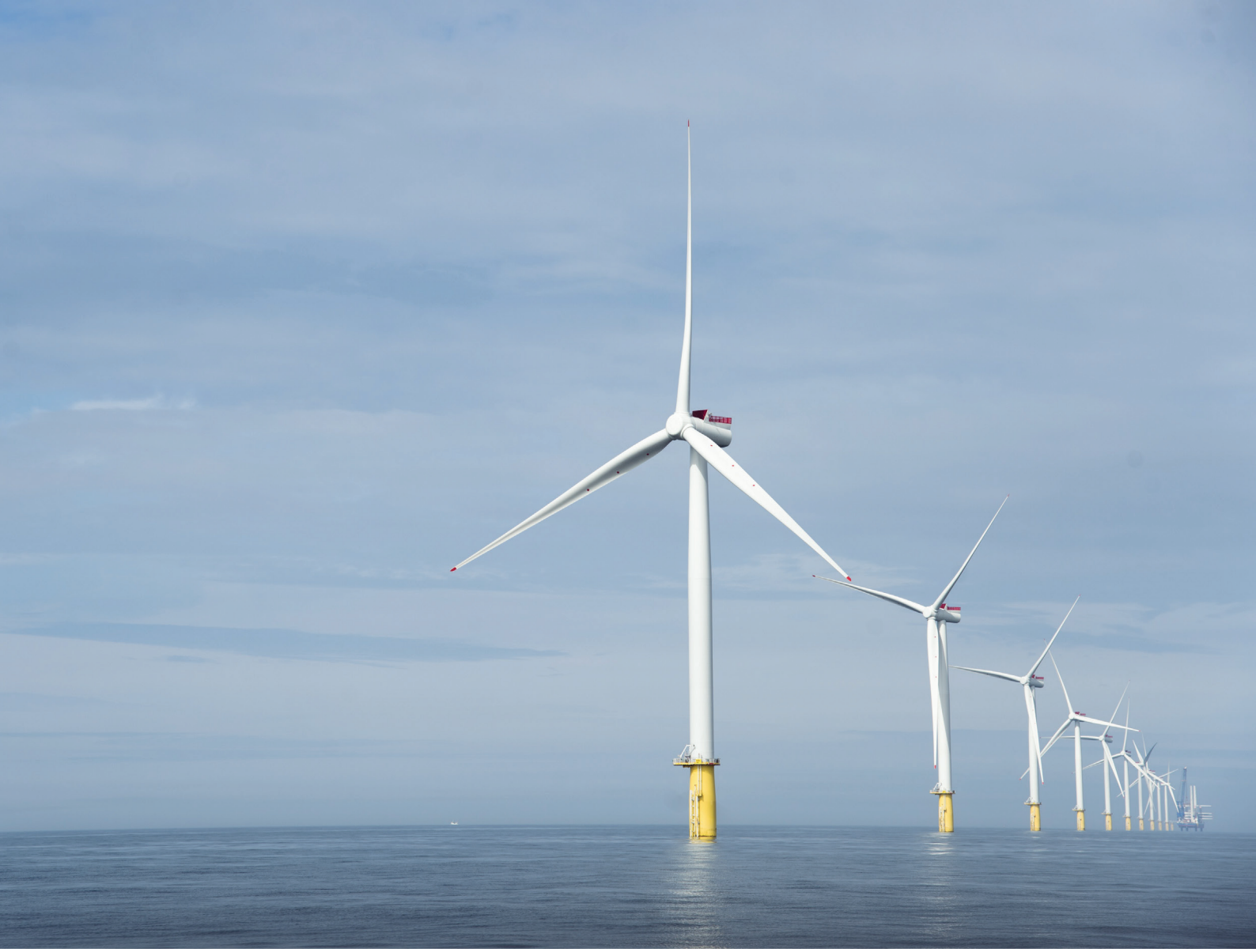

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

Volume 3

Appendix 17.2 - Waste Assessment (Onshore Development)

August 2022
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Acronyms

BDC	Broadland District Council
BEIS	Business, Energy, and Industrial Strategy
CBS	Cement Bound Sand
CoP	Code of Practice
CoCP	Code of Construction Practice
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
Defra	Department for the Environment and Rural Affairs
DEP	Dudgeon Extension Project
DLUHC	Department for Levelling Up, Housing and Communities
DPD	Development Plan Document
EC	European Commission
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
EWC	European Waste Catalogue
FTE	Full-Time Equivalent
HDD	Horizontal Directional Drilling
IEMA	Institute of Environmental Management and Assessment
JCS	Joint Core Strategy
km	Kilometre
LDF	Local Development Framework
MMP	Materials Management Plans
MWDF	Minerals and Waste Development Framework
NCC	Norfolk County Council
NNDC	North Norfolk District Council
NPPF	National Planning Policy Framework
NPS	National Policy Statement
PPE	Personal Protective Equipment
PPS	Planning Policy Statement
PRA	Preliminary Risk Assessment

rWFD	Revised Waste Framework Directive
SEP	Sheringham Shoal Extension Project
SNC	South Norfolk Council
SNRHW	Stable Non-Reactive Hazardous Wastes
SWMP	Site Waste Management Plan
TEU	Treaty of the European Union
UK	United Kingdom
WAC	Waste Acceptance Criteria
WEEE	Waste Electrical and Electronic Equipment
WM	Waste Management

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Hazardous waste	Waste which contains substances or has properties that might make it harmful to human health or the environment.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable corridor which would house HDD entry or exit points.
Institute of Environmental Management and Assessment (IEMA) guide to Materials and Waste in EIA	Industry publication offering guidance and recommendations for consultants and stakeholders concerned with the impacts and effects of materials and waste on the environment.
Inert waste	Inert waste is waste that does not undergo any significant physical, chemical, or biological transformations (for example concrete, bricks, rubble).
Jointing bays	Underground structures constructed at regular intervals along the onshore cable corridor to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water.
Non-hazardous waste	Waste which does not cause harm to human health or the environment.
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore substation	Compound containing electrical equipment to enable connection to the National Grid.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
Sheringham Shoal Offshore Wind Farm Extension site	Sheringham Shoal Offshore Wind Farm Extension lease area.

Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
The Applicant	Equinor New Energy Limited.
Transition joint bay	Connects offshore and onshore export cables at the landfall. The transition joint bay will be located above mean high water.

17.2 WASTE ASSESSMENT (ONSHORE DEVELOPMENT)

17.2.1 Introduction

1. This Waste Assessment Report assesses the onshore impacts of the Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP) in terms of waste generation during the construction, operation, and decommissioning phases, considering the proposed options for recycling, recovery or disposal of waste, and the capability and capacity of the existing local or regional waste management facilities to manage the quantities of waste estimated to be generated.

17.2.1.1 Summary Description of SEP and DEP

2. SEP and DEP will consist of a number of offshore and onshore elements including offshore wind turbines and subsea array cables, offshore/onshore export cables and an onshore substation to accommodate the connection to the transmission grid. A full description of SEP and DEP is provided within **Chapter 4 Project Description** of the Environmental Statement (ES).

17.2.1.2 Onshore Construction Scenarios

3. In the event that both SEP and DEP are built, the following principles set out the framework for how SEP and DEP may be constructed:
   - SEP and DEP may be constructed at the same time, or at different times;
   - If built at the same time both SEP and DEP could be constructed in four years;
   - If built at different times, either Project could be built first;
   - If built at different times, each Project would require a four year period of construction;
   - If built at different times, the offset between the start of construction of the first Project, and the start of construction of the second Project may vary from two to four years;
   - Taking the above into account, the total maximum period during which construction could take place is eight years for both Projects; and
4. The earliest construction start date is 2025
5. The waste assessment considers the following development scenarios in determining the worst-case scenario:
   - Build SEP or build DEP in isolation;
   - Build SEP and DEP sequentially with a gap of up to four years between the start of construction of each Project – reflecting the maximum duration of effects; and
   - Build SEP and DEP concurrently – reflecting the maximum peak effects.
6. Full details of the construction scenarios are detailed in **Chapter 17 Ground Conditions and Contamination** of the ES.

