

From: [Geoff Lyon](#)
To: [Norfolk Vanguard](#)
Subject: Norfolk Vanguard - Deadline 3 Submissions from North Norfolk District Council (Interested Party Ref: 20012882)
Date: 14 February 2019 17:25:37
Attachments: [NNDC Deadline 3 Post Hearing Submissions 14-2-19 Final.pdf](#)

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Dear Examining Authority,

Please find attached the Norfolk Vanguard Deadline 3 response from North Norfolk District Council (INTERESTED PARTY REF: 20012882).

Please could you confirm receipt of this document.

Kind Regards

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.....

North Norfolk District Council

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**NORTH
NORFOLK
DISTRICT
COUNCIL**

Norfolk Vanguard Offshore Wind Farm

REPRESENTATIONS FOLLOWING ISSUE SPECIFIC HEARINGS ON 5 & 7 FEBRUARY 2019

NORTH NORFOLK DISTRICT COUNCIL
(INTERESTED PARTY REF: 20012882)

FEB 2019

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1. Introduction

1.1. These are North Norfolk District Council's written submissions following Issue Specific Hearings 1 on Onshore Environmental Matters and 3 on the Draft Development Consent Order. They do not cover in writing all the matters on which oral submissions were made, but expand or elucidate where required, in light of the Action Points published by the Examining Authority after the hearings.

1.2. The following material is provided with these submissions:

- Examples from Establishment Management Information System (EMIS) decision tool;
- Ecological Site Classification Manual;
- Examples of Planning Applications in North Norfolk where a Ten Year replacement planting condition has been applied
- A timeline of Happisburgh Sea Defences covering a period of 1959 to 2015
- Amended version of dDCO Schedule 15 (amendments marked in red)

2. Design Choice of HVDC and Securing this Choice in the DCO

2.1. NNDC supports the choice of HVDC for two reasons, which are interconnected:

- As a matter of principle: NNDC understands that HVDC is a more energy efficient manner than HVAC of transmitting energy from offshore wind turbines sited a significant distance offshore. The Applicant accepted and confirmed during ISH 3 that this understanding is correct. Given that this infrastructure project is aimed at securing renewable energy because of the acknowledged national need for such energy, particularly in light of the UK's climate change commitments. Given that aim, as a matter of principle the choice of HVDC is preferable in order to maximise the benefits of this scheme;
- In light of reduced onshore impacts: this is emphasised in the OLEM page 7. The reduction in impacts is significant, given that HVDC requires a narrower cable corridor than HVAC and fewer onshore buildings. NNDC considers the physical onshore impact of HVDC to be significantly less and, for that reason considerably more acceptable.

2.2. At ISH1 the Applicant suggested that they key concern of local residents is the impact arising from the “physical manifestations” of the choice of HVDC, particularly in terms of the onshore station required. At ISH 3 the Appellant submitted that it is the physical manifestations of the choice of HVDC, when compared with larger scale requirements of HVAC installation that is secured by the DCO and so by that mechanism restriction to HVDC is achieved. For that reason, there is no necessity for HVDC to be specified in the DCO. By this the Applicant seeks to disassociate and exclude the choice of transmission method from those matters to be secured by the DCO. NNDC disagrees. The choice of transmission via HVDC drives the physical manifestations and drives the shape of the DCO, so it is reasonable and justifiable to include a reference to HVDC within the DCO (currently that term is neither used nor defined in the DCO – an odd situation given how important the choice of HVDC has been to the DCO process).

- 2.3. The fact that no type of transmission other than HVDC is capable of being implemented through the infrastructure does not mean that the DCO should be silent on the choice of HVDC. It is simply a reason why including the choice of HVDC as the method of transmission would sit properly alongside the infrastructure described in the DCO.
- 2.4. NNDC is sensitive to the need to ensure that those cables which are required to be HVAC (both at the turbine point and where the energy is fed into the National Grid) are not via a drafting slip required to be HVDC. Accordingly, NNDC does not suggest changes to any of the technical or detailed elements of the works, nor is a general requirement proposed. Instead, an addition can be made to the definition of “authorised development” in Article 2 to achieve HVDC transmission being secured – see §6.1 below.
- 2.5. NNDC also proposes a fallback position if the Examining Authority considers that it is not proper or necessary to secure the choice of HVDC in the DCO. Should that be the case, NNDC requests that the Examining Authority record within its Report that a change to HVAC would necessarily be a material amendment. NNDC welcomes the Applicant’s confirmation that this is the case in its Response to North Norfolk District Council’s Local Impact Report for the reasons there set out (pgs 4-5; section 4). NNDC also welcomes the Applicant’s submission at Issue Specific Hearing 1 that there is “No possible way it could be argued that a change to HVAC would amount to a non-material change to the DCO.” In light of those submissions, the Examining Authority can confidently record those matters in its Report.
- 2.6. The Examining Authority may feel it sensible to record those matters in the Report even if HVDC is secured through the DCO.

3. Noise

- 3.1. A number of local authorities have disagreed with the proposed hours of work. While those hours reflect the usual hours imposed by NNDC, there are two significant areas of residual concern from NNDC, both based on the potential for noise impact and hence adverse impact on residential amenity. The first is delivery hours for HGVs – while the Applicant was asked to clarify that no HGV movements would take place prior to 7am, and it appears that is the intention, the Applicant commented that any HGVs arriving prior to 7am would not be permitted onto site. This would mean that they would be turned away, potentially making the noise impact worse. In order to avoid this, the Applicant should identify remote waiting areas for HGVs so that they do not arrive before 7am, and so that they do not congregate in the local area before 7am near sensitive receptors.
- 3.2. Second, NNDC remains concerned that “daily start up and shut down” is outside the permitted hours, as is the “mobilisation period”. Further explication and definition of these broad terms would be welcomed to ensure that noisy activity is excluded.
- 3.3. Third, in respect of the area of Little London, whilst NNDC welcomes the applicant’s proposed reduction in numbers of vehicles for this area and types of vehicles, NNDC would appreciate further discussion with the applicant so as to minimise the potential for adverse impacts, particularly given that this is such a sensitive areas with dwellings close to the construction access.
- 3.4. NNDC notes that the Applicant will provide information on cumulative noise and vibration impacts, and cumulative air quality impacts, arising from the proposed development as that proposed for Hornsea 3. The Applicant has been asked to provide this to the Examining Authority by Deadline 5. NNDC asks that the Applicant share any cumulative impact assessment with NNDC as soon as possible and, if practicable, before Deadline 5 so that NNDC can comment on this information for Deadline 5.

- 3.5. In relation to complaints liaison – NNDC welcomes the Applicant's proactive approach and agrees that a complaints procedure is needed. In order for that to be fully effective, however, a mechanism needs to be in place for the relevant local authority to be made aware of complaints and also for the relevant local authority to make the contractor aware of any complaints that come direct to the local authority.

4. Landscaping Matters

10 Year Replacement Period

- 4.1. The position of NNDC is that a ten year rather than a five year replacement planting period should be applied to the Norfolk Vanguard DCO under requirement 19 (2). NNDC have adopted a similar position in relation to Ørsted Hornsea Project Three and the evidential basis for the 10 year period is set out below.
- 4.2. The Forestry Commission Ecological Site Classification Decision Support System (ESC-DSS) is a PC-based system to help guide forest managers and planners to select ecologically suited species to sites, instead of selecting a species and trying to modify the site to suit. The system is designed to match key site factors with the ecological requirements of different tree species and woodland communities, as defined in the National Vegetation Classification (NVC) for Great Britain.
- 4.3. Results from two sample sites along the cable route have been included at **Appendix 1**, using the Establishment Management Information System (EMIS) decision tool option to demonstrate that the prevailing site conditions will result in slow establishment. The following data was required to be inputted:

Grid references and soil types:
 - Cable route location North of Felmingham (Vernon Wood) (Grid ref: TG 243 306); and
 - Cable route location West of Whimpwell Green (Grid ref: TG 373 300)
- 4.4. The sample sheets indicate there are limited species that are suitable for the site conditions and, given the site conditions, yields are not expected to be high. A copy of the Ecological Site Classification Manual is attached at **Appendix 2**.
- 4.5. NNDC are aware that the Forestry Commission specify a standard 10-year replacement period for all new planting that is subject to a Replanting Notice.

