

Sea Link

Environmental Impact Assessment Scoping Report
Volume 1 Main Text
Part 2 Suffolk Onshore Scheme

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nationalgrid

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2.1 Evolution of the Suffolk Onshore Scheme

2.1.1 Introduction

2.1.1.1 The current stage of Project design is the result of an iterative process that commenced at project inception when the initial need to reinforce the network in the South East of England was identified in 2019.

2.1.1.2 **Part 1, Chapter 3, Main Alternatives Considered** describes National Grid's approach to options appraisal and summarises both the strategic options that have been considered for the Project as well as the routeing and siting process. This chapter provides a more detailed summary of the routeing and siting appraisal relevant to the evolution of the Suffolk Onshore Scheme from the selection of the preferred strategic option to the Suffolk Onshore Scheme Scoping Boundary as illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

2.1.1.3 This chapter should be read in conjunction with:

- **Part 1, Chapter 3, Main Alternatives Considered;**
- **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;** and
- **Part 4, Chapter 1, Evolution of the Offshore Scheme.**

2.1.1.4 This chapter is supported by the following figure:

- **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme.**

2.1.2 Network Connection Points

2.1.2.1 The preferred strategic option identified the Sizewell area as the area on the network the Project was required to connect, in order to meet the Needs Case as described in **Part 1, Chapter 1, Introduction** and as described in **Part 1, Chapter 3, Main Alternatives Considered**. Three potential points of connection were identified within the Sizewell area, and these were appraised as part of the routeing and siting appraisal. These connection points are illustrated on **Figure 1.3.4 Suffolk Network Connection Points** and were:

- the existing Sizewell B substation or the new Sizewell C substation (which forms part of the proposed Sizewell C Nuclear Power Station Project)
- the proposed Friston substation (which forms part of the Proposed Scottish Power Renewables East Anglia One North and East Anglia Two Offshore Wind Farm Projects), or
- a new connection point directly onto the existing 400kV overhead lines within proximity to the Sizewell area.

2.1.2.2 These were used as the basis for defining the routeing and siting study area in Suffolk.

2.1.3 Study Area

2.1.3.1 The routeing and siting study area in Suffolk extended from Hollesley in the south to Dunwich in the north along the Suffolk coast, and, inland to Wickham Market. The routeing and siting study area is illustrated on **Figure 1.3.1 Routeing and Siting Study Area**.

2.1.4 Landfall Areas of Search

Areas of Search

2.1.4.1 Five landfall areas of search were initially identified in Suffolk. These are illustrated on **Figure 1.3.2 Suffolk Landfall Areas of Search**. The southernmost area of search (S1) was identified to the south of Aldeburgh, north of the Alde and Ore River. A second area of search was identified between Aldeburgh and Thorpeness (S2). A third area of search was identified between Thorpeness and Sizewell (S3). This area was further split down into two sub areas, south (S3) and north (S3N). A fourth area (S4) at Sizewell and the northern most area of search was identified to the north of Sizewell, south of Minsmere (S5).

Summary of Appraisal Outcomes

Terrestrial constraints

2.1.4.2 All five landfall areas of search are within the Suffolk Coasts and Heaths AONB which was unavoidable within the study area.

2.1.4.3 Landfall area of search S1 is located to the south of Aldeburgh and the north of the Alde and Ore River. The Alde and Ore River is located adjacent to the south of this landfall area of search and is designated as the Alde-Ore Estuary Ramsar, SPA and SSSI and the Alde-Ore & Butley Estuaries SAC. These designations are avoidable within this landfall area of search however they would need to be crossed by any onward terrestrial routeing from this landfall. The whole of this landfall area of search is within Flood Zones 2 and 3 and construction within the flood zone could not be avoided. Access to this landfall area of search is also limited and would likely need to be taken through Aldeburgh.

2.1.4.4 Landfall area of search S2 is located to the north of Aldeburgh and south of Thorpeness. The whole of the landfall area of search is designated as Leiston – Aldeburgh SSSI and North Warren RSPB Reserve. These designations are unavoidable within this area of search, but the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations) could be used to avoid potential significant effects. The majority of the landfall area of search is within Flood Zone 2 and 3, depending on the installation technique, construction works within these zones are potentially avoidable.

2.1.4.5 Landfall area of search S3 stretches from Thorpeness in the south to Sizewell in the north and was broadly split into two, S3 in the south from Thorpeness to Beach View

Holiday Park and S3N to the north of Beach View Holiday Park to Sizewell Gap Road. The whole of the intertidal area within S3 is designated as Leiston – Aldeburgh SSSI, however within this landfall area of search this designation is very narrow and likely to be avoidable with the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations). A section of North Warren RSPB Reserve is located in the south of this landfall area of search but is likely to be avoidable. S3N is wholly outside of the Leiston – Aldeburgh SSSI. There are small areas of Flood Zone 2 and 3 across both S3 and S3N but these areas are localised and likely to be avoidable.

- 2.1.4.6 Landfall area of search S4 is located to the north of Sizewell Gap Road at Sizewell. There are no terrestrial designations for ecological conservation within the intertidal area however the landfall area of search is significantly constrained by the existing Sizewell B Nuclear Power Station.
- 2.1.4.7 Landfall area of search S5 is located to the north of existing Sizewell Nuclear Power Station and south of Minsmere New Cut drainage channel. The whole of the intertidal area and immediate terrestrial area is designated as Minsmere-Walberswick Ramsar and SPA, Minsmere to Walberswick Heaths & Marshes SAC and SSSI and Minsmere RSPB Reserve. These designated sites are unavoidable within this area of search but the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations) could be used to avoid potential significant effects. A second crossing of the Minsmere to Walberswick Heaths & Marshes SSSI and Minsmere RSPB Reserve would also be required for any onward terrestrial routeing. The majority of this landfall area of search is within Flood Zones 2 and 3 and construction within the flood zone could not be avoided. Access to this landfall area of search is also very limited and likely to require a long temporary access road.

Summary of relevant marine alignments

- 2.1.4.8 Whilst the immediate offshore landfall area of search at S1 and S2 is outside of the Southern North Sea SAC all marine alignments to the landfall areas of search in Suffolk would need to cross both the Southern North Sea SAC and the Outer Thames Estuary SPA.
- 2.1.4.9 The marine approaches to both landfall area of search S1 and S2 were considered to be relatively unconstrained.
- 2.1.4.10 The marine alignments to landfall area of search S3 was considered significantly constrained due to the presence of rocky reefs comprised of cemented limestone rich shells in the immediate offshore environment. This constraint is reduced at landfall S3N.
- 2.1.4.11 The marine alignments to landfall areas of search S4 and S5 were considered to be more constrained than the other options due to the additional number of offshore crossings that would be required and the potential for interaction with the proposed Sizewell C development.

Overall summary

- 2.1.4.12 Landfall area of search S1 was considered to be relatively unconstrained from a marine approach perspective but terrestrially has access and flood risk constraints and constraints associated with the onward terrestrial routeing.

- 2.1.4.13 Landfall area of search S2 was considered to be relatively unconstrained from a marine approach perspective but terrestrially crosses a wide area designated as SSSI and RSPB reserve.
- 2.1.4.14 Landfall area S3 was considered to be significantly constrained from a marine approach perspective due to the presence of rocky reefs and in the immediate offshore by the proposed export cable route from the East Anglia One North and Two developments. Onshore it was considered likely that the SSSI and RSPB reserve could be avoided through the use of trenchless installation techniques (subject to confirmation through further studies and ground investigations). Offshore the approach to landfall S3N was less constrained due to the presence of the rocky reef but other existing and proposed offshore infrastructure on the approach still pose a constraint. Terrestrially S3N is relatively unconstrained environmentally.
- 2.1.4.15 Landfall area of search S4 was considered to be significantly constrained both on the offshore approach and terrestrially by the presence of the existing Sizewell C Nuclear Power Station development.
- 2.1.4.16 Landfall area of search S5 was considered to be constrained on the marine approach by the number of offshore crossings and the potential interaction with the proposed Sizewell C Nuclear Power Station development and onshore by both European and national designated sites for nature conservation.

2.1.5 Converter Station Option Areas

Option Areas

- 2.1.5.1 Nine converter station option areas were identified within the routeing and siting study area. These were based on the siting parameter of approximately 5km from the network connection point as explained in **Part 1, Chapter 3, Main Alternatives Considered**.
- 2.1.5.2 Due to there being a number of potential network connection points in the Sizewell area, converter station option areas were identified for each connection point, but some option areas provided a connection into more than one of the connection points. Table 2.1.1 lists the option areas appraised for each connection point and a description of the option areas is provided below. The option areas are illustrated on **Figure 1.3.5 Suffolk Converter Site Option Areas**.

Table 2.1.1: Connection points and converter site option areas

Connection point	Converter site option areas
Existing and proposed Sizewell substations	A, B, C, D
Proposed Friston substation	B, C, D, E, F, G, H
New substation along the existing 4Z overhead lines	B, E, F, H, I

- 2.1.5.3 Option Area A is located to the north of Kenton and Goose Hill, to the southeast of Eastbridge. The option area is wholly within the Suffolk Coasts and Heaths AONB, but, was identified as a potential option area, as it is close to the existing Sizewell B Nuclear Power Station and adjacent to the proposed Sizewell C Nuclear Power Station, therefore, providing an opportunity to keep energy infrastructure close together. The option area is adjacent to the Minsmere-Walberswick Ramsar and SPA, Minsmere to Walberswick Heaths & Marshes SAC and SSSI and Minsmere RSPB Reserve.
- 2.1.5.4 Option Area B is located to the east of Leiston and west of the existing Sizewell B Nuclear Power Station. The option area is wholly within the Suffolk Coasts and Heaths AONB, but, was identified as a potential option area as it adjacent to the existing Sizewell B Nuclear Power Station and existing overhead lines, therefore, providing an opportunity to keep energy infrastructure close together. Sandlings SPA, Leiston – Aldeburgh SSSI and North Warren RSPB Reserve border this option area to the south.
- 2.1.5.5 Option Area C is located on the site of the former Leiston Airfield and is bordered to the south by Harrow Lane to the northwest by Theberton Woods. Moat Road runs west to east through the northern half of the option area.
- 2.1.5.6 Option Area D is located to the west of Leiston and is bordered to the northwest by the B1119 and Abbey Road and to the west by the Hundred River. There is a small parcel of Ancient Woodland (Buckles Wood) located within the north of this option area adjacent to Buckleswood Road. There is an area of Flood Zone 2 and 3 on the far western boundary of the option area associated with the Hundred River.
- 2.1.5.7 Option Area E is located to the south of Knodishall and is bounded to the east by the Suffolk Coasts and Heaths AONB, the south by the A1094 Aldeburgh Road and the B1069 (Snape Road) runs southwest to northeast through the centre of the option area. There is a small area of Ancient Woodland at Great Wood located on the eastern edge of the option area and Grove Wood Ancient Woodland is located adjacent to the northwest corner of the option area.
- 2.1.5.8 Option Area F is located to the southeast of Sternfield and west of Friston. An unnamed road linking Church Hill to the A1094 borders the west of the option area and the B1121 borders the option area to the north and northeast. Red Lane and Kiln Lane run west to east through the northern half of this option area. The existing 400kV overhead lines run southwest to northeast through the centre of this option area. The Suffolk Coasts and Heaths AONB is located to the south of the option area, south of the A1094.
- 2.1.5.9 Option Area G is located the southwest of Saxmundham and is bordered to the east by the A12 and the west by Deadmans Lane.
- 2.1.5.10 Option Area H is located to the west of Gromford and is bounded to the south and east by a railway line the west by Langham Road, Racewalk Covert is located to the north of the site. Snape RSPB Reserve is located to the south of the option area, south of the railway line.
- 2.1.5.11 Option Area I is located to the east of Lower Hacheston and is bounded to the north by the A12. The existing 400kV overhead lines and railway line cross the far southeastern boundary of the option area. A small area of Flood Zone 2 and 3 is

located in the northeastern corner of option the option area, associated with the River Ore.

Summary of Appraisal Outcomes

- 2.1.5.12 Of the possible connection points in the Sizewell area, only the Sizewell B substation is currently in existence; all the other proposed connection points would require the installation of a new substation, either proposed through another project in the area or installed as part of this Project. Connecting into the Sizewell B substation would require taking over two of the super grid transformer (SGT) circuits feeding the existing Leiston 132kV substation by connecting into the 400kV circuits feeding the SGTs. This would require the installation of two new 400/132kV SGTs in the converter station site with new 400kV cables connecting into the existing Sizewell B substation and new 132kV cables connecting the SGTs in the converter station with the Leiston 132kV substation. The 400kV cable route to the substation would require either using the corridor allocated to the existing 132kV connection or routeing through Sizewell Marshes SSSI. A connection into either the existing or proposed Sizewell substation would also need to take into account the works to construct the proposed Sizewell C Nuclear Power Station as the works would overlap. This could have programme implications for the delivery of this Project in line with the needs case and to meet the required connection date.
- 2.1.5.13 At the time of the routeing and siting appraisal the Development Consent Order (DCO) that would deliver Friston substation (which is proposed forms part of the Proposed Scottish Power Renewables East Anglia One North and East Anglia Two Offshore Wind Farm Projects) was advanced in the consenting process and it has subsequently received Development Consent.
- 2.1.5.14 A connection into the existing 400kV overhead lines would require a new substation to be built. This was assessed on the basis that it would be co-located within the converter station site option areas and would also require either the existing overhead lines to be diverted into and out of the new substation or a cable route (where economic and efficient) from a new substation to the overhead lines with a cable sealing end compound located adjacent to the overhead lines.
- 2.1.5.15 Converter site option areas A and B are both within the Suffolk Coasts and Heaths AONB but offers opportunities to keep existing and proposed energy infrastructure together. Both areas are also within land which is being used as part of ecological mitigation areas for the proposed Sizewell C Nuclear Power Station. As set out above a connection from either of these sites into either the existing or proposed Sizewell substation was considered to be significantly constrained and a connection into either the proposed Friston substation or a new connection into the existing 400kV overhead lines would likely be required. Site option area A was not identified as a site suitable for either a connection into the proposed Friston substation or the existing 400kV overhead lines due to the distance from this option area to these connection points.
- 2.1.5.16 Converter site option area C was considered to be constrained by the existing access, however the development of the proposed Theberton bypass as part of the proposed Sizewell C development, would alleviate some of these constraints if developed in time.

- 2.1.5.17 Converter site option area D was considered constrained by planned future development plans to the north including the proposed Sizewell C rail head and poor site access along the existing road network that would require routing of traffic through Leiston.
- 2.1.5.18 Converter site option areas E and F both have good access from the A1094 but were considered constrained by the proximity to the Suffolk Coasts and Heaths AONB in terms of the potential for setting impacts.
- 2.1.5.19 Converter site option areas G and H were considered highly constrained by future development plans on the eastern side of the A12 constraining the ability to connect into either the proposed Friston substation and, in the case of option area H, a new connection point on the existing 400kV overhead lines.
- 2.1.5.20 Converter site option area I was not identified for a Sizewell or a Friston connection due to the distance from this proposed connection point so the site would require a new connection point to be established. This option area is also constrained by the length of onshore cable that would be required to connect to any of the landfall areas of search increasing the spread of potential temporary disturbance during construction.
- 2.1.5.21 Due to the existing and proposed energy development within the study area coupled with the proximity of the Suffolk Coasts and Heaths AONB in this locality the environmental and socio-economic appraisal concluded that an underground High Voltage Alternating Current (HVAC) connection would be preferred to an OHL HVAC connection between the converter site options areas and any of the connection points.

2.1.6 Route Corridors

Route Corridors

- 2.1.6.1 Corridors were developed that could connect each of the landfall areas of search to each of the converter station site option areas.
- 2.1.6.2 Within Suffolk this process resulted in 15 corridors being identified:
- five corridors from each of the five landfall areas of search to the four converter station site option areas that could connect into the existing and proposed Sizewell substations (**Figure 1.3.7 Suffolk Terrestrial Route Corridors Sizewell Connection**);
 - five corridors from each of the five landfall areas of search to the seven converter station site option areas that could connect into the proposed Friston substation (**Figure 1.3.8 Suffolk Terrestrial Route Corridors Proposed Friston Connection**); and
 - five corridors from each of the five landfall areas of search to the five converter station site options that could connect into the existing 400kV overhead lines (**Figure 1.3.9 Suffolk Terrestrial Route Corridors New Connection**).

Summary of Appraisal Outcomes

- 2.1.6.3 Within Suffolk none of the corridors avoided designated sites. The Suffolk Coasts and Heaths AONB extends across the full extent of the routing and siting study area and

was therefore unavoidable for any of the 15 corridors that were identified and appraised. Whilst the routing and siting study area was drawn to provide opportunities to avoid designated sites and constraints. The Suffolk Coasts and Heaths AONB extends unbroken from Felixstowe and Harwich in the south to Kessingland in the north. It was not therefore possible to avoid this designation and meet the need case without a significantly longer and indirect route that would not be in accordance with National Grid's statutory duties.

- 2.1.6.4 All three green corridors that connect with the southernmost of the five landfall areas of search S1, south of Aldeburgh, would require an extensive crossing of the Alde-Ore Estuary, which is designated as the Alde-Ore Estuary Ramsar, SPA and SSSI and the Alde-Ore & Butley Estuaries SAC. These corridors would also interact with the same designated sites around the settlements of Iken and Snape. A large proportion of the green corridors is also within Flood Zone 2 and 3 and would require the longest cable route within the Suffolk Coasts and Heaths AONB of all the corridors.
- 2.1.6.5 The three red corridors that connect to the landfall area of search S2, between Aldeburgh and Thorpeness would need to cross a section of the Leiston Aldeburgh SSSI as well as part of the North Warren RSPB Reserve. It is likely trenchless construction techniques (subject to confirmation through further studies and ground investigations) could be used to avoid significant effects.
- 2.1.6.6 The three blue corridors that connect into the southern part of the landfall area of search S3 between Thorpeness and Sizewell would need to cross a section of Sandlings SPA and the Leiston Aldeburgh SSSI and would likely require interaction with the proposed cables routes for the Scottish Power Renewables (SPR) East Anglia One North and East Anglia Two Offshore Wind Farms.
- 2.1.6.7 The three purple corridors connecting into the northern part of this landfall area of search S3N, when considered in isolation, provided an opportunity to avoid sites designated for nature conservation but would entail interaction with the proposed Sizewell C Nuclear Power Station project.
- 2.1.6.8 The three orange corridors connecting to the most northern landfall area of search S5, to the north of Sizewell would need to cross Minsmere-Walberswick Ramsar and SPA, Minsmere to Walberswick Heaths & Marshes SAC and SSSI and Minsmere RSPB Reserve and would entail significant interaction with the proposed Sizewell C Nuclear Power Station project.
- 2.1.6.9 Four pinch-points were identified within the route corridors:
- The first is at a crossing of Leiston Road close to South Warren Golf Course, which would be crossed by all three red corridors connecting to the landfall area of search S2.
 - The second of these is located between the B1353 and Leiston Road and would require cable routes to cross the Sandlings SPA, the Leiston Aldeburgh SSSI, and a section of the golf course, as well as having a pinch-point at the crossing of Leiston Road. This pinch-point would affect the three corridors blue corridors connecting to landfall area of search S3.
 - The third pinch-point is to the south of Aldringham at the crossing of the Hundred River. This area is constrained by the Hundred River itself, the crossing of the B1353 and the B1122, and an area of woodland and properties. In addition, the

proposed cables for the SPR East Anglia One North and Two Offshore Windfarms are proposed to be routed through this same pinch-point. This area would need to be routed through (depending on which converter station site option area) by the three purple corridors connecting to landfall area of search S3N or by all three blue corridors connecting to landfall area of search S3 to avoid the second pinch point.

- The fourth pinch-point is to the northwest of Leiston associated with the offsite works for the proposed Sizewell C Nuclear Power Station including an area which has recently been established for ecological mitigation measures related to the project. This area would need to be routed through (depending on which converter station site option area) by the three purple corridors connecting to landfall area of search S3N.

2.1.7 Identification of the Initial Preferred Option

2.1.7.1 The evolution of the Suffolk Onshore Scheme is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheets 1 to 4.**

2.1.7.2 The connection points, landfall areas of search, converter site option areas, route corridors and nearshore marine alignments considered at the routeing and siting stage are shown on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 1 of 4.**

2.1.7.3 Significant constraints associated with a connection into either the existing or proposed Sizewell substations meant that these options were not preferred. Connecting to a new connection point in the area, with an associated additional substation, was also not preferred as there would be no environmental or socio-economic, technical, or economic benefit over connecting into an existing (where possible) or proposed substation. The proposed Friston substation was therefore identified as the preferred connection point. As a consequence, those converter option areas (area A and area I) which were not identified for a Friston connection were discounted alongside the associated terrestrial corridors. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 2 of 4.**

2.1.7.4 Landfall area of search S4 was identified as being significantly constrained from a terrestrial perspective as no onward terrestrial route corridor was identified from this landfall area of search due to the existing and proposed Sizewell Nuclear Power Stations. The marine approach was also considered to be constrained therefore this option was not taken forward. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 2 of 4.**

2.1.7.5 Whilst the marine alignment to landfall area S1 was relatively unconstrained, the terrestrial green corridor was constrained technically by two large river crossings of the Alde and Ore River which would also require a crossing of the Alde-Ore and Butley SAC in two places and the Alde-Ore Estuary SPA and SSSI in three places. A large proportion of this corridor is within the Flood Zone and this corridor would require the longest route within the Suffolk Coasts and Heaths AONB. Access to this corridor was also considered to be very limited, in particular in the area between the two large river crossings due to the nature and scale of the existing road network. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 3 of 4.**

- 2.1.7.6 The marine approach to landfall area S3 was considered to be significantly constrained by the presence of rocky reefs. Onward terrestrial routeing within the blue corridor would also likely require a crossing of Sandlings SPA and Leighton-Aldeborough SSSI although the potential for significant effects would likely be avoidable through the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations). This is illustrated in **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 3 of 4**.
- 2.1.7.7 The marine approach to landfall S5 was considered to be constrained by the number of crossings offshore. Terrestrially the onshore orange corridor is constrained at the landfall by the presence of both European and national designated sites for nature consideration, albeit it is likely that significant effects could be avoided through the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations). The orange corridor also crosses a large area of the proposed Sizewell C Nuclear Power Station development area which could significantly constrain the ability to route through this area and also have programme implications associated with construction sequencing of the two developments. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 3 of 4**.
- 2.1.7.8 The marine approach to the landfall area S2 has few constraints, however the Leiston Aldeburgh SSSI and North Warren RSPB reserve could not be avoided without the use of trenchless construction techniques (subject to confirmation through further studies and ground investigations) at this landfall. The red terrestrial route corridor from this landfall area of search also includes the pinch-point along Leiston Road. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 4 of 4**.
- 2.1.7.9 The northern part of the landfall area of search S3 (S3N) could avoid the area of rocky reef which significantly constrains the marine approach to S3 but the presence of existing and proposed cables at this landfall area and in the nearshore environment constrain potential marine alignments. The purple terrestrial route corridor connecting to this landfall area of search could avoid the designated sites for ecological conservation but could not avoid either of the two following pinch points. The first being a pinch-point to the south of Aldringham at the crossing of the Hundred River. This area is constrained by the Hundred River itself, the crossing of the B1353 and the B1122, and an area of woodland and properties. In addition, the proposed cables for the SPR East Anglia One North and Two Offshore Windfarms are proposed to be routed through this same pinch-point. The second being a pinch-point to the northwest of Leiston associated with the offsite works for the proposed Sizewell C Nuclear Power Station including an area which has recently been established for ecological mitigation measures related to the project. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 4 of 4**.
- 2.1.7.10 Converter site options area B was constrained as this site is within the Suffolk Coasts and Heaths AONB and overlaps with an area which has been established for the proposed Sizewell C Nuclear Power Station ecological mitigation. Option Area C was considered to be constrained by the existing access. This option area would also result in a significantly longer onshore cable route if landfall area of search S2 and the red corridor was selected. Option Area D was considered to be constrained due to access and the need to route construction traffic through settlements. Option areas G and H were considered to be significantly constrained by the connection from these sites back to the proposed Friston substation. Option areas E and F are both in close proximity to the Suffolk Coasts and Heaths AONB and therefore setting impacts is a

consideration for both. The landscape character of option area F is more open than option area E and option area E provides a greater opportunity to mitigate both through the use of existing and additional screening. Both option areas have good access to the strategic highway network. Option area E would result in a shorter onshore cable route from either landfall area of search S2 and the red corridor or landfall area of search S3N and the purple corridor. This is illustrated on **Figure 2.1.1 Evolution of the Suffolk Onshore Scheme, Sheet 4 of 4**.

- 2.1.7.11 On balance the preferred solution identified was landfall area of search S2 connecting to a converter station site option area E via the red corridor with a connection back to the network through the proposed Friston substation. This is illustrated on **Figure 2.1.2 Suffolk Onshore Scheme Initial Preference**.
- 2.1.7.12 Whilst this option was constrained at the landfall due to presence of terrestrial nature conservation sites it was identified that trenchless installation methods could be used to minimise or avoid potential impacts. However, as further survey work is required to confirm the feasibility of using trenchless techniques at this landfall it was considered prudent to also progress an alternative. This alternative is a landfall within the landfall area of search S3N connection to converter site option area E via the purple corridor with a connection back to the network through the proposed Friston substation. This is illustrated on **Figure 2.1.2 Suffolk Onshore Scheme Initial Preference**.

2.1.8 Stakeholder Feedback and Option Refinement

- 2.1.8.1 Through engagement, Suffolk County Council and East Suffolk District Council emphasised the importance of looking at opportunities to coordinate with the interconnector projects being proposed by National Grid Ventures (NGV) in the area, which would require similar infrastructure.
- 2.1.8.2 The Project has explored the concept of co-locating converter stations, sharing cable corridors and consolidating landfalls and to look at potential challenges and options for consenting a coordinated approach.
- 2.1.8.3 A backcheck and review was undertaken of all potential converter station sites/option areas that were identified independently through both NGV's non-statutory consultation for the Nautilus project and the routeing and siting option appraisal for the Project described above. This backcheck and review considered whether it was feasible for any of the converter option areas to accommodate up to three co-located converter stations and whether there were any additional sites that should be investigated/appraised further for co-location opportunities.
- 2.1.8.4 The landfall areas of search S2, between Aldeburgh and Thorpeness and S3 and S3N, between Thorpeness and Sizewell were revisited, along with the red, blue and purple cable corridors, to understand the feasibility of coordinated landfalls and corridors.
- 2.1.8.5 Seven sites were identified as potentially offering opportunities for coordination, these are illustrated on **Figure 2.1.3 Potential Coordinated Converter Station Sites** and an appraisal was undertaken of these sites in accordance with the National Grid options appraisal methodology described in **Part 1, Chapter 3, Main Alternatives Considered**.

Potential Coordinated Converter Station Sites

- 2.1.8.6 A summary of key considerations for each of the seven sites illustrated on **Figure 2.1.3 Potential Coordinated Converter Station Sites** is described in the following sections.
- 2.1.8.7 Site 1 is contiguous with part of converter option area E and offers good existing screening to the north of the site and good construction access to the strategic road network. It is close to the AONB so setting is a consideration for this site. However, the site offers good opportunities for mitigation in keeping with the existing landscape character. This site offers the shortest overall onshore cable route.
- 2.1.8.8 Site 2 is contiguous with part of converter option area F and whilst being located close to strategic road network in terms of access, in terms of landscape character it is a very open landscape and development of a coordinated solution on this site would likely involve substantial mitigation. Suffolk Coasts and Heaths AONB is adjacent to the southern boundary of this site. The settlement of Sternfield is located to the northwest of the site, Church Common to the southwest of the site and Friston to the east of the site.
- 2.1.8.9 Site 3 is located further from the AONB but in close proximity to the settlement of Saxmundham. There is good existing screening along the western and southern edges of the site, this along with the topography of the local area limits the intervisibility between the settlement and the site. Access to this site is constrained and would need to be routed through the settlement of Saxmundham if taken off the B1119. Opportunity does exist to take temporary construction access from the B1121. This would require construction of a temporary access route and a crossing of the River Fromus.
- 2.1.8.10 Site 4 is contiguous with part of converter option area C and is located further away from the AONB and offers good existing screening and additional screen plating could be developed in keeping with the existing landscape character. Access to this site is challenging however Site 4 has the benefit of the proposed new link road being developed by the proposed Sizewell C Nuclear Power Station albeit the cumulative impact with this development would be a consideration. The site contains the former RAF Leiston Airfield, therefore this non-designated asset would need to be considered further if taken forward for development.
- 2.1.8.11 Site 5 is located approximately 2.5km from the AONB at its closest point. There are smaller settlements which surround the site on the west, south and east although intervening vegetation particularly in the southern part of the site would provide a degree of existing screening. The existing overhead lines are routed to the south of the site, and this is the closest of the proposed sites to the proposed Friston substation development. There are a number of non-designated assets within the site which include potential extensive remains of a roman settlement and villa within the north of the site. Physical impacts to these assets could potentially be avoided if development was to take place in the southern part of the site. A small section of Flood Zones 2 and 3 are located along the eastern boundary of the site associated with the Hundred River although it is likely that these areas could be avoided. This site is located further from the strategic road network and routing construction traffic through settlements is unlikely to be avoidable.
- 2.1.8.12 Site 6 is contiguous with converter option area D and located approximately 1.5km from the AONB at its closet point. The site is located to the west of the settlement of Leiston and north of the settlement of Knodishall. There are a number of woodland

blocks and shelterbelts which do offer some opportunity for existing screening and integration of mitigation planting. There are a number of historical designated assets within the settlements of Leiston and Knodishall but these are well screened by existing vegetation surrounding the assets. Similar to site 5 this site is located further from the strategic road network and routeing construction traffic through settlements is unlikely to be avoidable.

- 2.1.8.13 Site 7 is contiguous with part of converter option area D and located within the Suffolk Coasts and Heaths AONB adjacent to the existing nuclear power stations and the Galloper and Gabbard Offshore Windfarm substations as well as the proposed Sizewell C Nuclear Power Station. Whilst within the designated site, this site does offer the opportunity to keep energy development close together. The settlement of Leiston is located to the west of this site although it is the industrial edge of this settlement closest to this site. Existing planting along the southern boundary of the site also provides good existing screening. Sandlings SPA is adjacent to the southern boundary of this site and Sizewell Marshes SSSI to the northern and western boundaries. The site is currently being used as a reptile mitigation area for the proposed Sizewell C Nuclear Power Station, therefore should this site be developed, this would need to be considered. This is the furthest of the sites from the strategic road network and like Site 4 access is constrained based on the existing road network. The proposed bypass as part of the proposed Sizewell C Nuclear Power Station would reduce potential impacts if in place for the start of construction but the cumulative impacts with the Sizewell C development would need to be considered. A connection back into Friston from site 7 is also technically challenging and an alternative solution would likely be required in terms of connecting into the existing network on the site

Potential for Coordinated Landfalls

- 2.1.8.14 As set out above landfall area of S2 interacts with the Leiston to Aldeburgh SSSI and North Warren RSBP reserve but has minimal constraints on the marine approach and is not constrained by the presence of any other existing or proposed infrastructure.
- 2.1.8.15 As set out above the majority of landfall S3 is significantly constrained in the immediate offshore environment due to the presence of the Coralline Cragg which is an important feature when considering coastal processes. There do exist opportunities to minimise interaction with this feature to the northern and southern ends of the landfall area of search however the southern extent of the landfall is spatially constrained by the proposed Scottish Power renewables (SPR) East Anglia One North and East Anglia Two Offshore Windfarm developments.
- 2.1.8.16 Whilst minimising interaction with the Coralline Cragg compared to S3, the routeing and siting process identified that landfall S3N has constraints associated with existing and proposed onshore and offshore infrastructure. When appraised as a landfall for the Project and as described in the sections above this landfall was identified as alternative to take forward. When considered as coordinated landfall it was identified that whilst landfall maybe achieved with two sets of cables but with significant technical complexity it was considered unlikely/impossible that landfall could be made with three sets of cables due to the space available.
- 2.1.8.17 The appraisal identified that only landfall area of search S2 could potentially deliver a coordinated landfall solution.