17.2.1.3 Operation Scenarios

7. Operation scenarios are described in detail in **Chapter 4 Project Description**. Where necessary, the assessment considers the following three scenarios:
   - Only SEP in operation;
   - Only DEP in operation; and
   - The two Projects operating at the same time, with a gap of two to four years between each Project commencing operation.

8. The operational lifetime of each Project is expected to be 40 years.

17.2.1.4 Decommissioning Scenarios

9. Decommissioning scenarios are described in detail in **Chapter 4 Project Description**. Decommissioning arrangements for the onshore elements of SEP and DEP will be agreed through the submission of an onshore decommissioning plan to the relevant planning authority for approval within six months of the permanent cessation of commercial operation (unless otherwise agreed in writing by the relevant planning authority), however for the purpose of this assessment it is assumed that decommissioning of SEP and DEP could be conducted separately, or at the same time.

17.2.2 Approach to Waste Assessment

10. The approach to the waste assessment is to undertake the following tasks:
    - Outline the main waste management legislative requirements and policy guidance relating to renewable energy projects;
    - Identify the primary sources of inert, non-hazardous and hazardous wastes that would be generated from the onshore construction, operation, and decommissioning of SEP and DEP;
    - Provide an order of magnitude estimate of the primary wastes that would be generated from the main project elements;
    - Assess the impact of project wastes on local/regional waste capacity in line with defined impact assessment methodologies.

11. This approach is in line with the methodology outlined in the Institute of Environmental Management and Assessment (IEMA) guide to Materials and Waste in EIA (IEMA, 2020), although no impact assessment has been undertaken. Data on the local and regional waste management capacity have been identified from sources published by the Environment Agency.

17.2.3 Waste Legislation and Policy Context

12. United Kingdom (UK) waste legislation is underpinned by several international (e.g. European Union (EU)) agreements. In 2017, the UK government triggered article 50 of the Treaty of the European Union (TEU) with the UK formally withdrawing from the EU on 31st January 2020.

13. Most EU waste management law was implemented into UK legislation by way of statutory instruments. This means that the relevant legislation has not been automatically or immediately affected by the UK's exit from the EU as the legislation will remain in place in the UK.

14. The UK government decided that at the point at which the UK left the EU, all EU legislation which had not already been transposed into UK law was transferred to UK statute. All the EU environmental legislation remains in force as part of UK law, with minor amendments, but (unless the UK has made specific commitments to apply such law as part of negotiating a new arrangement with the EU) it can then be repealed or amended according to the policy drivers of the UK Parliament (or the devolved parliaments where they have power to do so).

17.2.3.1 International Legislation and Policy

17.2.3.1.1 EU Waste Framework Directive (Directive 2008/98/EC)

15. The key European legislation is the revised Waste Framework Directive (2008/98/EC) ('rWFD'), which consolidates several separate Waste Directives and amendments. It establishes the basis for the management of wastes across the EU. It defines certain terms such as "waste", "recovery" and "disposal", to ensure that a uniform approach is taken across the EU.

16. The rWFD explains when waste ceases to be waste and becomes a secondary raw material (by meeting "end-of-waste" criteria), and how to distinguish between waste and by-products.

17.2.3.1.2 EU Landfill Directive

17. The objective of the Landfill Directive (1999/31/EC) is to prevent or reduce, as far as possible, negative effects on the environment, in particular on surface water, groundwater, soil, air, and on human health from the landfilling of waste by introducing stringent technical requirements for waste and landfills.

18. The Landfill Directive defines the different categories of waste (inert, non-hazardous, and hazardous waste) and applies to all landfills, defined as waste disposal sites for the deposit of waste onto or into land. A standard procedure for the acceptance of waste in a landfill is laid down to avoid any risks associated with accepting waste that could cause long-term harm.

17.2.3.2 National Planning Policy

17.2.3.2.1 National Policy Statement

19. The policy framework for examining and determining applications for Nationally Significant Infrastructure Projects is provided by National Policy Statements (NPS) issued by the Department for Energy and Climate Change (DECC) and are in the process of being consulted upon and updated.

20. Those relevant to the SEP and DEP are:

- Overarching NPS for Energy (EN-1) (DECC, 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011b); and

- NPS for Electricity Networks Infrastructure (EN-5) (DECC, 2011c).

21. The specific assessment requirements for waste, as detailed in the EN-1 are summarised in **Table 17.2.1**.

22. It is noted that NPS EN-1 is in the process of being revised. A draft version of the NPS was published for consultation in September 2021 (Department for Business Energy and Industrial Strategy (BEIS), 2021). A review of the draft version has been undertaken in the context of this waste assessment.

Table 17.2.1: Summary of NPS Requirements

NPS Requirement	EN-1 Paragraph
Sustainable waste management is implemented through the "waste hierarchy", which sets out the priorities that must be applied when managing waste.	5.14.2
Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome.	5.14.3
The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan. The arrangements described and Management Plan should include information on the proposed waste recovery and disposal system for all waste generated by the development, and an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation. The applicant is encouraged to refer to the Waste Prevention Programme for England and should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that this is the best overall environmental outcome.	5.14.6
NPS for Energy EN-1 draft (BEIS 2021)	
The Secretary of State should consider the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development. The Secretary of State should be satisfied that: • any such waste will be properly managed, both on-site and off-site. • the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and • adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where that is the best overall environmental outcome.	5.15.9

17.2.3.2.2 A Green Future Our 25 Year Plan to Improve the Environment

23. The Governments 25 Year Plan (Defra, 2018a) sets out the goal for improving the environment within a generation and leaving it in a better state. In terms of waste management, it seeks to minimise waste, reuse materials, and manage materials at the end of their life to minimise the impact on the environment, by:

- Working towards the ambition of zero waste by 2050.
- Working to a target of eliminating avoidable plastic waste by end of 2042.

- Meeting all existing waste targets – including those on landfill, reuse, and recycling – and development ambitious new targets and milestones.
- Seeking to eliminate waste crime and illegal waste sites over the lifetime of the Plan, prioritising those of highest risk.
- Delivering a substantial reduction in litter and litter behaviour.
- Significantly reducing and where possible preventing all kinds of marine plastic pollution, in particular material that came originally from land.

24. Provisions brought in January 2022 to Sections 8 – 15 of the Environment Act 2021 provide for the preparation, implementation and review of environmental improvement plans and setting of interim targets. The provisions indicate that the 25 Year Plan discussed above be treated as an environmental improvement plan for the purposes of Section 8 of the Environment Act 2021.

17.2.3.2.3 Our Waste, Our Resources

25. Defra launched its strategy for waste and resources – *Our Waste, Our Resources: A Strategy for England* in December 2018 (Defra, 2018b). The Strategy provides a focus on solutions that will reduce the country's reliance on single-use plastics, provide clarity on household recycling, and provides measures to manage packaging and food waste. Its purpose is to provide policy direction in line with government's 25 Year Environment Plan (see above).

26. The Strategy's timeline of targets shows those on recycling household waste and disposal to landfill remain pegged to the EU's Circular Economy Package of legislation (see below). An aim of the Strategy is to focus on resource recovery and waste management. Part of this involves the promotion of UK-based recycling.

17.2.3.2.4 The Strategy for Hazardous Waste Management in England 2010

27. The Strategy (Defra, 2010) sets out the principles for the management of hazardous waste and helps waste producers and managers:

- Make the right decisions about their waste.
- Identify the available treatment facilities available.

17.2.3.2.5 National Planning Policy for Waste 2014

28. The Government has published the National Waste Planning Policy 2014 for England (DCLG, 2014) as a replacement of Planning Policy Statement 10: Planning for Sustainable Waste Management (PPS 10) 2011 (DCLG, 2011). The updated policy maintains the core principles of the 'plan led' approach, with a continued focus of moving waste up the Waste Hierarchy.

29. It requires local planning authorities to "have regard to its policies when discharging their responsibilities to the extent that they are appropriate to waste management". Increasingly local authorities are working together in partnerships to deliver full and efficient waste services; a requirement of the duty to cooperate in section 110 of the Localism Act 2011. The document sets out detailed waste planning policies to facilitate a "more sustainable and efficient approach to resource use and management", for example by ensuring the design and layout of new infrastructure complements sustainable waste management.