- 4.6. A period of 10 years aftercare and replacement provides for greater formal protection when establishing tree stock. At 10 years growth, a tree will have reached a size where it would be subject to Forestry Commission Felling Licence Regulations (i.e. 8cm girth at 1.3m above ground level). After only 5 years, as proposed by the Applicant, trees would not have reached sufficient maturity to be protected by these Regulations and so could be removed without requiring formal consent.
- 4.7. Other than in the main river valleys, the Vattenfall onshore cable is to be routed through freely draining, slightly acid, loamy soils. The principle characteristics of this soil type relate to a free-draining nature and a low fertility as they are vulnerable to the leaching of nutrients. These principle soil characteristics will have a negative impact on vegetation establishment and will require additional and longer term maintenance to ensure that planting receives sufficient nutrients to thrive and outcompete other undesirable vegetation and does not succumb to drought conditions. The local soil characteristics together with the local climatic stresses (salt tolerance, wind exposure and drought) placed on any new planting in the District means that the additional care and longer term maintenance is crucial to the success of the planting. Soil data for the District has been derived from Cranfield University's free to use Soilscales dataset, available at <https://www.cranfield.ac.uk/themes/environment-and-agrifood/landis/soilscales>.
- 4.8. In respect of landscaping schemes, it is standard practice within North Norfolk District Council to impose a ten year replacement planting period condition on major developments where landscape planting is an important element of the proposal. Examples of a number of planning decisions in which NNDC has imposed a 10 year period is enclosed at **Appendix 3** including for a number of onshore solar farms (50MW). Copies of the actual decision notices can be provided if necessary for the ExA.

5. Tourism Impacts

- 5.1. NNDC notes the Applicant's submission of Appendix 19.3 to its Responses to the Examining Authority – the report by Biggar Economics *Wind Farms and Tourism Trends in Scotland* (July 2016).
- 5.2. NNDC invited the Examining Authority to place little weight on this report, for the following three reasons:
- The focus of the report, and the research it cites in section 3, concerns onshore wind farms, not on the construction impacts of large offshore wind farms. Indeed, “construction impacts” are not considered at all;
 - The report and the underlying research on which it was based concerned visual impact of onshore turbines or wind farms, not disruption impact experienced during the construction period of very large offshore projects;
 - The report concerns Scotland and examines the relationship “between the development of onshore wind energy and the sustainable tourism sector in Scotland” (pg 1). “Sustainable tourism” has a definition specific to Scotland, which is referenced but not set out in footnote 4 on pg 6. It is therefore not relevant to general tourism impact in North Norfolk.

6. Coastal Erosion

- 6.1. During Issue Specific Hearing 1 in relation to coastal erosion matters in the Happisburgh area the applicant responded (see 57:00 of Recording of ISH1 – Part 2) stating that they were conscious that coastal erosion is slightly more episodic at the moment rather than gradual erosion with periods of extreme erosion and that this as a function of a failure of sea defences that have exacerbated the situation. The applicant went on to set out that they are aware of the episodic change but are also looking at longer-term change which will reach more of an equilibrium rather than as a period of catching up following failure of sea defences.
- 6.2. The ‘failed’ sea defences referred to by the applicant consisted of timber revetment and groynes constructed between Ostend and Cart Gap in the period from 1959. In 1991, following storm damage, a 300m section of unsafe revetment was removed south of Happisburgh. Twenty-eight years have elapsed since the removal of these revetments so it is perhaps misleading of the applicant to imply this is a recent ‘failure’ of sea defences. Whilst the initial rapid erosion was likely to be due to the loss of the revetments, the current ongoing erosion is a result of coastal processes and low beach levels. A timeline of Happisburgh Sea Defences covering a period of 1959 to 2015 is attached at **Appendix 4**.
- 6.3. The Council’s is aware of research that has observed a phenomena in this location known as ‘coastal catch-up’ and ‘coastal overshoot’. This is the effect whereby historic sea defences have been removed resulting in rapid coastal erosion potentially extending beyond indicative erosion if sea defences were never constructed. Whilst the Council has adopted a Shoreline Management Plan (SMP) which sets out an indicate 100-year erosion area, this is indicative and the rate or erosion could be greater or lesser than predicted in the SMP. The presumption by the applicant that coastal erosion equilibrium will be reached in the future is possible but is for them to consider in relation to the location and resilience of their assets for their designed life. It is understood that the assets to

be placed within the 100year coastal erosion zone would be the cables that are to be routed below the predicted level of beaches

- 6.4. The key issue for NNDC is ensuring that that the landfall location remains resilient from the effects of coastal erosion for its anticipated lifetime.

7. Drafting Suggestions for the dDCO

HVDC and Article 2

7.1. NNDC suggests that the easiest way to secure HVDC in the DCO is in Article 2.

Two changes are suggested:

- Add the definition: “HVDC” means high voltage direct current;
- Amend the definition of “authorised development” to mean “the development and associated development described in Part 1 of **Schedule 1**, which includes deployment of an HVDC export system (authorised development) and any other development authorised by this Order, which is development within the meaning of section 32 of the 2008 Act”.

7.2. This wording is based on the description of HVDC as the “export system” throughout the ES, and the use of the word “includes” ensures that any necessary HVAC cable requirements outside of the HVDC export system are not prohibited.

The Requirements

7.3. Requirement 18(2)(d): hedgerows should be included.

7.4. Requirement 19(2): amend to a 10 year period and also include the discretion “unless otherwise approved in writing by the local planning authority”.

7.5. Requirement 20 - “vibration” should be added to the list in requirement 20(2). It could be included in R22(2)(e) (given noise and vibration are taken together in the ES in Chapter 25 and cross reference is made in ES Chapter 24 on Traffic).

Schedule 15

- 7.6. This Schedule is unusual. It seeks to impose a different timetable from that usually applied to applications to discharge conditions. Other offshore wind farm DCOs, such as Hornsea 1 and 2, have not sought to impose such a truncated timetable or any process other than the one provided for by the Town and Country Planning Act 1990 and the Town and Country Planning (Development Management Procedure) Order 2015. The Appellant has not provided any evidence that the usual process is unsatisfactory or has led to any delays.
- 7.7. Nevertheless, NNDC is content for the DCO to contain the process in Schedule 15, with the modifications suggested below. It is important that appropriate and comprehensive information be provided to local authorities to discharge requirements and that proper time be given to them to consider that information, otherwise the protections secured by those requirements will be undermined. Local authorities play a crucial role in ensuring that the impacts dealt with through the requirements are in fact suitably addressed. The desire for celerity in the infrastructure process must be balanced with the proper oversight role played by local authorities through the discharge of requirements. To do otherwise undermines the entire exercise of addressing impacts through the requirements.
- 7.8. It should be noted that NNDC does not propose to amend the 8 week period. The amendments are aimed at securing adequate information and extending some of the timings within the 8 week period where more time is required. It should also be noted that where changes have been suggested, it is emphasised the local authority should act “as soon as reasonably practicable”, but within a slightly longer timeframe.
- 7.9. NNDC suggests the following amendments (a tracked changes version of the whole schedule is provided at **Appendix 5**):
- Para 1: remove the reference to Requirement 19 (erroneously included) and to Requirement 31. The latter requirement concerns amendment to

the approved details and hence is not suitable for the truncated timetable in Schedule 15.

- Para 1: Add requirements for the undertaker to provide proper information, including where necessary plans and drawings. If a truncated period for consultation and requesting further information is to be justified and workable, the undertaker must provide adequate information with its application to discharge the requirement.
- Para 2(2): change the time for the discharging authority to request further information from 7 business days of receipt to “as soon as reasonably practicable and within 21 business days of receipt”. While 7 business days may be practicable for less complex requirements, it is likely that the information that will be needed for discharge of some of the requirements will be voluminous and will require expert officer assessment in order to identify any gaps. Given how crucial it is for the authority to have proper information, it is right that a 21 day period be allowed for this process.
- Para 2(3): change the requirement to issue the consultation to the relevant consultee from within 1 business day of receipt to “as soon as reasonably practicable and within 10 business days of receipt”. One business day is wholly impractical. Quite apart from leaving no margin for officers being unavailable, it does not provide any time for the authority to identify the requisite information to be sent to the consultee.
- Para 2(3). change the requirement for the discharging authority to notify the undertaker in writing specifying any further information requested by the consultee from within 1 business day of receipt and in any event within 21 days of receipt of the application to “within 10 business days of receipt of such a request and in any event within 42 days of receipt of the application”. One business day is again a wholly impractical turnaround time. It is also a significant hostage to fortune for the longstop period to be 21 days from the receipt of the application, as it is not known (or able to be known) how long the consultee may take to request further information. A 42 day period is therefore sensible and reasonable.
- Para 3(1)(a): remove “or grants it subject to conditions”. NNDC does not understand what is meant by this and asks the Applicant to clarify. On first

blush, the reference to “conditions” in the DCO process is inapt, as the discharging authority would not be imposing any further “conditions”.

- Para 3(1)(c) and (d): insert “reasonably”, such that the undertaker can appeal if it considered that whole or part of the requested further information or the additional information is not “reasonably necessary” for consideration of the application. This captures that the point of such appeals is to prevent unreasonable requests for further or additional information, rather than for the undertaker to impose a strict standard of necessity.
- Para 3(2)(c)-(e) and para 3(4): amend the times from 10 business days to 21 business days. Whilst this is ultimately a matter for the Planning Inspectorate as it affects their intended processes, the timeframes proposed seem very tight within which to carry out the specified actions – see issues set out above at §6.7 above.
- Para 4 definition of “discharging authority” – include Requirement 21 (wrongly excluded) and remove Requirement 31, for the reasons set out in para (a) above.