Coordinated Terrestrial Route Corridors

- 2.1.8.18 The assessment of the coordinated terrestrial route corridors identified the same constraints as those identified for the red, blue and purple corridors appraised for Project.
- 2.1.8.19 With regards to the four pinch points that were identified and are unavoidable on either the red, blue or purple corridors the third pinch point was identified as not being able to accommodate a coordinated solution. This would affect routes within the blue or purple corridors from landfall S3N depending on the location of the converter station.
- 2.1.8.20 Landfall S2 and the associated red corridor was the only landfall area or search/terrestrial corridor combination that could provide coordinated solution for three projects. It was however identified that the pinch point crossing within this corridor at Leiston Road may require the separation of the circuits over a short length including routeing some of the cables through the Aldeburgh golf course.

Suffolk Onshore Scheme Preferred Option

- 2.1.8.21 Following a back check of the initial preferred option for the Project and taking account of the appraisal findings of a potential coordinated options, Converter Site 1 and Site 3 have been identified as emerging preferences for the Project and sites which could also accommodated coordination with other projects.
- 2.1.8.22 Landfall S2 and the red corridor remains the emerging preference and this option could also potentially provide for a coordinated landfall and cable route with other projects.
- 2.1.8.23 Landfall S3N and the purple corridor remains an alternative option until survey work to determine the installation technique has been completed. However, this option could not facilitate a coordinated landfall or terrestrial cable route to either Site 1 or Site 3.

2.1.9 Suffolk Onshore Scheme Description

- 2.1.9.1 The Suffolk Onshore Scheme comprises of:
- HVAC connection, by underground cable, from the proposed Friston Substation to a converter station site;
 - A new converter station site; and
 - A HVDC underground cable from a new converter station site to a landfall on the Suffolk coast.
- 2.1.9.2 As described above there are currently options for the location of the infrastructure which makes up the Suffolk Onshore Scheme. These locations will be consulted on as part of the Projects non-statutory consultation.
- 2.1.9.3 There are five options in total which are listed below:
- Suffolk Site 1 Emerging Preference – this is illustrated on **Figure 2.1.4 Suffolk Site 1 Emerging Preference**;
 - Suffolk Site 3 Emerging Preference – this is illustrated on **Figure 2.1.5 Suffolk Site 3 Emerging Preference**;

- Suffolk Site 1 Alternative – this is illustrated on **Figure 2.1.6 Suffolk Site 1 Alternative**;
- Suffolk Site 3 Alternative (Option 1) – this is illustrated on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)**; and
- Suffolk Site 3 Alternative (Option 2) – this is illustrated on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)**.

2.1.9.4 The graduated swathes shown on **Figures 2.1.4 to 2.1.8** illustrate the area within the preferred corridors, where, based on the current understanding of baseline conditions the HVAC connection, converter station site and underground HVDC cables are likely to be routed/sited. These will be refined further on the selected option through both technical and environmental surveys and stakeholder and public feedback.

2.1.9.5 For the purpose of this Scoping Report, **Figure 1.1.1 Project Scoping Boundary** and **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary** encompasses all elements shown on **Figures 2.1.4 to 2.1.8**. The technical chapters 2 to 13 have provided a proposed scope for each of the five options. The boundary of each of the five options relative to the Project Scoping Boundary (**Figure 1.1.1 Project Scoping Boundary**) and the Suffolk Onshore Scheme Scoping Boundary (**Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**) is shown the following figures:

- **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**;
- **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**;
- **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**;
- **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**; and
- **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

2.1.9.6 Whilst both sites 1 and 3 have been identified as being able to potentially accommodate coordination with other developments, these other developments would be subject to their own consent and therefore the proposed scope of assessment presented in chapters 2-13 is for the proposed Project as described in **Part 1, Chapter 4, Description of the Project**.

2.2 Landscape and Visual

2.2.1 Introduction

- 2.2.1.1 This chapter presents how the Landscape and Visual Impact Assessment (LVIA) will consider the potentially significant effects on landscape and visual amenity that may arise from the construction and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.2.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.2.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;** and
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**
- 2.2.1.4 This chapter is supported by the following figures:
- **Figure 2.2.1 Topography;**
 - **Figure 2.2.2 Landscape Context and Designations;**
 - **Figure 2.2.3 Landscape Character - National & Regional;**
 - **Figure 2.2.4 Landscape Character - County;**
 - **Figure 2.2.5 Landscape Character – District;**
 - **Figure 2.2.6 Seascape Character – National & Regional;**
 - **Figure 2.2.7 Bare Earth Zone of Theoretical Visibility - Converter Station Site 1;**
 - **Figure 2.2.8 Bare Earth Zone of Theoretical Visibility - Converter Station Site 3;**
 - **Figure 2.2.9 Representative Viewpoint Locations and Screened Zone of Theoretical Visibility - Site 1; and**
 - **Figure 2.2.10 Representative Viewpoint Locations and Screened Zone of Theoretical Visibility - Site 3.**

- 2.2.1.5 Landscape and visual effects are interrelated with other environmental effects but will be assessed separately. Landscape effects associated with the Suffolk Onshore Scheme relate to the changes to the fabric, character and quality of the landscape and how it is experienced. Visual effects relate closely to changes to the landscape, but also concern changes in people's views as a result of the introduction of the Suffolk Onshore Scheme.

2.2.2 Regulatory and Planning Context

- 2.2.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on landscape and visual associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

- 2.2.2.2 At an International and National level, the following legislation is relevant to landscape and visual matters and will be referred to within the LVIA in the Environmental Statement (ES):

- The European Landscape Convention¹.

Planning Policy

National planning policy

- 2.2.2.3 At National level, the following policy is relevant to landscape and visual matters and will be referred to within the LVIA in the ES.

- Overarching National Policy Statement for Energy – EN-1²;
- National Policy Statement for Electricity Networks Infrastructure – EN-5³;
- National Planning Policy Framework⁴; and
- Planning Practice Guidance – Natural Environment⁵.

- 2.2.2.4 The relevant sections of the *Overarching National Policy Statement for Energy* to landscape and visual matters include:

- 4.5: Criteria for “good design” for energy infrastructure;

¹ Council of Europe (2004) Council of Europe Landscape Convention (ETS No. 176). [online] Available at: <https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treaty-num=176>

² Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

³ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

⁴ Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. [online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

⁵ Department for Levelling Up, House and Communities and Ministry of Housing, Communities and Local Government (2019). Planning Practice Guidance – Natural Environment. [online] Available at: <https://www.gov.uk/guidance/natural-environment>

- 5.3: Biodiversity and geological conservation;
- 5.7: Historic environment;
- 5.9: Landscape and visual; and
- 5.10: Land use including open space, green infrastructure & Green Belt.

2.2.2.5 The relevant sections of the *National Policy Statement for Electricity Networks Infrastructure* to landscape and visual matters include:

- 2.5: Consideration of good design;
- 2.7: Biodiversity and Geological Conservation; and
- 2.8: Landscape and Visual.

2.2.2.6 The draft Overarching National Policy Statement for Energy (EN-1) (September 2021) and draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (September 2021) will be referred to if they become adopted during the lifespan of the Suffolk Onshore Scheme.

Local planning policy

2.2.2.7 The Suffolk Onshore Scheme lies within the jurisdiction of Suffolk County Council. County planning guidance which is relevant to a study of landscape and visual matters and will inform the LVIA in the ES are as follows:

- Suffolk Historic Landscape Characterisation⁶;
- Historic Seascape Characterisation Newport to Clacton⁷; and
- Suffolk's Nature Strategy⁸.

2.2.2.8 The Suffolk Onshore Scheme Scoping Boundary (refer to **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**) lies within the jurisdiction of East Suffolk Council. Local planning policy for East Suffolk Council consists of two parts; the Suffolk Coastal Local Plan and the Waveney Local Plan (which cover the former Suffolk Coastal and Waveney Districts).

2.2.2.9 The Suffolk Scoping Boundary lies within the boundary of the *Suffolk Coastal Local Plan* (adopted September 2020)⁹. Local Plan policies which are relevant to landscape and visual matters and will inform the LVIA in the ES include:

- SCLP 2.2: Strategic Infrastructure Priorities;
- SCLP 10.1: Biodiversity and Geodiversity;
- SCLP 10.3: Environmental Quality;

⁶ Suffolk County Council (2012). Suffolk Historic Landscape Characterisation. [online] Available at: <https://www.suffolk.gov.uk/assets/culture-heritage-and-leisure/suffolk-archaeological-service/2017-SUFFOLK-HISTORIC-LANDSCAPE-CHARACTERISATION-.pdf>

⁷ English Heritage (2011). Historic Seascape Characterisation Newport to Clacton. [online] Available at: https://archaeologydataservice.ac.uk/archives/view/hscnewport_eh_2011/

⁸ Suffolk County Council (2015). Suffolk's Nature Strategy. [online] Available at: <https://www.suffolk.gov.uk/planning-waste-and-environment/suffolks-countryside-and-wildlife/protecting-the-environment/suffolk-nature-strategy/>

⁹ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://eastsuffolk.inconsult.uk/consult.ti/suffolkcoastallocalplan2020/viewCompoundDoc?docid=11955764&partid=11958292>

- SCLP 10.4: Landscape Character;
- SCLP 11.1: Design Quality;
- SCLP 11.2: Residential Amenity; and
- SCLP 11.8: Parks and Gardens of Historic or Landscape Interest.

2.2.2.10 Additional planning guidance documents relevant to landscape and visual matters are set out as follows:

- Sustainable Construction Supplementary Planning Document¹⁰; and
- Environmental Guidance Note¹¹.

2.2.2.11 The Settlement Sensitivity Assessment Volume 2: Suffolk Coastal¹² will not be referred to as it is based upon two development scenarios which are housing and commercial developments, of which the Suffolk Onshore Scheme is not relevant to.

2.2.2.12 Specifically relating to the Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB), within which the Suffolk Scoping Boundary lies partially in, the following planning guidance documents are relevant to landscape and visual matters:

- Suffolk Coast & Heaths Area of Outstanding Natural Beauty Management Plan¹³;
- Development in the setting of the Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) Position Statement¹⁴;
- Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) Natural Beauty and Special Qualities Indicators¹⁵;
- Suffolk Coast & Heaths Area of Outstanding Natural Beauty Guidance on the selection and use of colour in development¹⁶; and

¹⁰ East Suffolk Council (2022). Sustainable Construction Supplementary Planning Document. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Supplementary-documents/Sustainable-Construction-2022/FINAL-Sustainable-Construction-SPD.pdf>

¹¹ East Suffolk Council (2020). Environmental Guidance Note. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Environment/Environment-Guidance/Environmental-Guidance-Note.pdf>

¹² East Suffolk Council (2018). Settlement Sensitivity Assessment Volume 2: Suffolk Coastal. [online] Available at: [https://www.bing.com/search?q=East+Suffolk+Council+\(2018\)%2C+Settlement+Sensitivity+Assessment+Volume+2%3A+Suffolk+Coastal&cvid=779ea95c1ef948fb9628f703e0561488&aqs=edge.0.69i59j69i11004.994j0j9&FORM=ANAB01&PC=U531](https://www.bing.com/search?q=East+Suffolk+Council+(2018)%2C+Settlement+Sensitivity+Assessment+Volume+2%3A+Suffolk+Coastal&cvid=779ea95c1ef948fb9628f703e0561488&aqs=edge.0.69i59j69i11004.994j0j9&FORM=ANAB01&PC=U531)

¹³ Suffolk Coast & Heaths AONB Partnership (2018). Suffolk Coast & Heaths Area of Outstanding Natural Beauty Management Plan 2018-2023. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2021/01/SCH-AONB-Management-Plan-2018-23.pdf>

¹⁴ Suffolk Coast & Heaths AONB Partnership (2015). Development in the setting of the Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) Partnership Position Statement. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2021/01/ENDORSED-SCH-AONB-Position-Statement-on-Development-in-Setting-of-AONB-2015.pdf>

¹⁵ Suffolk Coast & Heaths AONB Partnership (2016). Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) Natural Beauty and Special Qualities Indicators. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Sizewell/Suffolk-Coast-and-Heaths-AONB-Natural-Beauty-and-Special-Qualities-Indicators.pdf>

¹⁶ Suffolk Coast & Heaths AONB Partnership (2019). Suffolk Coast & Heaths Area of Outstanding Natural Beauty Guidance on the selection and use of colour in development. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2021/01/SCH-Use-of-Colour-Guidance-v7.pdf>

- Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) State of the AONB Report¹⁷.

2.2.2.13 Where relevant to landscape and visual matters, the following neighbourhood plans within the study area will inform the LVIA:

- Leiston Neighbourhood Plan 2015-2029¹⁸; and
- Draft Saxmundham Neighbourhood Plan (pre-submission version)¹⁹.

2.2.3 Study Area

2.2.3.1 An initial study area of 3km from the Emerging Preference areas of the two converter sites (Site 1 and Site 3) as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and 1km from the Suffolk Scoping Boundary has been identified for the landscape and visual assessment and will be referred to as the study area within this chapter from now on. It is judged that significant landscape or visual effects will be unlikely beyond this study area. The LVIA study area is shown on **Figures 2.2.1 – 2.2.9**.

2.2.3.2 The extent of the study area has been informed by a review of the maximum parameters of the Suffolk Onshore Scheme, desk-based research, the appraisal work undertaken to date to inform the routeing and siting phase of the Suffolk Onshore Scheme, knowledge of the area alongside a targeted site visit and professional judgement. The study area will be further refined at the detailed assessment stage following further decision regarding the various options to ensure a proportional approach which will be focused on potential significant effects.

2.2.4 Baseline Conditions

Data Sources

2.2.4.1 The landscape and visual baseline described in this section has been informed by the following data sources:

- Ordnance Survey (OS) mapping, and aerial photography;
- OS Digital Terrain Model (DTM);
- Natural England;
- Historic England;
- National, and local planning policy;
- Published landscape character assessments; and

¹⁷ Suffolk Coast & Heaths AONB Partnership (2018). Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) State of the AONB Report. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2021/05/SCH-State-of-the-AONB-Report-2018.pdf>

¹⁸ Leiston-cum-Sizewell Town Council (2017). Leiston Neighbourhood Plan 2015-2029. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Neighbourhood-Planning/Designated-Neighbourhood-Areas/Leiston/Leiston-NP-Made-Version-March-2017.pdf>

¹⁹ Saxmundham Town Council (2021). Saxmundham Neighbourhood Plan 2022-2037 Pre-submission DRAFT. [online] Available at: <https://drive.google.com/file/d/1offOL1N8IEAct48PK3GmFWWeSk8xGdjo/view>

- Published documents by the Suffolk Coast and Heaths AONB Partnership.

Baseline

- 2.2.4.2 An initial study of the baseline environment has been undertaken through desk-based research and a targeted site visit to establish the existing conditions of the landscape and visual resources of the study area as defined in Section 2.2.3, to inform the previous options appraisal process, and the ongoing design development of the Suffolk Onshore Scheme.
- 2.2.4.3 Desk-based research has involved a review of mapping and aerial photography, planning and policy documents, landscape character assessments, and other sources of information relevant to the baseline environment of the study area.
- 2.2.4.4 The description of the baseline environment within the LVIA in the ES will provide a description of the identified landscape and visual receptors, indicating their key characteristics and value, against which the potential change arising from the Suffolk Onshore Scheme will be assessed.
- 2.2.4.5 Consultation will be held with relevant LPAs and statutory consultees early in the LVIA process. This will help to inform detailed baseline survey and data collection; refinement of the location of representative viewpoints that will form the basis of the visual assessment; and, to agree the approach to mitigation measures and landscape reinstatement.

Relevant designations

- 2.2.4.6 The Suffolk Scoping Boundary lies partially within the following landscape specific designations:
- Suffolk Coast & Heaths AONB;
 - Tree Preservation Orders (TPOs); and
 - Ancient Woodland.
- 2.2.4.7 Additional to the above, the Suffolk Scoping Boundary falls within the following designations:
- Listed Buildings (refer to **Part 2, Chapter 4, Cultural Heritage**);
 - Registered Common Land – Aldringham Green;
 - Countryside and Rights of Way (CRoW) Act Access Land;
 - RSPB Reserve – North Warren;
 - Special Protection Area (SPA) – Sandlings;
 - Sites of Special Scientific Interest (SSSI) – Leiston – Aldeburgh;
 - Scheduled Monuments (refer to **Part 2, Chapter 4, Cultural Heritage**); and
 - Local Nature Reserve (LNR) – The Haven, Aldeburgh.
- 2.2.4.8 Additional to the above, the study area, outside the Suffolk Scoping Boundary, also includes the following designations:

- Registered Common Land – Knodishall Common;
- SPA – Alde-Ore Estuary;
- Ramsar Site – Alde-Ore Estuary; and
- Special Areas of Conservation (SAC) – Alde-Ore & Butley Estuaries.

2.2.4.9 Whilst effects on these designated areas will not be assessed in the LVIA as they will be considered in other discipline specific chapters, they will inform judgements of landscape value and in the case of registered common land, is also an important recreational resource, views from which will be considered as part of the visual assessment.

2.2.4.10 Local designations include the Coastal Change Management Area (designated within *Suffolk Coastal Local Plan*⁹), which runs alongside the shoreline, and is partially within the Suffolk Scoping Boundary. They also include two Parks and Gardens of Historic or Landscape Interest (designated within *Suffolk Coastal Local Plan*⁹), Benhall Lodge Park and Carlton Park, Kelsale, which are located within the study area but not within the Suffolk Scoping Boundary.

2.2.4.11 As well as relevant designations, within the Suffolk Scoping Boundary, there is also a defined area of Heritage Coast – Suffolk.

Landscape character

2.2.4.12 The National, Regional, County and District landscape character context of the study area is shown on **Figure 2.2.3 Landscape Character - National & Regional** and **Figure 2.2.4 Landscape Character - District & County**. At the National level, the study area falls partly within the Suffolk Coast and Heaths National Character Area (NCA)²⁰ and partly within the South Norfolk and High Suffolk Claylands NCA²¹, as identified by Natural England.

2.2.4.13 At a Regional level, landscape character is defined by the *East of England Landscape Character Typology*²², published by Landscape East. The study area comprises the following Landscape Character Types (LCTs):

- Forested Estate Sandlands;
- Coastal Levels;
- Valley Settled Farmlands;
- Wooded Plateau Claylands;
- Urban;
- Valley Meadowlands; and
- Saltmarsh and Intertidal Flats.

²⁰ Natural England (2015). NCA Profile: 82 Suffolk Coast and Heaths (NE491). [online] Available at: <http://publications.naturalengland.org.uk/publication/5626055104659456?category=8005>

²¹ Natural England (2014). NCA Profile: 83 South Norfolk and High Suffolk Claylands. [online] Available at: <http://publications.naturalengland.org.uk/publication/6106120561098752?category=587130>

²² Landscape East (2010). East of England Landscape Typology. [online] Available at: <http://www.landscape-east.org.uk/east-england-landscape-typology>

2.2.4.14 At a County level, landscape character is defined by the *Suffolk Landscape Character Assessment*²³, published by Suffolk County Council. The study area comprises the following LCTs:

- Coastal Dunes and Shingle Ridges;
- Urban;
- Inland Navigable Waters;
- Saltmarsh & Inter-Tidal Flats;
- Coastal Levels;
- Estate Sandlands;
- Nearshore Waters;
- Valley Meadowlands;
- Rolling Estate Sandlands;
- Ancient Estate Claylands;
- Rolling Estate Claylands; and
- Valley Meadows and Fens.

2.2.4.15 At a District level, landscape character is defined by the *Suffolk Coastal Landscape Character Assessment*²⁴ (SCLCA), published by East Suffolk Council. The study area comprises the following LCTs and Landscape Character Areas (LCAs):

- LCT B: River Valleys - LCA B3: Yox Valley and LCA B4: Fromus Valley;
- LCT D: Coastal Broads and Marshes - LCA D3: Minsmere and Sizewell Coast and LCA D4: Thorpeness to Aldeburgh;
- LCT J: Estuaries – LCA J4: Alde Estuary;
- LCT K: Estate Sandlands – LCA K3: Aldringham and Freston Sandlands;
- LCT L: Ancient Estate Claylands – LCA L1: Heveningham and Knodihall Estate Claylands; and
- LCT O: Rolling Estate Sandlands – LCA O1: Benhall Estate Sandlands.

2.2.4.16 Also at a District level, landscape character is defined by the *Touching the Tide Landscape Character Assessment*²⁵ (TTLCA) published by the Touching the Tide Partnership. The TTLCA appears to use the LCTs identified in the Suffolk Landscape Character Assessment²³ and then identifies distinct Coastal Character Areas (CCAs). The study area comprises the following CCAs:

- Thorpeness to Aldeburgh Coast;

²³ Suffolk County Council (2008). Suffolk Landscape Character Assessment. [online] Available at: <https://suffolklandscape.org.uk/>

²⁴ East Suffolk Council (2018). Suffolk Coastal Landscape Character Assessment. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/SCDC-Landscape-Character-Assessment.pdf>

²⁵ Touching the Tide Partnership (2012). Touching the Tide Landscape Character Assessment. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2021/01/2012-Touching-the-Tide-Landscape-Character-Assessment.pdf>

- Alde Estuary; and
- Dunwich to Sizewell Coast.

2.2.4.17 Suffolk Coasts & Heaths AONB Partnership published the *Landscape Character Guidelines for the Suffolk Coast & Heaths Area of Outstanding Natural Beauty*²⁶, which will be used to inform the landscape character baseline of the study area.

Seascape character

2.2.4.18 The National and Regional seascape character context of the study area is shown on **Figure 2.2.5 Seascape Character - National & Regional**. At a National level, seascape character is defined by the *Seascape Character Assessment of the East Inshore and East Offshore Marine Plan Areas*²⁷, published by the Marine Management Organisation. The study area comprises the following Seascape Character Areas (SCAs):

- 10: Suffolk Coastal Waters.

2.2.4.19 At a Regional level, seascape character is defined by the *Seascape Character Assessment of Suffolk, South Norfolk and North Essex*²⁸ (SCASNE) published by Suffolk County Council. The study area comprises the following Seascape Character Types (SCTs):

- 3: Nearshore Waters.

Visual receptors

2.2.4.20 Visual receptors that have potential to experience views of all or some of the Suffolk Onshore Scheme including the extension to the proposed Friston substation, landfall, underground HVAC cable corridor, converter station and underground HVDC cable corridor include:

- Settlement (east to west) including Sizewell, Thorpeness, Aldeburgh, Leiston, Coldfair Green, Theberton, Knodishall, Friston, Benhall Green, Kelsale Carlton and Saxmudham;
- Isolated and small clusters of dwellings and farmsteads dispersed across the landscape;
- Recreational facilities including various areas of Common Land and Carlton Park;
- Recreational routes and access land including Public Rights of Way (PRoW), several recreational routes such as the Suffolk Coast Path, and National Cycle Network (NCN) route including NCN 42;
- Employers working at Sizewell;

²⁶ Suffolk Coasts & Heaths AONB Partnership (2010). *Landscape Character Guidelines for the Suffolk Coast & Heaths Area of Outstanding Natural Beauty*. [online] Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2020/04/SCH-Landscape-Character-Guidelines-2010.pdf>

²⁷ Marine Management Organisation (2012). *Seascape Character Area Assessment East Inshore and East Offshore Marine Plan Areas*. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/312481/east_seascape.pdf

²⁸ Suffolk County Council (2018). *Seascape Character Assessment of Suffolk, South Norfolk and North Essex*. [online] Available at: https://suffolklandscape.org.uk/wp-content/uploads/2020/08/Part1_5997_Assessment_V1_10_Issue_web.pdf

- Occupiers of vehicles travelling on A-roads including A1094, B-roads including B1119 and unclassified roads within the study area; and
- Passengers on the East Suffolk railway line.

Representative viewpoint locations

- 2.2.4.21 The visual assessment will be based on a series of representative viewpoints. These viewpoints have been chosen to provide a representative cross section of receptor types and locations within the study area, focused on those with the potential for significant effects. The representative viewpoint locations have been informed by desk-based work and field work undertaken in March 2022.
- 2.2.4.22 The chosen representative viewpoint locations for the converter station options (Site 1 and Site 3) have also been informed by a Bare Earth and Screened Zone of Theoretical Visibility (ZTV) plans, as shown on **Figures 2.2.6 – Figure 2.2.9**. The ZTVs have been run for the converter stations only, although as the design evolves it will be updated as the location and extent of permanent above ground infrastructure is finalised.
- 2.2.4.23 The ZTV has been generated using a 'bare ground' 5m OS digital terrain model (DTM) and is based on a maximum height of 30m, located in the centre of the graduated swathe within the emerging preference area for the converter stations. The graduated swathes are outlined in **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme**. The screening from woodland and buildings is based on the following factors:
- Existing buildings have been incorporated into the DTM from OS MasterMap with assigned individual heights and OS Open Map Local (where OS MasterMap data was not available) with an assumed height of 7.5m.
 - Woodland from the National Forest Inventory (NFI) has also been incorporated into the DTM with an assumed height of 10m.
- 2.2.4.24 The ZTVs indicate areas from where it may be possible to view part of or the entire converter station sites. However, the use of the ZTV needs to be qualified by the following considerations:
- The ZTV is limited by the detail of the digital terrain model data used and does not take account of local topographic variations;
 - Some areas of theoretical visibility may comprise woodland or other vegetation (not accounted for in the NFI) or agricultural land, where there is effectively no public access and the likelihood of views being experienced is consequently low; and
 - The ZTV does not take account of the likely orientation of a viewer, such as the direction of travel and there is no allowance for reduction of visibility with distance, weather or light.
- 2.2.4.25 These limitations mean that the ZTVs tends to overestimate the extent of the visibility, both in terms of the area from which the Suffolk Onshore Scheme is visible and the extent of the converter station sites, which are visible. Consequently, the ZTV should be considered as a tool to identify areas of potential visibility for further targeted survey and assessment, and not a measure of the visual effect.

2.2.4.26 Table 2.2.1 details the locations proposed for the representative viewpoints for Site 1 Emerging Preference, as shown on **Figure 2.2.9 Representative Viewpoints and Screened Zone of Theoretical Visibility Site 1**, and their reason for inclusion in the LVIA.

Table 2.2.1: Representative viewpoint locations for Site 1 Emerging Preference

Viewpoint number	Location description	Reason for inclusion
1	Grove Road, north of Friston (approximate grid reference: TM416610)	Representative of users of the local road network, including Grove Road between the settlements of Friston and Knodishall. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
2	Public footpath (Knodishall 354, route 16), north-west of Friston (approximate grid reference: TM403612)	Representative of recreational users of the local PRoW network within the landscape to the north of Friston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
4	Knodishall Common, west of Knodishall (approximate grid reference: TM430609)	Representative of recreational users within Knodishall Common and CRoW Access Land. Representative of the edge of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
5	Sailors' Path recreational route, south of Thorpeness (approximate grid reference: TM469587)	Representative of recreational users of the Sailors' Path recreational route between the settlements of Thorpeness and Aldeburgh. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA D4: Thorpeness to Aldeburgh.
7	South Coast Path recreational route off Aldeburgh Road (approximate grid reference: TM437582)	Representative of recreational users of the South Coast Path recreational route between the settlements of Aldeburgh and Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
8	Aldeburgh Road (A1094), near to Park Farm (approximate grid	Representative of users of the local road network between the settlements of Aldeburgh and Friston. Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB.

Viewpoint number	Location description	Reason for inclusion
	reference: TM425591)	Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
9	Sandlings Walk recreational route, south of Knodishall (approximate grid reference: TM433598)	Representative of recreational users of the Sandlings Walk recreational route to the south of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
17	Suffolk Coast Path recreational route, east of Snape (approximate grid reference: TM408582)	Representative of recreational users of the Suffolk Coast Path recreational route to the east of the settlement of Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
18	Saxmundham Road (B1119) and public footpath (Leiston-cum-Sizewell, route 3), on the edge of Leiston (approximate grid reference: TM432627)	Representative of users of the local road network and PRoW network on the edge of the settlement of Leiston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
19	Public footpath (Friston 260, route 22), east of Friston (approximate grid reference: TM417601)	Representative of recreational users of the local PRoW network to the east of the settlement of Friston. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.

2.2.4.27 Table 2.2.2 details the locations proposed for the representative viewpoints for Site 1 Alternative, as shown on **Figure 2.2.9 Representative Viewpoints and Screened Zone of Theoretical Visibility Site 1**, and their reason for inclusion in the LVIA.

Table 2.2.2: Representative viewpoint locations for Site 1 Alternative

Viewpoint number	Location description	Reason for inclusion
1	Grove Road, north of Friston (approximate grid reference: TM416610)	Representative of users of the local road network, including Grove Road between the settlements of Friston and Knodishall.

Viewpoint number	Location description	Reason for inclusion
		Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
2	Public footpath (Knodishall 354, route 16), north-west of Friston (approximate grid reference: TM403612)	Representative of recreational users of the local PRoW network within the landscape to the north of Friston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
4	Knodishall Common, west of Knodishall (approximate grid reference: TM430609)	Representative of recreational users within Knodishall Common and CRoW Access Land. Representative of the edge of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
6	Suffolk Coast Path recreational route, south of Sizewell nuclear power station (approximate grid reference: TM475624)	Representative of recreational users of the Suffolk Coast Path recreational route between Sizewell and Thorpeness. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
7	South Coast Path recreational route off Aldeburgh Road (approximate grid reference: TM437582)	Representative of recreational users of the South Coast Path recreational route between the settlements of Aldeburgh and Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
8	Aldeburgh Road (A1094), near to Park Farm (approximate grid reference: TM425591)	Representative of users of the local road network between the settlements of Aldeburgh and Friston. Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
9	Sandlings Walk recreational route, south of Knodishall (approximate grid reference: TM433598)	Representative of recreational users of the Sandlings Walk recreational route to the south of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
13	Aldringham Common and public footpath	Representative of recreational users of the local PRoW network, Aldringham Common and CRoW Act Access Land, to the east of the settlement of Aldringham.

Viewpoint number	Location description	Reason for inclusion
	(Aldringham-cum-Thorpe, route 3), east of Aldringham (approximate grid reference: TM456611)	Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
15	Sandy Lane, public bridleway (Leiston-cum-Sizewell, route 19), north-west of Sizewell (approximate grid reference: TM459632)	Representative of users of the local road network and recreational users along the local PRoW network. Representative of users of Leiston Common and CRoW Access Land. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
17	Suffolk Coast Path recreational route, east of Snape (approximate grid reference: TM408582)	Representative of recreational users of the Suffolk Coast Path recreational route to the east of the settlement of Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
18	Saxmundham Road (B1119) and public footpath (Leiston-cum-Sizewell, route 3), on the edge of Leiston (approximate grid reference: TM432627)	Representative of users of the local road network and PRoW network on the edge of the settlement of Leiston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
19	Public footpath (Friston 260, route 22), east of Friston (approximate grid reference: TM417601)	Representative of recreational users of the local PRoW network to the east of the settlement of Friston. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.

2.2.4.28 Table 2.2.3 details the locations proposed for the representative viewpoints for Site 3 Emerging Preference, as shown on **Figure 2.2.10 Representative Viewpoints and Screened Zone of Theoretical Visibility Site 3**, and their reason for inclusion in the LVIA.

Table 2.2.3: Representative viewpoint locations for Site 3 Emerging Preference

Viewpoint number	Location description	Reason for inclusion
1	Grove Road, north of Friston (approximate grid reference: TM416610)	Representative of users of the local road network, including Grove Road between the settlements of Friston and Knodishall. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
2	Public footpath (Knodishall 354, route 16), north-west of Friston (approximate grid reference: TM403612)	Representative of recreational users of the local PRoW network within the landscape to the north of Friston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
3	Public footpath (Saxmundham 460, route 37), north of Saxmundham (approximate grid reference: TM381642)	Representative of recreational users of the local PRoW network between the settlements of Carlton and Saxmundham. Representative of users of Carlton Park, Kelsale, locally designated as a Park and Garden of Historic or Landscape Interest. Located within SCLCA LCA B4: Fromus Valley.
4	Knodishall Common, west of Knodishall (approximate grid reference: TM430609)	Representative of recreational users within Knodishall Common and CRoW Access Land. Representative of the edge of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
5	Sailors' Path recreational route, south of Thorpeness (approximate grid reference: TM469587)	Representative of recreational users of the Sailors' Path recreational route between the settlements of Thorpeness and Aldeburgh. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA D4: Thorpeness to Aldeburgh.
7	South Coast Path recreational route off Aldeburgh Road (approximate grid reference: TM437582)	Representative of recreational users of the South Coast Path recreational route between the settlements of Aldeburgh and Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
8	Aldeburgh Road (A1094), near to Park Farm (approximate grid	Representative of users of the local road network between the settlements of Aldeburgh and Friston. Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB.