30. When determining planning applications for non-waste development, the Policy requires that local planning authorities should, to the extent appropriate to their responsibilities, ensure that:

- "The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;
- New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development; and
- The handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities and minimises off-site disposal."

17.2.3.2.6 National Planning Policy Framework

31. The National Planning Policy Framework (NPPF), which was updated in July 2021 (DLUHC, 2021), does not contain specific waste policies. In terms of achieving sustainable development, the NPPF identifies that minimising waste and pollution is a fundamental part of the environmental role of the planning system.

32. The NPPF encourages local planning authorities to prepare Local Plans that, so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously. The Facility should therefore have regard to the requirements of the relevant Local Plan in terms of waste management. This is discussed further below in the context of the Norfolk County Council Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026.

17.2.3.2.7 Waste Management Plan for England 2021

33. Defra published a Waste Management Plan for England in January 2021 (Defra, 2021). The key aim of the Waste Management Plan for England was to set a direction towards a zero-waste economy as part of the transition to a sustainable economy. In particular, this means using the "waste hierarchy" (waste prevention, re-use, recycling, recovery and finally disposal as a last option) as a guide to sustainable waste management.

17.2.3.2.8 Waste Prevention Programme for England 2013

34. The Government developed Waste Prevention Programme for England in 2013 (Defra, 2013b) to set out the key roles and actions which should be taken to move towards a more resource efficient economy. As well as describing the actions the government is taking to support this move, it also highlights actions businesses, the wider public sector, the civil society, and consumers can take to benefit from preventing waste. Using resources more efficiently, designing and manufacturing products for optimum life and repairing and reusing more items could save money and provide opportunities for economic growth at the same time as improving the environment.

35. The waste prevention programme is a requirement of the rWFD. It sets out detailed actions to:

- Encourage businesses to contribute to a more sustainable economy by building waste reduction into design, offering alternative business models, and delivering new and improved products and services;
- Encourage a culture of valuing resources by making it easier for people and businesses to find out how to reduce their waste, to use products for longer, repair broken items, and enable reuse of items by others;
- Help businesses recognise and act upon potential savings through better resource efficiency and preventing waste, to realise opportunities for growth; and
- Support action by central and local government, businesses, and civil society to capitalise on these opportunities.

36. To measure progress against the aim of the programme, the government measures changes in overall waste arising, assesses the environmental impacts of this waste and considers how these factors relate to changes in the resource efficiency of the economy.

17.2.3.3 Local and Regional Planning Policy

37. SEP and DEP fall under the jurisdiction of the following county council and local planning authorities:

- Norfolk County Council (NCC);
- North Norfolk District Council (NNDC);
- Broadland District Council (BDC); and
- South Norfolk Council (SNC).

38. The planning policies associated with each area are outlined below.

17.2.3.3.1 Norfolk County Council – Norfolk Minerals and Waste Development Framework (MWDF): Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 (Adopted September 2011).

39. The Core Strategy, along with the Proposals Map, sets out the spatial vision for future mineral extraction and associated development and waste management facilities in Norfolk from 2011-2026. It also contains strategic objectives and policies that make clear where, in broad terms, mineral extraction and associated development and waste management facilities should be located in Norfolk, and conversely where they should not be located. The location of these waste management facilities must be considered in the context of managing waste from SEP and DEP.

40. The policies contained within the spatial strategy that are applicable to managing waste for SEP and DEP include:

- Policy CS6 – General waste management considerations;
- Policy CS16 – Safeguarding mineral and waste sites and mineral resources; and
- Policy CS17 – Use of secondary and recycled aggregates.

17.2.3.3.2 Norfolk County Council – Norfolk Minerals and Waste Development Framework: Waste Site Specific Allocations Development Plan Document (Adopted October 2013)

41. As part of its preparation of the MWDF, Norfolk County Council produced a Waste Site Specific Allocations Development Plan Document (DPD). Its purpose is to set out specific, allocated sites where waste management facilities are considered acceptable in principle so to provide sufficient waste management capacity to meet the expected arisings of municipal, commercial, and industrial waste in Norfolk over the period 2011-2026. The location and capacity of these facilities should be considered for the management of waste during the construction phase.

17.2.3.3.3 North Norfolk District Council (NNDC) Local Development Framework Core Strategy (2008 – 2021)

42. The Core Strategy provides the overarching approach for development in North Norfolk. It sets out a long-term spatial vision, objectives, and policies to guide public and private sector investment up to 2021. The policies that are applicable to SEP and DEP include:

- Policy EN6: Sustainable Construction and Energy Efficiency – To maximise the use of locally sourced/re-used/renewable/ low embodied energy materials in the development, and minimise waste generated during construction.

43. North Norfolk District Council Emerging Local Plan (2016 – 2036) (also known as the Local Development Framework (LDF)) will soon replace Core Strategy (2008). It is a collection of planning documents which will guide the planning policy context for development across the whole of North Norfolk for the period 2016 – 2036. The 2019 first draft of the Local Plan includes Policy SD 5 which states "Developer contributions will be required to secure infrastructure which is necessary to ensure: …the delivery of environmental infrastructure including biodiversity management, landscaping, flood defences, SuDS, waste management and, where necessary their maintenance."

17.2.3.3.4 Broadland District Council Local Plan

44. Broadland District Council's current Local Plan is made up of several documents (as outlined below). These documents set out the general and specific planning policies and detailed local policies. They aim to help planning officers and applicants to achieve high standard of development in the district and are used as the main guide to determine planning applications.

- Greater Norwich Development Partnership – Joint Core Strategy (JCS) for Broadland, Norwich, and South Norfolk (adopted 2011, amendments adopted January 2014): The JCS sets out the long-term vision and objectives for the area, including strategic policies for steering and shaping development. The objectives and policies considered relevant to SEP and DEP include:
    - Spatial Planning Objective 9: To protect, manage and enhance the natural, built, and historic environment, including key landscapes, natural resources and areas of natural habitat or nature conservation value – Efficient use will be made of minerals, energy and water resources, and the production of waste will be minimised.
    - Area Wide Policies – Policy 1: Addressing climate change and protecting environmental assets – In areas not protected through international or national designations, development will: protect mineral and other natural resources identified through the MWDF.
- Broadland District Council – Development Management DPD (adopted August 2015): The Development Management DPD is a Local Plan established in accordance with the Town and Country Planning (Local planning) (England) Regulations 2012. It sets out the generic policies that are to be applied throughout the Broadland planning authority area and is in conformity with the objectives set out in the NPPF and the JCS (Broadland, Norwich, and South Norfolk) (adopted 2011, amendments adopted January 2014). The policies set out within the Development Management DPD do not repeat but seek to further the aims and objectives set out within the NPPF and JCS. It therefore includes more detailed local policies for the management of development. For major development, proposals will be expected to include appropriate provision for waste collection and recycling facilities in accordance with Policy CSU4.

- Broadland District Council – Site Allocations DPD (adopted May 2016): Identifies or allocates areas of land in Broadland for specific types of development, such as housing, employment, community facilities, retail, recreation etc. An increase in development within the area could result in reduced capacity within local waste management facilities. This should be taken into consideration in the context of SEP and DEP.

17.2.3.3.5 South Norfolk Local Plan Development Management Policies Document (2015).

45. The Development Management Policies set out how the Council carries out its development management responsibilities to promote sustainable development. There are no specific policies in relation of waste for developments (other than residential) in this document.

17.2.3.4 Waste Legislation

17.2.3.4.1 Environmental Protection Act 1990 Part II – Controlled Waste and Duty of Care

46. Section 34 of the Environmental Protection Act 1990 imposes a duty of care on producers and holders of waste to ensure that they handle their waste safely and in compliance with the appropriate regulations. It sets the rules for the management of controlled wastes and place legal obligations on any person who imports, produces, carries, keeps, treats, or disposes of controlled waste, including householders, commercial producers, and industrial producers of waste.
47. One of the fundamental aspects of the duty of care requires the holder of waste to make sure that anyone else dealing with their waste has the necessary authorisation to do so. If the holder does not do this and their waste is subsequently found to have been illegally disposed, the holder could be held responsible and may face prosecution.
48. The duty of care provisions are contained in the Waste (England & Wales) Regulations 2011.

