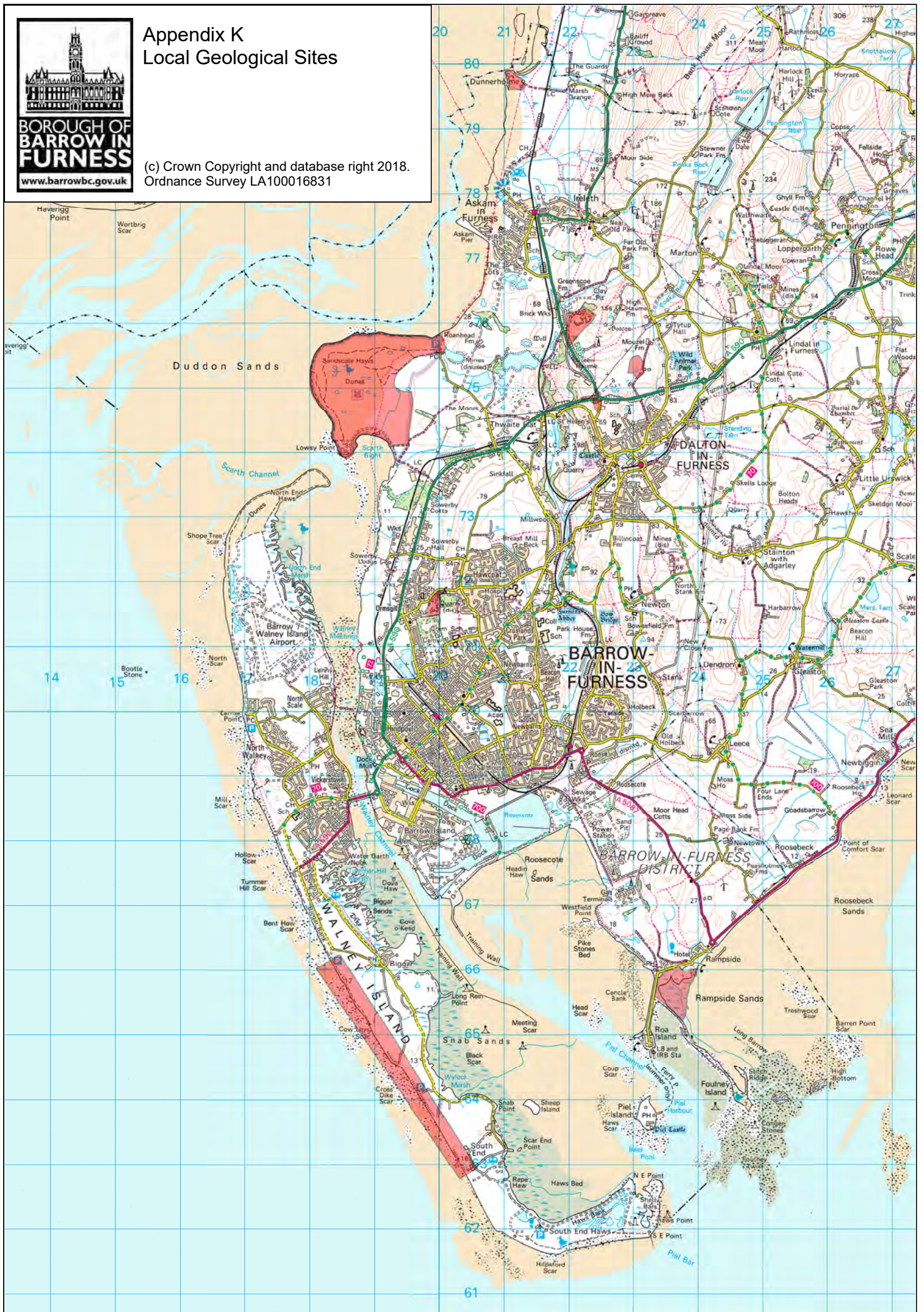
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix K Local Geological Sites