Viewpoint number	Location description	Reason for inclusion
	reference: TM425591)	Located within SCLCA LCA K3: Aldringham and Freston Sandlands
9	Sandlings Walk recreational route, south of Knodishall (approximate grid reference: TM433598)	Representative of recreational users of the Sandlings Walk recreational route to the south of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
10	Bigsbys Corner (B1121), south of Saxmundham (approximate grid reference: TM385624)	Representative of users of the local road network and local PRoW network between the settlements of Saxmundham and Benhall Green. Representative of users of the East Suffolk railway line between Saxmundham and Wickham Market. Located within SCLCA LCA B4: Fromus Valley
11	Public bridleway (Sternfield 491, route 29), east of Saxmundham (approximate grid reference: TM407628)	Representative of recreational users of the local PRoW network to the east of the settlement of Saxmundham. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
12	Clayhills Road and public footpath (Kelsale-cum-Carlton, route 33), east of Carlton (approximate grid reference: TM396641)	Representative of users of the local road network and recreational users of the local PRoW network to the east of the settlement of Carlton. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
16	Public footpath (Theberton 515, route 1), south-west of Theberton (approximate grid reference: TM424650)	Representative of recreational users of the local PRoW network to the south of Theberton Woods. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
17	Suffolk Coast Path recreational route, east of Snape (approximate grid reference: TM408582)	Representative of recreational users of the Suffolk Coast Path recreational route to the east of the settlement of Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
18	Saxmundham Road (B1119) and public	Representative of users of the local road network and PRoW network on the edge of the settlement of Leiston.

Viewpoint number	Location description	Reason for inclusion
	footpath (Leiston-cum-Sizewell, route 3), on the edge of Leiston (approximate grid reference: TM432627)	Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
19	Public footpath (Friston 260, route 22), east of Friston (approximate grid reference: TM417601)	Representative of recreational users of the local PRoW network to the east of the settlement of Friston. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.

2.2.4.29 Table 2.2.4 details the locations proposed for the representative viewpoints for Site 3 Alternative (Option 1), as shown on **Figure 2.2.10 Representative Viewpoints and Screened Zone of Theoretical Visibility Site 3**, and their reason for inclusion in the LVIA.

Table 2.2.4: Representative viewpoint locations for Site 3 Alternative (Option 1)

Viewpoint number	Location description	Reason for inclusion
1	Grove Road, north of Friston (approximate grid reference: TM416610)	Representative of users of the local road network, including Grove Road between the settlements of Friston and Knodishall. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
2	Public footpath (Knodishall 354, route 16), north-west of Friston (approximate grid reference: TM403612)	Representative of recreational users of the local PRoW network within the landscape to the north of Friston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
3	Public footpath (Saxmundham 460, route 37), north of Saxmundham (approximate grid reference: TM381642)	Representative of recreational users of the local PRoW network between the settlements of Carlton and Saxmundham. Representative of users of Carlton Park, Kelsale, locally designated as a Park and Garden of Historic or Landscape Interest. Located within SCLCA LCA B4: Fromus Valley

Viewpoint number	Location description	Reason for inclusion
6	Suffolk Coast Path recreational route, south of Sizewell nuclear power station (approximate grid reference: TM475624)	Representative of recreational users of the Suffolk Coast Path recreational route between Sizewell and Thorpeness. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
10	Bigbys Corner (B1121), south of Saxmundham (approximate grid reference: TM385624)	Representative of users of the local road network and local PRoW network between the settlements of Saxmundham and Benhall Green. Representative of users of the East Suffolk railway line between Saxmundham and Wickham Market. Located within SCLCA LCA B4: Fromus Valley
11	Public bridleway (Sternfield 491, route 29), east of Saxmundham (approximate grid reference: TM407628)	Representative of recreational users of the local PRoW network to the east of the settlement of Saxmundham. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
12	Clayhills Road and public footpath (Kelsale-cum-Carlton, route 33), east of Carlton (approximate grid reference: TM396641)	Representative of users of the local road network and recreational users of the local PRoW network to the east of the settlement of Carlton. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
14	Leiston Abbey Scheduled Monument, north of Leiston (approximate grid reference: TM444640)	Representative of recreational receptors at Leiston Abbey Scheduled Monument, within CRoW Act Access Land to the north of the settlement of Leiston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
15	Sandy Lane, public bridleway (Leiston-cum-Sizewell, route 19), north-west of Sizewell (approximate grid reference: TM459632)	Representative of users of the local road network and recreational users along the local PRoW network. Representative of users of Leiston Common and CRoW Access Land. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.

Viewpoint number	Location description	Reason for inclusion
16	Public footpath (Theberton 515, route 1), south-west of Theberton (approximate grid reference: TM424650)	Representative of recreational users of the local PRow network to the south of Theberton Woods. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
17	Suffolk Coast Path recreational route, east of Snape (approximate grid reference: TM408582)	Representative of recreational users of the Suffolk Coast Path recreational route to the east of the settlement of Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
18	Saxmundham Road (B1119) and public footpath (Leiston-cum-Sizewell, route 3), on the edge of Leiston (approximate grid reference: TM432627)	Representative of users of the local road network and PRow network on the edge of the settlement of Leiston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
19	Public footpath (Friston 260, route 22), east of Friston (approximate grid reference: TM417601)	Representative of recreational users of the local PRow network to the east of the settlement of Friston. Located within SCLCA LCA K3: Aldringham and Freston Sandlands

2.2.4.30 Table 2.2.5 details the locations proposed for the representative viewpoints for Site 3 Alternative (Option 2), as shown on **Figure 2.2.10 Representative Viewpoints and Screened Zone of Theoretical Visibility Site 3**, and their reason for inclusion in the LVIA.

Table 2.2.5: Representative viewpoint locations for Site 3 Alternative (Option 2)

Viewpoint number	Location description	Reason for inclusion
1	Grove Road, north of Friston (approximate grid reference: TM416610)	Representative of users of the local road network, including Grove Road between the settlements of Friston and Knodishall. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.

Viewpoint number	Location description	Reason for inclusion
2	Public footpath (Knodishall 354, route 16), north-west of Friston (approximate grid reference: TM403612)	Representative of recreational users of the local PRow network within the landscape to the north of Friston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
3	Public footpath (Saxmundham 460, route 37), north of Saxmundham (approximate grid reference: TM381642)	Representative of recreational users of the local PRow network between the settlements of Carlton and Saxmundham. Representative of users of Carlton Park, Kelsale, locally designated as a Park and Garden of Historic or Landscape Interest. Located within SCLCA LCA B4: Fromus Valley
4	Knodishall Common, west of Knodishall (approximate grid reference: TM430609)	Representative of recreational users within Knodishall Common and CRoW Access Land. Representative of the edge of the settlement of Knodishall. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
6	Suffolk Coast Path recreational route, south of Sizewell nuclear power station (approximate grid reference: TM475624)	Representative of recreational users of the Suffolk Coast Path recreational route between Sizewell and Thorpeness. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
7	South Coast Path recreational route off Aldeburgh Road (approximate grid reference: TM437582)	Representative of recreational users of the South Coast Path recreational route between the settlements of Aldeburgh and Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
8	Aldeburgh Road (A1094), near to Park Farm (approximate grid reference: TM425591)	Representative of users of the local road network between the settlements of Aldeburgh and Friston. Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
9	Sandlings Walk recreational route, south of Knodishall (approximate grid	Representative of recreational users of the Sandlings Walk recreational route to the south of the settlement of Knodishall.

Viewpoint number	Location description	Reason for inclusion
	reference: TM433598)	Located within SCLCA LCA K3: Aldringham and Freston Sandlands
10	Bigbys Corner (B1121), south of Saxmundham (approximate grid reference: TM385624)	Representative of users of the local road network and local PRoW network between the settlements of Saxmundham and Benhall Green. Representative of users of the East Suffolk railway line between Saxmundham and Wickham Market. Located within SCLCA LCA B4: Fromus Valley
11	Public bridleway (Sternfield 491, route 29), east of Saxmundham (approximate grid reference: TM407628)	Representative of recreational users of the local PRoW network to the east of the settlement of Saxmundham. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
12	Clayhills Road and public footpath (Kelsale-cum-Carlton, route 33), east of Carlton (approximate grid reference: TM396641)	Representative of users of the local road network and recreational users of the local PRoW network to the east of the settlement of Carlton. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands
13	Aldringham Common and public footpath (Aldringham-cum-Thorpe, route 3), east of Aldringham (approximate grid reference: TM456611)	Representative of recreational users of the local PRoW network, Aldringham Common and CRoW Act Access Land, to the east of the settlement of Aldringham. Representative of receptors on the boundary of the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands
15	Sandy Lane, public bridleway (Leiston-cum-Sizewell, route 19), north-west of Sizewell (approximate grid reference: TM459632)	Representative of users of the local road network and recreational users along the local PRoW network. Representative of users of Leiston Common and CRoW Access Land. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
16	Public footpath (Theberton 515, route 1), south-west of Theberton (approximate grid	Representative of recreational users of the local PRoW network to the south of Theberton Woods. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.

Viewpoint number	Location description	Reason for inclusion
	reference: TM424650)	
17	Suffolk Coast Path recreational route, east of Snape (approximate grid reference: TM408582)	Representative of recreational users of the Suffolk Coast Path recreational route to the east of the settlement of Snape. Representative of receptors within the Suffolk Coast and Heaths AONB. Located within SCLCA LCA K3: Aldringham and Freston Sandlands.
18	Saxmundham Road (B1119) and public footpath (Leiston-cum-Sizewell, route 3), on the edge of Leiston (approximate grid reference: TM432627)	Representative of users of the local road network and PRow network on the edge of the settlement of Leiston. Located within SCLCA LCA L1: Heveningham and Knodishall Estate Claylands.
19	Public footpath (Friston 260, route 22), east of Friston (approximate grid reference: TM417601)	Representative of recreational users of the local PRow network to the east of the settlement of Friston. Located within SCLCA LCA K3: Aldringham and Freston Sandlands

Visualisations

- 2.2.4.31 Visualisations will be produced, using the maximum development parameters, to illustrate the converter station from all the representative viewpoint locations where it is visible, to assist an understanding of the potential visual effects.
- 2.2.4.32 No visualisations are proposed for the landfall or underground HVAC or HVDC cable corridors because of the temporary nature of impacts predicted to arise during the construction phase of the Suffolk Onshore Scheme. There are also no visualisations proposed for the extension works to the proposed Friston substation as the works are considered to be minor.
- 2.2.4.33 The methodology for the preparation and presentation of the visualisations will follow the requirements set out in the Landscape Institute, 2019, *Technical Guidance Note 06-19: Visual Representation of Development Proposals*.

Planned Surveys

- 2.2.4.34 Field surveys of the converter station site, HVAC and HVDC corridors and the landfall will be undertaken by Chartered Landscape Architects.

- 2.2.4.35 An initial field survey has been undertaken in March 2022 to provide an understanding of the local area and potential landscape and visual receptors.
- 2.2.4.36 Subsequent field surveys will be completed after Scoping Opinions have been received and consultation has been conducted with relevant Local Planning Authorities (LPAs). These detailed surveys from publicly accessible areas will be used to undertake the landscape and visual assessments, and to capture photography from representative viewpoint locations used in the visual assessment and as supporting figures for the LVIA.
- 2.2.4.37 Field surveys will include site visits and photography during the winter season i.e., when vegetation cover is generally at its lowest (thus visibility is at its greatest), to enable an appreciation of the extent to which vegetation has a screening function within the landscape, particularly in relation to sensitive receptors, and to understand the likely mitigation requirements.
- 2.2.4.38 Surveys will be undertaken in line with UK Government guidelines relating to the Covid-19 pandemic and relevant Health and Safety procedures. At the time of writing there are no foreseeable limitations to the LVIA surveys because of Covid-19 restrictions.

Future Baseline

- 2.2.4.39 With regard to landscape baseline environment reporting, GLVIA3, states that: “The aim should be to describe the landscape as it is at the time but also to consider, if possible, what it may be like in the future, without the proposal.”
- 2.2.4.40 The LVIA within the ES will consider changes which may affect the future landscape in the absence of the development.

2.2.5 Embedded and Control & Management Measures

Embedded Measures

- 2.2.5.1 Embedded measures are steps taken during the design phase to help minimise potential effects, based on key sensitivities, constraints and opportunities identified through baseline study. Landscape and visual considerations have been important in informing the converter and landfall site selection process and in identifying potential cable route corridor options, and will continue to inform the form, location and routing of the various elements throughout the design process.
- 2.2.5.2 Mitigation measures are those that seek to further reduce potential effects that could not be entirely designed out and are identified and informed by the detailed assessment stage. These include landscape reinstatement and landform and woodland screening and seek to help reduce the extent or significance of negative effects in the long term. In relation to the Suffolk Onshore Scheme, secondary mitigation measures are likely to include, reinstatement of hedgerows and other vegetation along the cable route and temporary access tracks, and landscape integration of the converter station through planting and landform design.
- 2.2.5.3 Landscape mitigation measures will be developed to support the landscape strategies and guidelines identified in published landscape character assessments. Details of landscape mitigation measures, such as planting types and species will be developed

in consultation with LPAs. Opportunities will also be sought to integrate ecological, drainage and other mitigation measures into an overall landscape and environmental mitigation strategy and masterplan for the Suffolk Onshore Scheme.

Control and Management Measures

2.2.5.4 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the Landscape and Visual assessment are:

- LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the Landscape Ecological Management Plan (LEMP);
- LV02: The contractor(s) will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to design, demolition and construction. This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken or supervised by a suitably qualified arboriculturist; and
- LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting.
- GG07: A full record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
- GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition and use. Hedgerows, fences and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner agreement.
- GG09: Where sensitive features are to be retained within or immediately adjacent to the Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.

2.2.5.5 Additional measures relating to landscape and visual would include the following:

- Limiting the working width of the cable construction corridor and consideration of HDD construction techniques to maintain sensitive landscape features such as mature trees.

- Separation and storage of subsoil and topsoil to ensure no degradation in quality and reinstatement undertaken as soon as possible after completion of construction of each section/area of works.
- Placement of topsoil to one side of the trench and subsoil to the other, with the additional height of the subsoil storage used on whichever side requires greater screening benefit.
- Reinstatement of hedgerows/field boundaries crossed by the route, with native (and species-rich where appropriate) species planted to reduce or mitigate effects on landscape character and the visual awareness of the cable route within and across the landscape in the short to medium term.

2.2.6 Potential for Significant Effects

2.2.6.1 The LVIA will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.2.6.2 The proposed scope of the landscape and visual assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.2.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.2.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- construction compounds;
- temporary office accommodation and welfare facilities;
- access tracks;
- construction plant and vehicle movement;
- topsoil stripping and earthworks; and
- Introduction of localised lighting.

Sources of operational impacts

- permanent overground infrastructure, including converter station;
- permanent underground infrastructure, including HVDC and HVAC underground cables; and
- operational lighting at the converter station.

Sources of maintenance impacts

- vehicle movement to carry workers in and out of the converter station site along with new materials and equipment to replace the old; and
- access tracks with temporary vehicle movement for cable repairs.

Sources of decommissioning impacts

- decommissioning compounds and temporary office accommodation and welfare facilities;
- construction plant and vehicle movement associated with the removal of permanent above ground infrastructure including the converter station;
- redundant cables could be left in-situ, however where this is not possible construction plant and vehicle movement associated with the removal of cables to be disposed of; and
- reinstatement of converter station site.

Potential impacts

- 2.2.6.5 The siting of the landfall and converter station sites and the routing of the underground HVDC and HVAC cable corridors has reduced the potential for significant landscape and visual effects, through seeking to avoid the more sensitive landscape features such as protected trees (e.g., Tree Preservation Orders) and proximity to settlement. Where the removal of landscape features along the HVDC and HVAC cable corridors are unavoidable such as hedgerows and arable land, these will be fully reinstated to the pre-existing condition as far as reasonably practical (secured through a CoCP and DCO Requirements) once installation of the cables is complete.
- 2.2.6.6 As a result, the LVIA of the landfall and underground cable corridors will be focused on the construction phase as operational effects are not considered to be significant. This is underpinned by professional judgement and past experience of similar HVDC link projects. Effects on the landscape and visual resource as a result of the introduction of the converter station will be assessed both at construction and operation (at year 1 of operation (winter) and year 15 of operation (summer) once any mitigation planting has established). Decommissioning and maintenance effects are considered to be similar to and no worse than those assessed during the construction phase of works.
- 2.2.6.7 The following table lists all sources of potential impacts that could lead to potential significant effects on landscape character and visual amenity during each stage of the Suffolk Onshore Scheme and identifies those that have less potential to result in a significant effect with an explanation. The impacts relate to the LVIA methodology (detailed at section 7) and are split into landscape character and visual amenity for each source.
- 2.2.6.8 Table 2.2.6 identifies the potential impacts that could result from the sources identified above.

Table 2.2.6: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction, Maintenance and Decommissioning	Construction activity including construction compounds, temporary accommodation and access tracks, construction plant and vehicle movement, topsoil stripping and earthworks and introduction of localised lighting.	Temporary alteration to landscape character	Yes - Due to the short-term duration and temporary nature of activity, potential effects whilst have less potential to be significant will be considered within the LVIA.	Scoped in
		Temporary alteration to visual amenity	Yes - Due to the short-term duration and temporary nature of activity, potential effects whilst have less potential to be significant will be considered within the LVIA.	Scoped in
Operation	Operational converter station	Alteration to landscape character	Yes - Potential to result in a significant effect.	Scoped in
		Alteration to visual amenity	Yes - Potential to result in a significant effect.	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Operation	Introduction of operational lighting at the converter station	Alteration to landscape character and visual amenity as a result of operational lighting	No - There is less potential that significant effects will result on landscape character or visual amenity as any additional lighting will be limited to maintaining site security and safety and would be within the context existing settlement. Should the approach to lighting change, this aspect will be scoped into the landscape and visual assessments.	Scoped out
Operation	Operational extension to the proposed Friston substation (including extension to boundary of site and boundary fencing, installation of one new AIS bay and additional switch	Alteration to landscape character and visual amenity as a result of operational lighting	No - There is less potential that significant effects will result on landscape character or visual amenity as the extension to the proposed Friston	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	gear and bus bars to be located within the substation)		substation will be minimal and within the context of existing energy infrastructure. Should the design of the proposals at the proposed Friston substation become more substantial this aspect will be scoped into the landscape and visual assessments.	
Operation	Operational HVDC and HVAC underground cables	Alteration to landscape character	No - Less potential to have significant effects on landscape character at operation. The landscape will be returned to previous land use and landscape components lost at construction will be reinstated as soon as reasonably	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			practical after construction.	
		Alteration to visual amenity	No - Less potential to have significant effects on visual amenity at operation. The landscape will be returned to previous land use and landscape components lost at construction will be reinstated as soon as reasonably practical after construction.	Scoped out

Impact Pathways with Receptors (Step 2)

- 2.2.6.9 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the study area.

Suffolk Converter Station Site 1 Emerging Preference

- 2.2.6.10 Table 2.2.7 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.2.7: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary alteration to landscape character from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3.	Yes - The Suffolk Scoping Boundary lies within and near to multiple published LCAs, CCAs and SCT, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
	Suffolk Coast and Heaths AONB.	Yes - The Suffolk Scoping Boundary lies within the Suffolk Coast and Heaths AONB, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
Temporary alteration to visual amenity from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes - The Suffolk Scoping Boundary is potentially visible from a range of visual receptors, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of	Scoped in for construction, maintenance and decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
stripping and earthworks, storage of materials and lighting		the works there is potential that the majority of visual effects at construction will not be significant.	
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary is potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	Scoped in for construction, maintenance and decommissioning
Permanent alteration to landscape character as a result of the operational converter station	SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs and CCAs, of which there is the potential for significant effects at operation.	Scoped in for operation
	Suffolk Coast and Heaths AONB.	There is the potential for indirect effects to result on the setting of the Suffolk Coast and Heaths AONB as a result of the proximity of the operational converter station. Whilst less potential to result in significant effects at	

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		operation, they will be considered as part of the operational phase assessment.	
	SCLCA LCA 01. SCASNE SCT 3.	No - The Suffolk Scoping Boundary does not lie within the LCA and SCT. Whilst there is the potential for indirect effects on the perceptual qualities of the LCA and SCT there is less potential that the effects would be significant.	Scoped out for operation
Permanent alteration to visual amenity as a result of the operational converter station	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary will be potentially visible from a range of visual receptors, of which there is a potential significant effect at operation.	Scoped in for operation
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary will be potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is a potential significant effect at operation.	Scoped in for operation

Suffolk Converter Station Site 1 Alternative

- 2.2.6.11 Table 2.2.8 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.2.8: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary alteration to landscape character from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs, CCAs and SCT, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
	Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary lies within the Suffolk Coast and Heaths AONB, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
Temporary alteration to visual amenity from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary is potentially visible from a range of visual receptors, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of	Scoped in for construction, maintenance and decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
stripping and earthworks, storage of materials and lighting	Recreational users within the Suffolk Coast and Heaths AONB.	the works there is potential that the majority of visual effects at construction will not be significant.	Scoped in for construction, maintenance and decommissioning
		Yes -The Suffolk Scoping Boundary is potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	
Permanent alteration to landscape character as a result of the operational converter station	SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs and CCAs, of which there is the potential for significant effects at operation.	Scoped in for operation
	Suffolk Coast and Heaths AONB.	No - There is the potential for indirect effects to result on the setting of the Suffolk Coast and Heaths AONB as a result of the proximity of the operational converter station. Whilst less potential to result in significant	

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		effects at operation, they will be considered as part of the operational phase assessment.	
	SCLCA LCA 01. SCASNE SCT 3.	No - The Suffolk Scoping Boundary does not lie within the LCA and SCT. Whilst there is the potential for indirect effects on the perceptual qualities of the LCA and SCT there is less potential that the effects would be significant.	Scoped out for operation
Permanent alteration to visual amenity as a result of the operational converter station	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary will be potentially visible from a range of visual receptors, of which there is a potential significant effect at operation.	Scoped in for operation
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary will be potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is a potential significant effect at operation.	Scoped in for operation

Suffolk Converter Station Site 3 Emerging Preference

2.2.6.12 Table 2.2.9 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging

Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.2.9: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary alteration to landscape character from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs, CCAs and SCT, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
	Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary lies within the Suffolk Coast and Heaths AONB, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
Temporary alteration to visual amenity from the introduction of construction activity including compounds, temporary accommodation and	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and	Yes -The Suffolk Scoping Boundary is potentially visible from a range of visual receptors, of which there is the potential for significant effects at construction from close range	Scoped in for construction, maintenance and decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	railway line passengers.	receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary is potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	Scoped in for construction, maintenance and decommissioning
Permanent alteration to landscape character as a result of the operational converter station	SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs and CCAs, of which there is the potential for significant effects at operation.	Scoped in for operation
	Suffolk Coast and Heaths AONB.	No - There is not considered to be the potential for effects to result on the setting of the Suffolk Coast and Heaths AONB as a result of the	Scoped out for operation

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		proximity of the operational converter station.	
	SCLCA LCA 01. SCASNE SCT 3.	No - The Suffolk Scoping Boundary does not lie within the LCA and SCT. Whilst there is the potential for indirect effects on the perceptual qualities of the LCA and SCT there is less potential that the effects would be significant.	Scoped out for operation
Permanent alteration to visual amenity as a result of the operational converter station	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary will be potentially visible from a range of visual receptors, of which there is a potential significant effect at operation.	Scoped in for operation
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary will be potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is a potential significant effect at operation.	Scoped in for operation

Suffolk Converter Station Site 3 Alternative (Option 1)

2.2.6.13 Table 2.2.10 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (option 1) Option Area**.

Table 2.2.10: Impact Pathways – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary alteration to landscape character from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs, CCAs and SCT, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
	Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary lies within the Suffolk Coast and Heaths AONB, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
Temporary alteration to visual amenity from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary is potentially visible from a range of visual receptors, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of	Scoped in for construction, maintenance and decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
stripping and earthworks, storage of materials and lighting		the works there is potential that the majority of visual effects at construction will not be significant.	
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary is potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	Scoped in for construction, maintenance and decommissioning
Permanent alteration to landscape character as a result of the operational converter station	SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs and CCAs, of which there is the potential for significant effects at operation.	Scoped in for operation
	Suffolk Coast and Heaths AONB.	No - There is not considered to be the potential for effects to result on the setting of the Suffolk Coast and Heaths AONB as a result of the proximity of the operational converter station.	Scoped out for operation

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	SCLCA LCA 01. SCASNE SCT 3.	No - The Suffolk Scoping Boundary does not lie within the LCA and SCT. Whilst there is the potential for indirect effects on the perceptual qualities of the LCA and SCT there is less potential that the effects would be significant.	Scoped out for operation
Permanent alteration to visual amenity as a result of the operational converter station	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary will be potentially visible from a range of visual receptors, of which there is a potential significant effect at operation.	Scoped in for operation
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary will be potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is a potential significant effect at operation.	Scoped in for operation

Suffolk Converter Station Site 3 Alternative (Option 2)

- 2.2.6.14 Table 2.2.11 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (option 2) Option Area.**

Table 2.2.11: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary alteration to landscape character from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil stripping and earthworks, storage of materials and lighting	SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs, CCAs and SCT, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
	Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary lies within the Suffolk Coast and Heaths AONB, of which there is the potential for temporary and short-term effects. Whilst less potential to result in significant effects at construction, they will be considered as part of the construction phase assessment.	Scoped in for construction, maintenance and decommissioning
Temporary alteration to visual amenity from the introduction of construction activity including compounds, temporary accommodation and access tracks, construction plant and vehicle movements, topsoil	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary is potentially visible from a range of visual receptors, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of	Scoped in for construction, maintenance and decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
stripping and earthworks, storage of materials and lighting		the works there is potential that the majority of visual effects at construction will not be significant.	
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary is potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is the potential for significant effects at construction from close range receptors. However, due to the short duration and temporary nature of the works there is potential that the majority of visual effects at construction will not be significant.	Scoped in for construction, maintenance and decommissioning
Permanent alteration to landscape character as a result of the operational converter station	SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Yes -The Suffolk Scoping Boundary lies within and near to multiple published LCAs and CCAs, of which there is the potential for significant effects at operation.	Scoped in for operation
	Suffolk Coast and Heaths AONB.	No - There is not considered to be the potential for effects to result on the setting of the Suffolk Coast and Heaths AONB as a result of the proximity of the operational converter station.	Scoped out for operation

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	SCLCA LCA 01. SCASNE SCT 3.	No - The Suffolk Scoping Boundary does not lie within the LCA and SCT. Whilst there is the potential for indirect effects on the perceptual qualities of the LCA and SCT there is less potential that the effects would be significant.	Scoped out for operation
Permanent alteration to visual amenity as a result of the operational converter station	Settlement, isolated dwellings, recreational facilities, recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Yes -The Suffolk Scoping Boundary will be potentially visible from a range of visual receptors, of which there is a potential significant effect at operation.	Scoped in for operation
	Recreational users within the Suffolk Coast and Heaths AONB.	Yes -The Suffolk Scoping Boundary will be potentially visible from recreational receptors within the Suffolk Coast and Heaths AONB, of which there is a potential significant effect at operation.	Scoped in for operation

2.2.7 Proposed Assessment Methodology

Proposed Data Sources

2.2.7.1 The following data sources are proposed to be used to inform the assessment:

- Ordnance Survey (OS) mapping, and aerial photography;
- OS Digital Terrain Model (DTM);
- Natural England ;

- Historic England ;
- National, and local planning policy;
- Published landscape character assessments; and
- Published documents by the Suffolk Coast and Heaths AONB Partnership.

Guidance

2.2.7.2 The landscape and visual assessment will be carried out in accordance with the following good practice guidance documents:

- Guidelines for Landscape and Visual Impact Assessment: Third edition (GLVIA3)²⁹;
- Assessing landscape value outside national designations - Technical Guidance Note 02/21³⁰ ;
- Design Principles for National Infrastructure³¹ ;
- Infrastructure - Technical Guidance Note 04/20³² ;
- Tranquillity – An overview – Technical Information Note 01/17³³; and
- Visual Representation of Development Proposals – Technical Guidance Note 06/19³⁴.

2.2.7.3 *GLVIA3* places a strong emphasis on the importance of professional judgement in identifying and defining the significance of landscape and visual effects. The LVIA will be undertaken by Chartered Landscape Architects with experience in the assessment of similar types of HVDC link project. Professional judgement will be used in combination with structured methods and criteria to evaluate landscape and visual value and susceptibility, the resulting sensitivity, magnitude and significance of effect.

Proposed Assessment Methodology

2.2.7.4 The following section summarises the methodology for the LVIA which builds on the general assessment methodology presented in **Part 1, Chapter 5, EIA Approach and Methodology**. For clarity and in accordance with good practice, the assessment of

²⁹ Landscape Institute and Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment, Third Edition. Abingdon Oxon: Routledge

³⁰ Landscape Institute (2021). Assessing landscape value outside national designations - Technical Guidance Note 02/21. [online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf>

³¹ National Infrastructure Commission Design Group (2020). Design Principles for National Infrastructure. [online] Available at: <https://nic.org.uk/app/uploads/NIC-Design-Principles.pdf>

³² Landscape Institute (2020). Infrastructure - Technical Guidance Note 04/20. [online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2018/01/LI-Infrastructure-TGN-FINAL-200924.pdf>

³³ Landscape Institute (2017). Tranquillity – An overview - Technical Information Note 01/17. [online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2017/02/Tranquillity-An-Overview-1-DH.pdf>

³⁴ Landscape Institute (2019). Visual Representation of Development Proposals, Technical Guidance Note 06/19. [online] Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf

potential effects on landscape character and visual amenity, although closely related, are undertaken separately.

Sensitivity

Landscape receptors

- 2.2.7.5 Landscape receptors are described as components of the landscape that have the potential to be affected by the Suffolk Onshore Scheme. These can include overall character and key characteristics, individual elements or features and specific aesthetic or perceptual aspects. It is the interaction between the different components of the Project and these landscape receptors which has potential to result in landscape effects (both adverse and beneficial).
- 2.2.7.6 The sensitivity of the landscape receptor is a combination of the value of the landscape (undertaken as part of the baseline study) and the susceptibility to change of the receptor to the specific type of development being assessed.
- 2.2.7.7 Landscape value is frequently addressed by reference to international, national, regional and local designations, determined by statutory bodies and planning agencies. Absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource.
- 2.2.7.8 The evaluation of landscape value will be undertaken considering the following factors and classified as high, medium or low with evidence provided as to the basis of the evaluation. These are taken from the *Assessing landscape value outside national designations - Technical Guidance Note 02/21*.
- “Natural heritage – Landscape with clear evidence of ecological, geological, geomorphological or physiographic interest which contribute positively to the landscape.
 - Cultural heritage – Landscape with clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape.
 - Landscape condition – Landscape which is in a good physical state both with regard to individual elements and overall landscape structure.
 - Associations – Landscape which is connected with notable people, events and the arts.
 - Distinctiveness – Landscape that has a strong sense of identity.
 - Recreational – Landscape offering recreational opportunities where experience of landscape is important.
 - Perceptual (scenic) – Landscape that appeals to the senses, primarily the visual sense.
 - Perceptual (wildness and tranquillity) – Landscape with a strong perceptual value notably wildness, tranquillity and/or dark skies.
 - Functional - Landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape.”