17.2.3.4.2 The Waste (England and Wales) Regulations 2011 (the 2011 Waste Regulations)

49. The 2011 Waste Regulations transpose the rWFD into the law of England and Wales. In addition, the 2011 Waste Regulations reduce the fragmentation of waste legislation to some extent by replacing and streamlining previous waste regulation.
50. Key provisions in the rWFD were implemented by the 2011 Waste Regulations:
    - Waste hierarchy: established a legal requirement for certain parties to take measures to follow the ‘waste hierarchy’ for waste prevention and management (see below).

- Separate collections (private companies): From 1 January 2015: (1) businesses which collect waste paper, metal, plastic, or glass need to collect such waste separately; and (2) businesses which collect, transport, or receive separately collected waste paper, metal, plastic, or glass should ensure that such waste is not mixed with other waste.

17.2.3.4.3 The Waste Hierarchy

51. The waste hierarchy is set out at Article 4 of the rWFD and has been implemented by the 2011 Waste Regulations.

52. The waste hierarchy requires the producer/holder of a waste to demonstrate that the priorities identified in **Table 17.2.2** have been considered in the priority order, to determine the most suitable waste management option for all wastes prior to removal from site.

Table 17.2.2: The Waste Hierarchy

Waste Hierarchy	Relevant activity
Prevention	Using less material in design and manufacture, keeping products for longer, re-use, using less hazardous materials.
Preparing for re-use	Checking, cleaning, repairing, refurbishing, whole items, or spare parts.
Recycling	Turning waste into a new substance or product, includes composting if it meets quality protocols
Other recovery	Includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat, and power) and materials from waste, some backfilling.
Disposal	Landfill and incineration without energy recovery.

Table reproduced from Defra website: https://www.gov.uk/waste-legislation-and-regulations

53. It is a legal requirement for waste producers/holders to follow the waste hierarchy when making decisions about waste management options. Lower hierarchical options cannot be justified by cost alone. They require environmental justification over available higher options, for example the location of a site may justify sending waste to a lower hierarchical option (e.g. local landfill), rather than sending it hundreds of miles to the nearest facility that could provide a higher option.

17.2.3.4.4 The Environmental Permitting (England and Wales) Regulations 2016 (as amended)

54. The Environmental Permitting (England and Wales) Regulations 2016 ("the Environmental Permitting Regulations") consolidate earlier amendments to the Environmental Permitting (England and Wales) Regulations 2010. They set out an environmental permitting and compliance regime that applies to various activities and industries, including the management of waste.

55. The environmental permitting regime is a common framework for applying for, receiving, varying, transferring, and surrendering permits, along with compliance, enforcement, and appeals arrangements. It rationalises the previous permitting and compliance regimes into a common framework that is easier to understand and simpler to use.

56. The framework introduces different levels of control, based on risk: exclusions (very low risk activities which may be undertaken without any permit), exemptions (lower risk activities which may be undertaken after registering, which is free), standard rules permits (standard requirements and conditions for the relevant activities are set out so that applicants can determine in advance whether the permit is applicable to their proposals) and bespoke permits (permits written specifically for activities which are unique or of higher risk).

17.2.3.4.5 Hazardous Waste

57. Waste is generally considered hazardous if it (or the material or substances it contains) are harmful to humans or the environment. All producers and holders of hazardous waste are obliged to ensure that the hazardous waste does not cause harm or damage. All producers and holders of waste are obliged to know whether their waste is classified as hazardous or non-hazardous.

58. The hazardous waste regulations identify the administrative provisions for handling hazardous waste. The regulations also make it illegal to mix a hazardous waste with non-hazardous waste; or another type of hazardous waste; or material that is not waste. The Hazardous Waste (England and Wales) Regulations 2005 (Hazardous Waste Regulations) provide the rules for assessing if a waste is hazardous or not. The Hazardous Waste Regulations refer to the List of Wastes (which is often referred to as the European Waste Catalogue (EWC)) for the relevant thresholds for some of the hazardous properties; and to assign the formal description and code for the waste.

59. Detailed technical guidance on the hazardous waste assessment process is provided in Technical Guidance WM3 (Environment Agency, 2021a).

17.2.4 Description of Baseline Conditions

17.2.4.1 Project Waste Types

60. The onshore elements of SEP and DEP consist of the Development Consent Order (DCO) boundary, which includes the landfall, onshore cable corridor and the onshore substation site. The onshore cable corridor is predominantly within agricultural land and includes a number of roads, railway, and watercourse crossings. Nearby settlements include the towns and villages of Weybourne, Bodham, Attlebridge and Colton.

61. Wastes generated from project activities would be classified as either inert, non-hazardous or hazardous in line with regulatory requirements. Waste would be generated from construction, operational and decommissioning phases of the project. The following waste types are expected to be generated.

- Inert wastes

- Soils and subsoil – removed from sites.
- Hardcore – that cannot be reused.

- Non-hazardous wastes:
  - Drilling wastes – fluid and solids from HDD activities.
  - Food waste – from welfare facilities.
  - General wastes – mixed packaging and general waste from welfare facilities and site offices.
  - Green waste – from vegetation removal and clearing if transferred from site.
  - Concrete and rubble.
  - Scrap metal.
  - Recyclables – plastic bottles, drinks cans that are segregated at site welfare facilities.
  - Sewage waste – from toilet facilities at temporary construction sites and substation.
  - Wood – pallets, packing wastes, cable reels.
- Hazardous wastes:
  - Batteries, lead-acid.
  - Chemicals, off-spec and unwanted.
  - Contaminated land – if any is identified and removed.
  - Empty drums, with residues – chemicals/oils/lubricants
  - Medical/clinical waste – from first aid posts and from COVID-19 PPE measures.
  - Oil filters – from plant maintenance.
  - Oily rags – from plant maintenance.
  - Used oil – from equipment and plant.
  - Waste electrical and electronic equipment (WEEE)

62. There would be a range of quantities of wastes generated from the project development activities, some would be relatively small amounts and others, such as soils from excavation would be many thousands of tonnes. Larger quantities of wastes would be generated during the construction phase, these are outlined in the following section. Smaller quantities of routine wastes would be generated during the operational phase, these are detailed in **Section 17.2.6**.

17.2.5 Construction Phase: Waste Types and Estimated Quantities

63. Waste material would be generated at all stages of the construction process, including site clearing, excavations, grading, foundation digging and waste material from project development.

64. The largest waste stream would be excavated material where excess quantities are required to be removed from site. The activities that are considered most pertinent to excavated material during the construction phase are as follows:

- Construction compounds (main and secondary compounds);
- Cable corridor;
- Cable jointing pits;
- Haul road(s);
- Trenchless crossing techniques e.g. HDD; and
- Site worker facilities.

65. The approximate quantities of excavated waste associated with the above activities are outlined below, based upon data that is available at the time of writing this report.

17.2.5.1 Landfall

17.2.5.1.1 HDD Activities

66. Wastes would be generated at the landfall from the HDD activities, site offices and worker welfare facilities. Site offices and welfare facilities will generate routine general wastes and will segregate specific materials for recycling. Based on professional judgement, it is estimated that less than 250 tonnes of wastes would be produced during these activities, further breakdowns and temporal estimates would be included in the Site Waste Management Plan (SWMP). This would also include estimates of the sewage and wastewater that will require management from toilets and wash stations.

67. The volume of HDD materials, such as bentonite, required during the construction phase are outlined in **Table 17.2.3**.

Table 17.2.3: Estimated Material to be Produced for Landfall HDD

Scenario	Material	Volume (m^3) per borehole	No. of boreholes	Volume (m^3) for all boreholes
SEP and DEP alone	HDD materials (bentonite)	600 - 700	Up to 2	1,400
SEP and DEP – concurrent	HDD materials (bentonite)	600 - 700	Up to 4	2,800
SEP and DEP – sequential	HDD materials (bentonite)	600 - 700	Up to 4	2,800

68. Bentonite is an inert clay-based fluid that is used as a lubricant during the drilling process. This produces a non-hazardous drilling mud waste comprising sludge and displaced soil and stones from the process.