14 February 2019

Appendix 1 – Examples from Establishment Management Information System (EMIS) decision tool

Grid Ref: TG 243 306 North of Felmingham, Vernon Wood

Ecological Site Classification Report

Eastings(m)	Northings(m)	Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser/Nurse
624300	330600	TG243306	Medium-High 2050 (A1b/3q0)	Very warm - Moderately exposed - Moderately dry	All species	No brash present	No drainage installed	No fertiliser

Site Description and Variables

The site has a very warm, moderately exposed and moderately dry climate. The soils are fresh moisture status and medium nutrient status.

Modifications	AT	CT	DAMS	MD	SMR	SNR
Default	2691.0	10.0	13.0	279.0	5.0(Fresh)	3.0(Medium)
Final	2691.0	10.0	13.0	279.0	5.0(Fresh)	3.0(Medium)

Species	Abbr.	Suit(Ecol)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Lodgepole pine	LP	●	▲	7	MD	●	●	●	●	●	●	3.1(A)
Scots pine	SP	●	●	8	MD	●	●	●	●	●	●	3.3(A)
Norway spruce	NS	●	●	2	MD	●	●	●	●	●	●	3.3(A)
Sitka spruce	SS	●	●	0	MD	●	●	●	●	●	●	3.4(A)
Douglas fir	DF	●	●	4	MD	●	●	●	●	●	●	3.1(A)
Hybrid larch	HL	●	●	0	MD	●	●	●	●	●	●	3(A)
Japanese larch	JL	●	●	0	MD	●	●	●	●	●	●	3(A)
European larch	EL	●	●	0	MD	●	●	●	●	●	●	3(A)
Grand fir	GF	●	●	0	MD	●	●	●	●	●	●	3(A)
Noble Fir	NF	●	●	0	AT5	●	●	●	●	●	●	3(A)
Downy birch	PBI	●	●	0	MD	▲	●	●	●	●	●	3.2(A)
Silver birch	SBI	●	●	1	MD	●	●	●	●	●	●	3.2(A)
Sycamore	SY	●	●	2	MD	●	●	●	●	●	●	3.3(A)
Pedunculate oak	POK	▲	▲	3	MD	●	●	●	▲	●	●	3.1(A)
Sessile oak	SOK	●	●	1	MD	●	●	●	●	●	●	3.2(A)
Aspen	ASP	▲	●	2	MD	●	●	●	▲	●	●	3.2(A)

Appendix 2 – Ecological Site Classification Manual

Ecological Site Classification Version 4

Draft Quickstart Guidance for Site Assessment

1 Overview

The current system is structured to provide an interface organised as follows :

	Resource links
Quick navigation	Tool selector <i>Changing the option will change the contents of the tool options window.</i>
Tool options	Map view + legend
Results window	

- Resource links – the terms of use, update history, case studies, manual, contact email.
- Quick navigation – enter a six figure Ordnance Survey GB grid reference, the map will zoom into the region of interest.
- Tool selector – Ecological Site Classification and related decision support tools can be selected from a list.
- Maps of species suitability alongside climatic and topographic data can be accessed using Forest Maps.
- Tree species suitability can be evaluated using Ecological Site Classification (Tree Species).
- Native Woodland suitability can be evaluated using Ecological Site Classification (NVC Woodland).
- If ESC base data is required for sample sites, this can be obtained by uploading a file containing a list of Ordnance Survey GB grid references (i.e. two letters followed by six digits e.g. NT090950), this will return a common separated value file containing the four ESC climate variables and the modelled soil properties for the given site.
- Data is entered via the Tool Options window pane (e.g. soil properties and management options).
- The outcomes of an analysis are displayed in the Results Window, alongside options to save the data where applicable as a csv or pdf file.

2 Forest Maps Data Browser Options

The Forest Maps data browser contains folders which can be expanded by clicking on them to reveal a number of datasets. Clicking on the map will reveal metadata about the map currently being viewed alongside the option to download the data as a file (usually a geotiff).

a) Climatic Data

This option contains the baseline climatic data (accumulated temperature, continentality, days (exposure) and moisture deficit for the period 1961-1990 at a resolution of 250 metres. Rainfall is provided at 5km resolution for the same period.

b) Topographic Data

These are data derived from 250m Ordnance Survey open data digital elevation models and publicly available methods for calculating topographic shelter (topex) and topographic wetness (compound topographic index). Aspect and slope were derived from models in QGIS.

c) Broadleaf Species

Climatic timber suitability maps for a range of broadleaved species.

d) Conifer Species

Climatic timber suitability maps for a range of conifer species. In some cases such as Douglas fir, Scots pine and Sitka spruce additional information is available on provenance and soils suitability.

The species climatic suitability maps show the theoretical maximum planting extent of a selected species assuming optimal soil (edaphic) conditions within GB. However in practice the range will be considerably reduced due other factors, particularly the site soil type. Like many aspects of decision support tools the maps are intended to complement site level assessments, expert judgement and local knowledge.

e) Native woodland maps (Baseline)

Native woodland maps combine the **climatic** species suitability of the main component species with the **climatic** NVC suitability guidelines published in Ecological Site Classification Bulletin 124. Information on soil type will inform the actual NVC woodland type suitable for a given location.

f) Climate Zones and Modelled Soil Data

These are the broad ESC climate zones for GB alongside ESC soil properties data (SMR/SNR) which has been modelled to 250x250 metre pixel resolution based on FC soil maps and national scale data. While the soil data indicates trends it is not intended for site level planning, users are recommended to use their own data in site analyses if possible.

g) Establishment

Maps are included for bareroot planting windows according FC Bulletin 121 and GB Seed Zones.

h) In Development

Those are provided for evaluation and are part of ongoing work which is yet to be finalised. A map is included that provides an estimate of site fertility according to underlying solid geology (based on an old, and now superseded BGS 1:625k dataset).

In addition two new maps are in development that describe the climatic potential of broadleaved or conifer species according to the potential of various key species. Those climatic zone maps are intended to help users quickly identify the species and objectives that are likely to be supported in a given location.

For the broadleaved map the key is as follows:

Zone	Interpretation
OK/BE/SY/WCH	The site is climatically very suitable for one or more of Oak, Beech, Sycamore or Wild Cherry.
PBI/SBI	The site is climatically very suitable for Birch, or suitable for other broadleaved species. Good production is still possible.
OK/SY/Native	The site is climatically suitable for Birch, Oak and Sycamore, though there may be climatic constraints. Site may also be suitable for other native woodland (NVC) types where production is not an objective.
PBI/SBI	The site is only suitable for Birch, as a low yield species.
PBI/ROW	The site is possibly suitable for Birch and Rowan as native woodland habitat.

3 Map View

The map displays the dataset currently selected. The following actions are available

- a) zoom in/out using mouse wheel or the +/- control on the map. Pinch to zoom may work on devices with touch interfaces.
- b) pan by holding mouse down and dragging the map
- c) zoom to region of interest by holding down shift key then pressing left mouse button to draw a box, on release of the mouse button the system zooms in to the selected region.
- d) click to analyse – if the left mouse button is clicked the system analyses the site with the user selected (or default) site variables and query parameters.

4 Site and Query Parameters

The input panel for Ecological Site Classification includes the options to amend site level data on soil type, operations and query parameters.

a) Soil Moisture Regime

Select the appropriate soil moisture regime for the site. We assume that this data is obtained through a formal soil survey.

b) Soil Nutrient Regime

Select the appropriate soil moisture regime for the site. We assume that this data is obtained through a formal soil survey. Note there are now three categories of very poor site (VP1, VP2 and VP3). VP1 is the most impoverished (e.g. FC deep peat soil type 10a), VP2 the intermediate grade (e.g. FC deep peat soil type 11a) and VP3 is the richest (e.g. FC podzolic peaty gley soil type 6z).

Soil data for common FC soil types are included in appendix A.

c) Brash Management

If new planting ignore this option. If restock indicate if the site will replanted quickly to take advantage of nutrients from decomposing brash.

d) Drainage

Wet sites (soil moisture regimes very wet, wet, very moist and moist) can benefit from drainage, which has the effect of drying the site and slightly improving the nutrient availability on very poor sites.

e) Fertiliser/Nursing mixture

The application of fertiliser can raise the site nutrient regime, however this is only warranted on very poor and occasionally poor soil nutrient regimes. Depending upon the site type some species may require several applications and/or a unique fertiliser prescription based upon specific site/species issues (e.g. imbalance in NPK ratios).

There is evidence that pines planted in mixture with other species can ameliorate nitrogen deficiencies on certain sites, but not PK or other limitations. The favoured mixture species for use with Sitka spruce is Alaskan Lodgepole pine, as this will grow more slowly and the stand is therefore more likely to self thin.