- 2.2.7.9 Landscape susceptibility relates to the ability of a particular landscape to accommodate the Suffolk Onshore Scheme. It is appraised through consideration of the baseline characteristics of the landscape, and in particular, the scale or complexity of a given landscape. The evaluation of landscape susceptibility will be defined as high, medium or low and will be supported by a clear explanation based upon the analysis of the landscape receptor and the extent to which it is able to accommodate the type of change proposed, specific to the Suffolk Onshore Scheme.
- 2.2.7.10 The overall sensitivity assessment of the landscape receptor is made by employing professional judgement to combine and analyse the identified value and susceptibility with overall levels given from high, medium to low. Table 2.2.12 below outlines indicators that inform landscape value, susceptibility and sensitivity. The basis of the assessment will be made clear in the evaluation of each landscape receptor.

Table 2.2.12: Sensitivity of landscape receptors

	Higher sensitivity	←————→	Lower sensitivity
Value	A designated landscape (National Park, Area of Outstanding National Beauty, National Scenic Area, World Heritage Site) or a landscape in very good condition, exceptional scenic quality and high recreational opportunities or a high degree of rarity.	←————→	Landscapes containing few if any notable elements/features, of poor condition or containing several detracting features and limited aesthetic qualities. Landscapes which are not formally designated.
Susceptibility	Attributes that make up the character of the landscape which offer very limited opportunities to accommodate change of the type proposed without fundamentally altering key characteristics.	←————→	Attributes that make up the character of the landscape which are tolerant of a large degree of the type of change proposed without fundamentally altering the key characteristics.

Visual receptors

- 2.2.7.11 Sensitivity of visual receptors is defined through appraisal of the viewing expectation, or value placed on the view as identified in the baseline study, and its susceptibility to change.
- 2.2.7.12 Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey or tourist maps and in guidebooks, literature or art or identified in policy. Value can also be indicated by the provision of parking or services and signage and interpretation. The nature and composition of the view and its scenic quality is also an indicator. The value of the view is classified as high, medium or low and will be supported by evidenced, professional judgements.

- 2.2.7.13 The susceptibility of visual receptors is a function of the occupation or activity of people experiencing the view and the extent to which their attention or interest is focused on the view and the visual amenity they experience at a particular location. For example, residents in their home, walkers whose interest may tend to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience, may indicate a higher level of susceptibility. Whereas, receptors occupied in outdoor sport where views are not important or at their place of work could be considered less susceptible to change.
- 2.2.7.14 As with landscape susceptibility, judgements about the susceptibility of visual receptors are described as high, medium or low using consistent and reasoned judgements.
- 2.2.7.15 The overall sensitivity assessment of the visual receptor is determined by employing professional judgement to combine and analyse the identified value and susceptibility ratings. Overall visual sensitivity will be rates as high, medium or low. Table 2.2.13 below outlines indicators that inform value for the view, susceptibility and sensitivity of visual receptors. The basis of the assessment is made clear in the evaluation of each visual receptor.

Table 2.2.13: Sensitivity of visual receptors

	Higher sensitivity	←————→	Lower sensitivity
Value	Views protected by designation, or nationally recognised, or recorded on maps/guidebooks or with cultural associations. Views that have high scenic qualities relating to the content and composition of the view.	←————→	Views which are not documented or protected with minimal or no cultural associations. Views that exhibit low scenic qualities relating to the content and composition of the view.
Susceptibility	Viewers whose attention or interest is focused on their surroundings.	←————→	People whose attention or interest is not focused on their surroundings and where the view is incidental to their enjoyment.

Magnitude of effect

Landscape

- 2.2.7.16 Landscape magnitude of effect refers to the extent to which the Suffolk Onshore Scheme will alter the existing characteristics of the landscape. It is an expression of the size or scale of change to the landscape, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below:

- the extent of existing landscape elements that will be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape;
- the extent to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or by addition of new ones;
- whether the change alters the key characteristics of the landscape, which are integral to its distinctive character;
- the geographic area over which the change will be felt (within the application boundary itself, the immediate setting, at the scale of the landscape character area, on a larger scale influencing several landscape character areas); and
- the duration of the change short term, medium term or long term (which is defined in **Part 1, Chapter 5, EIA Approach and Methodology**), and its reversibility (whether it is permanent, temporary or partially reversible).

2.2.7.17 An overall assessment of the magnitude of landscape effect resulting from the Suffolk Onshore Scheme on the landscape receptor is made combining the above judgements using evidence and professional judgement. The levels of magnitude of change are described as being very large, large, medium, small, negligible and are defined below in Table 2.2.14.

Table 2.2.14: Magnitude of effect – landscape receptors

Magnitude	Criteria
Very Large	Substantial alteration to the landscape receptor or may impact an extensive area or unique characteristics at a local level. May be longer term, permanent or reversible.
Large	Large alteration to the landscape receptor or may impact an extensive area or unique characteristics at a local level. May be longer term, permanent or reversible.
Medium	Partial alteration to the landscape receptor or may impact a wide area or characteristics at a local level. May be medium term, permanent or reversible.
Small	Slight alteration to the landscape receptor or may impact a restricted area and few key characteristics. May be short to medium term, permanent or reversible.
Negligible	Very slight alteration to the landscape receptor or may impact a limited area or no key characteristics. May be short term, permanent or reversible.
None	No change to the landscape receptor.

Visual

2.2.7.18 Visual magnitude of effect relates to the extent to which the Suffolk Onshore Scheme will alter the existing view and is an expression of the size or scale of change in the

view, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the Suffolk Onshore Scheme;
- The degree of contrast or integration of any new features or changes in the form, scale, composition and focal points of the view;
- The nature of the view of the Suffolk Onshore Scheme in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpsed;
- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the Suffolk Onshore Scheme and the extent of the area over which the changes will be visible; and
- The duration of the change short term, medium term or long term (which is defined in **Part 1, Chapter 5, EIA Approach and Methodology**) and its reversibility (whether it is permanent, temporary or partially reversible).

2.2.7.19 An overall assessment of the magnitude of visual effect resulting from the Suffolk Onshore Scheme on the visual receptor is made combining the above judgements using evidence and professional judgement. The levels of magnitude of change are described as being very large, large, medium, small, negligible and none are defined below.

Table 2.2.15: Magnitude of effect – visual receptors

Magnitude	Criteria
Very Large	A substantial change to the composition of the view or change that may be viewed in the foreground or directly. May be longer term, permanent or reversible.
Large	A pronounced change to the composition of the view or change that may be viewed in the foreground or directly. May be longer term, permanent or reversible.
Medium	A noticeable change to the composition of the view or change that may be viewed in the middle ground or indirectly. May be medium term, permanent or reversible.
Small	An unobtrusive change in the composition of the view or change that may be viewed in the background or obliquely. May be short to medium term, permanent or reversible.
Negligible	A barely perceptible change in the composition of the view or change that may be viewed in the background and/or very obliquely. May be short term, permanent or reversible.
None	No change to the view.

Significance of effects

- 2.2.7.20 Determination of the significance of landscape and visual effects will be undertaken by employing professional judgement and experience to combine and analyse the magnitude of change against the identified sensitivity of the receptor. The assessments will take account of direct and indirect change on existing landscape elements, features, key characteristics and evaluates the extent to which these will be lost or modified, in the context of their importance in determining the existing baseline character. The visual assessment will take into account potential changes to the visual composition, including the extent to which new features will distract or screen existing elements in the view or disrupt the scale, structure or focus of the existing view.
- 2.2.7.21 The levels of landscape and visual effects will be described with reference to the criteria outlined below in Table 2.2.16. For the purposes of this assessment, effects of moderate or above are generally considered to be significant.

Table 2.2.16: Significance of effect

Significance of effect	Landscape	Visual
Major Beneficial	Alterations that result in a considerable improvement of the existing landscape resource. Valued characteristic features would be restored or reintroduced.	Alterations that typically result in a pronounced improvement in the existing view.
Moderate Beneficial	Alterations that result in a partial improvement of the existing landscape resource. Valued characteristic features would be largely restored or reintroduced.	Alterations that typically result in a noticeable improvement in the existing view.
Minor Beneficial	Alterations that result in a slight improvement of the existing landscape resource. Characteristic features would be partially restored.	Alterations that typically result in a limited improvement in the existing view.
Negligible Beneficial	Alterations that result in a very slight improvement to the existing landscape resource, not uncharacteristic within the receiving landscape.	Alterations that typically result in a barely perceptible improvement in the existing view.
Neutral	No alteration to any of the components that contribute to the existing landscape resource.	No change to the existing view.
Negligible Adverse	Alterations that result in a very slight deterioration to the existing landscape resource, not uncharacteristic within the receiving landscape.	Alterations that typically result in a barely perceptible deterioration in the existing view.

Minor Adverse	Alterations that result in a slight deterioration of the existing landscape resource. Characteristic features would be partially lost.	Alterations that typically result in a limited deterioration in the existing view.
Moderate Adverse	Alterations that result in a partial deterioration of the existing landscape resource. Valued characteristic features would be largely lost.	Alterations that typically result in a noticeable deterioration in the existing view.
Major Adverse	Alterations that result in a considerable deterioration of the existing landscape resource. Valued characteristic features would be wholly lost.	Alterations that typically result in a pronounced deterioration in the existing view.

2.2.8 Conclusion

- 2.2.8.1 The LVIA will be undertaken in accordance with *GLVIA3* and current good practice guidance. The landscape assessment will consider potential effects on recognised National, Regional, County and District landscape character areas and relevant designations. The visual assessment will be based on a series of representative viewpoint locations which will be informed by detailed baseline study and defined in consultation with statutory consultees.
- 2.2.8.2 The LVIA will also consider the potential for cumulative effects resulting from the addition of the Suffolk Onshore Scheme in relation to other similar developments. Mitigation measures will also be developed and informed by the detailed baseline and assessment stages and will seek to minimise potential adverse effects. This will focus on the reinstatement of the cable corridors and integrating and partially screening views of the converter station.
- 2.2.8.3 As there is the potential for long-term landscape and visual effects associated with the converter station the LVIA will be included within the main ES. However, given the temporary and reversible effects associated with the HVAC and HVDC cable corridors, it is proposed that operational phase effects associated with the HVAC and HVDC cable corridors will be scoped out of the LVIA.

Proposed Scope of the Assessment

- 2.2.8.4 A summary of the proposed scope of the assessment is provided in Table 2.2.17.

Table 2.2.17: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
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SCLCA LCAs B3, B4, D3, D4, J4, K3, L1 and O1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast. SCASNE SCT 3	Temporary alteration to landscape character from construction activity and operations	Construction, Maintenance and Decommissioning	Scoped in (All options)
SCLCA LCAs B3, B4, D3, D4, J4, K3 and L1. TTLCA CCAs Thorpeness to Aldeburgh Coast, Alde Estuary and Dunwich to Sizewell Coast.	Alteration to landscape character from the operational converter station.	Operation	Scoped in (All options)
Suffolk Coast and Heaths AONB.	Temporary alteration to landscape character and visual amenity of recreational users from construction activity and operations.	Construction, Maintenance and Decommissioning	Scoped in (All options)
	Alteration to setting of AONB and to the landscape character of recreational users from the operational converter station	Operation	Scoped in (Site 1 Emerging Preference and Site 1 Alternative) Scoped out (Site 3 Emerging Preference, Site 3 Alternative (Option 1), Site 3 Alternative (Option 2))
	Alteration to setting of AONB and to visual amenity of recreational users from the operational converter station.	Operation	Scoped in (All options)
Settlement, isolated dwellings, recreational facilities,	Alteration to visual amenity from the introduction of construction activity and operations.	Construction, Maintenance and Decommissioning	Scoped in (All options)

recreational routes and access land, employees, occupiers of vehicles and railway line passengers.	Alteration to visual amenity from the operational converter station.	Operation	Scoped in (All options)
SCASNE SCT 3. SCLCA LCA 01.	Alteration to landscape character and perceptual qualities as a result of the operational converter station.	Operation	Scoped out (All options)

2.3 Ecology and Biodiversity

2.3.1 Introduction

2.3.1.1 This chapter presents how the Ecology and Biodiversity assessment will consider the potentially significant effects on heritage assets that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.

2.3.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

2.3.1.3 This chapter should be read in conjunction with:

- **Part 1, Chapter 4, Description of the Project**
- **Part 1, Chapter 5, EIA Approach and Methodology**; and
- **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme**.

2.3.1.4 This chapter is supported by the following figure:

- **Figure 2.3.1 Statutory Designated Ecological Features, Sheets 1-5**.

2.3.2 Regulatory and Planning Context

2.3.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on protected nature conservation sites, significant habitats, protected and/or, notable species as well as invasive non-native species associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

2.3.2.2 The below legislation will be considered when identifying potential constraints to the Suffolk Onshore Scheme, design options and mitigation. Compliance with the below legislation may require obtaining relevant protected species licences prior to implementation of the Project.

- The Conservation of Habitats and Species Regulations 2017³⁵ (as amended);
- The Natural Environment and Rural Communities (NERC) Act 2006³⁶;
- The Countryside and Rights of Way (CRoW) Act 2000³⁷;
- Wildlife and Countryside Act 1981 (as amended)³⁸
- Environment Act 2021³⁹;
- Animal Welfare Act 2006⁴⁰;
- Protection of Badgers Act 1992⁴¹;
- The Wild Mammals (Protection) Act 1996⁴²;
- The Hedgerow Regulations 1997⁴³; and
- Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended)⁴⁴.

Planning Policy

National planning policy

2.3.2.3 The assessment will take account of the relevant National Policy Statements (NPSs) for energy: the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Electricity Networks (EN-5)⁴⁵. These NPSs are, in the process of being updated and therefore relevant sections of the draft NPSs are also included below, where relevant.

2.3.2.4 Paragraph 4.3.1 of the Overarching National Policy Statement for Energy (EN-1) (2011)⁴⁶, states what the Secretary of State must, under the Conservation of Habitats and Species Regulations 2017, consider when granting a development consent order with regard to effects on internationally important wildlife sites and the need for Habitats Regulations Assessment. It also clarifies that information to inform the assessment

³⁵ Conservation of Habitats & Species Regulations 2017 [online]. Available at: <https://www.legislation.gov.uk/ukxi/2017/1012/contents/made> [Accessed 13/07/2022].

³⁶ Natural Environment and Rural Communities Act 2006 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [Accessed 13/07/2022].

³⁷ Countryside and Rights of Way Act 2000 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2000/37/contents> [Accessed 13/07/2022].

³⁸ Wildlife and Countryside Act 1981 (as amended) [online]. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents> [Accessed 13/07/2022].

³⁹ Environment Act 2021 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted> [Accessed 13/07/2022].

⁴⁰ Animal Welfare Act 2006 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2006/45/contents> [Accessed 13/07/2022].

⁴¹ Protection of Badgers Act 1992 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1992/51/contents> [Accessed 13/07/2022].

⁴² Wild Mammals (Protection) Act 1996 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1996/3/contents> [Accessed 13/07/2022].

⁴³ The Hedgerow Regulations 1997 [online]. Available at: <https://www.legislation.gov.uk/ukxi/1997/1160/contents/made> [Accessed 13/07/2022].

⁴⁴ The Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) [online]. Available at: <https://www.legislation.gov.uk/ukxi/2019/527/2021-05-04> [Accessed 13/07/2022]

⁴⁵ Department of Energy & Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure. [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf [Accessed 13/07/2022]

⁴⁶ Department of Energy & Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: Overarching National Policy Statement for Energy (publishing.service.gov.uk) [Accessed 13/07/2022].

must be provided by the applicant. Part 5 section 5.3 of EN-1 sets out guidance on generic impacts relating to biodiversity for the applicant's assessment and decision-making on the application. The Draft Overarching National Policy Statement for Energy (EN-1) (2021)⁴⁷ includes guidance for biodiversity net gains in paragraphs 4.5.1 to 4.5.3 and generic impacts on biodiversity in Part 5.4. This guidance has also been considered within this chapter. Section 2.7 of EN-5 provides general information on biodiversity considerations for electricity networks, including that the applicant will need to consider whether the proposed line will cause such problems at any point along its length and take this into consideration in the preparation of the Environmental Impact Assessment (EIA) and ES. Particular consideration should be given to feeding and hunting grounds, migration corridors and breeding grounds.

Biodiversity Net Gain (BNG)

- 2.3.2.5 It is Government policy that planning decisions should minimise impacts on and provide net gain for biodiversity (National Planning Policy Framework 2021)⁴⁸. In addition, the Environment Act 2021 includes provisions to make BNG a mandatory requirement within the planning system in England requiring all relevant developments to achieve a minimum 10% net gain in biodiversity units relative to the Site baseline biodiversity value, it is anticipated the secondary legislation mandating the need for 10% net gain will be in place by November 2023.
- 2.3.2.6 National Grid has committed to 10% Net Gain in Environmental value including as a minimum 10% BNG across all its construction projects. This is described in **Part 1, Chapter 1, Introduction**.

National planning policy framework

- 2.3.2.7 The National Planning Policy Framework⁴⁹ (NPPF) details the Government's planning policies for England and how these are expected to be applied. It states the commitment of the UK Government to minimising impacts on and providing net gains in biodiversity, contributing to the Government's commitment to halt the overall decline in biodiversity.
- 2.3.2.8 The NPPF specifies the obligations that Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how these are to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species. Where impact is unavoidable, NPPF outlines that compensation may be required.

⁴⁷ Department for Business, Energy & Industrial Strategy (2021). Draft Overarching National Policy Statement for Energy (EN-1). [online] Available at: Draft Overarching National Policy Statement for Energy (publishing.service.gov.uk) [Accessed 13/07/2022].

⁴⁸ Ministry of Housing, Communities & Local Government (2021). [online] Available at: National Planning Policy Framework - GOV.UK (www.gov.uk) [Accessed 30/09/2022].

⁴⁹ Department for Levelling Up, Housing & Communities (2021). National Planning Policy Framework. London. [online] Available at: National Planning Policy Framework - Guidance - GOV.UK (www.gov.uk) [Accessed 13/07/2022].

Biodiversity 2020: A strategy for England's wildlife and ecosystem services

- 2.3.2.9 Biodiversity 2020⁵⁰ was published by DEFRA in 2011. The strategy builds on the Natural Environment White Paper: “The Natural Choice: securing the value of nature” (2011)⁵¹, with an overall mission to “halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people”.
- 2.3.2.10 The strategy includes consideration of planning and development including commitments to (i) retain protection and improvement of the natural environment as core objectives for local planning and development management, (ii) support biodiversity offsetting pilots through a two-year test phase, until spring 2014, and the government's expectation that the planning system contributes to achieving no net loss of biodiversity.

Regional planning policy

- 2.3.2.11 The planning policies that relate to the study area are shown below. The policies listed below are taken from the following document.

- Suffolk Nature Strategy (2015)⁵²
 - Recommendation 1: In line with Government's Biodiversity 2020 strategy vision, Outcome 1, by 2020 at least 50% of Suffolk's SSSIs will be in favourable condition, whilst maintaining at least 95% in favourable or recovering condition.
 - Recommendation 3: In line with Biodiversity 2020, Outcomes 1 & 3, we wish to see an overall improvement in the status of our wildlife and for further degradation to have been halted. Public bodies and statutory undertakers should ensure that, in exercising their functions, they have access and pay due regard to appropriate ecological evidence and advice so as to ensure that their duties under the relevant legislation are met.
 - Recommendation 15: New energy infrastructure should be sensitive to place. Relevant policies as well as national and local guidance, appropriate biological data and Suffolk's Landscape Character Assessment should be used to assess suitability of new energy infrastructures, and other developments, to particular places. A Strategic Renewable Energy Strategy, produced by 2018, will help ensure that all new energy infrastructures are appropriately sited.
 - Recommendation 22: Biodiversity offsetting must follow Government guidelines and the mitigation hierarchy, set out in the National Planning Policy Framework. Offsetting should only occur when all steps to avoid and mitigate impacts have been exhausted and should not be seen as a licence to damage sites where less damaging alternatives exist. Offsetting should not apply to internationally or nationally designated sites.

⁵⁰ Department for Environment, Food & Rural Affairs (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf [Accessed 13/07/2022].

⁵¹ Department for Environment, Food & Rural Affairs (2011). The Natural Choice: securing the value of nature. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf [Accessed 13/07/2022].

⁵² Suffolk County Council (2015). Suffolk's Nature Strategy. [online] Available at: <https://www.suffolk.gov.uk/assets/planning-waste-and-environment/suffolks-countryside-and-wildlife/Suffolks-Nature-Strategy-2015.pdf> [Accessed 13/07/2022].

Local planning policy

2.3.2.12 The study area runs through the former Suffolk Coastal District Area in East Suffolk. Therefore policies regarding biodiversity and the protection of natural resources from this region apply to the Suffolk Onshore Scheme.

2.3.2.13 The planning policies that relate to the Suffolk Onshore Shore Scheme are shown below. From the following documents:

- East Suffolk Coastal Local Plan (Adopted September 2020)⁵³

- Policy SCLP10.1: Biodiversity and Geodiversity

“Development will be supported where it can be demonstrated that it maintains, restores or enhances the existing green infrastructure network and positively contributes towards biodiversity and/or geodiversity through the creation of new habitats and green infrastructure and improvement to linkages between habitats, such as wildlife corridors and habitat ‘stepping stones’. All development should follow a hierarchy of seeking firstly to avoid impacts, mitigate for impacts so as to make them insignificant for biodiversity, or as a last resort compensate for losses that cannot be avoided or mitigated for. Adherence to the hierarchy should be demonstrated.

Any proposal that adversely affects a European site, or causes significant harm to a Site of Special Scientific Interest, will not normally be granted permission.

Any development with the potential to impact on a Special Protection Area, Special Area for Conservation or Ramsar site within or outside of the plan area will need to be supported by information to inform a Habitat Regulations Assessment, in accordance with the Conservation of Habitats and Species Regulations 2017, as amended (or subsequent revisions).”

- Policy SCLP10.3: Environmental Quality

“Development proposals will be expected to protect the quality of the environment and to minimise and, where possible, reduce all forms of pollution and contamination. Development proposals will be considered in relation to impacts on;

- a) Air quality, and the impact on receptors in Air Quality Management Areas;
- b) Soils and the loss of agricultural land;
- c) Land contamination and its effects on sensitive land uses;
- d) Water quality and the achievement of Water Framework Directive objectives;
- e) Light pollution; and
- f) Noise pollution. Proposals should seek to secure improvements in relation to the above where possible.

The cumulative effect of development, in this regard, will be considered.”

⁵³ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf> [Accessed 13/07/2022].

2.3.3 Study Area

- 2.3.3.1 The study area for ecological surveys includes the land within the Suffolk Onshore Scheme Scoping Boundary and appropriate Zones of Influence (Zoi), are described in the following sections.
- 2.3.3.2 The boundaries and zone for the ecology and biodiversity study area reflect standard industry good practice and the distances used in this scoping exercise that statutory consultees would typically expect to be considered for identification of features external to the Suffolk Onshore Scheme that could be affected. This is informed by published guidance and professional judgement.
- 2.3.3.3 The desk study included a search for:
- International statutory nature conservation sites (e.g. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites) within 10km of the Suffolk Onshore Scheme Scoping Boundary and 30km for SACs designated for bats. Note that there are no SACs designated for bats within 30km of the Suffolk Onshore Scheme, the nearest being Paston Great Barn SAC over 70km from the Suffolk Onshore Scheme;
 - National statutory nature conservation designations (e.g. Sites of Special Scientific Interest (SSSI), excluding geological SSSIs), National Nature Reserve (NNRs) and Local Nature Reserves (LNRs)) within 5km, also referencing Natural England Impact Risk Zones for SSSIs on MAGIC; and,
 - Non-statutory nature conservation designations (e.g. Local Wildlife Sites (LWS) and Roadside Nature Reserves (RNR)) within 2km.
 - Records of protected and notable species and notable habitats (e.g. Habitats of Principal Importance Section 41 (41) of the Natural Environment and Rural Communities (NERC) Act) have also been identified up to 1km (for most species) and 500m (for habitats and great crested newts) from the Suffolk Onshore Scheme Scoping Boundary. For the purposes of **Figure 2.3.1 Statutory Designated Ecological Features** within 2km of the Suffolk Onshore Scheme.
- 2.3.3.4 Only statutory designated sites up to 2km from the Suffolk Onshore Scheme Scoping Boundary have been shown but this will be updated and expanded for the Preliminary Environmental Information Report (PEIR).

2.3.4 Baseline Conditions

Data Sources

- 2.3.4.1 The known or predicted current and future ecological baseline conditions described in this section has been informed by the following data sources:
- Multi-Agency Geographic Information for the Countryside (MAGIC)⁵⁴ website;
 - Aerial photography of the Site (2021 image capture);

⁵⁴ Department for Environment, Food and Rural Affairs. Multi-Agency Geographic Information for the Countryside (MAGIC) (2022). [online] Available at: <https://magic.defra.gov.uk/>

- Suffolk Biodiversity Information Service⁵⁵; and,
- Local wildlife group and landowner data sets (e.g. Suffolk Wildlife Trust, Suffolk Bat Group, Suffolk Bird Group and RSPB).

Baseline

- 2.3.4.2 Previous survey reports from the local area and adjacent applications (e.g. East Anglia ONE North Limited⁵⁶, East Anglia TWO Limited⁵⁷, and The Sizewell C Project⁵⁸) will also be consulted.

Expected survey requirements

- 2.3.4.3 Completion of initial Phase 1 Habitat Survey (following the established JNCC methodology⁵⁹) and Protected Species Scoping Surveys, will confirm the requirements for further surveys to support the ecology, biodiversity and nature conservation impact assessment, but these are likely to include the following:

- Botanical surveys including National Vegetation Classification Surveys following established Rodwell (2006)⁶⁰ methodology, including invasive non-native plant species, hedgerows and river habitats and corridors;
- Terrestrial invertebrate surveys;
- Aquatic invertebrate surveys if required (potential to be scoped out by use of HDD to avoid direct watercourse impacts);
- Reptile presence / absence surveys;
- Habitat Suitability Index (HSI) assessment⁶¹ and Great Crested Newt eDNA surveys at waterbodies identified on and within 250m of the Suffolk Onshore Scheme (if District Level Licensing approach not or only partially pursued with Natural England);
- Great crested newt population size surveys (where applicable);
- Intertidal bird surveys

⁵⁵ Suffolk Biodiversity Information Service. [online] Accessed via: <http://www.suffolkbis.org.uk/>

⁵⁶ National Infrastructure Planning (2022). East Anglia ONE North Limited. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/eastern/east-anglia-one-north-offshore-windfarm/?ipcsection=docs&stage=app> [Accessed 19/07/2022].

⁵⁷ National Infrastructure Planning (2022). East Anglia TWO Limited. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/eastern/east-anglia-two-offshore-windfarm/?ipcsection=docs&stage=app> [Accessed 19/07/2022].

⁵⁸ National Infrastructure Planning (2022). The Sizewell C Project. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/?ipcsection=docs&stage=app> [Accessed 19/07/2022].

⁵⁹ Joint Nature Conservation Committee (2016). Handbook for Phase 1 habitat survey. A technique for environmental audit. [online] Available at: <https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf> [Accessed 13/07/2022].

⁶⁰ Rodwell, J.S. on behalf of the Joint Nature Conservation Committee (2006). National Vegetation Classification: Users' Handbook. [online] Available at: <https://data.jncc.gov.uk/data/a407ebfc-2859-49cf-9710-1bde9c8e28c7/JNCC-NVC-UsersHandbook-2006.pdf> [Accessed 13/07/2022].

⁶¹ Amphibian & Reptile Groups of the United Kingdom (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. [online] Available at: <https://www.arguk.org/info-advice/advice-notes/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5/file> [Accessed 13/07/2022].

- Breeding bird surveys (including targeted surveys for barn owl);
- Wintering bird surveys;
- Preliminary bat roost feature assessment of buildings and structures and tree climbing surveys for bats (where applicable);
- Bat activity surveys;
- Dusk emergence and dawn return surveys of buildings, structures and trees (if applicable). All bat surveys will follow BCT Good Practice Guidelines 3rd Edition⁶² and Interim Guidance Note⁶³ (and any updated editions: 4th Edition expected late 2022);
- Badger surveys; and
- Riparian mammal surveys (otter (*Lutra lutra*) and water vole (*Arvicola amphibius*)), where watercourses are adjacent to the scheme and 100-200m upstream and downstream.

2.3.4.4 A Habitats Regulations Assessment (HRA), commencing with a Stage 1: Test of Likely Significant Effects and including a Stage 2: Appropriate Assessment Information Report if required) will also be produced in line with Planning Inspectorate Advice Note 10⁶⁴.

Summary of ecological receptors

2.3.4.5 The known or predicted ecological baseline conditions are summarised in the following sections by each receptor in turn.

Statutory designated sites

2.3.4.6 21 statutory sites designated for nature conservation have been identified within the stated desk study areas (10km for international 5km for national sites).

2.3.4.7 These sites are summaries in Table 2.3.1 and are shown on **Figure 2.3.1 Statutory Designated Ecological Features** within 2km of the Suffolk Onshore Scheme.

⁶² Collins, J. on behalf of The Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists. Good Practice Guidelines. 3rd Edition. [online] Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/Bat_Survey_Guidelines_2016_NON_PRINTABLE.pdf?v=1542281971 [Accessed 13/07/2022].

⁶³ Bat Conservation Trust (2022). Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys. [online] Available at: <https://cdn.bats.org.uk/uploads/pdf/Interim-guidance-note-on-NVAs-May-2022-FINAL.pdf?v=1653399882> [Accessed 13/07/2022].

⁶⁴ National Infrastructure Planning (2018). The Planning Inspectorate: Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-ten/> [Accessed 13/07/2022].