69. The drilling fluid would be recycled to be used at different locations via a drilling fluid recycling plant, and solid residues and sludge would be removed as waste when required. The quantity of drilling solids would be related to the final length of HDD required for the landfall cable connection. Estimates of the quantity of these wastes would be incorporated in the SWMP that would be developed as part of the final Code of Construction Practice (CoCP).

17.2.5.1.2 HDD Compound

70. A temporary HDD works compound would be required as part of the landfall works. The temporary would cover an area of 75 x 75m for both the SEP and DEP in isolation and concurrently scenario options. Each scenario would require 2,200m^3 of material to be excavated. Further details of the estimated quantities of wastes would be developed in the SWMP.

17.2.5.2 Onshore Cable Corridor

71. The onshore underground cable system would be installed in trenches as shown in **Table 17.2.4**. The approximate width at the base of each trench would be 0.85m, and the proposed installation depth for each cable is 1.2m, however the trench would be required to be 2m deep. The onshore cable corridor would be 60km in length. The estimated volume of excavated material is presented in **Table 17.2.4** below.

Table 17.2.4: Estimated Excavated Soil Material and Waste from Onshore Cable Corridor

Development Scenario	No. of trenches	Volume for all trenches (m^3)
SEP and DEP alone	1	180,000
SEP and DEP – concurrent	1 wide or 2 single trenches	360,000
SEP and DEP – sequential	2	360,000

72. For trenchless crossings using HDD it is expected that all drilling wastes produced would be disposed of at an approved permitted waste site. Further details of the estimated quantities of wastes would be developed in the SWMP.

17.2.5.2.1 Jointing Bays

73. There are anticipated to be up to 60 jointing bays for SEP and DEP alone or 120 if built concurrently or sequentially. The dimensions of each cable jointing bay will be approximately 3.5m wide by 16m long by 2m deep (i.e. 112m^3). It is anticipated as a worst-case scenario that all excavated soil material would be waste. The estimated volume of excavated material is included in **Table 17.2.5** below.

Table 17.2.5: Estimated Soil Material to be Excavated from Jointing Bays

Development Scenario	Volume (m^3) for all joint bays	Volume (m^3) of surplus
SEP and DEP alone	18,000	4,200
SEP and DEP – concurrent	36,000	8,400
SEP and DEP – sequential	36,000	8,400

17.2.5.2.2 Haul Road

74. There would be one or two (if SEP and DEP are built sequentially) haul roads for use in the duct installation process and for transport of plant and materials between the works compounds and work fronts. When the entire duct installation exercise is completed, the haul road would be taken up and the topsoil reinstated.

75. The haul road(s) would be 5m wide (increasing to 8m at crossing places) and extend 55km along the onshore cable corridor. The surfacing of the haul road would be stone chip at 300mm depth. The topsoil would be excavated and stored and re-instated post construction. The stone chip is assumed to be a waste when it is removed from the track. The estimated volume of excavated material is presented in **Table 17.2.6**.

Table 17.2.6: Estimated Stone Chip to be Removed from Haul Road(s)

Development Scenario	Volume (m3) per haul road	Volume (m3) for 2 haul roads	Volume (m3) of surplus
SEP and DEP alone	123,000	N/A	123, 000
SEP and DEP – concurrent	123,000	N/A	123, 000
SEP and DEP – sequential	123,000	246,000	246, 000

76. Any surface vegetation removed as part of excavation works would be separately stockpiled and sent for treatment at a local waste facility.

17.2.5.2.3 Construction Compounds

77. There would be a total number of nine temporary construction site compounds along the onshore cable corridor, comprising one main construction compound and eight secondary construction compounds (two with CBS batching, six without CBS batching), this would be the same for both the SEP and DEP in isolation and concurrently scenario options. For SEP and DEP sequentially, the number of compounds would be nine per project, with the same breakdown of main and secondary compounds.

78. The main construction compounds will have an estimated area of 30,000m^2. The secondary construction compounds will have an estimated area of 7,500m^2 for compounds with CBS batching and 2,500m^2 without CBS batching. It is anticipated that any soil stripping would be re-instated so no waste would be generated.

79. Existing hard standing would be used for the compounds where available. Where the hard surfacing is removed it is assumed this would be waste material. Assuming a depth of 0.35m the volume of waste hardstanding would be 10,500m^3 for main construction compounds, 2,625m^3 for secondary construction compounds with CBS batching and 875m^3 for secondary construction compounds without CBS batching. A total of 20,820m^3 of hard standing material for all 9 compounds would be produced for SEP or DEP in isolation and concurrently, as well as per project for SEP and DEP sequentially.

80. The construction compounds will each have offices and welfare facilities for workers so will generate routine general wastes and recyclables as well as sewage and wastewater from the toilet facilities. Small quantities of these wastes would be produced while the compounds are being used, further estimates of the amounts would be included in the SWMP and CoCP.

81. Small quantities of other hazardous wastes such as batteries, used oil filters, used oils and medical wastes from the site first aid station would be produced and details of storage locations at the specific sites would be detailed in the SWMP.

82. The trenchless crossings compound would be 1,500 – 4,500m^2, the number of trenchless crossings (HDD) required is 62 with an additional nine potential trenchless crossings. Quantities of drilling wastes would be produced from these activities that will require management and offsite disposal. Estimates and timings of generation would be included in the SWMP.

17.2.5.3 Onshore Substation

83. An onshore substation would be constructed to accommodate the connection of both SEP and DEP to the transmission grid. If only one project comes forward the substation would be 3.25ha in size. If both SEP and DEP are taken forward a single substation would be constructed to accommodate both connections and would be 6.00ha in size.

84. To install the substation foundations a certain amount of 'cutting' and 'filling' of soil would be required (i.e. soil removed from the site may be used to fill in or landscape the site after foundation installation). Topsoil and subsoil generated from site preparation works at the onshore substation would be retained on site where possible to be used in the site restoration and landscaping.

85. A temporary working area would be established adjacent to the substation prior to the start of the installation works and would be reinstated once all construction has been completed.

86. Estimates of the amount of soil material that would be excavated from the substation footprint are provided in **Table 17.2.7**. This material would be removed as a waste from the site.

Table 17.2.7: Estimated Soil Wastes from Substation Base

Development Scenario	Volume (m^3) of surplus
SEP and DEP alone	11,250
SEP and DEP – concurrent	22,500
SEP and DEP – sequential	22,500

17.2.5.3.1 Substation Construction Compound

87. A temporary compound would be required as part of the substation construction works. The construction compound for both the SEP and DEP in isolation and concurrently scenario options would occupy an area of 10,000m^2. A second construction compound would also be required for the permanent access road. The compound would occupy an area of 2,500m^2. A total volume of 4,875m^3 of material would be excavated for both compounds for each scenario. Further details of the estimated quantities of wastes would be developed in the SWMP.

17.2.5.3.2 Site Workers

88. It is estimated that there would be between 730 – 1,730 full-time equivalent (FTE) jobs per annum during the construction, installation and commissioning of the onshore infrastructure, dependant on construction scenario and maximum generation capacity (see **Chapter 27 Socio-Economics and Tourism**). These operatives will produce a range of non-hazardous wastes during the construction programme, including general waste and toilet waste at the welfare facilities within the site temporary works areas or mobilisation areas. General waste is considered similar in composition to solid domestic waste i.e. dry recyclables, such as paper and cardboard, plastic, glass, and food waste. Small quantities of these wastes would be generated, further details of the quantities and forecast rate of generation would be developed in the SWMP.

17.2.5.3.3 Other Construction Wastes

89. Almost all of the waste produced during the construction phase concerns excavated arisings. However other non-hazardous and hazardous wastes would be produced during the construction process, particularly in the temporary works areas, including waste wood, waste metal packaging, waste oils, solvents, paints, and other ad hoc hazardous wastes. The quantity of these wastes is relatively small and would be dependent on the final design and chosen construction methodologies. It is anticipated that wastes produced along the construction corridor, would then be transferred back to the nearest works compound for temporary storage pending removal by a registered waste carrier in accordance with the waste duty of care. Further details and estimates would be developed in the SWMP.