Larch, birch and alder may also confer nurse benefits though they may not be suitable in some situations due to site requirements, or their tendency on exposed sites to damage leaders of adjacent trees through crown whipping.

f) Results Filter

This list provides options to constrain the results list to suitable species only, native only and so on. When looking at native woodland creation remember that NVC types have different niches to the suitability ranges of component species. For example Scots Pine is suitable on a wide range of soil types (very poor to rich), but the related W18 native woodland only tends to occur where the soil nutrient regime is very poor or poor (see pages 48-49 of bulletin 124).

g) Climate Scenarios

The ESC model can be run against different climate scenarios. For current operational use we recommend the baseline scenario with some thought given to the consequences for selected species should the site become drier in the future.

h) Update button

Assuming a site has been identified on the map, the update button allows the same site to be re-analysed but with different soil or management options.

5 Results View

a) Site Data

The first table lists all the site data and the user inputs. Sometimes SMR and SNR will be amended according to the impact of a site operation (e.g. drainage).

b) Results

Species suitability results are displayed for all 57 species available unless the user subsets the list via option 4(f). Suitability scores are presented in the classic coloured chart on the right hand side and complemented with the underlying model outputs on the left hand side.

There is a link at the top of the table that allows the results to be saved in CSV or PDF format.

ESC Score	Description	Interpretation
0.75+	Very suitable	Factors will not significantly constrain growth
0.5 – 0.74	Suitable	Some impact upon growth, for example lower yielding Sitka spruce on a peaty gley (YC 14-16).
0.3 – 0.49	Marginal	Species in this category may have significantly reduced growth, high risk of check or absolute failure. Examples -Sitka spruce on certain deep peats without fertiliser exhibiting wide variation in growth rates(YC 0-10). -Downy birch on very poor sites forming a scrub woodland .
0 – 0.29	Unsuitable	In this category the species will usually fail to establish extensive tree cover.

The species suitability scores operate on the basis that a higher value means a particular factor (AT, SMR etc) is unlikely to prevent tree growth. Values above 0.75 are very suitable and have the lowest risk, but the incidence of failure or significantly reduced growth is usually much higher when one or more factors is below 0.5.

The numeric outputs give a little more information about how marginal or suitable a species may be on a given site. For example a species with a suitability score of 0.50 in reality may be close in performance to another with a score of 0.49.

ESC Species Symptoms by Climatic/Edaphic(Soil) Variables and Suitability Classes

Variable	Suitability Class	Effects
Accumulated Temperature (AT)	Unsuitable	- High mortality due to winter cold. - Very slow growth. - Potentially death at any age.
	Marginal	- Significantly reduced growth rate.
	Suitable	- Growth reduction of 25-50%
	Very Suitable	- No warmth constraints
Continentality	Unsuitable	
	Marginal	
	Suitable	
	Very Suitable	
DAMS	Unsuitable	- High mortality due to wind exposure
	Marginal	- Significantly reduced growth rate. - Severe stem form problems
	Suitable	- Possible stem form problems
	Very Suitable	- No exposure constraints
Moisture deficit	Unsuitable	- High mortality due to drought. - Limited growth due to excessive rainfall
	Marginal	- Severe growth constraints - Stem damage risk from drought cracks
	Suitable	- Some growth constraints - Possible drought cracks(Grand/Noble fir)
	Very Suitable	- No constraints
Soil Moisture Regime	Unsuitable	- Mortality due to anaerobic conditions (wet sites) - Mortality due to dry conditions (very dry sites)
	Marginal	- Severe growth constraints due to limited rooting in wet soil. - Difficulty sustaining growth of larger trees due to limited water availability on dry soils.
	Suitable	- Some growth constraints due to limited water availability on dry soils. - Wet conditions inhibit uptake of nutrients.
	Very Suitable	- No constraints
Soil Nutrient Regime	Unsuitable	- High mortality due to acid soil conditions. - Check, trees unable to grow due to

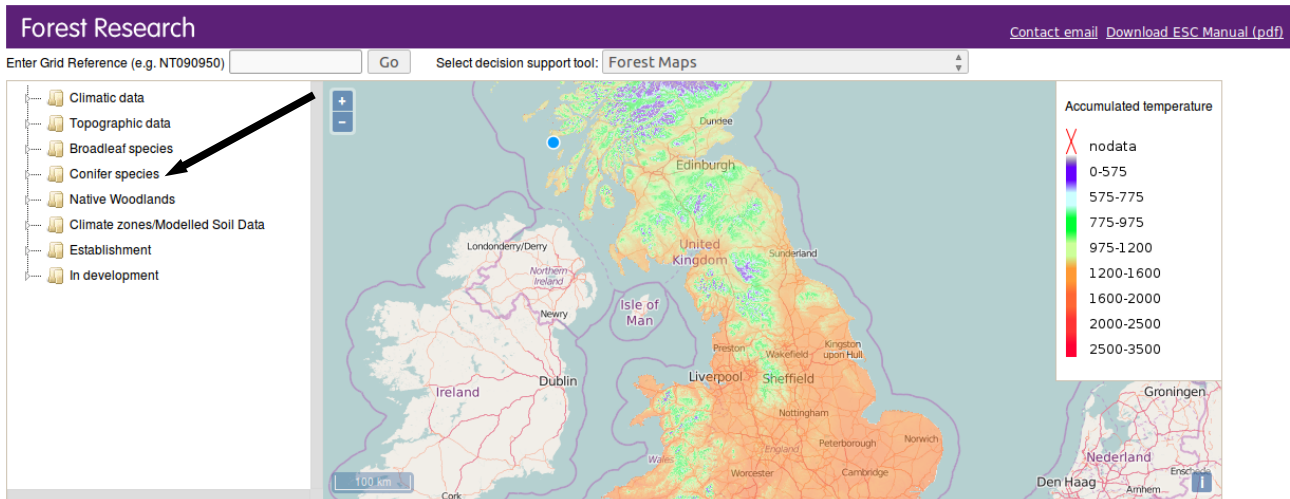
		nutrient deficiencies. - Mortality associated with carbonate soils.
	Marginal	- Uneven and limited growth due to lack of nutrients. - Stunted stems.
	Suitable	- Some reduction in growth potential.
	Very Suitable	- Good growth. - Coarse branching on richer soils (Scots pine, birch)

6. ESC Examples

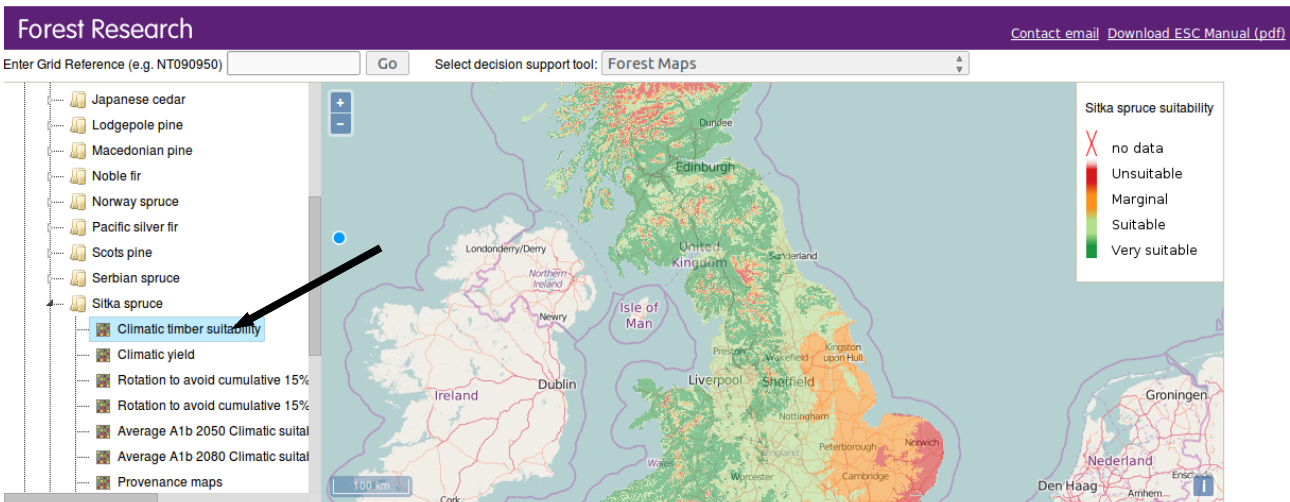
Case Study One – Restock of poor wet site type with Sitka spruce.

1. On the layer view expand the conifer species folder by clicking on it

This will allow you to select the map for the species of interest.