Table 2.3.1: Statutorily Designated Sites within 10km (international) and 5km (national) of the Suffolk Onshore Scheme

Site name	Designation	Description	Distance (km) and direction from closest point of the Site
Sandlings (3,406 ha)	SPA	The site is notified for its internationally important populations of woodlark and nightjar. The SPA is made up of lowland heathland, acid grassland and forestry plantations on sandy soils which once supported extensive heathland; the main conservation interest of which lies in the open areas such as young plantation and rotational clearfell which provide suitable breeding habitat.	Within Suffolk Scoping Boundary. Within the scoping boundary of: Site 3 Alternative Option 1, Site 3 Alternative Option 2 and Site 1 Alternative to the North near Sizewell Within the scoping boundary of: Site 3 Emerging Preference and Site 1 Emerging Preference to the south near Aldeburgh.
Outer Thames Estuary (393,612 ha)	SPA	The Outer Thames Estuary SPA was designated to protect the red-throated diver <i>Gavia stellata</i> population and its supporting habitats (subtidal sands) in favourable condition. The main part of the site is the outer part of the estuary (east of a line north from Sheerness, Kent to Shoebury Ness, Essex); a separate area extending south along the coast of east Norfolk (from Caister-on-Sea) to Woodbridge, Suffolk and lying mainly within the 12 nautical mile(nm) zone, except for two small areas which extend slightly into the 12nm zone offshore from about Lowestoft; and a third area lying slightly further north and partly within 12 nm, but also with a larger area extending well beyond the 12 nm zone).	Adjacent to the Suffolk Scoping Boundary Adjacent to the scoping boundary of: Site 3 Alternative Option 1, Site 3 Alternative Option 2 and Site 1 Alternative to the North near Sizewell Adjacent to the scoping boundary of: Site 3 Emerging Preference and Site 1 Emerging Preference to the south near Aldeburgh.
Minsmere-Walberswick (2,019 ha)	SPA	Minsmere – Walberswick SPA is located on the Suffolk coast south of Southwold in eastern England. It comprises two large marshes, the tidal Blyth estuary and associated habitats.	2km north of the Suffolk Scoping Boundary 2km north of Site 3 Alternative Option 1

		<p>There are nationally important numbers of breeding and wintering birds. In particular, the reedbeds are of major importance for breeding Bittern <i>Botaurus stellaris</i> and Marsh Harrier <i>Circus aeruginosus</i>. A range of breeding waders (e.g. Avocets <i>Recurvirostra avosetta</i>) and heathland birds occur in other areas of the SPA. The shingle beaches support important numbers of breeding Little Tern <i>Sterna albifrons</i>, which feed substantially outside the SPA in adjacent marine waters. The site is also important for wintering Bitterns and raptors.</p>	<p>3.4 km north of Site 3 Alternative Option 2 and Site 1 Alternative 5.3 km north of Site 3 Emerging Preference and Site 1 Emerging Preference</p>
Alde-Ore Estuary (2,404 ha)	SPA	<p>The Alde-Ore Estuary SPA's scientific interests are outstanding and diverse. The sites contain a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value.</p>	<p>100m south of Suffolk Scoping Boundary 2.4km south of Site 3 Alternative Option 1 1.2km south of Site 3 Alternative Option 2 100m south of Site 3 Emerging Preference and site 1 Emerging Preference 1.4km south of Site 1 Alternative</p>
Southern North Sea (3,695,100 ha)	SAC	<p>The Southern North Sea SAC is an area of importance for harbour porpoise. This site includes key winter and summer habitat for this species and covers an area over three times the size of Yorkshire, making it the largest SAC in UK and European waters at the point of designation in 2019.</p> <p>Alde, Ore and Butley Estuaries SAC's scientific interests are outstanding and diverse. The sites contain a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value</p>	<p>Adjacent to the Suffolk Scoping Boundary Adjacent to the Site 3 Alternative Option 1, Site 3 Alternative Option 2 and Site 1 Alternative 670m east of Site 3 Emerging Preference and Site 1 Emerging Preference 100m south of Suffolk Scoping Boundary 2.4km south of Site 3 Alternative Option 1 1.2km south of Site 3 Alternative Option 2 100m south of Site 3 Emerging Preference</p>

			and Site 1 Emerging Preference 1.4km south of Site 1 Alternative
Alde-Ore & Butley Estuaries (1633 ha)	SAC	Alde, Ore and Butley Estuaries SAC's scientific interests are outstanding and diverse. The sites contain a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value	100m south of Suffolk Scoping Boundary 2.4km south of Site 3 Alternative Option 1 1.2km south of Site 3 Alternative Option 2 100m south of Site 3 Emerging Preference and Site 1 Emerging Preference 1.4km south of Site 1 Alternative
Orfordness-Shingle Street (888 ha)	SAC	Orfordness-Shingle Street's scientific interests are outstanding and diverse. The sites contain a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value	2.8km south of the Suffolk Scoping Boundary 2.8km south of Site 3 Emerging Preference and Site 1 Emerging Preference 7.5km south-east of Site 3 Alternative Option 1 5km south-east of Site 3 Alternative Option 2 and Site 1 Alternative
Minsmere to Walberswick Heaths & Marshes (1257 ha)	SAC	Minsmere – Walberswick Heaths & Marshes SAC is located on the Suffolk coast south of Southwold in eastern England. It comprises two large marshes, the tidal Blyth estuary and associated habitats. This composite coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mud-flats, lagoons, shingle, woodland and areas of lowland heath. It supports the largest continuous stand of Common Reed <i>Phragmites australis</i> in England and Wales and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water.	2km north of Suffolk Scoping Boundary 2km north of Site 3 Alternative Option 1 3.3km north of Site 3 Alternative Option 2 and Site 1 Alternative 5.3km north of Site 3 Emerging Preference and Site 1 Emerging Preference

		SAC features are heathland, vegetated annual and perennial shingle habitats.	
Staverton Park & The Thicks, Wantisden (84 ha)	SAC	Staverton Park is an ancient park with a well-documented medieval history. It is composed of three main areas of woodland on sandy soil. The Park is an open canopy wood pasture, predominantly of over-mature pollard Oak <i>Quercus robur</i> but Holly <i>Ilex aquifolium</i> , Birch <i>Betula pubescens</i> and <i>B. pendula</i> and Rowan <i>Sorbus aucuparia</i> also occur. Some of these trees achieve great age.	9.8km south-west of Suffolk Scoping Boundary 9.8km south-west of Site 3 Emerging Preference and Site 1 Emerging Preference Over 10km south-west of Site 3 Alternative Option 1, Site 3 Alternative Option 2, and Site 1 Alternative.
Dew's Ponds	SAC	Rural site in East Suffolk, comprises 12 ponds in arable/grassland. The site is designated for great crested newts which are present in all 12 ponds.	7.3km north of Suffolk Scoping Boundary 7.3km north of Site 3 Alternative Option 1 8.6km north Site 3 Emerging Preference and Site 3 Alternative Option 2 Over 10km north of Site 1 Emerging Preference, and Site 1 Alternative
Alde-Ore Estuary (2547 ha)	Ramsar	Alde-Ore Estuary Ramsar is an estuary complex of three rivers comprising various habitats including intertidal mudflats, saltmarsh, a vegetated shingle spit, saline lagoons, and semi-intensified grazing marsh. The site supports nationally scarce plants and invertebrates and notable assemblages of breeding and wintering wetland birds.	100m south of Suffolk Scoping Boundary 2.4km south of Site 3 Alternative Option 1 1.2km south of Site 3 Alternative Option 2 100m south of Site 3 Emerging Preference and Site 1 Emerging Preference 1.4km south of Site 1 Alternative
Minsmere-Walberswick (2119 ha)	Ramsar	Minsmere-Walberswick Ramsar is a mosaic of coastal habitats consisting of shingle beaches, dunes, estuarine mudflats, grazing marshes, lagoons, reedbeds, and heathland. The marshes support the largest continuous stand of reedbed in England and Wales. The site	2km north of Suffolk Scoping Boundary 2km north of Site 3 Alternative Option 1 3.3km north of Site 3 Alternative Option 2 and Site 1 Alternative

		supports an outstanding diversity of breeding birds, including a number of nationally rare species which winter at the site, as well as rare species of marshland flora and insect fauna.	5.3km north of Site 3 Emerging Preference and Site 1 Emerging Preference
Leiston-Aldeburgh (535 ha)	SSSI	Leiston-Aldeburgh contains a rich mosaic of habitats including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. This mix of habitats in close juxtaposition and the associated transition communities between habitats is unusual in the Suffolk Coast and Heaths. The variety of habitats support a diverse and abundant community of breeding and overwintering birds, a high number of dragonfly species and many scarce plants.	Within Suffolk Scoping Boundary Within all Emerging Preference and Alternative boundaries.
Alde-Ore Estuary (2534 ha)	SSSI	Sizewell Marshes are important for their large area of lowland, unimproved wet meadows which support outstanding assemblages of invertebrates and breeding birds. Several nationally scarce plants are also present. The site occupies a low-laying basin of deep fen peat. The water table is permanently high, with the area being prone to flooding, and there is an extensive network of ditches across the site.	100m south of Suffolk Scoping Boundary 2.4km south of Site 3 Alternative Option 1 1.2km south of Site 3 Alternative Option 2 100m south of Site 3 Emerging Preference and Site 1 Emerging Preference 1.4km south of Site 1 Alternative
Sizewell Marshes (105 ha)	SSSI	Sizewell Marshes are important for their large area of lowland, unimproved wet meadows which support outstanding assemblages of invertebrates and breeding birds. Several nationally scarce plants are also present. The site occupies a low-laying basin of deep fen peat. The water table is permanently high, with the area being prone to flooding, and there is an extensive network of ditches across the site.	Within Suffolk Scoping Boundary Within Site 3 Alternative Option 2 3.3km south of the Site 1 Emerging Preference and Site 3 Emerging Preference 250m north of Site 1 Alternative and Site 3 Alternative Option 2
Minsmere-Walberwick Heaths and Marshes (2306 ha)	SSSI	This composite site is situated on the coast of Suffolk between Southwold in the north and Sizewell in the south. It contains a complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which	1.4km north of Suffolk Scoping Boundary 5.3km north of Site 1 Emerging Preference and Site 3 Emerging Preference

		combine to create an area of exceptional scientific interest.	1.8km north of Site 1 Alternative and Site 3 Alternative Option 2 1.4km north of Site 3 Alternative Option 1
Iken Wood (5.3 ha)	SSSI	<p>Iken Wood lies close to the banks of the River Alde and may well be the only ancient coppice wood on blown sand in Britain. It is the most interesting example of lowland coppice oakwood in Suffolk and has a distinctive flora typical of woods on light soils.</p> <p>The wood is almost entirely of the lowland hazel-pedunculate oak stand-type with a small area of invasive elmwood, which is unusual for such an acidic soil. Huge Oak <i>Quercus robur</i> standards are dominant with scattered Silver Birch <i>Betula pendula</i>, Holly <i>Ilex aquifolium</i> and Rowan <i>Sorbus aucuparia</i>.</p>	<p>3.5km south-west of the Suffolk Scoping Boundary</p> <p>3.5km south-west of Site 1 Emerging Preference and Site 3 Emerging Preference</p> <p>3.7km south-west of Site 1 Alternative</p> <p>3.8km south-west of Site 3 Alternative Option 2</p> <p>4.4km south-west of Site 3 Alternative Option 1</p>
Sandlings Forest (2474 ha)	SSSI	<p>The Sandlings Forest SSSI lies between Snape and Woodbridge and is comprised of the areas known as Tunstall Forest and Rendlesham Forest. The site is dominated by commercial forestry plantations on sandy soils which once supported extensive heathland. The plantations were first established between the 1920s and the 1940s. The initial plantations were largely of Scot's pine <i>Pinus sylvestris</i> but on second rotation have been replaced by Corsican pine <i>P. maritima ssp laricio</i>. Ten to twelve percent of trees are broadleaves. Small areas have been taken out of timber production and reversion to open, heathy habitat is being undertaken. Unplanted areas of heathland lie adjacent to the forest within separate SSSIs</p>	<p>3.6km south-west of the Suffolk Scoping Boundary</p> <p>3.6km south-west of Site 1 Emerging Preference and Site 3 Emerging Preference</p> <p>3.8km south-west of Site 1 Alternative</p> <p>3.9km south-west of Site 3 Alternative Option 2</p> <p>4.5km south-west of Site 3 Alternative Option 1</p>
Blaxhall Heath (46 ha)	SSSI	<p>Blaxhall Heath is one of the few fragments of the once extensive 'Sandlings' heath of coastal Suffolk and is a good example of this type of dry lowland heath. Substantial losses of lowland heath have occurred in the Sandling area and elsewhere in lowland England this century.</p>	<p>4.6km south-west of the Suffolk Scoping Boundary</p> <p>4.6km south-west of the Site 1 Emerging Preference and Site 3 Emerging Preference.</p>

			4.8 km south-west of Site 3 Alternative Option 2 and Site 1 Alternative Over 5km south-west of Site 3 Alternative Option 1
Gromford Meadow (1.7 ha)	SSSI	Gromford Meadow is a good example of an unimproved base-rich marsh on an alluvial soil with a high organic content. It borders the River Alde and is fed by springs. It is species-rich and contains a variety of characteristic fen meadow and marshland plants	2.6km south-west of Suffolk Scoping Boundary 2.6km south-west of all Sites.
Westleton Heath (9 ha)	NNR	Westleton Heath NNR is part of the best remaining tract of heathland in Suffolk.	4.6km north of Suffolk Scoping Boundary 4.6km north Site 3 Alternative Option 1 Over 5km north of Site 1 Emerging Preference, Site 3 Emerging Preference, Site 1 Alternative, and Site 3 Alternative Option 2
Orfordness-Havergate	NNR	The sites contain a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value	2.9km from the Suffolk Scoping Boundary 2.9km south of Site 1 and Site 3 Emerging Preference 7.5km southwest of Site 3 Alternative Option 1 5km southwest of Site 3 Alternative Option 2 4.8km southwest of Site 1 Alternative
The Haven, Aldeburgh (20 ha)	NNR	The site covers the beach north of Aldeburgh and an area of lagoons and reedbeds which are protected as nature reserves	Within the Suffolk Scoping Boundary Within Site 1 and Site 3 Emerging Preference 3km west of Site 1 Alternative

Non-statutorily designated sites

2.3.4.8 A desk-study is currently ongoing with Suffolk Biodiversity Information Centre and non-statutory wildlife sites may be identified through that process.

Table 2.3.2: Non-statutory designated sites currently identified within 2km of the Suffolk Onshore Scheme

Site name	Designation	Description	Distance (km) and direction from closest point of the site
North Warren	RSPB Reserve	The North Warren reserve lies on the Suffolk coast on the north edge of the town of Aldeburgh and to the south of Thorpeness. Ducks, swans and geese use the marshes in winter, while spring hosts breeding bitterns, marsh harriers, woodlarks and nightingales.	Suffolk Scoping Boundary overlaps with the Non-statutory Designated Site
Minsmere	RSPB Reserve	The Minsmere reserves reedbeds, wet grasslands and heathlands host an assemblage of wading birds, nightjar, woodlark, marsh harrier, otters, water voles, otter and a range of invertebrates.	The Non-statutory Designated Site is 1.8km north of the Suffolk Scoping Boundary
Grove Wood/Old World Wood ⁶⁵	Ancient Woodland	No description available	With Suffolk Scoping Boundary
Great Wood ⁶⁶	Ancient Woodland	No description available	With Suffolk Scoping Boundary

Notable habitats

2.3.4.9 An extended Phase 1 Habitat Survey will be undertaken in order to establish the ecological value of the land within the Suffolk Onshore Scheme Scoping Boundary, and its potential to support notable and/or legally protected species.

⁶⁵ Suffolk Heritage Explorer (2002). Monument Record KND 010- Grove Wood / Old World Wood. [online] Available at: <https://heritage.suffolk.gov.uk/Monument/MSF19483> [Accessed 19/07/2022].

⁶⁶ Suffolk Heritage Explorer (2002). Monument Record FRS 008- Great Wood. [online] Available at: <https://heritage.suffolk.gov.uk/Monument/MSF19482> [Accessed 19/07/2022].

- 2.3.4.10 The survey will be carried out in line with the Phase 1 Habitat Survey method as set out by the Joint Nature Conservation Committee (JNCC) (2016)⁶⁷. This survey would record the types and distribution of habitats throughout the graduate swathe. Information gained from the extended Phase 1 Habitat Survey would be important in assessing the ecological value of the land within the Suffolk Scoping Boundary and identifying the need for any further survey work.
- 2.3.4.11 A biodiversity net gain (BNG) assessment will be undertaken using Biodiversity Metric 3.1 – Technical Supplement⁶⁸ in accordance with the accompanying guidance and best practice principles. The calculation will be based on baseline habitat distinctiveness scores determined by the Phase 1 habitat surveys. Habitat condition will be assigned retrospectively using the information in the Phase 1 habitat survey based on the condition assessment criteria outlined in the Biodiversity Metric 3.1 – Technical Supplement and applying professional judgement.
- 2.3.4.12 While extended Phase 1 Habitat Surveys have only recently commenced (May 2022) review of online data sources, notably MAGIC⁶⁹, indicated that the following Habitats of Principal Importance (HoPI) are located either within or adjacent to (i.e. up to 500m from) the Suffolk Scoping Boundary as follows:
- Coastal vegetated shingle – present within the Suffolk Scoping Boundary along the beach between Aldeburgh and Thorpeness along ‘The Haven’ and outside of the Suffolk Scoping Boundary east of Sizewell Power Station.
 - Coastal and floodplain grazing marsh – behind ‘The Haven’ situated within and outside of the boundary for the Site 1 and Site 3 Emerging Preference. Also, within the Scoping boundary north of Leiston around Leiston Common and Sizewell Belts. Additionally, outside of the site south of Hazlewood Common and part of Cliff Plantation.
 - Reedbeds – outside of the site but within 500m, east of North Warren and south of The Meare.
 - Coastal saltmarsh – present along Long Reach approximately 420m south of the Suffolk Scoping Boundary.
 - Lowland dry acid grasslands – situated in North Warren adjacent to the Suffolk Scoping Boundary and South Warren within the Suffolk Scoping Boundary
 - Lowland heathland – situated within the Suffolk Scoping Boundary within South Warren north-west of Aldeburgh. Also, within the Suffolk Scoping Boundary south-west of Sizewell around Halfway Cottages and within and adjacent to the Suffolk Scoping Boundary within Leiston Common.
 - Lowland Fen – less than 100m south of the Suffolk Scoping Boundary east of Decoy Wood.

⁶⁷ Joint Nature Conservation Committee (2016). Handbook for Phase 1 habitat survey. A technique for environmental audit. [online] Available at: <https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf> [Accessed 13/07/2022].

⁶⁸ Natural England (2022). The Biodiversity Metric 3.1- Technical Supplement. [online] Available at: <http://nepubprod.appspot.com/publication/6049804846366720> [Accessed 13/07/2022].

⁶⁹ Department for Environment, Food and Rural Affairs. Multi-Agency Geographic Information for the Countryside (MAGIC) (2022). [online] Available at: <https://magic.defra.gov.uk/>

- 2.3.4.13 There are two parcels of ancient woodland within the Suffolk Scoping Boundary both within the Site 1 and Site 3 Emerging Preference, namely Great Wood and Grove Wood.
- 2.3.4.14 Note that while some of these habitats are located directly within designated sites (being a reason for designation), a number are distributed outside. The distribution of HoPI is to be confirmed by detailed survey (Habitat Condition Assessment and (where required) National Vegetation Classification and Hedgerow Surveys) which will confirm extent and condition and also inform future Biodiversity Net Gain assessment. It will also confirm the presence of any uncommon arable plants.

Other habitats

- 2.3.4.15 Review of MAGIC indicates that the Suffolk Onshore Scheme is located within a patchwork of arable, woodland, pasture and residential land uses. Away from the designated sites and notable habitats described above, the Suffolk Scoping Boundary is likely to include a mix of these habitat types.

Invertebrates

- 2.3.4.16 The designated sites and notable habitats present within the Suffolk Onshore Scheme Scoping Boundary have potential to support a significant assemblage of notable invertebrates. In particular, Leiston-Aldeburgh SSSI which is within the Suffolk Scoping Boundary; the variety of water bodies and terrestrial habitats within the site provides suitable breeding and hunting areas for many species of dragonfly and damselfly, including the nationally scarce hairy dragonfly *Brachytron pratense*.
- 2.3.4.17 As part of the Extended Phase 1 Habitat Survey, the distribution of habitats with potential to support a significant assemblage of notable invertebrates will be recorded and assessed to determine the need for specific invertebrate survey.

Invasive non-native species

- 2.3.4.18 Suitable habitat is present across the Suffolk Onshore Scheme Scoping Boundary for a range of non-native invasive plant species. Rivers and wetlands are likely to be traversed during construction. The focus of invasive plant surveys to update the baseline will be on terrestrial and riparian species.

Great crested newt

- 2.3.4.19 A review of District Level Licencing and survey returns has highlighted 11 ponds within 500m of the Suffolk Scoping Boundary with an additional one pond on the border of the Scoping Boundary south-west of Theberton Woods (where the majority of GCN ponds are located) and one within site, west of Leiston Abbey where GCN are recorded as present.
- 2.3.4.20 Suitable aquatic habitat (e.g ponds and ditches) and terrestrial habitat (scrub, rough grassland, arable field margins etc) are present throughout the Suffolk Scoping Boundary.
- 2.3.4.21 A desk based search of waterbodies will be undertaken to identify ponds within 250m of the Suffolk Scoping Boundary once ponds are identified two different survey methods are used to determine the likely presence of great crested news e.g. HSI and

eDNA. However District Level Licensing approach (to be agreed with Natural England) may reduce or remove the need for detailed survey.

Reptiles

- 2.3.4.22 Habitats present within Suffolk Scoping Boundary are suitable for the four widespread species of reptile: slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*) and adder (*Viper berus*).
- 2.3.4.23 The Site 1 and Site 3 Emerging Preference traverse the highest value habitats for reptiles including priority habitat lowland heathland at South Warren. The remaining key habitats likely to support reptiles and which are present within the Suffolk Scoping Boundary include arable field margins, scrub and coastal grazing marsh. No records of sand lizard or smooth snake were returned within the desk study.
- 2.3.4.24 Reptile surveys will be undertaken in suitable habitat as identified by the extended Phase 1 Habitat Survey.

Birds

- 2.3.4.25 There are a number of sites within and in close proximity to the Suffolk Scoping Boundary designated for an extensive assemblage of notable wintering, breeding and passage bird species.
- 2.3.4.26 Sandlings SPA is within the Suffolk Scoping Boundary in both the north-east and south-east close to the coast. This SPA is designated for breeding European nightjar *Caprimulgus europaeus* and breeding woodlark *Lullula arborea*. Adjacent to the Suffolk Scoping Boundary to the east is the Outer Thames Estuary SPA which is designated for wintering red-throated diver *Gavia stellata*. Also within 200m of the Suffolk Scoping Boundary to the south is Alde-Ore Estuary SPA and is designated for the following species or species assemblages:
- Marsh harrier *circus aeruginosus* (breeding)
 - Pied avocet *Recurvirostra avosetta* (wintering and breeding)
 - Ruff *Philomachus pugnax* (wintering)
 - Sandwich tern *Sterna sandvicensis* (breeding)
 - Little tern *Sternula albifrons* (breeding)
 - Bittern *Botaurus stellaris* (wintering)
 - Bewick's swan *Cygnus columbianus* (wintering)
 - Hen harrier *circus cyaneus* (wintering)
 - Golden plover *Pluvialis apricaria* (wintering)
 - Short-eared owl *Asio flammeus* (wintering)
 - Mediterranean gull *Larus melanocephalus* (breeding)
 - Common tern *Sterna hirundo* (breeding)
 - Arctic tern *Sterna paradisaea* (breeding)

- Lesser black-backed gull *Larus fuscus* (breeding)
- Redshank *Tringa totanus* (wintering)
- Shelduck *Tadorna tadorna* (wintering)
- Wigeon *Anas penelope* (wintering)
- Teal *Anas crecca* (wintering)
- Black-tailed godwit *Limosa limosa* (wintering)
- Gadwall *Anas strepera* (breeding)
- Shoveler *Anas clypeata* (breeding)
- Herring gull *Larus argentatus* (breeding)
- Oystercatcher *Haematopus ostralegus* (breeding)
- Ringed plover *Charadrius hiaticula* (breeding)
- Lapwing *Vanellus vanellus* (breeding and wintering)
- Black-headed gull *Chroicocephalus ridibundus* (breeding)
- Barn owl *Tyto alba* (breeding)
- Cormorant *Phalacrocorax carbo* (wintering)
- European white-fronted goose *Anser albifrons albifrons* (wintering)
- Brent goose *Branta bernicla* (wintering)
- Pintail *Ansa acuta* (wintering)
- Grey plover *Pluvialis squatarola* (wintering)
- Dunlin *Calidris alpina* (wintering)
- Curlew *Numenius arquata* (wintering)

2.3.4.27 While some of these species are likely to be primarily associated with the intertidal and saltmarsh habitats, it should be noted that some (especially golden plover, white-fronted goose and brent goose) may utilise inland habitats such as arable fields for winter foraging.

2.3.4.28 The habitats within the Suffolk Scoping Boundary contain a wide variety of habitats to support an assemblage of other notable bird species, in particular those associated with coastal floodplain and grazing marsh, scrub, woodland and arable habitats.

2.3.4.29 Along with a review of available bird record and reports relating to the area within 1km of the Suffolk Scoping Boundary (e.g. Wetland Bird Survey data, previous project reports, Suffolk bird reports, biological records and Suffolk Wildlife Trust data), an updated programme of bird surveys will be conducted to provide an updated baseline.

2.3.4.30 The baseline for birds will be sub-divided into the following assemblages (or an equivalents) for ease of reference, noting the baseline will overlap with that for designated sites;

- Non-breeding birds (intertidal);

- Non-breeding birds (terrestrial); and
- Breeding birds.

2.3.4.31 Wintering and breeding bird surveys have commenced in the coastal areas but two full seasons of non-breeding and breeding bird surveys will be undertaken prior to DCO submission. Surveys will include specific investigations for hobby, nightjar, woodlark and barn owl.

Bats

2.3.4.32 A review of MAGIC EPS mitigation licences and survey returns has returned 16 licence records of roosting bats both breeding and non-breeding within 6km of the Suffolk Scoping Boundary with an additional non-breeding roost within the Suffolk Scoping Boundary. The licence within the Suffolk Scoping Boundary consisted of a non-breeding roost for common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Natterer's bat *myotis nattereri*, and noctule *Nyctalus noctula*.

2.3.4.33 EPS mitigation licences within 6km of the Suffolk Scoping Boundary cover breeding and non-breeding roosts for the following species, common pipistrelle, soprano pipistrelle, Natterer's bat, noctule, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, Brant's bat *Myotis brandti*, serotine *Eptesicus serotinus* and barbastelle *Barbastella barbastellus*.

2.3.4.34 Potential roost features will be identified as part of the extended Phase 1 Habitat survey. Any trees or buildings with suitable features will require either aerial inspection surveys or if not safe to climb emergence/re-entry surveys. Bat activity transects will also be undertaken on all habitats on site where permeant infrastructure will be built along the route.

Hazel dormouse

2.3.4.35 A review of MAGIC EPS mitigation licences and survey returns has not returned any records of hazel dormouse (*Muscardinus avellanarius*) presence. Additionally, no records of hazel dormouse were returned within the desk study.

2.3.4.36 Suitable habitat for hazel dormouse in the form of woodlands and a network of connected hedgerows is present within Suffolk Onshore Scheme Scoping Boundary and will be assessed as part of the extended Phase 1 Habitat Surveys.

Riparian mammals (otter, water vole)

2.3.4.37 Water vole *Arvicola amphibius* prefer habitat running alongside water, primarily rivers, brooks, drainage and irrigation ditches. Such as those through Site 1 Emerging Preference and Site 3 Emerging Preference where it co-insides with Leiston-Aldeburgh SSSI west of The Haven and south of the Suffolk Scoping Boundary north of Long Reach. Additionally, The Hundred River flows through the Suffolk Scoping Boundary. No water vole records were returned within the desk study; however, suitable habitat will be assessed within the extended Phase 1 Habitat Survey.

2.3.4.38 There is also suitable habitat for otter *Lutra lutra* within the Suffolk Scoping Boundary as well as both north and south. Forty nine records of otter were returned within the desk study including in areas of North Warren, The Hundred River, Aldeburgh, Leiston and Thorpeness within and between the two potential cable routes as well as north of

the Suffolk Scoping Boundary in Sizewell Marshes and south of Suffolk Scoping Boundary in Hazelwood Marshes. A review of MAGIC EPS mitigation licences returned a single licence for otter west of the Alde-Ore Estuary SSSI approximately 3km south-west of the Suffolk Scoping Boundary. Suitable habitat for otter will also be assessed within the Phase 1 Habitat Survey.

Badger

- 2.3.4.39 Extensive suitable habitat for badger is present throughout the Suffolk Scoping Boundary, comprising woodland, arable fields and margins and scrub amongst others. Habitat is both suitable for foraging and for the excavation of setts, with sufficient habitat present to support a number of social groups.
- 2.3.4.40 The extended Phase 1 Habitat Surveys will provide initial information of the likely distribution of badger within the Suffolk Scoping Boundary to be followed by detailed badger surveys to inform routeing.

Future Baseline

- 2.3.4.41 Relative to the current baseline, the value of ecological features present are not expected to change significantly by the end of the construction period in 2030. Management of the habitats is unlikely to change over this period, and consequently no significant degradation or improvement of habitat condition is expected. Due to development pressure year on year within the wider landscape, protected and notable species and habitats are likely to remain priorities for conservation within future baseline scenarios.

2.3.5 Embedded and Control & Management Measures

Embedded Measures

- 2.3.5.1 Where feasible, trenchless techniques would be used at the landfalls to minimise disturbance to coastal habitats, acknowledging that the installation of cables using trenchless techniques has technological limitations that limit the lengths that can be achieved, limitations will in part be linked to the specific topography and geology of the individual sites, this was considered initially to ensure it was viable mitigation at all landfall search locations, but this will need to be further validated through detailed geotechnical surveys.
- 2.3.5.2 In some instances, the use of trenchless techniques can be used to avoid impacts on key constraints, for example where sites designated for their nature conservation value cannot be avoided. Other examples include crossing rivers or major infrastructure such as railway lines or motorways. These were considered in the routeing and siting process.
- 2.3.5.3 Further refinement of the Suffolk Onshore Scheme will be informed by the results of ecology and biodiversity surveys to avoid or minimise impacts on ecological receptors.

Control and Management Measures

2.3.5.4

An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the ecology and biodiversity assessment are:

- GG04 - The CEMP shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.
- GG21 - Construction lighting will be of the lowest luminosity necessary to safely perform each task. It will be designed, positioned and directed to reduce the intrusion into adjacent properties, protected species and habitats.
- GG17 - Wash down of vehicles and equipment will take place in designated areas within construction compounds. Wash water will be prevented from passing untreated into watercourses and groundwater. Appropriate measures will include use of sediment traps.
- GG18 - Wheel washing will be provided at each main compound access point on to the highway. An adequate supply of water will be made available at these locations at all times. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- B02 - The assumption will be that vegetation with the potential to support breeding birds will not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works will be supervised by an Environmental Clerk of Works. Appropriate protection measures will be put in place should active nests be found. These will include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the Environmental Clerk of Works.
- B03 - Where there will be a risk of animal entrapment, a means of escape will be installed into all excavations left open overnight.
- B04 - To control the spread of invasive weeds in accordance with the Wildlife and Countryside Act 1981, any plant or machinery that has been used in areas infested with invasive species (both terrestrial and aquatic), such as Japanese knotweed and Himalayan balsam, will be thoroughly cleaned. Water used to clean vehicles will be controlled to prevent the spread of the plant (through seeds, rhizomes, fragments, etc.). The area will be cordoned off to prevent any inadvertent spreading.
- B05 - All habitats suitable for common reptiles will be subject to two-stage habitat manipulation that will take place between mid-March and mid-October. Firstly, vegetation will be cut to approximately 150mm (with the arisings removed) under the supervision of an Environmental Clerk of Works and the site left for a minimum of two days to allow reptiles to naturally disperse from the area. Secondly, vegetation will be cleared down to ground level under the supervision of an Environmental Clerk of Works. Vegetation will be cleared using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of mortality or injuring reptiles. Construction works could commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction where practicable. If unavoidable, the

removal of vegetation and groundworks at hibernacula will be timed to avoid the hibernation season (late October to early March). Replacement hibernacula and refugia will be provided.

- B06 - Alternative roost structures (bat boxes) will be provided (with landowner consent) on retained trees within the Order Limits or areas outside of the Order Limits agreed with landowners. Three boxes will be provided for each tree with moderate bat roost potential to be felled. Five boxes will be provided for each tree with high bat roost potential to be felled.
- B07 - Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.

Habitat Re-instatement, restoration and compensation

2.3.5.5 Where temporary habitat removal is required, this will be re-instated as soon as practically possible through use of techniques such as re-instatement of temporarily stored turfs and topsoil. Where habitat re-instatement is not possible, restoration or compensatory habitat will be explored.

2.3.5.6 Long term habitat re-instatement, restoration and compensation will be detailed within a Landscape and Ecology Management Plan or equivalent, which will accompany the BNG assessment.

2.3.6 Potential for Significant Effects

2.3.6.1 The ecology and biodiversity assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.3.6.2 The proposed scope of the ecology and biodiversity assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.3.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.3.6.4 The potential for the Suffolk Onshore Scheme to result in likely significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- construction of converter station and underground cables;

- construction of any temporary works areas;
- construction traffic movements; and
- presence of pollution from construction crews.

Sources of maintenance impacts

- presence of pollution from maintenance crews;
- temporary works areas; and
- traffic movements during maintenance works.

Sources of decommissioning impacts

- removal of converter station and underground cables;
- temporary works areas; and
- decommissioning traffic movements.