17.2.5.4 Construction Waste Management Measures

90. This section describes the measures that can be implemented to eliminate or reduce the anticipated quantity of waste sent to landfill by implementing the waste hierarchy. These measures would increase reuse; recycling or recovery opportunities, thereby reducing the effect of significant environmental impacts. The waste management measures for the construction phase are split in the section below, into those that can generally be applied to one or more waste type; and those that are applied to specific waste streams.

91. A SWMP would be prepared before construction starts to record any decisions given to materials resource efficiency when designing and planning the works. Any assumptions on the nature of SEP and DEP; their design; the construction method or materials employed, to minimise the quantity of waste produced on site; or maximise the amount of waste reused, recycled, or recovered, would be captured within the SWMP.

92. The SWMP would provide information on each waste type that is expected to be produced in SEP and DEP with the appropriate EWC code and description for each waste type. It will provide an estimate of the quantity of each type of waste and the proposed waste management option for each waste produced (i.e. re-use, recycling, recovery, or disposal; on or off-site).

17.2.5.4.1 General Waste Management Measures

93. There are certain principles of waste management that can be applied to most wastes that would be created during the construction phase. These are:

- Adhere to waste legislation for storage and handling on-site; and ensure that the relevant regulatory controls have been applied to the reuse, recycling, or recovery of waste on-site.
- No waste from SEP and DEP shall be deposited outside the DCO boundary, unless it is at a facility that holds a valid environmental permit or suitable authorised exemption. Off-site waste management facilities are legally obliged to operate under an environmental permit (or an authorised exemption), which is in place to ensure that the site is operated in a manner to prevent emissions causing harm to human health or the environment.
- Ensure that those who remove waste from site have the appropriate authorisation (i.e. are registered waste carriers); and those facilities that receive waste from the site hold a valid environmental permit or authorised exemption.
- Allocate space on site for the storage of waste materials and ensure that storage areas and containers are clearly labelled (appropriate signage) so site workers know which wastes should be put there. Paved areas/impermeable surfaces may be required, as deemed necessary, to prevent direct contact with the ground.
- Hazardous waste must be stored separately from non-hazardous wastes to avoid contamination.
- Provide separate containers for dry recyclables, such as paper and cardboard, plastic, glass, wood, and metal at welfare facilities within temporary works areas. This would encourage recycling and increase the potential value of the recyclable items by avoiding contamination.
- Monitor the actual quantities of wastes produced during construction and update the SWMP to allow comparison with waste arisings estimated prior to construction. Record the proposed waste management option (e.g. reuse on site, recycle off-site, or dispose off-site) for each waste produced.

- All wastes that are removed off site would be described on a waste transfer note or hazardous waste consignment note (as appropriate) that tracks the movement of the waste to the specified disposal or recovery facility.
- The appointed contractors should identify appropriate staff that are responsible for waste management; and ensure that all contractor staff are aware of the appropriate reuse, recovery, or disposal routes for each waste.

94. These measures would promote sustainable waste management practices by maximising waste prevention, re-use, recycling, and recovery opportunities for material destined for offsite waste management. This would actively discourage sending waste to landfill and would promote the waste hierarchy, which is a legal requirement. These measures would be incorporated into the final CoCP for SEP and DEP.

17.2.5.4.2 Waste-Specific Management Measures

95. It is anticipated that some of the excavated soil would be retained on site for reuse as general fill as part of the cut and fill balance associated with the construction process. Any excavated soil that is surplus to requirements would be sent for reuse or recovery, with inert landfill being the least favourable option.

96. Effective stockpile management would be essential within each location. It would maximise the amount of material that can be beneficially reused on site. As the site is largely greenfield, there are two proposed approaches for the use of excavated material within the development:

- Use of the exclusion from the rWFD; or
- Use of the CL:AIRE Code of Practice (CoP).

97. The use of naturally occurring, uncontaminated material is excluded from the scope of the waste regulatory framework according to very specific circumstances. This is because of Article 2(1)(c) of the rWFD, which states that "uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material would be used for the purposes of construction in its natural state on the site from which it was excavated" is excluded from the scope of the rWFD. The use is not subject to any waste regulatory controls if it can be demonstrated that the use is recovery. Overarching principles of rWFD must be adhered to. These are:

- "… take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment and, in particular:

  (a) Without risk to water, air, soil, plants, or animals;

  (b) Without causing a nuisance through noise or odours; and

  (c) Without adversely affecting the countryside or places of special interest."

98. The exclusion does not apply to material removed from the site.

99. The rWFD does not define 'uncontaminated'. However, the Environment Agency has a strict interpretation based on environmental risk: "At its most basic or general, in this context, 'contamination' means the presence of substances in soil that produce a risk of harm or pollution. In the Environment Agency's opinion, the presence or absence of "contamination" has to be assessed on a site-specific basis having regard to a risk assessment e.g. some soil may not be considered contaminated for one land use but may be for another. It is not just a matter of what levels of substances are present within a soil but where and how that soil is used."

100. Therefore, a risk assessment would be required, which is one of the fundamental requirements of the CL:AIRE CoP. By using the exclusion, it is recommended that the principles of the CoP are followed (including the use of Materials Management Plans (MMP)) but without the formal signoff.

101. The CoP is anticipated to provide the framework for the reuse of the remaining excavated material and provides principles that allow the excavated material to cease to be waste when used. The CoP can also apply to the use of contaminated material (including excavated material classified as hazardous waste – see below), where an appropriate risk assessment demonstrates that there would be no unacceptable level of risk to human health or the environment in the proposed context of use.

102. The CoP is supported by the Environment Agency and is subject to self-regulation, via the use of an independent assessment by a Qualified Person for sign-off. The Qualified Person is a person that fulfils the required experience, qualifications and professional membership criteria set by CL:AIRE. The CoP sets out the principles for achieving a non-waste status by setting a risk-based approach when excavated material is used within a development. The principles are:

- The proposed use of the material must not cause any harm to human health or the environment.
    - A risk assessment for the specific end use would be required following the principles defined in Environment Agency Land Contamination Risk Management (Environment Agency, 2021b) guidance (this is an update to the former Environment Agency Model Procedures for the Management of Land Contamination, Contaminated Land Report 11 (CLR11)). This would find out whether any contaminants from anthropogenic and/or natural sources present an unacceptable level of risk to human health, controlled waters, ecosystems and/or the built environment, based on the available pathways and receptors. If the level of risk is unacceptable after treatment, the CoP cannot apply to the material, therefore, it would be a waste and an environmental permit would be required to allow the reuse of the material.
- The excavated material is suitable for its proposed use.
    - This would consider the chemical and geotechnical requirements of the material in relation to a specification defined for their end use.
- The excavated material must not require further treatment prior to use.
    - The material must be suitable for use in all respects without treatment. If it requires treatment, it is waste.

- The use of the excavated material is certain.
    - The holder must be able to demonstrate that all of the material would be used, and that use is a certainty, not a probability. The use of the excavated material must form part of the final design, so it can be clearly identified where in SEP and DEP the material would be used; and how much would be used. This requires a MMP to be prepared to show how and where all materials on the ground are to be dealt with; and a tracking system to monitor any waste/material movements; and also, contingency measures must be defined, i.e. who takes responsibility and what happens in the event that the material is not suitable for use.
- Only a sufficient quantity of material would be used.
    - The material must be destined for a defined purpose, which is defined in the SEP and DEP design. The quantity of material required for that purpose must be known prior to construction. If excess material is deposited to undertake that purpose this is an indication that it is being discarded and it would be waste.

103. The benefit of the CoP is that an environmental permit is not required where the principles can be met; and therefore, this promotes waste reduction, because the material ceases to be waste when it is used. These measures would promote on-site recovery and reduce the amount of waste on-site.

104. A proportion of the excavated non-hazardous material may not be suitable for reuse due to the presence of large rocks/stones or fibrous material. This material would be stockpiled separately for off-site management in accordance with the waste hierarchy.