2. Select the map for climatic suitability of Sitka spruce in baseline climates

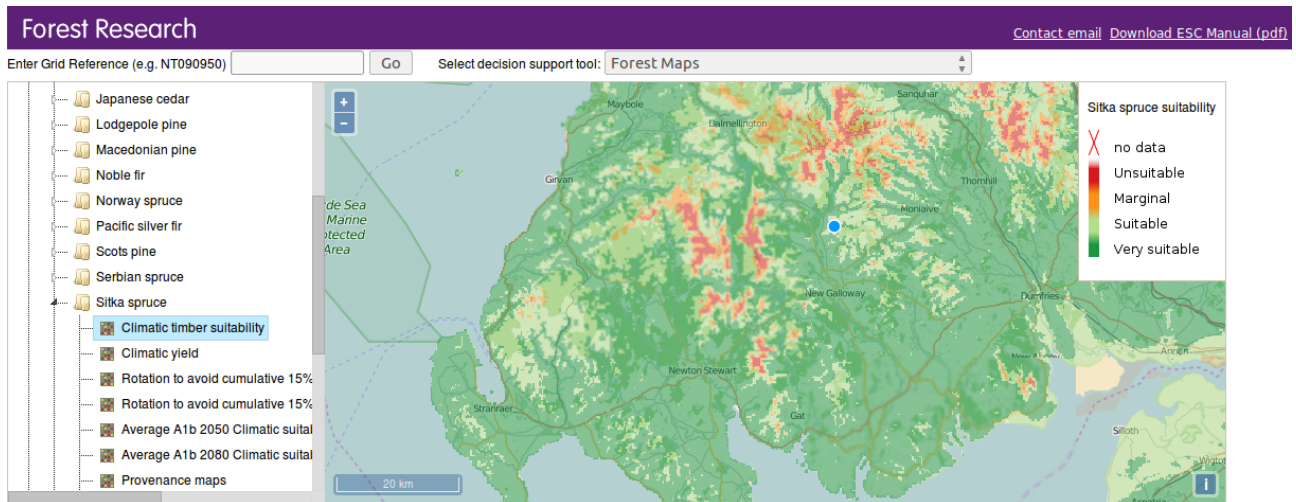


This map gives an overview of yield potential for the selected species, considering ESC climatic factors only (i.e. AT, CT, DAMS and MD). Darker green indicates increasing suitability while regions in red are unsuitable.

ESC assumes adverse climatic factors cannot be compensated by ideal soil conditions, so those maps can be viewed as the maximum areas of land suitable for a given species. However there is evidence that some climatic constraints can be compensated by local site properties, for example high climatic moisture deficits/dry regions may be offset by wet soils. Those issues require foresters to make on the ground adjustments based on their own experience and history of the site.

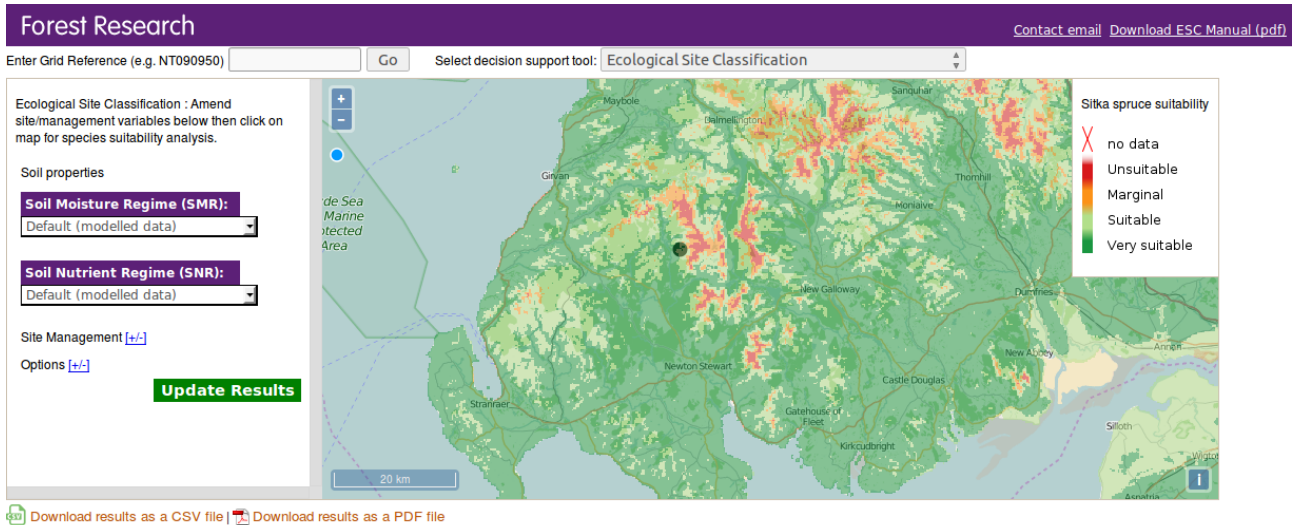
3. Locate Site of interest

The map has various functions such as pan/zoom. Use those to locate the site of interest. In this example we have zoomed into Galloway.



Now to obtain a site assessment from ESC we simply select Ecological Site Classification in the drop down menu and click on the site of interest indicated by the cursor (blue dot). A set of results is added below the map and a black circle indicates the location.

4. Initial Results



Adjustments	Eastings(m)	Northings(m)	Site Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser
Site defaults	238745	584975	NX387849	Baseline climate 1961-1990	Cool - Moderately exposed - Wet	All species	No brash present	No drainage installed	No fertiliser

Modifications	Accumulated Temperature(AT)	Continentality(CT)	Exposure(DAMS)	Moisture Deficit (MD)	Soil Moisture Regime (SMR)	Soil Nutrient Regime(SNR)
None	1102	6	15	62	2(Wet)	0.5(VP2 Very poor)

The analysis at this stage is based upon default settings, such as a soil type of SMR Wet and SNR VP2 Very poor.

The site we wish to test is a restocking site with soil conditions SMR=Wet, SNR=VP3 determined by a site visit. Brash will be retained on the site but it will not be restocked

for 4 years after felling due to the risk of damage from *hylobius*. To minimise site costs we wish to avoid the investment in fertiliser if possible.

5. Site Data Input

Forest Research [Contact email](#) [Download ESC Manual \(pdf\)](#)

Enter Grid Reference (e.g. NT090950) Select decision support tool: Ecological Site Classification

Ecological Site Classification : Amend site/management variables below then click on map for species suitability analysis.

Soil properties

Soil Moisture Regime (SMR):
Wet

Soil Nutrient Regime (SNR):
Very poor (VP3)

Site Management

Brash management:
Brash > 18 months

Drainage:
Drainage installed

[Download results as a CSV file](#) | [Download results as a PDF file](#)

Adjustments	Eastings(m)	Northings(m)	Site Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser
Site defaults	238745	584975	NX387849	Baseline climate 1961-1990	Cool - Moderately exposed - Wet	All species	Brash older than 18 months	Drainage installed	No fertiliser

Modifications	Accumulated Temperature(AT)	Continentality(CT)	Exposure(DAMS)	Moisture Deficit (MD)	Soil Moisture Regime (SMR)	Soil Nutrient Regime(SNR)
None	1102	6	15	62	2(Wet)	1(VP3 Very poor)
Drainage					1	0.5
Final	1102	6	15	62	3(Very moist)	1.5(Very poor-poor)

The site data is amended using the drop down options on the right hand side. Click update results to change the site analysis to reflect the new data. Drainage has altered the soil wetness class from wet to very moist and improved the site soil nutrient regime by half a class.

6. Results

Suitability key Very Suitable (0.75-1.00) Suitable (0.50-0.74) Marginal (0.30-0.49) Unsuitable (0.0-0.29)

Common name	Species Code	Suitability		YC	Lim	AT	CT	DAMS	MD	SMR	SNR	Suit.	AT	CT	DAMS	MD	SMR	SNR	Version (Rating)	Suit. Charts	
		Ecological	Timber																		
Corsican pine	CP	0.49	0.33	7	AT5	0.49	1	0.78	0.97	0.75	0.67									3.3(A)	download chart(csv)
Lodgepole pine	LP	0.67	0.62	9	SNR	0.92	1	0.89	0.72	1	0.67									3.1(A)	download chart(csv)
Macedonian pine	MCP	0.64	0.64	9	MD	1	1	0.87	0.64	1	0.67									3.1(C)	download chart(csv)
Maritime pine	MAP	0.18	0.07	1	MD	0.37	1	0.61	0.18	0.35	0.67									3.1(C)	download chart(csv)
Monterey/Radiata pine	RAP	0	0	0	MD	0.21	0.83	0.85	0	0.58	0.72									3(C)	download chart(csv)
Scots pine	SP	0.63	0.61	8	SMR	0.96	1	0.77	0.98	0.63	0.67									3.3(A)	download chart(csv)
Weymouth pine	WEP	0	0	0	SMR	0.78	0.74	0.6	0.94	0	0.47									3(B)	download chart(csv)
Norway spruce	NS	0.56	0.51	12	SNR	0.91	1	0.62	0.93	0.82	0.56									3.1(A)	download chart(csv)
Oriental spruce	ORS	0.25	0.15	3	SNR	0.62	0.87	0.59	0.49	0.6	0.25									3(C)	download chart(csv)
Serbian spruce	OMS	0.46	0.4	9	SNR	0.88	0.9	0.64	0.49	0.8	0.46									3(B)	download chart(csv)
Sitka spruce	SS	0.53	0.45	13	SNR	0.86	1	0.87	1	0.99	0.53									3.1(A)	download chart(csv)
Sitka spruce(VP)	VPSS	0.53	0.45	14	SNR	0.86	1	0.87	1	0.99	0.53									3.1(A)	download chart(csv)
Douglas fir	DF	0	0	0	SMR	0.74	1	0.49	0.66	0	0.46									3.1(A)	download chart(csv)

The results for Sitka spruce are highlighted. For discussion the results are tabulated below.