Potential impacts

2.3.6.5 Table 2.3.3 identifies the potential impacts that could result from the sources identified above.

Table 2.3.3: Source and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction and Maintenance	Construction of converter station and underground cables Construction of any temporary works areas Potential pollution from maintenance crews	Permanent habitat loss (terrestrial)	Yes -The converter station and associated infrastructure will result in an unavoidable permanent loss of habitat. Maintenance of the converter station, underground cables and overhead line may result in permanent or temporary loss of habitat but at a much smaller scale than construction.	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Potential pollution from maintenance crews</p>	Permanent habitat loss (intertidal)	<p>Yes -No permanent infrastructure is to be installed above ground level within the intertidal zone.</p> <p>No day to day maintenance of underground cables would be required in the intertidal zone.</p>	Scoped in
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements during maintenance works</p>	Temporary habitat loss/disturbance (terrestrial)	<p>Yes -Cable installation within the Suffolk Scoping Boundary will result in a degree of temporary habitat loss/disturbance to terrestrial habitat.</p> <p>Maintenance of the converter station, underground cables and overhead line may result in temporary loss of habitat or disturbance but at a much smaller scale than construction.</p>	Scoped in
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements</p>	Temporary habitat fragmentation / degradation (terrestrial)	<p>Yes -Implementation of a construction working corridor may result in temporary fragmentation of habitat connectivity.</p> <p>Maintenance of the converter station, underground cables and overhead line may result in temporary fragmentation of habitat connectivity</p>	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	during maintenance works		but at a much smaller scale than construction.	
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements during maintenance works</p>	Temporary habitat loss/ disturbance (intertidal)	<p>Yes -Cable installation within the Suffolk Scoping Boundary will result in a degree of temporary habitat loss / disturbance to intertidal habitat</p> <p>Maintenance of underground cables could be required in the intertidal zone.</p>	Scoped in
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements during maintenance works</p>	Incidental mortality of protected or notable species	<p>Yes -In the absence of mitigation, there is potential for construction and maintenance works to result in the accidental killing or injuring of protected or notable species, although maintenance would be at a much smaller scale than construction.</p>	Scoped in
Construction and Maintenance	Construction of converter station and underground cables	Disturbance to protected or notable species (noise/ vibration, visual, lighting	Yes -In the absence of mitigation, there is potential for construction and maintenance works	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	<p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements during maintenance works</p>		to result in the accidental disturbance of protected or notable species, although maintenance would be at a much smaller scale than construction.	
Construction and Maintenance	<p>Construction of converter station and underground cables</p> <p>Construction of any temporary works areas</p> <p>Construction traffic movements</p> <p>Potential pollution from maintenance crews</p> <p>Traffic movements during maintenance works</p>	Pollution impacts (dust deposition, air quality, water)	Yes -In the absence of mitigation, there is potential for construction works and maintenance to result in pollution impact pathways upon habitats and species, although maintenance would be at a much smaller scale than construction.	Scoped in
Decommissioning	<p>Decommissioning of converter station and underground cables</p> <p>Any temporary works areas</p> <p>Decommissioning traffic movements</p>	Temporary habitat loss/ disturbance (intertidal)	Yes - Cable removal within the Suffolk Scoping Boundary will result in a degree of temporary habitat loss / disturbance to intertidal habitat	Scoped in
Decommissioning	Decommissioning of converter station and	Incidental mortality of	Yes - In the absence of mitigation, there is potential for	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	underground cables Any temporary works areas Decommissioning traffic movements	protected or notable species	decommissioning works to result in the accidental killing or injuring of protected or notable species.	
Decommissioning	Decommissioning of converter station and underground cables Any temporary works areas Decommissioning traffic movements	Disturbance to protected or notable species (noise/ vibration, visual, lighting)	Yes - In the absence of mitigation, there is potential for decommissioning works to result in the accidental disturbance of protected or notable species.	Scoped in
Decommissioning	Decommissioning of converter station and underground cables Any temporary works areas Decommissioning traffic movements	Pollution impacts (dust deposition, air quality, water)	Yes - In the absence of mitigation, there is potential for decommissioning works to result in pollution impact pathways upon habitats and species	Scoped in

Impact Pathways with Receptors (Step 2)

2.3.6.6 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the Suffolk Scoping Boundary.

Suffolk Converter Station Site 1 Emerging Preference

2.3.6.7 Table 2.3.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.3.4: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Permanent habitat loss (terrestrial)	Designated Sites	Yes -The cable installation route has the potential for direct habitat loss within designated sites. It is expected that any cable installation will result in only a temporary impact. However, until the proposed alignment and working methods are confirmed this impact pathway will be included as a possibility.	Scoped in for Construction, Maintenance and Decommissioning
	Sandlings SPA Alde-Ore Estuary SPA Alde-Ore Estuary Ramsar Leiston-Aldeburgh SSSI North Warren RSPB Reserve	No permanent habitat loss of a designated site will occur as a result of the converter station. It is however possible arable habitats utilised by birds associated with nearby designated sites (e.g. golden plover, white-fronted goose, brent goose) functionally linked to Alde-Ore Estuary SPA/Ramsar could be lost. Bird surveys will investigate use of these habitats by such species and inform any requirement for mitigation.	
	Notable Habitats	Yes -Ancient woodland, coastal grazing marshes, hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD (where possible) and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary, where possible. Should ancient woodland be removed this would be assessed as permanent.	Scoped in for Construction, Maintenance and Decommissioning
	Ancient Woodland – Grove/Old World Wood and Great Wood		

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		The converter station would be located within an arable field so will not result in permanent loss of notable habitats.	
Temporary habitat loss disturbance (terrestrial)	Designated Sites Notable Habitats Sandlings SPA Alde-Ore Estuary SPA Alde-Ore Estuary Ramsar Leiston-Aldeburgh SSSI North Warren RSPB	Yes - It is designated sites as well as notable habitats will be temporary once additional mitigation has been employed (e.g. HDD, re-instatement) to be confirmed by design.	Scoped in for Construction, Maintenance and Decommissioning
	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes -Habitats with potential to support protected and notable species to be potentially impacted by cable installation or converter station construction will be subject to mitigation measures including route assessment, possible HDD, reinstatement and compensation	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss (connectivity)	Invertebrates Great Crest Newt Reptiles	Yes - Habitat connectivity may be impacted in the short term by cable installation but will be minimised through use of HDD where possible to avoid key habitats. Where	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	unavoidable fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established The converter station will likely be situated within arable fields, therefore minimising fragmentation and degradation of key habitats.	
Temporary habitat loss/ disturbance (intertidal)	Designated Sites Notable Habitats	Yes - Cable installation within the intertidal zone of the Outer Thames Estuary, and coastal grazing marsh of Leiston-Aldeburgh SSSI and is unlikely to be achievable through HDD alone and while mitigation through habitat re-instatement will take place it is unlikely that an effect can be avoided entirely.	Scoped in for Construction, Maintenance and Decommissioning
	Non-breeding birds (Intertidal) Breeding Birds	Yes - While intertidal cable installation will be temporary and where possible timed to avoid the most sensitive breeding and wintering periods, an assemblage of notable bird species highly likely to be present within and adjacent to the intertidal works zone	Scoped in for Construction, Maintenance and Decommissioning
Incidental mortality of protected or notable species	Invertebrates	No - It is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat.	Scoped out for all phases
	Great crested newt	Yes - While potential exists for great crested newt mortalities during construction, the overall favourable population status is to be maintained through	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		either implementation of District Level or European Protected Species Mitigation licence.	
	Reptiles Breeding Birds Non-breeding Birds Bats Badger	Yes - Potential exists for unmitigated works to impact suitable protected and notable species habitat which may be relatively widespread along the cable corridor (i.e. arable field margins) and result in direct mortalities. If HDD or route selection cannot avoid suitable habitat, mitigation options include works Ecological Method Statement or Natural England mitigation licence to avoid direct mortalities.	Scoped in for all during Construction, Maintenance and Decommissioning Additionally scoped in for breeding and non-breeding birds during Operation due to potential bird strike on new overhead line.
		Potential also exists for the section of possible overhead powerline to affect breeding and non-breeding birds through collision risk.	
	Dormouse	Yes - Hedgerows within the Suffolk Onshore Scheme Scoping Boundary may be suitable for dormouse and may be impacted by works if HDD not feasible and require mitigation (i.e. under Natural England mitigation licence). Until further assessment can confirm likely absence of dormouse, effect will be scoped in.	Scoped in for Construction, Maintenance and Decommissioning
	Riparian Mammals (otter and water vole)	Yes - It is expected that direct impacts on watercourses (and therefore water vole and otter) can be avoided through HDD techniques. Until routing and feasibility of HDD can be confirmed, there is a potential requirement for mitigation and	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		these receptors remain scoped in.	
Disturbance to protected or notable species (noise/ vibration, visual, lighting)	Great crested newt Non-breeding Birds (Intertidal) Non-breeding Birds (Terrestrial) Breeding Birds Bats Dormouse Badger Otter	Yes - Trees, hedgerows and other habitats within the Suffolk Onshore Scheme Scoping Boundary may be suitable for protected or notable species. If route selection cannot avoid disturbance impacts then mitigation (i.e. works under Ecological Method Statement or Natural England mitigation licence) could be required	Scoped in for Construction, Maintenance and Decommissioning
Pollution impacts (dust deposition, air quality, water)	Designates Sites Notable Habitats	Yes - Potential for pollution or other indirect impacts during construction on adjacent habitats and species will be mitigated through implementation of a Construction and Ecology Management Plan.	Scoped in for Construction, Maintenance and Decommissioning

Suffolk Converter Station Site 1 Alternative

- 2.3.6.8 Table 2.3.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.3.5: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Permanent habitat loss (terrestrial)	Designated Sites Sandlings SPA Alde-Ore Estuary SPA	Yes -The cable installation route has the potential for direct habitat loss within designated sites. It is expected that any cable installation will result in only a temporary impact. However,	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Alde-Ore Estuary Ramsar Leiston-Aldeburgh SSSI North Warren RSPB	<p>until route and working methods are confirmed this impact pathway will be included as a possibility.</p> <p>No permanent habitat loss of a designated site will occur as a result of the converter station. It is however possible arable habitats utilised by birds associated with nearby designated sites (e.g. golden plover, white-fronted goose, brent goose) functionally linked to Alde-Ore Estuary SPA/Ramsar could be lost. Bird surveys will investigate use of these habitats by such species and inform any requirement for mitigation.</p>	
	Notable Habitats Ancient Woodland – Grove/Old World Wood and Great Wood	<p>Yes - Ancient woodland (Great Wood and Grove Wood), coastal grazing marshes, hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD where possible and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary, where possible.</p> <p>Removal of ancient woodland would be assessed as permanent.</p> <p>The converter station would be located within an arable field so will not result in permanent loss of notable habitats.</p>	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary habitat loss disturbance (terrestrial)	Designated Sites Notable Habitats Sandlings SPA Alde-Ore Estuary SPA and Ramsar Leiston-Aldeburgh SSSI The Haven LNR North Warren RSPB	Yes - It is expected that impacts upon designated sites as well as notable habitats will be temporary once additional mitigation has been employed (e.g. HDD, re-instatement) to be confirmed by design.	Scoped in for Construction, Maintenance and Decommissioning
	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitats with potential to support protected and notable species to be potentially impacted by cable installation or converter station construction will be subject to mitigation measures including route assessment, possible HDD, reinstatement and compensation	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss (connectivity)	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter	Yes - Habitat connectivity may be impacted in the short term by cable installation but will be minimised through use of HDD where possible to avoid key habitats. Where fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Water vole Hazel dormouse	The converter station will likely be situated within arable fields, therefore minimising fragmentation and degradation of key habitats.	
Temporary habitat loss/ disturbance (intertidal)	Designated Sites Notable Habitats Sandlings SPA Leiston-Aldeburgh SSSI North Warren RSPB Reserve	Yes -Cable installation within the intertidal zone may or may not be achievable through HDD alone and while mitigation through habitat re-instatement will take place it is unlikely that an effect can be avoided entirely. Current routing alternative options may avoid the need to HDD through Sandlings SPA Leiston-Aldeburgh SSSI, North Warren RSPB and so an effect may be avoided.	Scoped in for Construction, Maintenance and Decommissioning
	Non-breeding birds (Intertidal) Breeding Birds	Yes -While intertidal cable installation will be temporary and where possible timed to avoid the most sensitive breeding and wintering periods, an assemblage of notable bird species highly likely to be present within and adjacent to the intertidal works zone	Scoped in for Construction, Maintenance and Decommissioning
Incidental mortality of protected or notable species	Invertebrates	No - It is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat.	Scoped out for all phases
	Great crested newt	Yes -While potential exists for great crested newt mortalities during construction, the overall favourable population status is to be maintained through either implementation of District Level or European Protected Species Mitigation licence.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Reptiles Breeding Birds Non-breeding Birds Bats Badger	<p>Yes - Potential exists for unmitigated works to impact suitable protected and notable species habitat which may be relatively widespread along the cable corridor (i.e. arable field margins) and result in direct mortalities. If HDD or route selection cannot avoid suitable habitat, mitigation options include works Ecological Method Statement or Natural England mitigation licence to avoid direct mortalities.</p> <p>Potential also exists for the section of possible overhead powerline to affect breeding and non-breeding birds through collision risk.</p>	<p>Scoped in for all during Construction, Maintenance and Decommissioning</p> <p>Additionally scoped in for breeding and non-breeding birds during Operation due to potential bird strike on new overhead line.</p>
	Dormouse	<p>Yes - Hedgerows within the Suffolk Onshore Scheme Scoping Boundary may be suitable for dormouse and may be impacted by works if HDD not feasible and require mitigation (i.e. under Natural England mitigation licence). Until further assessment can confirm likely absence of dormouse, effect will be scoped in.</p>	<p>Scoped in for Construction, Maintenance and Decommissioning</p>
	Riparian Mammals (otter and water vole)	<p>Yes - It is expected that direct impacts on watercourses (and therefore water vole and otter) can be avoided through HDD techniques. Until routing and feasibility of HDD can be confirmed, there is a potential requirement for mitigation and these receptors remain scoped in.</p>	<p>Scoped in for Construction, Maintenance and Decommissioning</p>
Disturbance to protected or notable species	Great crested newt	<p>Yes -Trees, hedgerows and other habitats within the Suffolk Onshore Scheme</p>	<p>Scoped in for Construction,</p>

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
(noise/ vibration, visual, lighting)	Non-breeding Birds (Intertidal) Non-breeding Birds (Terrestrial) Breeding Birds Bats Dormouse Badger Otter	Scoping Boundary may be suitable for protected or notable species. If route selection cannot avoid disturbance impacts then mitigation (i.e. works under Ecological Method Statement or Natural England mitigation licence) could be required	Maintenance and Decommissioning
Pollution impacts (dust deposition, air quality, water)	Designates Sites Notable Habitats	Yes -Potential for pollution or other indirect impacts during construction on adjacent habitats and species will be mitigated though implementation of a Construction and Ecology Management Plan.	Scoped in for Construction, Maintenance and Decommissioning

Suffolk Converter Station Site 3 Emerging Preference

2.3.6.9 Table 2.3.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.3.6: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
Permanent habitat loss (terrestrial)	Designated Sites Sandlings SPA Alde-Ore Estuary SPA and Ramsar Leiston-Aldeburgh SSSI	Yes -The cable installation route has the potential for direct habitat loss within designated sites. It is expected that any cable installation will result in only a temporary impact. However, until route and working methods are confirmed this impact pathway will be included as a possibility.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
	The Haven LNR North Warren RSPB	No permanent habitat loss of a designated site will occur as a result of the converter station. It is however possible arable habitats utilised by birds associated with nearby designated sites (e.g. golden plover, white-fronted goose, brent goose) functionally linked to Alde-Ore Estuary SPA/Ramsar could be lost. Bird surveys will investigate use of these habitats by such species and inform any requirement for mitigation.	
	Notable Habitats	Yes - Ancient woodland (Great Wood and Grove Wood), coastal grazing marshes, hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD where possible and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary, where possible. Removal of ancient woodland will be assessed as permanent. The converter station would be located within an arable field so will not result in permanent loss of notable habitats.	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss disturbance (terrestrial)	Designated Sites Notable Habitats Sandlings SPA	Yes - It is expected that impacts upon designated sites as well as notable habitats will be temporary once additional mitigation has been employed (e.g. HDD, re-instatement) to be confirmed by design.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
	Alde-Ore Estuary SPA and Ramsar Leiston-Aldeburgh SSSI The Haven LNR North Warren RSPB		
	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitats with potential to support protected and notable species to be potentially impacted by cable installation or converter station construction will be subject to mitigation measures including route assessment, possible HDD, reinstatement and compensation.	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss (connectivity)	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitat connectivity may be impacted in the short term by cable installation but will be minimised through use of HDD where possible to avoid key habitats. Where fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established. The converter station will likely be situated within arable fields, therefore minimising fragmentation and degradation of key habitats.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
Temporary habitat loss/disturbance (intertidal)	Designated Sites Notable Habitats Leiston-Aldeburgh SSSI North Warren RSPB Reserve The Haven LNR	Yes - Cable installation within the intertidal zone of Leiston-Aldeburgh SSSI, North Warren RSPB Reserve and The Haven LNR may or may not be achievable through HDD alone and while mitigation through habitat reinstatement will take place it is unlikely that an effect can be avoided entirely.	Scoped in for Construction, Maintenance and Decommissioning
	Non-breeding birds (Intertidal) Breeding Birds	Yes - While intertidal cable installation will be temporary and where possible timed to avoid the most sensitive breeding and wintering periods, an assemblage of notable bird species highly likely to be present within and adjacent to the intertidal works zone.	Scoped in for Construction, Maintenance and Decommissioning
Incidental mortality of protected or notable species	Invertebrates	No - It is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat.	Scoped out for all phases
	Great crested newt	Yes - While potential exists for great crested newt mortalities during construction, the overall favourable population status is to be maintained through either implementation of District Level or European Protected Species Mitigation licence.	Scoped in for Construction, Maintenance and Decommissioning
	Reptiles Breeding Birds Non-breeding Birds	Yes -Potential exists for unmitigated works to impact suitable protected and notable species habitat which may be relatively widespread along	Scoped in for all during Construction, Maintenance and Decommissioning

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
	Bats Badger	the cable corridor (i.e. arable field margins) and result in direct mortalities. If HDD or route selection cannot avoid suitable habitat, mitigation options include works Ecological Method Statement or Natural England mitigation licence to avoid direct mortalities. Potential also exists for the section of possible overhead powerline to affect breeding and non-breeding birds through collision risk.	Additionally scoped in for breeding and non-breeding birds during Operation due to potential bird strike on new overhead line.
	Dormouse	Yes -Hedgerows within the Suffolk Onshore Scheme Scoping Boundary may be suitable for dormouse and may be impacted by works if HDD not feasible and require mitigation (i.e. under Natural England mitigation licence). Until further assessment can confirm likely absence of dormouse, effect will be scoped in.	Scoped in for Construction, Maintenance and Decommissioning
	Riparian Mammals (otter and water vole)	Yes - It is expected that direct impacts on watercourses (and therefore water vole and otter) can be avoided through HDD techniques. Until routing and feasibility of HDD can be confirmed, there is a potential requirement for mitigation and these receptors remain scoped in.	Scoped in for Construction, Maintenance and Decommissioning
Disturbance to protected or notable species (noise/ vibration, visual, lighting)	Great crested newt Non-breeding Birds (Intertidal) Non-breeding Birds (Terrestrial)	Yes -Trees, hedgerows and other habitats within the Suffolk Onshore Scheme Scoping Boundary may be suitable for protected or notable species. If route selection cannot avoid disturbance impacts then mitigation (i.e. works under	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Source	Potential for significant effects	Proposed to be scoped in/out
	Breeding Birds Bats Dormouse Badger Otter	Ecological Method Statement or Natural England mitigation licence) could be required	
Pollution impacts (dust deposition, air quality, water)	Designates Sites Notable Habitats	Yes - Potential for pollution or other indirect impacts during construction on adjacent habitats and species will be mitigated through implementation of a Construction and Ecology Management Plan.	Scoped in for Construction, Maintenance and Decommissioning

Suffolk Converter Station Site 3 Alternative (Option 1)

- 2.3.6.10 Table 2.3.7 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area** and **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)**.

Table 2.3.7: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Permanent habitat loss (terrestrial)	Designated Sites Sandlings SPA, Leiston-Aldeburgh SSSI North Warren RSPB Reserve Sizewell Marshes SSSI Alde-Ore Estuary SPA and Ramsar	Yes -The cable installation route has the potential for direct habitat loss within designated sites. It is expected that any cable installation will result in only a temporary impact. However, until route and working methods are confirmed this impact pathway will be included as a possibility. No permanent habitat loss of a designated site will occur as a result of the converter station. It is however possible arable habitats utilised by	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		birds associated with nearby designated sites (e.g. golden plover, white-fronted goose, brent goose) functionally linked to Alde-Ore Estuary SPA/Ramsar could be lost. Bird surveys will investigate use of these habitats by such species and inform any requirement for mitigation.	
	Notable Habitats	<p>Yes - Coastal grazing marshes, hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD where possible and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary, where possible.</p> <p>The converter station would be located within an arable field so will not result in permanent loss of notable habitats.</p> <p>No ancient woodland is present within the boundary of Site 3 Alternative Option 1, however there is an ancient woodland (Grove Wood/Old World Wood) adjacent to site.</p>	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss disturbance (terrestrial)	Designated Sites Notable Habitats Sandlings SPA, Leiston-Aldeburgh SSSI	Yes - It is expected that impacts upon designated sites as well as notable habitats will be temporary once additional mitigation has been employed (e.g. HDD, re-instatement) to be confirmed by design.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	North Warren RSPB Reserve Sizewell Marshes SSSI Alde-Ore Estuary SPA/Ramsar		
	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitats with potential to support protected and notable species to be potentially impacted by cable installation or converter station construction will be subject to mitigation measures including route assessment, possible HDD, reinstatement and compensation.	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss (connectivity)	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitat connectivity may be impacted in the short term by cable installation but will be minimised through use of HDD where possible to avoid key habitats. Where fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established. The converter station will likely be situated within arable fields, therefore minimising fragmentation and degradation of key habitats.	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss/	Designated Sites	Yes -Cable installation within the intertidal zone may or may not be achievable through	Scoped in for Construction,

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
disturbance (intertidal)	Notable Habitats	HDD alone and while mitigation through habitat re-instatement will take place it is unlikely that an effect can be avoided entirely. Current potential routing around Sandlings SPA/Leiston-Aldeburgh SSSI/North Warren RSPB Reserve and Sizewell Marshes SSSI will avoid an effect on designated habitats within this site.	Maintenance and Decommissioning
	Non-breeding birds (Intertidal) Breeding Birds	Yes - While intertidal cable installation will be temporary and where possible timed to avoid the most sensitive breeding and wintering periods, an assemblage of notable bird species highly likely to be present within and adjacent to the intertidal works zone.	Scoped in for Construction, Maintenance and Decommissioning
Incidental mortality of protected or notable species	Invertebrates	No - It is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat.	Scoped out for all phases
	Great crested newt	Yes - While potential exists for great crested newt mortalities during construction, the overall favourable population status is to be maintained through either implementation of District Level or European Protected Species Mitigation licence.	Scoped in for Construction, Maintenance and Decommissioning
	Reptiles Breeding Birds Non-breeding Birds	Yes - Potential exists for unmitigated works to impact suitable protected and notable species habitat which may be relatively widespread along	Scoped in for all during Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Bats Badger	the cable corridor (i.e. arable field margins) and result in direct mortalities. If HDD or route selection cannot avoid suitable habitat, mitigation options include works Ecological Method Statement or Natural England mitigation licence to avoid direct mortalities. Potential also exists for the section of possible overhead powerline to affect breeding and non-breeding birds through collision risk.	Additionally scoped in for breeding and non-breeding birds during Operation due to potential bird strike on new overhead line.
	Dormouse	Yes - Hedgerows within the Suffolk Onshore Scheme Scoping Boundary may be suitable for dormouse and may be impacted by works if HDD not feasible and require mitigation (i.e. under Natural England mitigation licence). Until further assessment can confirm likely absence of dormouse, effect will be scoped in.	Scoped in for Construction, Maintenance and Decommissioning
	Riparian Mammals (otter and water vole)	Yes - It is expected that direct impacts on watercourses (and therefore water vole and otter) can be avoided through HDD techniques. Until routing and feasibility of HDD can be confirmed, there is a potential requirement for mitigation and these receptors remain scoped in.	Scoped in for Construction, Maintenance and Decommissioning
Disturbance to protected or notable species (noise/ vibration, visual, lighting)	Great crested newt Non-breeding Birds (Intertidal)	Yes -Trees, hedgerows and other habitats within the Suffolk Onshore Scheme Scoping Boundary may be suitable for protected or notable species. If route selection cannot avoid disturbance impacts then	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Non-breeding Birds (Terrestrial) Breeding Birds Bats Dormouse Badger Otter	mitigation (i.e. works under Ecological Method Statement or Natural England mitigation licence) could be required	
Pollution impacts (dust deposition, air quality, water)	Designates Sites Notable Habitats Sandlings SPA, Leiston-Aldeburgh SSSI North Warren RSPB Reserve Sizewell Marshes SSSI Alde-Ore Estuary SPA/Ramsar	Yes - Potential for pollution or other indirect impacts during construction on adjacent habitats and species will be mitigated through implementation of a Construction and Ecology Management Plan.	Scoped in for Construction, Maintenance and Decommissioning

Suffolk Converter Station Site 3 Alternative (Option 2)

2.3.6.11 Table 2.3.8 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area and Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)**.

Table 2.3.8: Impact pathways with receptors– Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Permanent habitat loss (terrestrial)	Designated Sites	Yes -The cable installation route has the potential for direct habitat loss within the designated sites. It is expected that any cable installation will result in only a temporary impact. However, until route and working methods are confirmed this impact pathway will be included as a possibility.	Scoped in for Construction, Maintenance and Decommissioning
	Sandlings SPA Alde-Ore Estuary SPA and Ramsar North Warren RSPB Reserve Leiston-Aldeburgh SSSI	No permanent habitat loss of a designated site will occur as a result of the converter station. It is however possible arable habitats utilised by birds associated with nearby designated sites (e.g. golden plover, white-fronted goose, brent goose) functionally linked to Alde-Ore Estuary SPA and Ramsar could be lost. Bird surveys will investigate use of these habitats by such species and inform any requirement for mitigation.	
	Notable Habitats	Yes - Ancient Woodland (Grove wood and Great Wood), Coastal grazing marshes, hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD where possible and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary, where possible.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		Removal of ancient woodland will be assessed as permanent.	
		The converter station would be located within an arable field so will not result in permanent loss of notable habitats.	
Temporary habitat loss disturbance (terrestrial)	Designated Sites Notable Habitats Sandlings SPA Alde-Ore Estuary SPA and Ramsar North Warren RSPB Reserve Leiston-Aldeburgh SSSI	Yes - It is expected that impacts upon designated sites as well as notable habitats will be temporary once additional mitigation has been employed (e.g. HDD, re-instatement) to be confirmed by design.	Scoped in for Construction, Maintenance and Decommissioning
	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitats with potential to support protected and notable species to be potentially impacted by cable installation or converter station construction will be subject to mitigation measures including route assessment, possible HDD, reinstatement and compensation.	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary habitat loss (connectivity)	Invertebrates Great Crest Newt Reptiles Non-breeding Birds (Terrestrial) Breeding Birds Bats Badger Otter Water vole Hazel dormouse	Yes - Habitat connectivity may be impacted in the short term by cable installation but will be minimised through use of HDD where possible to avoid key habitats. Where fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established. The converter station will likely be situated within arable fields, therefore minimising fragmentation and degradation of key habitats.	Scoped in for Construction, Maintenance and Decommissioning
Temporary habitat loss/disturbance (intertidal)	Notable Habitats	Yes - Cable installation within the intertidal zone may or may not be achievable through HDD alone and while mitigation through habitat re-instatement will take place it is unlikely that an effect can be avoided entirely.	Scoped in for Construction, Maintenance and Decommissioning
	Non-breeding birds (Intertidal) Breeding Birds	Yes - While intertidal cable installation will be temporary and where possible timed to avoid the most sensitive breeding and wintering periods, an assemblage of notable bird species highly likely to be present within and adjacent to the intertidal works zone.	Scoped in for Construction, Maintenance and Decommissioning
Incidental mortality of protected or notable species	Invertebrates	No - It is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat.	Scoped out for all phases
	Great crested newt	Yes - While potential exists for great crested newt mortalities during construction, the	Scoped in for Construction,

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		overall favourable population status is to be maintained through either implementation of District Level or European Protected Species Mitigation licence.	Maintenance and Decommissioning
	Reptiles Breeding Birds Non-breeding Birds Bats Badger	Yes - Potential exists for unmitigated works to impact suitable protected and notable species habitat which may be relatively widespread along the cable corridor (i.e. arable field margins) and result in direct mortalities. If HDD or route selection cannot avoid suitable habitat, mitigation options include works Ecological Method Statement or Natural England mitigation licence to avoid direct mortalities. Potential also exists for the section of possible overhead powerline to affect breeding and non-breeding birds through collision risk.	Scoped in for all during Construction, Maintenance and Decommissioning Additionally scoped in for breeding and non-breeding birds during Operation due to potential bird strike on new overhead line.
	Dormouse	Yes - Hedgerows within the Suffolk Onshore Scheme Scoping Boundary may be suitable for dormouse and may be impacted by works if HDD not feasible and require mitigation (i.e. under Natural England mitigation licence). Until further assessment can confirm likely absence of dormouse, effect will be scoped in.	Scoped in for Construction, Maintenance and Decommissioning
	Riparian Mammals (otter and water vole)	Yes - It is expected that direct impacts on watercourses (and therefore water vole and otter) can be avoided through HDD techniques. Until routing and feasibility of HDD can be confirmed, there is a potential	Scoped in for Construction, Maintenance and Decommissioning

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		requirement for mitigation and these receptors remain scoped in.	
Disturbance to protected or notable species (noise/ vibration, visual, lighting)	Great crested newt Non-breeding Birds (Intertidal) Non-breeding Birds (Terrestrial) Breeding Birds Bats Dormouse Badger Otter	Yes -Trees, hedgerows and other habitats within the Suffolk Onshore Scheme Scoping Boundary may be suitable for protected or notable species. If route selection cannot avoid disturbance impacts then mitigation (i.e. works under Ecological Method Statement or Natural England mitigation licence) could be required.	Scoped in for Construction, Maintenance and Decommissioning
Pollution impacts (dust deposition, air quality, water)	Designates Sites Notable Habitats Sandlings SPA Alde-Ore Estuary SPA and Ramsar North Warren RSPB Reserve Leiston-Aldeburgh SSSI Outer Thames Estuary SPA	Yes - Potential for pollution or other indirect impacts during construction on adjacent habitats and species will be mitigated through implementation of a Construction and Ecology Management Plan.	Scoped in for Construction, Maintenance and Decommissioning

2.3.7 Proposed Assessment Methodology

Proposed Data Sources

- 2.3.7.1 The following sources of information will be utilised to form the basis of the assessment of the likely significant effects on Ecology:

- Baseline data collected by site surveys for the Suffolk Onshore Scheme;
- Baseline data collected and publicly published with regards to other schemes in the area; and
- Biodiversity record data searches undertaken to inform baseline data.

Proposed Assessment Methodology

2.3.7.2 The approach used for the ecological impact assessment (EcIA) will be undertaken in accordance with best practice guidance as published in the CIEEM Guidelines⁷⁰ and summarised below:

- Ecological features that are both present and might be affected by the Suffolk Onshore Scheme are identified (both those likely to be present at the time works begin and those predicted to be present under a future baseline) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions.
- The importance of the identified ecological features evaluated, placing their relative biodiversity and nature conservation value into geographic context. This is then used to define the relevant ecological features that need to be considered further within the assessment process.
- The changes or perturbations predicted to result as a consequence of the Suffolk Onshore Scheme (i.e. the potential impacts), and which could potentially affect relevant ecological features are identified and their nature described. Established good-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account.
- The likely effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified.
- Measures to avoid or reduce any predicted significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines). If necessary, measures to compensate for effects on features of nature conservation importance are also included.
- Any residual effects of the Suffolk Onshore Scheme are reported; and
- Scope for ecological enhancement is considered.

2.3.7.3 The valuation of sites used established value systems (e.g. SSSIs are all of national importance) and reflected the geographical context of the valuation. The categories shown in Table 2.3.9 were applied to give geographic context.

⁷⁰ Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1 (Updated 2019). [online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> [Accessed 13/07/2022].