Dry Recyclables from Site Workers

105. Site workers will create waste during routine refreshment and lunch breaks at site welfare facilities. In terms of the waste that would be produced on site from site workers in the temporary office locations and in the site temporary works areas, this is similar in composition to mixed municipal waste. Space should be made available to provide receptacles to collect different waste streams and allow the separate collection of dry recyclables from residual waste.

106. Segregation of the different streams of plastic and metal cans waste would maximise opportunities for recycling. Card and paper should be separately collected. Glass should be separated into different receptacles where possible. These measures would ensure that the maximum amount of waste is diverted for reuse, recycling, and recovery. The food waste should also be separately collected and sent for anaerobic digestion.

107. All receptacles for contractor waste should be clearly labelled and have lids to prevent wind-blown litter. Frequent collections of waste should be arranged to ensure that quantities on site are within the capacity of one skip and waste is not retained on site for long periods to reduce scavengers and vermin; and to reduce odour issues.

108. The remaining residual waste should be sent to an off-site materials recycling facility. It should be noted that the level of recycling/separate collection would be dependent on the amount of space at the site temporary works and availability of different types of container; and waste management and recycling policies introduced by the Contractor.

Excess or Off-Spec Materials

109. Timely procurement and buying only the required amount of material should ensure that the material is delivered at the time when it is needed and only in sufficient quantities. This would prevent waste from unused or spoiled items because of bulk purchasing.

110. Ensure that perishable materials are stored so that they are protected from the local climate. Any damaged or off-specification material should be immediately returned to the supplier where possible, which would reduce the amount of waste held on site. These measures will reduce the amount of waste generated.

Metal Wastes

111. Metal waste (i.e. off-cuts and scrap metal that cannot be reused) should be collected in containers/skips or stored in an allocated area and removed off site for recycling.

Packaging

112. To minimise the effects of packaging, suppliers should be required to take back any packaging associated with their products. This would assist the suppliers in fulfilling their own producer responsibility obligations under Packaging Waste Regulations 2007 (as amended).

113. Packaging materials that cannot be returned should be kept for on-site use (e.g. use of pallets for storage). Any residual packing that cannot be used on site should be segregated into distinct dry recyclable waste streams and sent for recycling off-site. No waste packaging would be landfilled.

Hazardous Wastes

114. Empty fuel or oil drums should be retained for reuse on site for storing waste oil where possible. Those that cannot be retained should be sent to a drum reconditioning facility to enable the container to be prepared for re-use. Damaged drums should be sent for recycling.

115. Hazardous materials should be stored securely, away from non-hazardous or incompatible materials. Small items of hazardous waste should be prevented from being disposed of in general waste skips to avoid contamination. Hazardous material should be collected frequently to minimise the total volume on site at any one time.

Contaminated Excavated Material

116. **Appendix 17.1** – **Land Quality Desk Study and PRA Report** states that some of the area within the PRA onshore survey area has been subject to anthropogenic influence including railway land; potentially infilled land, sewage works, airfields and military camps. As such, there could be areas of contamination within the PRA onshore survey area. There are also potentially contaminative areas within 250m of the onshore survey area including railway land; brick works; potentially infilled land/ refuse sites; airfield and military camp; electricity substation; and filling station. An intrusive site investigation has not been undertaken that would determine the current nature and extent of contamination within the onshore project area. Therefore, specific locations of contamination hotspots have not been identified and a precautionary approach should be adopted, which assumes that some contaminated material would be encountered.

117. A watching brief should be maintained during construction, in accordance with the CoCP and any excavated material that is suspected of contamination (e.g. because of staining or odour) should be stockpiled separately from any other stockpiled material; and be sampled for analysis to determine the classification (i.e. hazardous or non-hazardous) and potential risk associated with the material.

118. Any excavated material that is found to be contaminated (including material classified as hazardous) should be assessed against the principles of the CoP and reused where there is a need for the material; and it is demonstrated to be suitable for use. This would reduce the amount of material on site that is waste.

119. Any material found to be hazardous and unsuitable for reuse on site should be sent off-site. Surplus hazardous material should be sent to a soil treatment facility holding a valid environmental permit that authorises treatment, where it can be treated to remove or reduce the levels of contamination to a level acceptable for recovery of the material. This would reduce the amount of hazardous waste from the facility going to landfill (which would have to be exported out of the region if going direct to hazardous waste landfill), and would promote the waste hierarchy and proximity principle, where such facilities are available within the region.

120. If any excavated material is classified as hazardous and is required to be landfilled because it cannot be treated for recovery, further testing would be carried out to ensure that it meets the Hazardous Waste Acceptance Criteria (WAC) prior to landfill disposal outside of the region.

17.2.6 Operational Phase: Waste Types and Estimated Quantities

17.2.6.1 Operational Waste Arisings

17.2.6.1.1 Onshore Cable Corridor

121. The buried cables would be insulated and protected; however, occasional routine maintenance works would still be required during the operational phase. In the event of a cable failure, it may be necessary to excavate around the cables and replace/repair the faulty cable along limited stretches. Limited waste arisings are anticipated in accordance with this activity relating to excavated material and faulty cable.

122. Waste cable would be assessed and reused if possible; or would be recycled if not – there is an active metal recycling market in the UK and the cables contain high-value recyclable materials. Waste excavated material that cannot be returned to the trench would be sent for off-site waste management in accordance with the waste hierarchy.

17.2.6.1.2 Onshore Substation

123. The servicing of equipment in the onshore substation is likely to give rise to small quantities of liquid hazardous waste (used oil, solvents, paints etc.), solid hazardous waste (oil-contaminated wipes, absorbent, and some specialist electrical equipment and batteries etc.) and non-hazardous waste (packaging, cables, metal waste, plastic waste, waste electrical and electronic equipment (WEEE).

124. The onshore substation would be unmanned, however due to the requirement for general ad hoc maintenance, personnel/maintenance engineers would visit the site. Small amounts of general waste may be generated.

125. Currently, there is insufficient information regarding the specific operational activities that would generate waste to predict the quantities of waste that are likely to be produced. However, in addition to the principles identified for non-hazardous and hazardous construction wastes; there are general principles that would need to be followed to ensure effective management of operational waste arisings. These are provided below.

17.2.6.2 Operational Waste Management Measures

17.2.6.2.1 Duty of Care

126. Personnel generating waste from the servicing and maintenance of the onshore cable corridor and onshore substation would be under a legal obligation to comply with the waste duty of care to ensure that they handle waste safely and in compliance with the appropriate regulations (Defra, 2018c).

127. The duty of care involves making sure that the waste has been described properly and that all of the properties associated with the waste are known; and to ensure that persons involved in the transfer of waste hold the necessary authorisation to do so.

17.2.6.2.2 Hazardous Waste

128. Servicing and maintenance personnel would be required to know the difference between hazardous waste and non-hazardous waste. All hazardous waste must be segregated from non-hazardous wastes or other non-waste materials. All hazardous wastes must be accompanied by a hazardous waste consignment note when removed from site.

17.2.7 Decommissioning Phase

17.2.7.1 Cable Corridor and Infrastructure

129. No decision has been made regarding the final decommissioning policy for the onshore cables, as it is recognised that industry best practice, rules and legislation change over time. It is likely that the onshore cables would be removed from the ducts and recycled, with the ducts capped and sealed then left in situ. The decommissioning methodology cannot be finalised until immediately prior to decommissioning but would be in line with relevant policy at that time.

17.2.7.2 Onshore Substation

130. In relation to the onshore substation, the programme for decommissioning is expected to be similar in duration to the construction phase. The detailed activities and methodology would be determined later within SEP and DEP lifetime, but are expected to include:

- Dismantling and removal of outside electrical equipment from site located outside of the onshore substation buildings;
- Removal of cabling from site;
- Dismantling and removal of electrical equipment from within the onshore substation buildings;
- Removal of main onshore substation building and minor services equipment;
- Demolition of the support buildings and removal of fencing;
- Landscaping and reinstatement of the site (including land drainage); and
- Removal of areas of hard standing.

131. Whilst details regarding the decommissioning of the onshore substation are currently unknown, it is anticipated that the impacts would be similar or less than to those during construction.