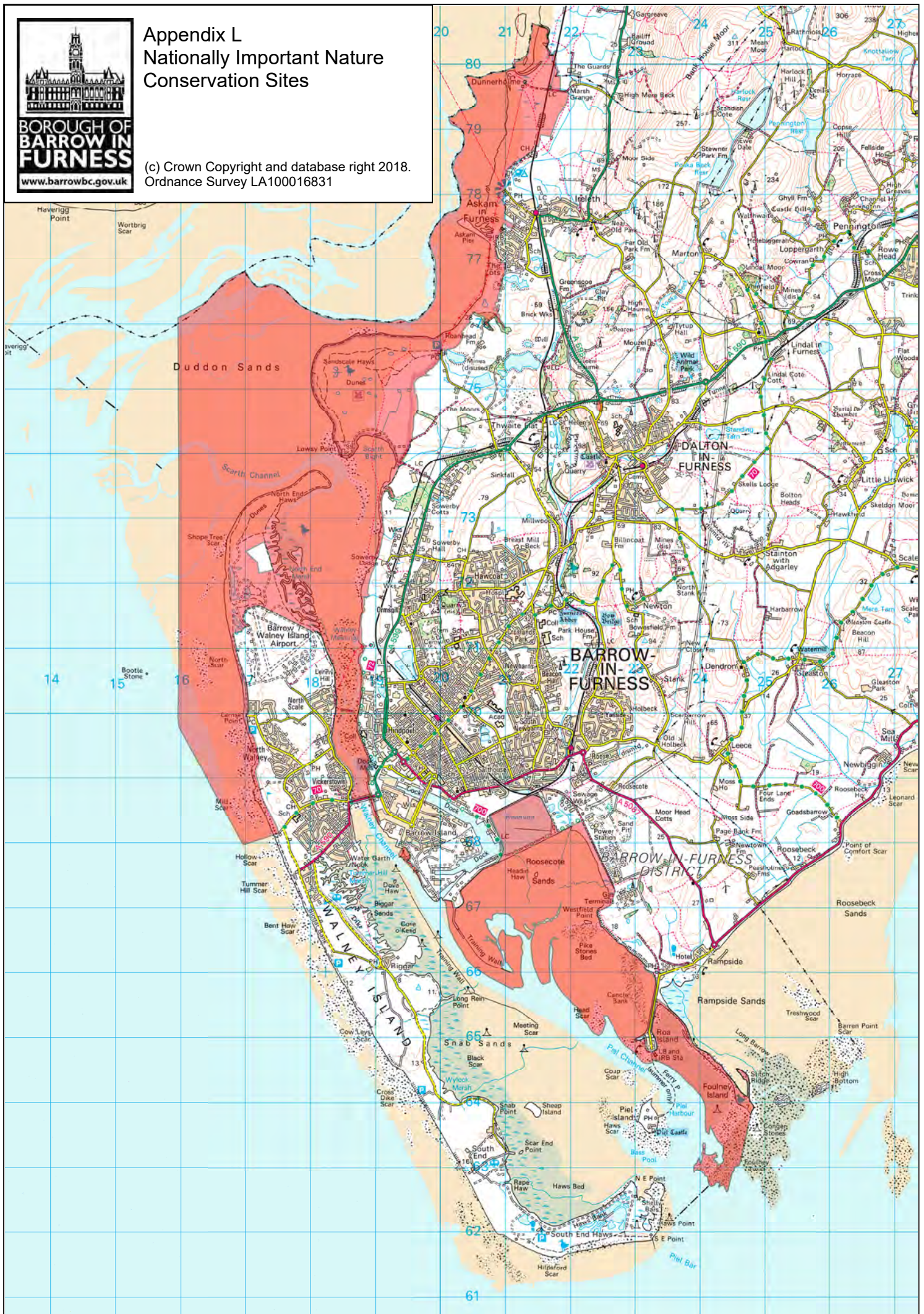
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix L Nationally Important Nature Conservation Sites