Table 2.3.9: Examples of criteria used to evaluate important ecological features in a defined geographical context

Geographical level at which ecological feature is important	Example of criteria
International (Very high)	An internationally important site, e.g. Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar; a regularly occurring population of an internationally important species (listed on Annex IV of the Habitats Directive)
National (High)	A nationally designated site, e.g. SSSI, or a site considered worthy of such designation; a large regularly occurring population of a nationally important species
Regional (Medium)	An ecological feature identified in the local BAP. A smaller area of local BAP habitat which are essential to maintain the viability of a larger whole; non-statutory designated sites; a regularly occurring, locally significant number of a nationally important species. An ecological feature identified as of priority within Section 41 of the NERC Act 2006.
District (Low)	An ecological feature that is scarce within the district or borough or which appreciably enriches the district or borough habitat resource.
Local (Very low)	A good example of a common or widespread ecological feature in the local area.
Negligible	No or very limited ecological value.

- 2.3.7.4 The ecological surveys will confirm or identify the distribution and valuation of species and habitats.
- 2.3.7.5 The 'zone of influence' for the Suffolk Onshore Scheme is the area over which ecological features may be affected by changes as a result of the Suffolk Onshore Scheme and associated activities. The zone of influence will be different for each ecological receptor identified, dependent on each receptor's sensitivity to change and will be determined using the maximum extents for study areas of each identified receptor. Where necessary, these will be appropriately revised as the Project evolves.
- 2.3.7.6 The ES will include consideration of options to avoid, reduce, mitigate, or, if necessary, compensate for any identified potential significant adverse effects to the point where any residual effects are not considered to be significant. In addition, opportunities will

be sought for the enhancement of biodiversity at both on and off-site locations as associated with the Suffolk Onshore Scheme.

2.3.7.7 In line with Section 1.2. in the CIEEM guidelines, the terminology used within the EclA will draw a clear distinction between the terms 'impact' and 'effect'. For the purposes of this EclA these terms are defined as follows:

- Impact – actions resulting in changes to an ecological feature. For example, construction activities of a development removing a hedgerow; and
- Effect – outcome resulting from impact acting upon the conservation status or structure and function of an ecological feature. For example, the effects on a population of bats as a result of the loss of a bat roost.

2.3.7.8 When describing potential impacts (and where relevant the resultant effects) consideration will be given to the following characteristics likely to influence this (Sections 5.11-5.18 in the CIEEM guidelines):

- Positive / Negative – i.e. is the change likely to be in accordance with nature conservation objectives and policy:
- Positive – a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g. increasing the extent of a habitat of conservation value; or
- Negative – a change that reduces the quality of the environment, e.g. destruction of habitat.
- Extent – the spatial or geographical area or distance over which the impact/effect occurs;
- Magnitude – the 'size', 'amount' or 'intensity' and 'volume' of an impact - this is described on a quantitative basis where possible;
- Duration – the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to relevant ecological characteristics such as a species' lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact;
- Timing and frequency – i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons; and
- Reversibility – i.e. is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

2.3.7.9 Cumulative effects will be assessed and are those occurring from several sources (also known as inter-relationships) and/or the combined effects of other developments in the area.

2.3.7.10 For each ecological feature only those characteristics relevant to understanding the ecological effect and determining the significance will be described. The determination

of the significance of effects has been made based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

- Not significant - no effect on structure and function, or conservation status; and
- Significant - structure and function, or conservation status is affected.

2.3.7.11 Sections 5.24 to 5.28 in the CIEEM guidance states that effects should be determined as being significant when:

“an effect either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project”.

2.3.7.12 In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

2.3.7.13 Using this information and judgment, it is determined whether the effects will be significant or not on the integrity (of site / ecosystems) or conservation status (of habitats / species) of each ecological feature and the impact significance is determined at the appropriate geographical scale.

2.3.7.14 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines recommend the avoidance of the use of the matrix approach for categorisation (major, moderate and minor), in order to provide consistency of terminology, the CIEEM assessment will be translated into the classification of effects scale, as outlined in Table 2.3.10.

Proposed Significance Criteria

2.3.7.15 The potential effects that are proposed to be scoped into or out of the assessment are summarised in Table 2.3.10.

Table 2.3.10: Relating CIEEM assessment terms to those used in other EIA chapters

Effect classification terminology used in other EIA chapters	Equivalent CIEEM assessment
Major beneficial (positive)	1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.

Moderate beneficial (positive)	<p>1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.</p>
Minor beneficial (positive)	<p>1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.</p>
Negligible beneficial (positive)	<p>1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.</p>
Negligible adverse (negative)	<p>1) Temporary/reversible damage to a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.</p>
Minor adverse (negative)	<p>1) Permanent/irreversible damage to a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.</p>
Moderate adverse (negative)	<p>1) Temporary/reversible damage to a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.</p>
Major adverse (negative)	<p>1) Permanent/irreversible damage to a biodiversity resource; and</p> <p>2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.</p>

2.3.8 Conclusion

2.3.8.1 The receptors and impact pathways identified in this report will be taken into account in the ecological impact assessment to accompany the ES, which will be undertaken in line with the methodology in section 7.

Proposed Scope of the Assessment

2.3.8.2 A summary of the proposed scope of the assessment is provided in Table 2.3.11.

Table 2.3.11: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
Designated Sites	Permanent Habitat Loss (terrestrial)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Sandlings SPA, Outer Thames Estuary SPA, Alde-Ore Estuary SPA and Ramsar, Leiston-Aldeburgh SSSI, The Haven LNR	Temporary Habitat Loss/Disturbance (terrestrial)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
North Warren RSPB Reserve	Temporary Habitat Loss/Disturbance (intertidal)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
	Pollution Impacts (dust, deposition, air quality, water)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Notable Habitats	Permanent Habitat Loss (terrestrial)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Including Ancient Woodland – Great Wood and Grove / Old World Wood	Temporary Habitat Loss/Disturbance (terrestrial)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
	Temporary Habitat Loss/Disturbance (intertidal)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
	Pollution Impacts (dust, deposition, air quality, water)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Invertebrates	Incidental Mortality of Protected or Notable Species	Construction, Maintenance, Decommissioning	Scoped out All emerging preferences and alternative options
Invertebrates	Temporary Habitat Loss/Disturbance (terrestrial)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options

Great crested newts	Temporary Habitat Loss (connectivity)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Reptiles	Incidental Mortality of Protected or Notable Species	Construction, Maintenance, Decommissioning	Scoped in (except invertebrates see above) All emerging preferences and alternative options
Non-breeding birds (terrestrial)			
Breeding birds	Disturbance to Protected or Notable Species (noise, vibration, visual, lighting)	Construction, Maintenance, Decommissioning	Scoped in All emerging preferences and alternative options
Bats			
Badger			
Otter			
Water vole			
Hazel dormouse			
Non-breeding birds (intertidal)			
Breeding Birds			

2.4 Cultural Heritage

2.4.1 Introduction

2.4.1.1 This chapter presents how the Cultural Heritage assessment will consider the potentially significant effects that may arise from the construction, operation maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

2.4.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

2.4.1.3 This chapter should be read in conjunction with:

- **Part 1, Chapter 4, Description of the Project;**
- **Part 1, Chapter 5, EIA Approach and Methodology;**
- **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;** and
- **Part 2, Chapter 5, Geology and Hydrogeology.**

2.4.1.4 This chapter is supported by the following figures:

- **Figure 2.4.1 Designated Cultural Heritage Assets within the Scoping Boundary and wider 1km Study Area;** and
- **Figure 2.4.2 Non-designated assets within the Scoping Boundary.**

2.4.1.5 This chapter is supported by the following Appendix:

- **Appendix 2.4.A Non-designated assets recorded on the Suffolk HER within the Scoping Boundary**

2.4.1.6 Cultural Heritage comprises above and below-ground archaeological assets, buildings or structures of historic interest, historic landscape features, and any other elements that are of cultural heritage interest

2.4.2 Regulatory and Planning Context

2.4.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. The key legislation, policy, and guidance relevant to the assessment of the potential effects on the historic environment

associated with the construction, operation, maintenance and decommissioning phases of the Project are presented below.

Legislation

- Planning (Listed Buildings and Conservation Areas) Act 1990⁷¹; and
- Ancient Monuments and Archaeological Areas Act 1979⁷² (amended by the National Heritage Act 1983⁷³ and 2002⁷⁴).

Planning Policy

National planning policy

- NPS EN-1⁷⁵ with particular reference to Section 5.8 in relation to the significance, impact and recording of the historic environment. The historic environment is also covered in the section 5.9 of the Draft NPS EN-1 which is currently under review.;
- NPS EN-5⁷⁶ with particular reference to Paragraph 2.8.9 in relation to the archaeological consequences of electricity line installation. Potential impacts are also mentioned in sections 2.2.5 and 2.11.14 of the Draft NPS EN-5 which is currently under review.;
- NPPF⁷⁷ with particular reference to Section 16: Conserving and Enhancing the Historic Environment.

National guidance

2.4.2.2 The following guidance is of relevance for cultural heritage:

- Planning Practice Guidance, Section 16: Conserving and enhancing the historic environment⁷⁸;
- Historic Environment Good Practice Advice in Planning Note 2. Managing Significance in Decision Taking in the Historic Environment. Historic England⁷⁹;

⁷¹ Planning (Listed Buildings and Conservation Areas) Act 1990 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/9/contents>

⁷² Ancient Monument and Archaeological Areas Act 1979 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1979/46/contents>

⁷³ National Heritage Act 1983 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1983/47/contents>

⁷⁴ National Heritage Act 2002 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2002/14/contents>

⁷⁵ Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

⁷⁶ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf

⁷⁷ Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

⁷⁸ Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance: Historic Environment. [online] Available at: <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment#overview-historic-environment>

⁷⁹ Historic England (2015). Historic Environment Good Practice Advice in Planning: 2. Managing Significance in Decision – Taking in the Historic Environment. [online] available at: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/>

- Historic Environment Good Practice Advice in Planning Note 3. The Setting of Heritage Assets. Historic England (2nd edition, 2017)⁸⁰;
- Historic Environment Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12. Historic England (2019)⁸¹;
- Commercial Renewable Energy Development and the Historic Environment. Historic England Advice Note 15 (2021)⁸²;
- Chartered Institute for Archaeologists (ClfA) Standard and Guidance for Historic Environment Desk-Based Assessment⁸³;
- ClfA Code of Conduct⁸⁴; and
- Institute of Environmental Management and Assessment (IEMA), the Institute of Historic Building Conservation (IHBC) and the Chartered Institute for Archaeologists (ClfA), Principles of Cultural Heritage Impact Assessment in the UK⁸⁵.

Local planning policy

2.4.2.3 The Suffolk Onshore Scheme falls within the area covered by East Suffolk Council, with key policies linked to heritage covered by the East Suffolk Plan adopted in September 2020⁸⁶. Policies include:

- Strategic Policy SP8 – Tourism, and how the Heritage Coastline, Cultural Heritage, and the Area of Outstanding Natural Beauty contributes to tourism and the economy;
- Strategic Policy SP15 – Landscape and Townscape. Relates to the protection and enhancement of the landscape of historic settlements and their surroundings.
- Development Management Policy DM21 – Aesthetic. Relates to the design of developments and how they can result in impacts on setting.

2.4.2.4 In addition to the East Suffolk policy set out above, East Suffolk Council also published a document entitled ‘Historic Environment: Supplementary Planning Document’ in

⁸⁰ Historic England (2017). Historic Environment Good Practice Advice in Planning Note 3 (second edition). The Setting of Heritage Assets. [online] Available at: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/>

⁸¹ Historic England (2019). Historic England Advice Note 12. Statements of Heritage Significance: Analysing Significance in Heritage Assets. [online] Available at: <https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/>

⁸² Historic England (2021). Historic Environment Good Practice Advice in Planning Note 15. Commercial Renewable Energy Development and the Historic Environment. [online] Available at: <https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/heag302-commercial-renewable-energy-development-historic-environment/>

⁸³ Chartered Institute for Archaeologists (2020). Standard and guidance for historic environment desk-based assessment. [online] Available at: https://www.archaeologists.net/sites/default/files/ClfAS%26GDBA_4.pdf#:~:text=STANDARD%20AND%20GUIDANCE%20for%20historic%20environment%20desk-based%20assessment,expand%20and%20explain%20general%20definitions%20in%20the%20Code.

⁸⁴ Chartered Institute of Archaeology (2019). Code of Conduct: Professional Ethics in Archaeology. [online] Available at: <https://www.archaeologists.net/sites/default/files/Code%20of%20conduct.pdf>

⁸⁵ Institute of Environmental Management & Assessment, in partnership with the Chartered Institute for Archaeologists and the Institute of Historic Building Conservation (2021). Principles of Cultural Heritage Impact Assessment in the UK.

⁸⁶ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf>

June 2021⁸⁷. This provides further details on the Historic Environment in relation of development and includes both direct and non-direct impacts on both archaeology and built heritage.

2.4.3 Study Area

2.4.3.1 The study area is the area within which cultural heritage assets may experience effects as a result of the Suffolk Onshore Scheme during construction, maintenance, operation and decommissioning. Effects to heritage assets may arise as a result of physical impacts to their fabric or through changes to their setting.

2.4.3.2 For the purpose of this scoping report, the Suffolk Onshore Scheme Scoping Boundary which includes the proposed cable route has been used as the study area to capture information relating to archaeology and cultural heritage. The study area provides the necessary context for establishing the likely impacts arising from the Suffolk Onshore Scheme and the potential effects to cultural heritage assets. A second wider study area consisting of the Suffolk Scoping Boundary and a 1km buffer was used to identify designated assets within the surrounding landscape, in order to provide an initial assessment of potential impacts on designated assets.

2.4.4 Baseline Conditions

Data Sources

2.4.4.1 The cultural heritage baseline described in this section has been informed by the following data sources:

- Historic England National Designated Assets dataset⁸⁸;
- Suffolk HER;
- Data collected as part of other schemes in the area including geophysical survey data and evaluation reports produced as part of the SPR East Anglia 1 and East Anglia 2 projects^{89,90,91}; and
- Other readily available online sources.

⁸⁷ East Suffolk Council (2021). Historic Environment: Supplementary Planning Document. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Supplementary-documents/Historic-Environment-SPD/Historic-Environment-SPD-reduced.pdf>

⁸⁸ Historic England. National Heritage List. [Online] Available at: <https://historicengland.org.uk/listing/the-list>

⁸⁹ Scottish Power and Renewables (2019). East Anglia TWO Offshore Windfarm, Chapter 24: Archaeology and Cultural Heritage. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-001096-6.1.24%20EA2%20Environmental%20Statement%20Chapter%2024%20Archaeology%20and%20Cultural%20Heritage.pdf>

⁹⁰ Scottish Power and Renewables (2019). East Anglia TWO Offshore Windfarm (Environmental Statement Volume 3), Appendix 24.4: Proposed Onshore Cable Corridor and Substation Sites – Geophysical Survey Report. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-001538-6.3.24%20EA2%20ES%20Appendix%2024.4%20Geophysical%20Survey%20Report%20Part%201%20of%202.pdf>

⁹¹ Scottish Power and Renewables (2020). East Anglia One North and East Anglia TWO Offshore Windfarm: Pre-Construction Trial Trenching Report. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-002659-ExAAS13D1V1EA1NEA2PreConstructionTrialTrenchingReport_378030_1.pdf

Baseline

- 2.4.4.2 A number of designed assets have been recorded within the Suffolk Scoping Boundary including two scheduled monuments and seven Grade II listed buildings. The scheduled monuments consist of two bowl barrows on Aldringham Green (1011378) and the second site of Leiston Abbey (1014520). The Grade II listed buildings recorded within the Suffolk Scoping Boundary include Aldringham Court (1393143), Billeaford Hall (1216081), and Gorsehill (1269753). The remaining Grade II listed buildings are farmsteads, or former farms, and consist of Little Moor Farm (1215743), Elm Tree Farm (1215788), High House Farm (1216049), and Hill Farmhouse (1231296).
- 2.4.4.3 A further two scheduled monuments have also been recorded in the wider 1 km study area. Both of these are prehistoric burial sites and consist of two bowl barrows in Square Plantation (1011376), and a bowl barrow on Aldringham Common some 300m east of Stone House (1011440).
- 2.4.4.4 Listed buildings outside of the Suffolk Scoping Boundary include one Grade I listed building, seven Grade II* listed buildings, and 85 Grade II listed buildings. The Grade I listed buildings is St Mary's Abbey Church which forms part of the Leiston Abbey complex (1215753). A number of the Grade II* listed buildings are also churches and include the Church of St Lawrence in Knodishall (1215745), the Church of St John Baptist in Saxmundham (1268184), the Church of St Mary Magdalen in Sternfield (1278252), and the Church of St Mary in Friston (1287864). The remaining Grade II* listed buildings include the Long Shop in Leiston (1287610), the Post Mill in Friston (1215741), and Buxlow Manon on the near Knodishall Green (1215749).
- 2.4.4.5 The majority of the Grade II listed buildings are located within the settlements which surrounds the Scoping Boundary, with concentrations in Leiston, Aldeburgh, Thorpness, Aldringham, Friston, Sternfield, and Saxmundham. Aldeburgh, Thorpness, Leiston, and Saxmundham are also Conservation Areas.
- 2.4.4.6 A limited number of Grade II Listed Buildings are also located in more rural settings outside of the main settlements. These are largely farmhouses, or former farmhouses/agricultural buildings.
- 2.4.4.7 A review of non-designated assets recorded on the Suffolk HER revealed a large number of heritage assets demonstrating evidence of human activity in the area from the early prehistoric period through to the modern period (see **Appendix 2.4.A Non-designated assets recorded on the Suffolk HER within the Scoping Boundary** for the full list of non-designated assets). Some of the earliest material identified includes microliths dating to the Mesolithic period recorded near the former Post Office in Aldringham (MSF24493), although lithic scatters have also been recorded in a number of other areas of the Suffolk Scoping Boundary (MSF21571 & MSF21595). While early prehistoric settlement activity is limited, Bronze Age activity has been recorded with a number of assets relating to burial practices recorded.
- 2.4.4.8 The Iron Age is better represented with a number of cropmarks recorded through aerial photography have suggesting extensive field systems and settlement activity dating from the Iron Age, and recent excavations undertaken as part of other infrastructure projects has also demonstrated extensive human activity throughout the Iron Age and Roman period. It is also possible that some of the undated cropmarks have earlier origins and date to the Bronze Age.

- 2.4.4.9 While early medieval sites are not well represented within the Suffolk Scoping Boundary, it is possible that many of the settlements that survive in the wider area have their origins in the early medieval period, and as a result remains dating to this period could lie buried beneath the more built-up areas. It is, however, also possible that some of the Iron Age/Roman sites could continue in use into the early medieval period, and recent works as part of the East Anglia projects⁹²⁹³⁹⁴ have noted a number of sites which might date to this period.
- 2.4.4.10 The majority of assets dating to the medieval period are find spots or scatters of pottery which may represent waste material being spread on the agricultural fields which surrounded the settlements. It is, however, also possible that some of the more focused scatters might represent settlement activity associated with abandoned or shrunken settlements.
- 2.4.4.11 Most activity dating to the post-medieval within the Suffolk Scoping Boundary is associated with the agricultural land through which the study area is focused, although other non-designated assets include banks/flood defences, rabbit warrens, and features linked to industries including brink making.
- 2.4.4.12 The modern period is very well represented with a large number of non-designated dating to the Second World recorded near the coast as well as inland. These remains include pill boxes, anti-glider trenches, and other structures and features on the coast to repel enemy attack and invasion.

Future Baseline

- 2.4.4.13 The cultural heritage chapter within the Environmental Statement (ES) will include an outline of the likely evolution of the baseline environment without the implementation of the development as far as natural changes from the baseline scenario can be assessed.

2.4.5 Embedded and Control & Management Measures

Embedded Measures

- 2.4.5.1 While a number of designated assets have been noted within the Suffolk Scoping Boundary, all will be avoided by the Suffolk Onshore Scheme. As the design develops further and is better refined, additional mitigation measures could include further design intervention to avoid physical impacts on known heritage assets.

⁹² Scottish Power and Renewables (2019). East Anglia TWO Offshore Windfarm, Chapter 24: Archaeology and Cultural Heritage. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-001096-6.1.24%20EA2%20Environmental%20Statement%20Chapter%2024%20Archaeology%20and%20Cultural%20Heritage.pdf>

⁹³ Scottish Power and Renewables (2019). East Anglia TWO Offshore Windfarm (Environmental Statement Volume 3), Appendix 24.4: Proposed Onshore Cable Corridor and Substation Sites – Geophysical Survey Report. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-001538-6.3.24%20EA2%20ES%20Appendix%2024.4%20Geophysical%20Survey%20Report%20Part%201%20of%202.pdf>

⁹⁴ Scottish Power and Renewables (2020). East Anglia One North and East Anglia TWO Offshore Windfarm: Pre-Construction Trial Trenching Report. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-002659-ExAAS13D1V1EA1NEA2PreConstructionTrialTrenchingReport_378030_1.pdf

2.4.5.2 Impacts caused through change to the setting of heritage assets may be mitigated through detailed design and micro-siting of the converter station to avoid or minimise harm to heritage assets.

Control and Management Measures

2.4.5.3 If it is not possible to avoid heritage assets, mitigation will include (but not be limited to) detailed landscape/topographic survey, archaeological excavation of features being removed and archaeological monitoring/watching brief.

2.4.5.4 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the Cultural Heritage assessment are:

- GG03: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP) and a Construction Traffic Management Plan (CTMP) will be produced prior to construction;
- H01 Locations of known archaeological interest/value, or areas where archaeological work is planned, will be signposted/fenced off to avoid unintentional damage; and
- H02 Where a previously unknown heritage asset is discovered, or a known heritage asset proves to be more significant than foreseen at the time of application, the project will inform the local planning authority and will agree a solution that protects the significance of the new discovery, so far as is practicable, within the project parameters.

2.4.6 Potential for Significant Effects

2.4.6.1 The Cultural Heritage assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.4.6.2 The proposed scope of the cultural heritage assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.4.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.4.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

2.4.6.5 Permanent sources of construction impacts resulting from the construction phase are likely to include:

- construction activities such as the excavation of trenches for cable installation, and the establishment of construction compounds; and
- impacts on the setting of heritage assets resulting from the converter station and sub-station

2.4.6.6 Temporary sources of construction impacts that will not last beyond the construction phase are likely to include:

- the presence and movement of construction plant that may alter the setting of heritage assets, including change arising from aural intrusion; and
- the presence of construction compounds introducing potential light and noise.

Sources of operational impacts

2.4.6.7 Permanent sources operational impacts are likely to include:

- the presence of new above ground infrastructure including the new converter station; and
- the presence of potential light and noise.

Sources of maintenance impacts

- Physical impacts resulting from intrusive maintenance works on the cable and converter station; and
- Temporary impacts on setting resulting from plant/machinery linked to maintenance works

Sources of decommissioning impacts

- the presence and movement of construction plant that may alter the setting of heritage assets, including change arising from aural intrusion; and
- the presence of construction compounds introducing potential light and noise.

Potential impacts

2.4.6.8 There is the potential for significant effects on a number of non-designated assets within the Suffolk Scoping Boundary. A full list of non-designated assets can be seen in **Appendix 2.4.A Non-designated assets recorded on the Suffolk HER within the Scoping Boundary** although it should be noted that significant effects are not expected on 'find spots' as 'find spots' represent features that have been recovered and therefore are no longer surviving *in situ*. It is also possible that at least some of the features have been excavated as part of earlier schemes so also no longer survive *in situ*.

2.4.6.9 There will be no physical impacts on the designated assets within the Suffolk Scoping Boundary as they will be avoided by the construction works. There is, however, the potential for temporary impacts on the setting of designated assets resulting from the construction of the cable.

2.4.6.10 Table 2.4.1 below identifies the potential impacts that could result from the sources identified above.

Table 2.4.1: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction	Construction works linked to Suffolk Onshore Scheme	Physical impacts on non-designated heritage assets.	Yes -The Suffolk Onshore Scheme has the potential to result in a physical impact on non-designated assets.	Scoped in
Construction	Construction works linked to Suffolk Onshore Scheme	Temporary impacts on the setting of designated assets.	Yes -The Suffolk Onshore Scheme has the potential to result in temporary impacts on the setting of designated assets.	Scoped in
Construction	Construction compounds introducing light and noise pollution	Temporary impacts on the setting of designated assets.	Yes -The Suffolk Onshore Scheme has the potential to result in temporary impacts on the setting of designated assets.	Scoped in
Operation	Converter Station and potential sub-station extension at Friston	Impacts on the setting of designated assets.	Yes -The Suffolk Onshore Scheme has the potential to result in temporary impacts on the setting of designated assets	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Maintenance	Physical impacts resulting from maintenance works	Physical impacts on non-designated assets	No - Limited potential as all remains will have been removed during construction	Scoped out
Maintenance	Temporary impacts on setting resulting from plant/machinery	Temporary impacts on the setting of heritage assets	No - Limited potential as the machinery/plant being used will be minor in size.	Scoped out
Decommissioning	Physical impacts resulting from decommissioning works	Physical impacts on non-designated assets	No - Limited as all remains will have been removed during construction	Scoped out
Decommissioning	Temporary impacts on setting resulting from plant/machinery	Temporary impacts on the setting of heritage assets	No - Limited potential for significant impacts as the machinery/plant being used will be minor in size.	Scoped out
Decommissioning	Construction compounds introducing light and noise pollution	Temporary impacts on the setting of heritage assets.	No - Limited potential for significant impacts, and impacts will be temporary.	Scoped out

Impact Pathways with Receptors (Step 2)

- 2.4.6.11 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the Suffolk Onshore Scheme study area or areas (delete as appropriate).

Suffolk Converter Station Site 1 Emerging Preference

- 2.4.6.12 Table 2.4.2 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.4.2: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary impacts on the setting of designated assets during construction	Designated Heritage Assets (mainly listed buildings)	Yes -Low due to the limited number of listed buildings near the proposed Converter Station, and the category of the listed buildings	Scoped in
Physical impacts on non-designated heritage assets during construction	Non-Designated Heritage Assets	Yes - High due to the number and size of non-designated assets in the area, as well as the nature of the non-designated assets.	Scoped in
Impacts on the setting of heritage assets resulting from the converter station and above ground infrastructure during construction and operation	Designated and Non-Designated Heritage Assets	Yes -Moderate due to the number of designated and non-designated assets in the surrounding area	Scoped in

Suffolk Converter Station Site 1 Alternative

2.4.6.13 Table 2.4.3 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.4.3: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary impacts on the setting of designated assets during construction	Designated Heritage Assets (mainly listed buildings)	Yes -Low due to the limited number of listed buildings near the proposed Converter Station, and the category of the listed buildings	Scoped in

Physical impacts on non-designated heritage assets during construction	Non-Designated Heritage Assets	Yes -High due to the number and size of non-designated assets in the area, as well as the nature of the non-designated assets.	Scoped in
Impacts on the setting of heritage assets resulting from the converter station and above ground infrastructure during construction and operation	Designated and Non-Designated Heritage Assets	Yes - Moderate due to the number of designated and non-designated assets in the surrounding area	Scoped in

Suffolk Converter Station Site 3 Emerging Preference

2.4.6.14 Table 2.4.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.4.4: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary impacts on the setting of designated assets during construction	Designated Heritage Assets (mainly listed buildings)	Yes - Low due to the limited number of listed buildings near the proposed Converter Station, and the category of the listed buildings	Scoped in
Physical impacts on non-designated heritage assets during construction	Non-Designated Heritage Assets	Yes - High due to the number and size of non-designated assets in the area, as well as the nature of the non-designated assets.	Scoped in
Impacts on the setting of heritage assets resulting from the converter station and above	Designated and Non-Designated Heritage Assets	Yes - Moderate due to the number of designated and non-designated assets in the surrounding area	Scoped in

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
ground infrastructure during construction and operation			

Suffolk Converter Station Site 3 Alternative (Option 1)

2.4.6.15 Table 2.4.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**.

Table 2.4.5: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary impacts on the setting of designated assets during construction	Designated Heritage Assets (mainly listed buildings)	Yes - Low due to the limited number of listed buildings near the proposed Converter Station, and the category of the listed buildings	Scoped in
Physical impacts on non-designated heritage assets during construction	Non-Designated Heritage Assets	Yes - High due to the number and size of non-designated assets in the area, as well as the nature of the non-designated assets.	Scoped in
Impacts on the setting of heritage assets resulting from the converter station and above ground infrastructure construction and operation	Designated and Non-Designated Heritage Assets	Yes - Moderate due to the number of designated and non-designated assets in the surrounding area	Scoped in

Suffolk Converter Station Site 3 Alternative (Option 2)

2.4.6.16 Table 2.4.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option

2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

Table 2.4.6: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary impacts on the setting of designated assets during construction	Designated Heritage Assets (mainly listed buildings)	Yes - Low due to the limited number of listed buildings near the proposed Converter Station, and the category of the listed buildings	Scoped in
Physical impacts on non-designated heritage assets during construction	Non-Designated Heritage Assets	Yes - High due to the number and size of non-designated assets in the area, as well as the nature of the non-designated assets.	Scoped in
Impacts on the setting of heritage assets resulting from the converter station and above ground infrastructure during construction and operation	Designated and Non-Designated Heritage Assets	Yes - Moderate due to the number of designated and non-designated assets in the surrounding area	Scoped in

2.4.7 Proposed Assessment Methodology

2.4.7.1 An overview of the proposed assessment methodology is provided in **Part 1, Chapter 5, EIA Approach and Methodology**.

2.4.7.2 A cultural heritage Desk-Based Assessment (DBA) will be prepared in accordance with industry standards and best practice guidelines, namely the Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-Based Assessment (2020), Historic England's Good Practice Advice in Planning Notes 2, 3 and 12 (2016; 2015; 2019 respectively), and any responses received as part of the scoping phase and consultation on the Project. The DBA will form an appendix to the Project Environmental Statement and will inform the Suffolk Cultural Heritage chapter. It will confirm whether any additional survey work is required to better determine the nature, extent and significance of buried archaeological remains within the construction footprint of the Suffolk Onshore Scheme.

2.4.7.3 While a 1km study area has been used for the scoping stage, as Order Limits had not been set, a refined study area of 0.5 km from the proposed Order Limits will be used to provide detailed baseline information for the assessment. A wider study area of 2 km will be used to identify assets which may have their setting affected. The study area for the assessment of setting will be limited to 2km in the area of Above Ground Infrastructure, such as the Converter Station and any extension to the proposed Friston Substation that might be required, due to the below ground nature of the majority of the development. The scope of the setting assessment will be informed by the Zone of Theoretical Visibility (ZTV), although some assets beyond this distance and outside the ZTV may also be considered where elements of their setting extend closer to, or include, the Suffolk Onshore Scheme.

Proposed Data Sources

2.4.7.4 Desk-based research will be undertaken as part of the EIA. Additional information will be gathered from the following sources.

- Suffolk Historic Environment Records (HER);
- The National Heritage List for England (NHLE), held by Historic England, for designated assets;
- Local authority conservation area appraisal and management documents and their mapping;
- Historic landscape characterisation (HLC) mapping undertaken by local planning authorities;
- Aerial photographs held by Historic England, local authorities and other appropriate repositories and other readily available remote sensing results such as LiDAR data;
- Geological mapping and borehole information as held by the British Geological Survey; and
- Documentary, cartographic and other resources as deposited within local studies libraries, county libraries and archives, including historic Ordnance Survey maps, tithe, estate and other maps, and other relevant primary sources held at Suffolk Archives, together with local studies library information.

2.4.7.5 An archaeological walkover survey to assess known sites and to determine the potential for previously unrecorded heritage assets will also be undertaken. This will focus on the final alignment as well as any associated compounds, laydown areas, and Above Ground Infrastructure.

2.4.7.6 Information collected from these sources will be used to describe the known archaeology and built heritage of the 0.5km study area, and to assess the setting of heritage assets up to 2 km from above ground elements of the Project.

Assigning Value

2.4.7.7 The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest which may be archaeological,

architectural, artistic or historic (NPPF Annex 2, Glossary⁹⁵). Each identified heritage asset can be assigned a value in accordance with the criteria set out in Table 2.4.7. Using professional judgement and the results of consultation, heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account where applicable.