132. The decommissioning methodology would need to be finalised nearer to the end of the lifetime of SEP and DEP to be in line with current guidance, policy, and legislation at that point. Any such methodology would be agreed with the relevant authorities and statutory consultees. The decommissioning works could be subject to a separate licencing and consenting approach.

133. Decommissioning of the onshore substation is likely to create significant quantities of non-hazardous and inert construction and demolition waste, mainly comprising excavated hardstanding, building waste and excavated soil. Furthermore, the dismantling of power equipment will give rise to electrical and electronic wastes stream, including cables. Options to reuse/refurbish or recycle these wastes would be explored in line with guidelines and recommendations in force at that time.

17.2.8 Regional Waste Management Facilities

135. The regional waste management facilities for the East of England have been identified that could potentially receive project generated wastes. Data published by the Environment Agency for the waste sites throughout the East of England and specifically in Norfolk and the neighbouring counties have been presented in **Table 17.2.8** to **Table 17.2.11**.

136. The data in **Table 17.2.8** to **Table 17.2.11** inclusive confirms the widespread availability of a range of types of waste management facilities within East of England, based upon the most current published data set (2020). This provides an indication of whether the estimated waste types from SEP and DEP can be managed within the region in accordance with the proximity principle (i.e. managing wastes as close to the source of production as possible).

137. Specific waste management sites have not been identified at this stage as they would be identified as part of the development of the SWMP for the construction works, as noted in **Section 17.2.5.4**.

17.2.9 Availability and Capacity of Regional Facilities

138. The landfill capacity in Norfolk and surrounding counties is presented in **Table 17.2.9** which confirms that large capacities of both non-hazardous and inert waste are available to the projects. The data in **Table 17.2.10** indicates there is incineration capacity in the neighbouring counties of Suffolk and Cambridgeshire, where non-hazardous or hazardous wastes are required to be disposed of at these facilities.

139. The information shows that there are numerous waste management facilities providing a wide variety of waste management options within the local area. **Table 17.2.11** indicates the number of regional waste treatment and recycling sites that can be utilised by the project. The closest permitted sites would be identified by the Waste Contractors responsible for managing the wastes, as detailed in the CoCP.

140. The current overall capacity data means that these facilities are likely to be capable of managing all of the of the wastes requiring off-site management that are predicted to be generated by SEP and DEP during construction and operation.

141. The local and regional waste management capability sets the baseline condition of waste management infrastructure. A detailed SWMP cover all construction works would be produced post-consent identifying all wastes that would be generated from the project and identifying specific Waste Contractors that would be responsible for the collection and transfer of all waste streams and all specific local waste management facilities that would be used to treat or dispose of SEP and DEP generated wastes.

Table 17.2.8: Number of Waste Management Facilities in East of England (2020)

Site type	Status	East of England
Landfill	Number of sites with an environmental permit at end 2020	104
	Number of sites that accepted waste in 2020	51
Land Disposal	Number of sites with an environmental permit at end 2020	64
	Number of sites that accepted waste in 2020	26
Incineration	Number of sites with an environmental permit at end 2020	17
	Number of sites that accepted waste in 2020	9
Transfer	Number of sites with an environmental permit at end 2020	338
	Number of sites that accepted waste in 2020	269
Treatment	Number of sites with an environmental permit at end 2020	346
	Number of sites that accepted waste in 2020	289
Metal Recovery	Number of sites with an environmental permit at end 2020	270
	Number of sites that accepted waste in 2020	148
Use of Waste	Number of sites with an environmental permit at end 2020	2
	Number of sites that accepted waste in 2020	-

Total	Number of sites with an environmental permit at end 2020	1,141
	Number of sites that accepted waste in 2020	792

Source: Environment Agency, 2021c

Table 17.2.9: Remaining Landfill Capacity in the East of England: 2020 (000s cubic metres)

Landfill Type	Sub-Region						EAST OF ENGLAND
	Bedfordshire	Cambridgeshire	Essex	Hertfordshire	Norfolk	Suffolk	
Hazardous Merchant	-	-	-	-	-	-	-
Hazardous Restricted	-	-	-	-	-	-	-
Non-Hazardous with SNRHW cell*	-	1,845	-	-	-	3,401	5,246
Non-Hazardous	-	6,424	8,973	64	5,030	-	20,491
Non-Hazardous Restricted	-	-	1,777	-	-	-	1,777
Inert	683	4,501	6,496	9,109	998	3,193	24,980
Total	683	12,770	17,246	9,173	6,028	6,594	52,494

*Some non-hazardous sites can accept some Stable Non-Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity of the site.

Source: Environment Agency, 2021c

Table 17.2.10: Incineration Capacity in East of England: 2020 (000s tonnes)

Incineration Type	Sub-Region						EAST OF ENGLAND
	Bedfordshire	Cambridgeshire	Essex	Hertfordshire	Norfolk	Suffolk	
Animal By-Product	438	-	-	-	550	160	1,148
Animal Carcasses	-	-	-	-	-	-	-
Clinical	-	5	-	-	-	9	13
Co-Incineration of Hazardous Waste	-	-	-	-	-	-	-
Co-Incineration of Non Hazardous Waste	-	-	-	-	-	-	-
Hazardous	-	-	-	-	-	-	-
Municipal and/or Industrial & Commercial	-	85	-	113	-	269	467
Sewage Sludge	-	-	-	-	-	-	-
Biomass/Waste Wood	-	-	490	-	-	-	490
Total	438	90	490	113	550	438	2,118

Source: Environment Agency, 2021c

Table 17.2.11: Transfer, Treatment, and Metal Recycling Site Inputs in East of England: 2020 (000s tonnes)

Site Type		Region	ENGLAND
		East of England	
Transfer	Hazardous Waste	997	6,302
	HIC	2,823	29,173
	Clinical	180	594
	Civic amenity site	474	4,448
	Non-biodegradable	308	2,055
Total		4,782	42,572
Treatment	Material recovery	1,469	11,033
	Physical	4,021	39,652
	Physico-chemical	933	5,611
	Chemical	1,606	2,138
	Composting	790	4,770
	Biological	1,906	23,635
Total		10,725	86,839

Site Type		Region	ENGLAND
		East of England	
Metal Recycling	Vehicle depollution	329	1,883
	Metal recycling site	1,786	12,429
Total		2,115	14,312

Source: Environment Agency, 2021c

17.2.10 Conclusion

17.2.10.1 Construction Phase

142. Excavated material forms the majority of all waste arisings. Most of this material is likely to be inert or non-hazardous because the onshore project area is largely greenfield. Any excavated material that is not suitable for use on site or is surplus to requirements for use for construction purposes would be sent off-site in accordance with the waste hierarchy. Options for reuse or recovery, for example to a soil conditioning facility; or beneficial use as restoration material at a local landfill, would be prioritised to ensure that the amount of waste excavated material being disposed to landfill is reduced to an absolute minimum.

143. Containers would be provided at construction compounds to collect different waste streams and allow the separate collection of dry recyclables. Segregation of the different waste streams would ensure that the maximum amount of waste is diverted for reuse, recycling, and recovery.

144. There are sufficient facilities within the region to recycle or treat ad hoc hazardous wastes (such as waste oils etc.).

17.2.10.2 Operational Phase

145. Limited operational wastes are expected to be generated because of occasional routine maintenance and servicing works at the onshore cable corridor and onshore substation.

146. Although the onshore cable corridor and onshore substation would be unmanned, personnel/maintenance engineers would be required to visit the site. Small amounts of solid domestic waste would be generated. Wastes produced during operation phase would be managed in accordance with the general principles of the waste duty of care and suitable waste management plans and procedures would be developed.

17.2.10.3 Decommissioning Phase

147. No decision has been made regarding the final decommissioning policy for the onshore cables, as it is recognised that industry best practice, rules and legislation change over time. It is likely that the onshore cables would be removed from the ducts and recycled, with the transition pits and ducts capped and sealed then left in situ.

148. Decommissioning of the onshore substation is likely to create significant quantities of non-hazardous and inert construction and demolition waste, mainly comprising excavated hardstanding, power equipment and cables, building waste and excavated soil.

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