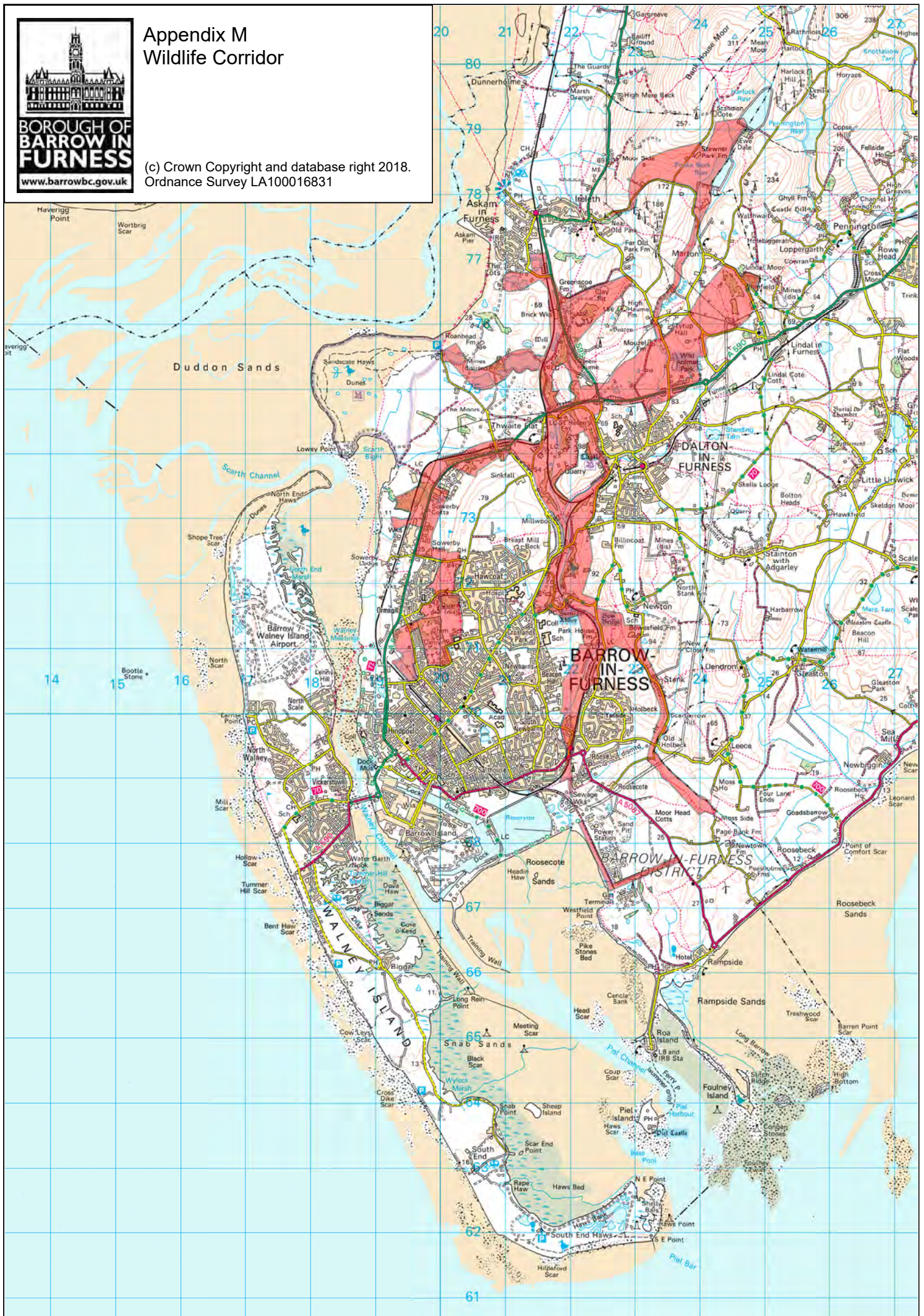
(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix M Wildlife Corridor

(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix N Natura 2000

(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831





Appendix O Site of Special Scientific Interest

(c) Crown Copyright and database right 2018.
Ordnance Survey LA100016831



Contact:

**Planning Policy Team
Development Services
Barrow Borough Council
Town Hall
Duke Street
Barrow-in-Furness
Cumbria
LA14 2LD**

Email: developmentplans@barrowbc.gov.uk

Website: www.barrowbc.gov.uk/residents/planning/



Working together to support sustainable development within the Borough of Barrow-in-Furness