Field	Value	Explanation
Common Name	Sitka spruce	
Species Code	SS	
Ecological suitability	0.53	The ecological suitability based on the most limiting factor, in this case SNR. Indicates suitable.
Timber suitability	0.45	The timber suitability based on AT and SNR in this case, the growth potential is just below 50% of potential. Indicates marginal.
Yield Class	13	The predicted yield class. $YC = ATFactor * LimitingFactor * Species\ Max\ YC\ in\ GB$ $0.86 * 0.53 * 28 = 13$
Limiting factor	SNR	The factor with the lowest response.
AT	0.86	AT value (1099) Very Suitable (≥ 0.75)
CT	1	CT value (6) Very Suitable (≥ 0.75)
DAMS	0.87	DAMS value (16) Very Suitable (≥ 0.75)
MD	1	MD value (61) Very Suitable (≥ 0.75)
SMR	0.99	SMR value (3/Very moist) Very Suitable (≥ 0.75)
SNR	0.53	SNR value (1.5/Very Poor-Poor) Suitable (≥ 0.5 and < 0.75)

So currently the site is predicted to be suitable ecologically and therefore likely to

establish. Sitka Spruce has the potential to achieve YC 13.

The conclusion of the ESC analysis is that the site is suited for restocking with Sitka Spruce provided drainage operations can improve soil conditions. Without drainage operations Lodgepole pine may be a better option for lower yield timber production or Downy birch for native woodland habitat.

7. Other ESC Terms

Suitability

Ecological Site Classification uses the term suitability to describe the likely success of a particular tree species establishing and growing to maturity on a given site. There are two measures of suitability, one broadly considers timber in terms in yield potential, the other the ecological suitability of the site. It is possible for situations to arise where a species is ecologically suited to a given site despite being unsuitable for timber production.

Timber Suitability

In ESC4 the definition of very suitable is the potential to achieve 75% or more of the maximum general yield class for the given species in British conditions. The threshold for suitable is 50% or more and marginal is 30% or more. Unsuitable conditions for timber production are defined as those where the predicted yield is less than 30% of the maximum possible in British conditions.

Marginally suitable species are usually only recommended where no other options exist or when production goals are of lesser importance as a site objective.

Ecological Suitability

The ecological suitability of a site describes the suitability of a species in terms of the most limiting factor. A species is ecologically suited to a site if the species response to each of the climatic and edaphic(soil) variables is greater than 0.5.

Note it is possible for a species to be suitable for a site ecologically, but unsuitable for timber production. This reflects the distribution of some native species and the occurrence of low density woodlands.

In most cases productive goals are met when a species is a least suitable for timber production and is ecologically suitable for a given site. When woodland habitat is an objective an ecological suitable or marginal species may be a valid option, assuming that establishment goals (e.g. stocking density can be achieved).

Model Version

ESC models are assigned a version. Models are revised and tested as the system changes to ensure consistent outputs. The 3.1 series models onwards are revisions associated with the introduction of additional classes of very poor soil nutrient regime.

Model Class

Species suitability models are assigned a class according to the amount of evidence available to support the model.

Class A – the species is well understood in British conditions, with widespread historical

planting and trials.

Class B – the species has been trialled in British conditions on a limited scale.

Class C – the species has very limited or no trials in British conditions, e.g. individual planting or experimental use in limited geographic extents.

Therefore a species recommended as suitable in class B is a safer option than an equivalent species in class C.

Appendix A

1. The ESC Soil properties of common Forestry Commission Soil Types

The ESC properties for the main Forestry Commission soil types are tabulated below. The values applied are typical observed mean attributes, and it is common for soil moisture and nutrient regime values to vary depending upon local factors. For example mineral soils in higher rainfall areas are more likely to be wetter and soils overlying richer bedrock may be more fertile.

Soil Moisture Regime (SMR) and Soil Nutrient Regime (SNR) are modelled as continuous variables though for convenience they are often referred to as the following classes described in tables A.1 and A.2 respectively.

Soil Moisture Regime	Numeric value	Example
Very wet (VW)	1	Deep peat
Wet (W)	2	Peaty gley
Very moist (VM)	3	Surface water gley
Moist (M)	4	Gleyed brown earth
Fresh (F)	5	Freely draining mineral soil
Slightly dry (SD)	6	Sandy mineral soil
Moderately dry (MD)	7	Shallow sandy mineral soil
Very dry (VD)	8	Rankers, shingle, rendzinas

Table A.1: Soil Moisture Regimes

Soil Nutrient Regime	Numeric value	Example
Very poor (VP1)	0	Unflushed deep peat
Very poor (VP2)	0.5	Podzols
Very poor (VP3)	1.0	Podzolic ironpans
Very poor-Poor (VP-P)	1.5	Ironpans
Poor (P)	2.0	Peaty gleys, upland brown earth
Medium (M)	3	Brown earth and surface water gleys
Rich (R)	4	Brown earths with high base status
Very rich (VR)	5	Calcareous brown earths
Carbonate	6	Rendzinas

Table A.2: Soil Nutrient Regimes

When using ESC the following tables allow users to enter default values for common soil types as described by the Forestry Commission Soil Classification. The table is not exhaustive because many mineral/organo mineral soils have a wide range of potential phase interactions.

2. ESC Properties of Mineral and Organo-Mineral Soils

Tables A.3 and A.4 describe the default ESC properties of the most common mineral and organo-mineral forest soil types according to the Forestry Commission soil classification system. Note that significant variation around the default properties can be expected due to local factors such as underlying geology.

In the case of Ironpan soils two sets of information are provided, one assumes establishment will occur with the pan unbroken; the other assumes site preparation techniques will break the pan and drain the perched water table.

FC Soil Code	Description	Soil Moisture Regime (SMR)		Soil Nutrient Regime (SNR)	
		Text	Value	Text	Value
1	Typical brown earth	Fresh	5	Medium	3
1u	Upland brown earth	Fresh	5	Poor	2
1z	Podzolic brown earth	Fresh	5	Poor	2
3	Podzol	Fresh	5	Very poor (VP2)	0.5
5	Ground water gley	Very moist	3	Rich	4
6	Peaty gley	Wet	2	Poor	2
6l	Peaty gley (loamy)	Very moist	3	Poor	2
6z	Podzolic Peaty gley	Very moist	2	Very poor (VP3)	1
7	Surface water gley	Very moist	3	Medium	3
7z	Podzolic Surface water gley	Very moist	3	Poor	2

Table A.3: Mineral and organo-mineral soil properties without perched water tables.

FC Soil Code	Description	Soil Moisture Regime (SMR)		Soil Nutrient Regime (SNR)	
		Text	Value	Text	Value
4*	Ironpan	Very moist	3	Very poor (VP3)	1
4z*	Podzolic Ironpan	Very moist	3	Very poor (VP2)	0.5
4	Ironpan	Fresh	5	Very poor-Poor	1.5
4z	Podzolic Ironpan	Fresh	5	Very poor (VP3)	1
4b	Ironpan intergrade	Fresh	5	Poor	2

Table A.4: Mineral soil properties with perched water tables . *=assumes the ironpan is not broken through ground preparation

3. Organic soils

Table A.5 describes the properties of deep peats according to the FC soil classification system and ESC. Many of those soils would have been afforested with the assistance of drainage systems which may need to be maintained if such sites are to be restocked.

FC Soil Code	Description	Soil Moisture Regime (SMR)		Soil Nutrient Regime (SNR)	
		Text	Value	Text	Value
8a	Phragmites fen	Very wet	1	Rich	4
8b	Juncus articulatus/acutifloris	Very wet	1	Medium	3
8c	Juncus effusus	Very wet	1	Medium	3
8d	Carex	Very wet	1	Rich	4
9a	Molinia, Myrica, Salix	Very wet	1	Medium	3
9b	Tussocky Molinia/Calluna	Very wet	1	Poor	2
9c	Tussocky Molinia Eriophorum vaginatum	Wet	2	Poor	2
9d	Non Tussocky Molinia, Eriophorum vaginatum, Trichophorum	Very wet	1	Very poor (VP3)	1
9e	Trichophorum, Calluna, Molinia	Wet	2	Very poor (VP2)	0.5
10a	Lowland Sphagnum	Very wet	1	Very poor (VP1)	0
10b	Upland Sphagnum	Very wet	1	Very poor (VP1)	0
11a	Calluna	Very moist	3	Very poor (VP2)	0.5
11b	Calluna, Eriophorum vaginatum	Wet	2	Very poor (VP2)	0.5
11c	Trichophorum, Calluna	Wet	2	Very poor (VP1)	0
11d	Eriophorum	Wet	2	Very poor (VP1)	0

Table A.5: Properties associated with organic soils.

Document Change History

Version	Date Changed	Changed By	Comments
4.2	23 May 2016	Stephen Bathgate	Revised introduction to match latest user interface. Minor text edits to table labelling. Revised text describing of suitability. Corrected case study to indicate use of drainage.
4.1	15 April 2016	Stephen Bathgate	Included default soil properties as appendix.

Appendix 3 - Examples of Planning Applications in North Norfolk where a Ten Year replacement planting condition has been applied

Examples of Planning Applications in North Norfolk where a Ten Year replacement planting condition has been applied

Application Number	Proposal	Location	Relevant Condition Number	Comments
PF/13/0007	Erection of 123 dwellings with public park and open space and associated landscaping, drainage and highway infrastructure	Land off Two Furlong Hill and Market Lane, Wells-next-the-Sea	Condition 17	Site located with Norfolk Coast AONB
PF/13/0168	Construction of 20 mw solar photovoltaic farm with associated works including inverter housing	Land at North Creake Airfield, Egmere, Walsingham	Condition 7	Site located near to Norfolk Coast AONB
PF/13/1166	Installation of 49.9MW solar farm with plant housing and perimeter fence	Former Airfield, West Raynham	Condition 7	Large scale solar farm
PF/14/1334	Installation and operation of a ground mounted solar photovoltaic array to generate electricity of up to 50MW capacity comprising photovoltaic panels, inverters, security fencing, cameras and other associated infrastructure	Former RAF Coltishall, Lamas Road, Scottow NR10 5LR	Condition 9	Large scale solar farm
PF/14/1559	Demolition of buildings and erection of forty dwellings, refurbishment of existing dwelling, contouring site, alterations of the existing access and off-site highway improvements	Former Cherryridge Poultry Site, Church Street, Northrepps, Cromer, NR27 0AA	Condition 14	Site Located in Norfolk Coast AONB

Appendix 4 – A timeline of Happisburgh Sea Defences covering a period of 1959 to 2015

Happisburgh Defences - History to December 2001

1959-1961	Timber revetment and groynes constructed between Ostend and Cart Gap
1968	Beach Road groynes constructed
1982	Partial reconstruction of damaged revetment and groynes
1986	cart Gap Seawall Constructed & old revetment partially removed leaving cill
1989	Need for major investment in new defences identified
1991	Following storm damage, unsafe section of revetment (300m long) removed to south of village. Consultants Halcrow are commissioned to consider defence options for Happisburgh
1992	Halcrow report. A scheme is designed and advertised, receiving four objections. Meetings held with objectors. The objections cannot be resolved and the scheme stalled.
1994	Shoreline Management Plan commenced.
1995	Revised scheme prepared, but fails to meet MAFF economic criteria.
1996	Shoreline Management Plan completed. Hold the Line policy adopted. Storm damage results in the loss of a further 400m of revetment and the end of beach road. Halcrow commissioned to carry out 2 nd study integrating scheme with Environment Agency works to the south. Visit to Happisburgh by Junior Agriculture Minister, Tim Boswell MP.
1997	Revised defence scheme advertised. Two irreconcilable objections received. MAFF introduces Priority Score that the scheme fails to meet. Scheme stalled. No immediate prospect of further scheme and Council asks MAFF to fund design work to date. Coast Protection Sub-Committee informed 29 Oct 1997 and 7 Jan 1998 (Note: Vice Chairman, Cllr Benstead, in Chair; Chairman, Cllr Will, absent 29 Oct 1997 to 24 June 1998)
1998	Visits to Happisburgh by the Junior Agriculture Minister, Elliot Morley MP and the House of Commons Agriculture Select Committee.
1999	MAFF grant aids preliminary design work carried out to date. This brings all previous and current schemes to a close. Coastal Concern Action Group formed in April, followed by public meeting in May
2000	MAFF agrees to fund a Strategy Study of the coast between Ostend and Cart Gap. Consultants HR Wallingford are appointed. MAFF amends Priority Score to place greater emphasis on river defence schemes.
2001	HR Wallingford report and scheme is advertised December 2001.

Happisburgh Defences - History of Scheme from January to December 2002

2002

January	Two objections received in response to public advertisement of scheme 28 th December 2001.
Jan - March	Negotiations with objectors
March	Defra announces new priority scoring system to be effective from 2003/04.
April	Notification to objectors of NNDC's intention to refer to Minister.
May	NNDC Executive Committee approves referral of objections to Defra
May	Objections referred to Defra.
June	Defra Regional Engineer seeks clarification of technical points - referred to consultants.
July	Technical response sent to Defra.
July	English Nature raises concerns over a prehistoric axe that we are not supposed to know about.
July	Verbal request from regional office that NNDC needs to submit a formal application to Defra for approval of the scheme and grant aid before Defra will consider the objections.
July	Application submitted to Defra. Full supporting documentation not available at the time.
August	Details of BCR sent to Defra Regional Engineer.
August	Correspondence with Norfolk Landscape Archaeology re axe. Agreement reached.
September	Defra and HR in correspondence re financial justifications
September	Verbal advice from Defra that we need Planning and landowner consents <u>before</u> Defra will hear the objections.
September	Planning application submitted.
October needed.	Defra formally advise NNDC that planning and land owner consents are needed. Further clarification of English Nature's position also required.
October	NNDC Executive Committee resolved <u>not</u> to implement any emergency work.
October	English Nature position clarified. Brief Environmental Statement submitted to EN. Acceptable.
October	English Heritage raises concerns over the axe; resolved.
October	Emergency evacuation plan set up.

October	Defra advised that planning consent in place.
Nov 6	NNDC commission Halcrow to review scheme.
Nov 11	E Couzens as landowner confirms refusal.
Nov 12	Defra Regional Engineer seeks confirmation that the scheme still meets the basic technical, environmental and economic criteria.
Nov 13	NNDC seeks Counsels' opinion on claims by Mr Couzens.
Nov 20	Halcrow conclude scheme no longer meets the Defra criteria.
Nov 21	Defra advised that NNDC is considering emergency works.
Nov 25	Defra (London) set hearing date for 16 December (By e-mail).
Nov 27	Internal Defra Regional Engineers report received for information. NNDC resolves at Special Executive Committee to undertake emergency works.
Nov 28	Defra advised of decision to carry out emergency works and withdrawal of scheme previously submitted.
December	Emergency works commence. Informal indications from Defra are that Priority Score threshold for 2003/4 is to be set at the maximum score of 44; i.e. no new schemes in 2003/04. Happisburgh RNL access ramp lost due to undermining as a result of beach loss. Work commences on review of Shoreline Management Plan.

Happisburgh Defences - History of Scheme from January 2003

2003

January	Emergency works completed. Public meeting held in St. Mary's Church.
February	Plans drawn for construction of temporary pedestrian access steps near destroyed access point.
February	Defra notifies councils that the threshold score for 2003/04 is 22. Happisburgh scores 5.
March	Additional rock (supplied by EA) placed on beach.
April	Access steps to west of ramp constructed
May	Meeting with Parliamentary Elliot Morley. Coastal Group Chairmen present case for amendments to Defra Priority Score system.
June	New Councillors visit Happisburgh. H & S work undertaken.
August	Meeting with Defra Regional Engineer More EA rock placed on beach.
October	Visit to Brussels by Norman Lamb, MP, P Frew, M Kerby NNDC Executive Committee considers report on future options and resolves not to promote capital scheme without assurances of Government funding.

Resolves to lobby for funds and changes to the rules.

November Further lobbying by Coastal Group Chairmen. Public meeting in St Mary's church.

December Minor surge and storm causes Cart Gap wall to be outflanked. Council considers use of emergency powers and relevant notifications are made.

2004

January Council appoints St La Haye Ltd to consider consequences of not implementing works at Cart Gap.

Complaint by Mr Hayward received from Local Ombudsman.

February Repairs to timber revetment.

Report submitted to Ombudsman.

March Council resolves not to proceed with works at Cart Gap as it would not be able to recover costs in the form of grant aid. (See below for predicted erosion and 2006 measurements. Breach point at year 48.)

Proposal from British Museum for excavation on Happisburgh beach

Container purchased for use of residents for furniture storage. Placed on car park

Asbestos removed from garages to rear of Beach Road properties.

May Garages demolished.

June Archaeological excavations on Happisburgh beach by Natural History and British Museums.

September Some rocks relocated.

October Further report submitted to Ombudsman.

November Ombudsman finds in favour of the Council.

December Draft SMP published.

2005

June 2nd archaeological excavation

December New emergency plan issued.

2006

December Council approves additional expenditure to fund programme of works to “buy time”.

CP Act notices served on Defra and NE

2007

February Work commences to augment existing rock berm.

April Enlarged rock berm completed.

Natural England assent to the emergency works

August 3rd archaeological excavation

August Visit by Defra Minister Ian Pearson, MP

September Village planning workshop

November Meeting with Natural England about works in the Site of Special Scientific Interest

2008

January Visit by East of England Minister Barbara Follett MP

August 4th archaeological excavation

June Visit by Defra Minister Phil Woolas, MP

2009

- January 4-5,000 tonne of surplus / out of specification rock delivered week commencing 26th January to Decca Field area
- January 5th Visit by Royal Commission on Environmental Pollution
- August CP Act notice published for construction of rock revetment at Decca Field.
- December Pathfinder planning started

2010

- March Decca Field rock scheme completed. Rock moved into Happisburgh
- May 5th Archaeological dig - 31st May to 18th June
- October Council approves methodology for acquisition of Beach Road houses. Offers made to purchase.
1st offer accepted

2011

- February Planning application submitted for car park, toilets and ramp
- March Completion of first house purchase.

2012

- April 9 cliff top properties demolished and area landscaped
- August Completion of new car park and toilets, transferred operations to Parish Council
- September Happisburgh steps are removed but put into local storage.

2013	February	Installation of short section of Rock bund to provide some protection to the new ramp.
2014	April	Caravan Park refused planning consent to roll back to alternative site.
2015	May	Caravan park wins planning appeal for the rolling back of the park.
	June	New play space built next to new car park as a community initiative
	October	Rolling back of Rock sill and removal of further beach debris between the new ramp and old lifeboat slipway.
	December	Release of second Pathfinder Evaluation from DEFRA.

Appendix 5 – Schedule 15 Drafting Suggestions

SCHEDULE 15

Article 39

Procedure for discharge of Requirements

Applications made under requirement

1. —(1) Where an application has been made to a discharging authority for any agreement or approval required pursuant to **requirements 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 31** in Part 3 of **Schedule 1** (requirements) of this Order—

(a) the undertaker must give the discharging authority sufficient information to identify the requirement(s) to which the application relates;

(b) the undertaker must provide such particulars, and be accompanied by such plans and drawings, as are necessary to deal with the application

(2) The discharging authority must give notice to the undertaker of its decision on the application before the end of the decision period.

(3) For the purposes of sub-paragraph (2), the decision period is—

- (a) where no further information is requested under paragraph 2 (further information), 8 weeks from the day immediately following that on which the application is received by the discharging authority;
- (b) where further information is requested under paragraph 2 (further information), 8 weeks from the day immediately following that on which further information has been supplied by the undertaker under paragraph 2; or
- (c) such longer period as may be agreed by the undertaker and the discharging authority in writing before the end of the period in sub-paragraph (a) or (b).

Further information

2. —(1) In relation to any application to which this Schedule applies, the discharging authority has the right to request such further information from the undertaker as is necessary to enable it to consider the application.

(2) If the discharging authority considers such further information to be necessary and the requirement does not specify that consultation with a requirement consultee is required, it must, as soon as reasonably practicable and within 217 business days of receipt of the application, notify the undertaker in writing specifying the further information required.

(3) If the requirement specifies that consultation with a requirement consultee is required, the discharging authority must issue the consultation to the requirement consultee as soon as reasonably practicable and within 10 + business days of receipt of the application, and must notify the undertaker in writing specifying any further information requested by the requirement consultee within 10 business days of receipt of such a request and in any event within 42 + days of receipt of the application.

(4) If the discharging authority does not give such notification as specified in sub-paragraph (2) or (3) it is deemed to have sufficient information to consider the application and is not thereafter ~~entitled to~~ request further information without the prior agreement of the undertaker.

Appeals

3. —(1) The undertaker may appeal to the Secretary of State in the event that—

- (a) the discharging authority refuses an application for any agreement or approval required by a requirement included in this Order ~~or grants it subject to conditions;~~

- (b) the discharging authority does not give notice of its decision to the undertaker within the decision period as determined in paragraph ~~1~~; ~~4~~
- (c) on receipt of a request for further information pursuant to paragraph 2 (further information) the undertaker considers that either the whole or part of the specified information requested by the discharging authority is not reasonably necessary for consideration of the application; or
- (d) on receipt of any further information requested, the discharging authority notifies the undertaker that the information provided ~~d~~ is inadequate and requests additional information which the undertaker considers is not reasonably necessary for consideration of the application.

(2) The appeal process is as follows—

- (a) the undertaker must submit the appeal documentation to the Secretary of State, a copy of the application submitted to the discharging authority and any supporting documentation which the undertaker may wish to provide (“the appeal documentation”);
- (b) the undertaker must on the same day provide copies of the appeal documentation to the discharging authority and the requirement consultee (if applicable);
- (c) as soon as is practicable after receiving the appeal documentation, but in any event within ~~21~~ ~~40~~ business days of receiving the appeal documentation, the Secretary of State must appoint a person and forthwith notify the appeal parties of the identity of the appointed person and the address to which all correspondence for that person’s attention should be sent;
- (d) the discharging authority and the requirement consultee (if applicable) must submit written representations to the appointed person in respect of the appeal within ~~21~~ ~~10~~ business days of the date on which the appeal parties are notified of the appointment of a person under paragraph (c) and must ensure that copies of their written representations are sent to each other and to the undertaker on the day on which they are submitted to the appointed person; and
- (e) the appeal parties must make any counter-submissions to the appointed person within ~~21~~ ~~10~~ business days of receipt of written representations pursuant to sub-paragraph (d) above.

(3) The appointed person must make his decision and notify it to the appeal parties, with reasons, as soon as reasonably practicable. If the appointed person considers that further information is necessary to enable him to consider the appeal he must, as soon as practicable, notify the appeal parties in writing specifying the further information required, the appeal party from whom the information is sought, and the date by which the information is to be submitted.

(4) Any further information required pursuant to sub-paragraph (3) must be provided by the party from whom the information is sought to the appointed person and to other appeal parties by the date specified by the appointed person. Any written representations concerning matters contained in the further information must be submitted to the appointed person, and made available to all appeal parties within ~~21~~ ~~40~~ business days of that date.

(5) On an appeal under this paragraph, the appointed person may—

- (a) allow or dismiss the appeal; or
- (b) reverse or vary any part of the decision of the discharging authority (whether the appeal relates to that part of it or not),

and may deal with the application as if it had been made to the appointed person in the first instance.

(6) The appointed person may proceed to a decision on an appeal taking into account only such written representations as have been sent within the time limits prescribed, or set by the appointed person, under this paragraph.

(7) The appointed person may proceed to a decision even though no written representations have been made within those time limits, if it appears to the appointed person that there is sufficient material to enable a decision to be made on the merits of the case.

(8) The decision of the appointed person on an appeal is final and binding on the parties, and a court may entertain proceedings for questioning the decision only if the proceedings are brought by a claim for judicial review.

(9) If an approval is given by the appointed person pursuant to this Schedule, it is deemed to be an

approval for the purpose of Part 3 of **Schedule 1** (requirements) as if it had been given by the discharging authority. The discharging authority may confirm any determination given by the appointed person in identical form in writing but a failure to give such confirmation (or a failure to give it in identical form) may not be taken to affect or invalidate the effect of the appointed person's determination.

(10) Save where a direction is given pursuant to sub-paragraph (11) requiring the costs of the appointed person to be paid by the discharging authority, the reasonable costs of the appointed person must be met by the undertaker.

(11) On application by the discharging authority or the undertaker, the appointed person may give directions as to the costs of the appeal parties and as to the parties by whom the costs of the appeal are to be paid. In considering whether to make any such direction and the terms on which it is to be made, the appointed person must have regard to the Planning Practice Guidance on the award of costs or any guidance which may from time to time replace it.

Interpretation of this Schedule

4. In this Schedule—

“the appeal parties” means the discharging authority, the requirement consultee and the undertaker;

“business day” means a day other than Saturday or Sunday which is not Christmas Day, Good Friday or a bank holiday under section 1 of the Banking and Financial Dealings Act 1971;

“discharging authority” means that person or body responsible for approving details pursuant to requirements **13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and ~~31~~** in Part 3 of **Schedule 1** (requirements);

“requirement consultee” means any body named in a requirement which is the subject of an appeal as a body to be consulted by the discharging authority in discharging that requirement.