Table 2.4.7: Criteria for assessing the value of heritage assets

Value (significance)	Asset categories
High	World Heritage Sites
	Scheduled Monuments
	Grade I and II* listed buildings
	Registered battlefields
	Grade I and II* registered parks and gardens
	Conservation areas of demonstrable high value
	Non-designated heritage assets (archaeological sites, historic buildings, monuments, parks, gardens or landscapes) that can be shown to have demonstrable national or international importance
Medium	Well preserved historic landscape character areas, exhibiting considerable coherence, time-depth or other critical factor(s)
	Grade II listed buildings
	Conservation areas
	Grade II registered parks and gardens
	Conservation areas
	Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens or landscapes) that can be shown to have demonstrable regional importance
Low	Averagely preserved historic landscape character areas, exhibiting reasonable coherence, time-depth or other critical factor(s)
	Historic townscapes with historic integrity in that the assets that constitute their make-up are clearly legible
	Locally listed buildings
	Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens or landscapes) that can be shown to have demonstrable local importance
	Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade

⁹⁵ Ministry of Housing, Communities and Local Government (2012). National Planning Policy Framework (NPPF) Annex 2: Glossary. Available at <https://www.gov.uk/guidance/national-planning-policy-framework/annex-2-glossary>

Value (significance)	Asset categories
	Historic landscape character areas whose value is limited by poor preservation and/ or poor survival of contextual associations
Not significant	Assets identified on national or regional databases, but which have no archaeological, architectural, artistic or historic value Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade Landscape with no or little significant historical merit

Determining the Magnitude

- 2.4.7.8 Having identified the value of the heritage asset, the next stage in the assessment is to identify the level and degree of impact to an asset arising from the development. Impacts may arise during construction or operation and can be temporary or permanent. Impacts can occur to the physical fabric of the asset or affect its setting.
- 2.4.7.9 The level and degree of impact (impact rating) is assigned with reference to a four-point scale as set out in Table 2.4.8. In respect of cultural heritage an assessment of the level and degree of impact is made in consideration of any scheme design mitigation (embedded mitigation). If no impact on value is identified, no impact rating is given and no resulting effect reported.

Table 2.4.8: Factors influencing the assessment of magnitude of impacts.

Magnitude of Impact rating	Description of impact
Large	Changes such that the heritage value of the asset is totally altered or destroyed. Comprehensive change to elements of setting that would result in harm to the asset and our ability to understand and appreciate its heritage significance.
Medium	Change such that the heritage value of the asset is significantly altered or modified. Changes such that the setting of the asset is noticeably different, affecting significance and resulting in changes in our ability to understand and appreciate the heritage value of the asset.
Small	Changes such that the heritage value of the asset is slightly affected. Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the heritage value of the asset.
Negligible	Changes to the asset that hardly affect heritage value. Changes to the setting of an asset that have little effect on

significance and no real change in our ability to understand and appreciate the heritage value of the asset

Assessment of Effect

2.4.7.10 An assessment to classify the effect, having taken into consideration any embedded mitigation, is determined using the matrix at Table 2.4.9, which takes account of the value of the asset (Table 2.4.7) and the magnitude of impact (Table 2.4.8). Effects can be neutral, adverse or beneficial.

Table 2.4.9: Assessment of effect

Heritage Value (significance)	Very High	High	Medium	Low	Negligible	
Impact Magnitude	Large	Major	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Moderate	Minor	Negligible
	Small	Moderate	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible

2.4.7.11 The ES reports on the significance of effect in accordance with EIA methodology. Major and moderate effects are considered to be significant. Within the NPPF, impacts affecting the value of heritage assets are considered in terms of harm and there is a requirement to determine whether the level of harm amounts to ‘substantial harm’ or ‘less than substantial harm’. This is also supported by the Overarching National Policy Statement for Energy (EN-1) which also notes that there should always be a presumption in favour of conservation as once lost assets cannot be replaced⁹⁶. There is no direct correlation between the significance of effect as reported in the final ES and the level of harm caused to heritage significance. A major (significant) effect on a heritage asset would, however, more often be the basis by which to determine that the level of harm to the significance of the asset would be substantial. A moderate (significant) effect is unlikely to meet the test of substantial harm and would therefore more often be the basis by which to determine that the level of harm to the significance of the asset would be less than substantial. A minor or negligible (not significant) effect would still amount to a less than substantial harm, which triggers the statutory presumptions against development within s.66 of the Listed Buildings Act 1990; however, a neutral effect is classified as no harm. In all cases determining the level of harm to the significance of the asset arising from development impact is one of professional judgement

⁹⁶ Department of Energy and Climate Change (2011). National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

2.4.8 Conclusion

- 2.4.8.1 From the review of data undertaken as part of the scoping exercise, a number of designated and non-designated assets have been recorded within, and immediately adjacent, to the Suffolk Onshore Scheme and associated study area.
- 2.4.8.2 Previous developments in the area, including a number of infrastructure schemes in the immediate surroundings, have also revealed previously unrecorded assets, including significant Early Medieval and Medieval remains.
- 2.4.8.3 While designated assets will be avoided as part of the development of the Suffolk Onshore Scheme, there is the potential for physical impacts on non-designated assets during the construction phase. Furthermore, there is the potential for impacts on the setting of designated and non-designated assets from the converter station.
- 2.4.8.4 As a result, an archaeology and cultural heritage chapter will be completed as part of the EIA. This will focus on assessing impacts to designated and non-designated assets, either through physical impacts from the Suffolk Onshore Scheme, or through change to their settings, during the construction and operational phases.

Proposed Scope of the Assessment

- 2.4.8.5 A summary of the proposed scope of the assessment is provided in Table 2.4.10.

Table 2.4.10: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
Designated assets	Potential for significant effect from impacts on setting resulting from the converter station and any above ground infrastructure such as the possible extension at the proposed Friston sub-station.	Construction and Operation	Scoped in for all options
Non-designated assets	Potential for significant impacts resulting from construction works	Construction	Scoped in for all options
	Potential for significant effect from impacts on setting resulting from the converter station and any other above ground infrastructure	Operation	Scoped in for all options

2.5 Water Environment

2.5.1 Introduction

2.5.1.1 This chapter presents how the Water Environment assessment will consider the potentially significant effects on water environment receptors that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.

2.5.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary, hereafter referred to as the Suffolk Scoping Boundary, is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

2.5.1.3 This chapter should be read in conjunction with:

- **Part 1, Chapter 4, Description of the Project;**
- **Part 1, Chapter 5, EIA Approach and Methodology;**
- **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;** and
- **Part 2, Chapter 5, Geology and Hydrogeology.**

2.5.1.4 This chapter is supported by the following figure:

- **Figure 2.5.1 Water Environment Study Area and Existing Features.**

2.5.1.5 The assessment of potentially significant effects on groundwater receptors is presented in **Part 2, Chapter 6, Geology and Hydrogeology**.

2.5.1.6 The Water Environment Assessment will be supported by a Flood Risk Assessment (FRA) and Water Framework Directive (WFD) Screening Assessment. The scopes of these are not discussed in detail herein, but will be agreed with the relevant stakeholders

2.5.2 Regulatory and Planning Context

2.5.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. The key legislation, policy, and guidance relevant to the assessment of the potential effects on the water environment associated with the construction, operation, maintenance and decommissioning phases of the Project are presented below.

Legislation

- 2.5.2.2 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2003 (Her Majesty's Stationery Office (HMSO), 2003) implemented the Water Framework Directive in England and Wales and were amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019⁹⁷. The 2019 Regulations, specifically Regulation 20, stipulate that the substance of the WFD regime that applied pre-EU Exit will continue to apply with only relatively minor amendments.
- 2.5.2.3 Part 5 of the Environment Act 2021 (HMSO, 2021)⁹⁸, brings together measures to strengthen and update the existing regulatory and long-term planning framework for water, helping to reduce environmental risks, including to water quality and land drainage. It also strengthens the regulation of water and sewerage undertakers by the newly established Office for Environmental Protection.
- 2.5.2.4 The Land Drainage Act 1991 (HMSO, 1991)⁹⁹ together with the Water Resources Act 1991¹⁰⁰ provide for the Environment Agency to prevent the obstruction of any main river through the construction of flow control structures, culverts or any other structure in a main river. Where culverting or other works have a potential to affect the flow regime on ordinary watercourses, consent is required from the Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010 (HMSO, 2010)¹⁰¹, which provides a comprehensive flood risk management framework for people, homes and businesses.

Planning Policy

National planning policy

- 2.5.2.5 National Policy Statement for Energy (EN-1) states that energy projects have the potential to have adverse effects on the water environment, noting that where significant effects are likely an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment should be undertaken. The potential for the Project to result in significant effects on all these aspects of the water environment has been considered herein.
- 2.5.2.6 Flood risk is also a consideration and paragraph 5.7.4 of EN-1 states 'applications for energy projects of 1 hectare or greater in Flood Zone 1 in England and all proposals for energy projects located in Flood Zones 2 and 3 should be accompanied by a flood risk assessment (FRA). This should identify and assess the risk of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account'. The Project will be subject to an FRA that meets these criteria. EN-1 also sets out generic policy with respect to water quality and resources in section 5.16 and section 4.10 sets out policy on the pollution control framework.

⁹⁷ The Floods and Water (Amendments etc.) (EU Exit) Regulations 2019 [online]. Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176283/contents>

⁹⁸ The Environment Act 2021 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

⁹⁹ The Land Drainage Act 1991 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1991/59/contents>

¹⁰⁰ The Water Resources Act 1991 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1991/57/contents>

¹⁰¹ The Flood and Water Management Act 2010 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2010/29/contents>

2.5.2.7 National Policy Statement for Electricity Networks Infrastructure (EN-5) contains paragraph 2.4.2 relating to the water environment, which has been considered within this chapter. This states that ‘The resilience of the project to climate change should be assessed in the Environmental Statement (ES) accompanying an application. For example, future increased risk of flooding would be covered in any flood risk assessment’.

Local planning policy

2.5.2.8 Relevant policies from the East Suffolk Council Suffolk Coastal Local Plan, adopted September 2020, are listed below:

- SCLP9.3 - Coastal Change Management Area.
- SCLP9.5 – Flood Risk.
- SCLP9.6 – Sustainable Drainage Systems.
- SCLP10.3 – Environmental Quality.

2.5.2.9 Several standards and non-statutory guidelines, which provide details of assessment methodologies and mitigation techniques, will also be referenced to inform the assessment, including:

- Planning Inspectorate Advice Note 18: Water Framework Directive¹⁰²,
- Construction Industry Research and Information Association (CIRIA) publications (various dates)¹⁰³; and
- Guidance for Pollution Prevention series¹⁰⁴.

2.5.3 Study Area

2.5.3.1 The study area for the EIA is proposed to include all land within the Suffolk Onshore Scheme Scoping Boundary, together with an additional 500m buffer from this boundary. The study area for the EIA is illustrated in **Figure 2.5.1 Water Environment Study Area and Existing Features**.

2.5.3.2 The FRA that will be prepared to inform the EIA, may cover a larger study area where necessary, for example assessing the potential for changes to baseline flood risk at the local catchment scale or within a floodplain cell which may cover areas up to several km². The Water Framework Directive Screening Assessment will include a study area that is set at the water body scale and include all those WFD waterbodies with the potential to be affected.

2.5.3.3 The study areas for assessing effects on geology and the groundwater environment are described in **Part 2, Chapter 6, Geology and Hydrogeology**.

¹⁰² The Planning Inspectorate (2017). Advice Note 18: Water Framework Directive. [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/>

¹⁰³ CIRIA (various dates) accessible online: https://www.ciria.org/CIRIA/Bookshop/Free_Publications/Books/Free_CIRIA_Publications.aspx?hkey=ca8794b8-b1b3-4742-880d-6c7a27719afb

¹⁰⁴ NetRegs (2022). Guidance for Pollution Prevention (GPPs) – Full List. [online] Available at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

2.5.4 Baseline Conditions

Data Sources

2.5.4.1 The water environment baseline described in this section has been informed by the following data sources:

- The Flood Estimation Handbook webservice;
- Ordnance Survey maps and aerial imagery;
- Environment Agency flood maps for rivers and the sea, surface water and reservoirs;
- Environment Agency Catchment Data Explorer that records WFD data;
- Anglian River Basin Management Plan; and
- Environment Agency Water Quality Data Archive that provides water quality data for monitored main rivers.

Baseline

2.5.4.2 The Suffolk Onshore Scheme is situated in the hydrological catchments of the Hundred River and the neighbouring River Fromus, which is a tributary of the River Alde. Small areas are within the headwaters of the Minsmere Old River and the Leiston Beck. All of these watercourses are designated main rivers and are waterbodies that are monitored under the WFD. The Hundred River and the Fromus rise to the north of Saxmunden. The River Fromus flows south, discharging to the River Alde near Snape. The Hundred River also follows a southerly flow path to drain to the coast south of Thorpeness. Within the study area these rivers have relatively narrow floodplains, designated as Environment Agency Flood Zone 3. However, near their discharges to the coast and the River Alde, floodplains are more extensive, with the Hundred River floodplain shown to be benefitting from flood defences. The Hundred River has a current (2019) ecological status of Moderate and is failing with regard to chemical status¹⁰⁵. The Fromus waterbody has a current ecological status of Poor and is also failing with regard to chemical status. The Minsmere Old River and Leiston Beck both share an ecological status of moderate and are failing with regard to chemical status.

2.5.4.3 In addition to these main rivers, within the study area there are networks of ordinary watercourses, several of which are managed by the East Suffolk Internal Drainage Board (IDB). The board manages water levels in these watercourses and maintains them.

2.5.4.4 Sites designated for their nature conservation interest, where surface waters play a key role in sustaining the designated interest features, are also important receptors. Details of these sites are provided in **Part 2, Chapter 3, Ecology and Biodiversity**. Assessment of effects on such sites will be undertaken in collaboration with ecology and groundwater specialists.

¹⁰⁵ Environment Agency (2022). Catchment Data Explorer – Suffolk Body Water. [online] Available at: <https://environment.data.gov.uk/catchment-planning/WaterBody/GB650503520002>

- 2.5.4.5 Additional baseline data to characterise the water environment within the study area will be collected as part of a desk study, with reference to published data sources, supplemented by data sets collected in consultation with the Environment Agency, Suffolk County Council in their role as the LLFA and East Suffolk IDB.
- 2.5.4.6 Field notes and photographs of water features, collected during ecological walkovers and surveys, will also be referenced, in addition to the high-resolution aerial imagery.
- 2.5.4.7 Baseline data collection will be undertaken on a risk basis, focusing on collecting data for receptors where source-pathway linkages are identified. For example, watercourses that are intended to be crossed by the cable route using open cut techniques and locations accommodating any above ground infrastructure (AGI). For watercourse receptors (where applicable) WFD status data will be collected to characterise existing qualities and status objectives, as well as any measures identified to achieve these objectives, as recorded in the Anglian River Basin Management Plan. Existing surface water interests (abstractions and discharges) will be identified with reference to Environment Agency consent/permit registers. Areas of fluvial/coastal floodplain will be described using Environment Agency flood mapping and modelling data. Existing flood defence assets will be identified with reference to Environment Agency asset records and the Lowestoft Ness to Felixstowe Landguard Point Shoreline Management Plan. Other sources of flood risk, such as from surface water, groundwater and artificial sources, will be characterised in consultation with the LLFA and East Suffolk IDB and with reference to relevant Strategic Flood Risk Assessments and other published sources.

Future Baseline

- 2.5.4.8 With regard to flood risk and drainage, future baseline conditions will be forecasted, drawing on current best practice guidelines. These will take into account the likely impacts of climate change on, river flows, rainfall intensities, and tidal flood levels / storm surge. These future conditions would be accounted for in the design of the Suffolk converter station where required to ensure future resilience to flooding. The likely effects of implementation of future cycles of WFD management plans on the ecological and chemical quality of waterbodies would be considered when assigning value to water environment resources and receptors.

2.5.5 Embedded and Control & Management Measures

Embedded Measures

- 2.5.5.1 The assessment of effects will take account of mitigation, including measures embedded into the Project's design, and good practice measures. Key measures are described below.
- 2.5.5.2 The Suffolk converter station would be situated to avoid areas of Flood Zone 2 and 3. This would ensure that Project infrastructure is safe from flooding and would also avoid permanent losses of floodplain storage or disruption to floodplain flow paths, so avoiding permanent impacts on offsite flood risk.
- 2.5.5.3 Sustainable Drainage System (SuDS) techniques would be utilised at the converter station to manage rainfall runoff in terms of both quantities and quality, as well as along

the cable swathe during construction. Suitable techniques will be selected, influenced by ground conditions and with reference to the drainage hierarchy set out in the National Planning Practice Guidance¹⁰⁶. The drainage hierarchy promotes the use of SuDS and encourages infiltration to ground as a preference, or where this is not practicable, discharges to surface water bodies.

2.5.5.4 The surface water management systems adopted will achieve both attenuation and treatment of surface water runoff, avoiding increases in surface water flood risk and pollution of the receiving water environment.

2.5.5.5 Where the cable route crosses watercourses, appropriate construction techniques would be selected according to factors such as watercourse channel dimensions, flow conditions and environmental sensitivities. Main rivers may be crossed by trenchless techniques to avoid physical changes and impacts on flow and sediment transport regimes and hydromorphology. This technique would also reduce disturbance within the riparian corridor and the risks of the construction phase being detrimental to water quality.

2.5.5.6 Where watercourses are crossed temporarily to provide for construction access, similarly suitable crossing designs would be selected with the aim of reducing impacts.

Control and Management Measures

2.5.5.7 Where effects cannot be avoided through design, commitments would be made, and secured through the Development Consent Order (DCO), to control and manage effects.

2.5.5.8 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect flood risk and land drainage are:

- GG16: Commitments include controlling runoff for work site areas using a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There would be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority. Fuels, oils, chemicals and any other potentially hazardous materials would be stored responsibly in accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001, and all refuelling, oiling and greasing of construction plant and equipment would take place above drip trays and also away from watercourses and drains as far as is reasonably practicable.
- GG15: Appropriate spill kits would be easily accessible for these activities.
- GG18: Wheel washing will be provided at each main compound access point.
- GG17: Wash down of vehicles and equipment will take place in designated areas within construction compounds, with appropriate treatment provided e.g. sediment traps in order to prevent pollution of the water environment.

¹⁰⁶ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021). Planning Practice Guidance. [online] Available at: <https://www.gov.uk/government/collections/planning-practice-guidance>

- GG23: An Emergency Action Plan will be developed for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents.
- W03: At all watercourse crossings, widths of topsoil stripping would be reduced whilst still providing safe working widths and riparian vegetation and natural channel bed materials would be re-instated on completion of the works.
- W06: To manage potential flood risk impacts associated with works in the floodplain, temporary stores of spoil along the cable route corridor would be configured to avoid forming continuous barriers to floodplain flow conveyance.
- W01: Risks of sedimentation would be reduced using silt fencing or similar measures. Secondary consents under the Environmental Permitting Regulations and the Land Drainage Byelaws for qualifying works would also be secured by the appointed Contractor prior to the commencement of any works.

2.5.6 Potential for Significant Effects

2.5.6.1 The water environment assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.5.6.2 The proposed scope of the water environment assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.5.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.5.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

2.5.6.5 Good practice measures within the CoCP would reduce the risk of pollution of the water environment during construction by removing pathways between sources and receptors for many construction activities.

2.5.6.6 However, potential for construction work to cause localised and temporary pollution effects would remain, for example caused by heavily silted runoff, or accidental spills of hydrocarbons and other construction materials.

2.5.6.7 At open cut watercourse crossings there would be temporary physical disturbance and temporary changes to watercourse flow regimes may also occur, for example, where over pumping is required during construction of the cable and access route watercourse crossings. Impacts would range in duration, but crossings may be in place in some locations for several months. Whilst crossing watercourses via trenchless techniques reduces physical disturbance and flow regime effects, the technique is not

entirely without pollution risk, which is associated with the potential for break out of drilling muds (bentonite). Trenchless techniques also have a water demand.

- 2.5.6.8 During construction there would be potential for impacts on land drainage regimes and associated surface water flood risk, due to changes in land surface permeabilities or local topography, e.g. where vegetation cover is stripped and earthworks are undertaken.
- 2.5.6.9 At work sites located in the floodplain there would be potential for localised impacts associated with storage of spoil reducing available floodplain storage or interrupting key floodplain flow paths.
- 2.5.6.10 These higher risk activities and associated receptors are proposed to be scoped into the Environmental Statement (ES), which will be informed by the findings of a supporting FRA. Effects on artesian water, springs and groundwater resources will be addressed in **Part 2, Chapter 6, Geology and Hydrogeology**.
- 2.5.6.11 The sources of construction impacts are:
- soil stripping earthworks and excavations;
 - watercourse crossings for access and cable crossings (trenched);
 - watercourse cable crossings (trenchless); and
 - spoil storage in the floodplain.

Sources of operational impacts

- 2.5.6.12 During operation of the Project, there would be no sources of pollution with the potential to impact on surface waterbodies. This is because land within the cable construction working width would be reinstated following completion of the construction works.
- 2.5.6.13 There would be no untreated operational discharges to surface watercourses and rainfall runoff from the Suffolk Converter Station or any potential AGI associated with the HVAC connection would be sustainably attenuated and treated prior to discharge to the receiving water environment. Physico-chemical elements supporting WFD waterbody status would therefore be safeguarded. No likely significant effects are therefore anticipated, and it is proposed that water quality effects during operation are scoped out of the assessment.
- 2.5.6.14 Given the nature of the Project, there would be no permanent impacts on watercourse flow regimes or floodplains. There would be no new consumptive water uses, and the water quality of water receptors would not be degraded. Therefore, the potential for likely significant effects on existing water interests (surface water abstractions and discharges) and hydromorphology is negligible.
- 2.5.6.15 Regarding flood risk and land drainage, situating the Suffolk converter station outside of the floodplain and incorporating appropriate post construction surface water management and land drainage systems would result in negligible effects. All operational effects on water environment receptors are therefore proposed to be scoped out.
- 2.5.6.16 The sources of operational impacts are:
- operational runoff and discharges from above ground infrastructure (AGI); and

- loss of floodplain infrastructure from AGI.

Sources of maintenance impacts

2.5.6.17 Maintenance activities would fall under the Applicant’s operational management procedures and, given the nature of the Project, maintenance activities are considered to pose a relatively low risk of causing likely significant effects on water environment receptors. Potential maintenance effects are considered to be as described for construction, albeit on a much more localised scale.

2.5.6.18 The sources of maintenance impacts are:

- soil stripping earthworks and excavations;
- watercourse crossings for access; and
- spoil storage in the floodplain.

Sources of decommissioning impacts

2.5.6.19 Whilst the detail of decommissioning would be subject to environmental management plans the impacts and sources are predicted to be the same as those identified for the construction of the Project.

2.5.6.20 The sources of decommissioning impacts are:

- soil stripping earthworks and excavations;
- watercourse crossings for access; and
- spoil storage in the floodplain.

Potential impacts

2.5.6.21 Table 2.5.1 identifies the potential impacts that could result from the sources identified above.

Table 2.5.1: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction, and decommissioning	Soil stripping, earthworks and excavations	Pollution by silt, hydrocarbons and other construction materials	Yes	Scoped in
Construction	Watercourse crossings for access and	Physical disturbance, changes to flow regime	Yes	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	cable route – open cut			
Construction	Watercourse crossings for cable route – trenchless	Pollution risks (bentonite breakout) and water consumption	Yes	Scoped in
Construction, and decommissioning	Soil stripping, earthworks and excavations	Increased runoff rates and volumes, disruption to land drainage regimes	Yes	Scoped in
Construction, decommissioning	Spoil storage in floodplain	Increased flood risk	Yes	Scoped in
Operation	Operational discharges and runoff from AGI	Pollution of watercourses	No – no impact pathway given treatment through SuDS provision	Scoped out
Operation	Operational discharges and runoff from AGI and loss of floodplain storage	Increased flood risk	No – no impact pathway given attenuation of runoff through SuDS provision	Scoped out
Operation	Operational infrastructure – AGI and watercourse crossings	Physical disturbance, impact to flow regimes	No – no impact pathway, there would be no physical disturbance	Scoped out
Maintenance	Maintenance activities	Pollution of watercourses and physical disturbance	Yes	Scoped in

Impact Pathways with Receptors (Step 2)

- 2.5.6.22 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the water environment study areas for each of the five options.

Suffolk Converter Station Site 1 Emerging Preference

- 2.5.6.23 Table 2.5.2 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.
- 2.5.6.24 Water environment receptors in the Suffolk Site 1 Emerging Preference study area include a small reservoir, unnamed ordinary watercourses that are tributaries of the River Fromus and that drain to the coast, and land drainage ditches. There are also limited areas of floodplain at the coastal boundary of the study area.

Table 2.5.2: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Pollution by silt, hydrocarbons and other construction materials and due to decommissioning activities	Hundred River, ordinary watercourses and ditches, reservoir	Yes	Scoped in
Temporary physical disturbance and change to flow regimes at watercourse crossings for access and cable route	Unnamed ordinary watercourses and ditches	Yes	Scoped in
Impact on land drainage regime during construction and operation due to soil stripping, earthworks and excavation	Unnamed ordinary watercourses and ditches, existing land uses	Yes	Scoped in
Temporary loss of floodplain storage / impediment of floodplain flows due to spoil storage during construction and decommissioning	Fluvial and coastal floodplain	Yes	Scoped in
Increased surface water runoff from converter station	Existing land uses and infrastructure	No– no impact pathway given attenuation of runoff	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
drainage during operation		through SuDS provision	
Increased flood risk due to permanent loss of floodplain storage / impediment of floodplain flows	Fluvial and coastal floodplain	No– no impact pathway, there would be no permanent works in the floodplain	Scoped out
Permanent physical disturbance and change to flow regimes	Unnamed ordinary watercourses	No– no impact pathway as cables would be buried	Scoped out
Pollution of watercourses and physical disturbance during maintenance	Unnamed ordinary watercourses, ditches, reservoir	No– no impact pathway for a significant effect given the likely nature and scale of maintenance activities	Scoped out

Suffolk Converter Station Site 1 Alternative

- 2.5.6.25 Table 2.5.3 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.
- 2.5.6.26 Water environment receptors in the Suffolk Site 1 Alternative study area include the Hundred River and its tributaries. Areas of floodplain are very localised, with only very narrow extents of Flood Zone 3 at the coastal landfall site and associated with the Hundred River.

Table 2.5.3: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Pollution by silt, hydrocarbons and other construction materials and due to decommissioning activities	Hundred River and ordinary watercourse tributaries and ditches	Yes	Scoped in
Temporary physical disturbance and	Hundred River, ordinary	Yes	Scoped in

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
change to flow regimes at watercourse crossings for access and cable route	watercourse tributaries and land drainage ditches		
Impact on land drainage regime during construction due to soil stripping, earthworks and excavation	Hundred River, ordinary watercourse tributaries land drainage ditches, existing land uses	Yes	Scoped in
Temporary loss of floodplain storage/impediment of floodplain flows due to spoil storage during construction and decommissioning	Coastal and fluvial floodplain	No– no impact pathway as areas of floodplain are very localised and could be avoided	Scoped out
Increased surface water runoff from converter station drainage during operation	Existing land uses and infrastructure	No– no impact pathway given attenuation of runoff through SuDS provision	Scoped out
Increased flood risk due to permanent loss of floodplain storage/impediment of floodplain flows	Coastal and fluvial floodplain	No– no impact pathway, there would be no permanent works in the floodplain	Scoped out
Permanent physical disturbance and change to flow regimes	Hundred River and ordinary watercourse tributaries	No– no impact pathway as cables would be buried	Scoped out
Pollution of watercourses and physical disturbance during maintenance	Hundred River and ordinary watercourse tributaries	No– no impact pathway for a significant effect given the likely nature and scale of maintenance activities	Scoped out

Suffolk Converter Station Site 3 Emerging Preference

2.5.6.27 Table 2.5.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.5.4: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Pollution by silt, hydrocarbons and other construction materials and due to decommissioning activities	Hundred River, ordinary watercourses, reservoir	Yes	Scoped in
Temporary physical disturbance and change to flow regimes at watercourse crossings for access and cable route	Ordinary watercourses	Yes	Scoped in
Impact on land drainage regime during construction and decommissioning due to soil stripping, earthworks and excavation	Ordinary watercourses, existing land uses	Yes	Scoped in
Temporary loss of floodplain storage /impediment of floodplain flows due to spoil storage during construction and decommissioning	Fluvial and coastal floodplain	Yes	Scoped In
Increased surface water runoff from converter station drainage during operation	Existing land uses and infrastructure	No– no impact pathway given attenuation of runoff through SuDS provision	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Increased flood risk due to permanent loss of floodplain storage/impediment of floodplain flows	Fluvial and coastal floodplain	No– no impact pathway, there would be no permanent works in the floodplain	Scoped out
Permanent physical disturbance and change to flow regimes	Ordinary watercourses	No- no impact pathway as cables would be buried	Scoped out
Pollution of watercourses and physical disturbance during maintenance	Unnamed ordinary watercourses	No– no impact pathway for a significant effect given the likely nature and scale of maintenance activities	Scoped out

Suffolk Converter Station Site 3 Alternative (Option 1)

- 2.5.6.28 Table 2.5.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**.
- 2.5.6.29 Water environment receptors in the Suffolk Site 3 Alternative (Option 1) study area include the headwaters of the Hundred River and several tributaries, as well as the Leiston Beck that drains to the coast through the Sizewell Belts marshland. Areas of fluvial floodplain are localised, with narrow extents of Flood Zone 3 associated with the Hundred River. There are also some areas of floodplain at the coastal landfall site and associated with the Leiston Beck that drains to the coast via the marshland of the Sizewell Belts.

Table 2.5.5: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Pollution by silt, hydrocarbons and other construction materials and due to decommissioning activities	Hundred River, tributary of Leiston Beck and ordinary watercourse tributaries	Yes	Scoped in
Temporary physical disturbance and	Hundred River, Leiston Beck and	Yes	Scoped in

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
change to flow regimes at watercourse crossings for access and cable route	ordinary watercourse tributaries		
Impact on land drainage regime during construction and decommissioning due to soil stripping, earthworks and excavation	Hundred River, Leiston Beck and ordinary watercourse tributaries, existing land uses	Yes	Scoped in
Temporary loss of floodplain storage/impediment of floodplain flows due to spoil storage during construction and decommissioning	Coastal and fluvial floodplains	Yes	Scoped in
Increased surface water runoff from converter station drainage during operation	Existing land uses and infrastructure	No- no impact pathway given attenuation of runoff through SuDS provision	Scoped out
Increased flood risk due to permanent loss of floodplain storage/impediment of floodplain flows	Fluvial and coastal floodplains	No– no impact pathway, there would be no permanent works in the floodplain	Scoped out
Permanent physical disturbance and change to flow regimes	Hundred River, Leiston Beck and ordinary watercourse tributaries	No– no impact pathway as cables would be buried	Scoped out
Pollution of watercourses and physical disturbance during maintenance	Hundred River, Leiston Beck and ordinary watercourse tributaries	No– no impact pathway for a significant effect given the likely nature and scale of maintenance activities	Scoped out

Suffolk Converter Station Site 3 Alternative (Option 2)

- 2.5.6.30 Table 2.5.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (option 2) Option Area**.
- 2.5.6.31 Water environment receptors in the Suffolk Site 3 Alternative (Option 2) study area include the Hundred River and several of its tributaries. Areas of floodplain are very localised, with only very narrow extents of Flood Zone 3 at the coastal landfall site and associated with the Hundred River.

Table 2.5.6: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Pollution by silt, hydrocarbons and other construction materials and due to decommissioning activities	Hundred River and ordinary watercourse tributaries and ditches	Yes	Scoped in
Temporary physical disturbance and change to flow regimes at watercourse crossings for access and cable route	Hundred River and ordinary watercourse tributaries and ditches	Yes	Scoped in
Impact on land drainage regime during construction and decommissioning due to soil stripping, earthworks and excavation	Existing land uses and infrastructure	Yes	Scoped in
Temporary loss of floodplain storage/impediment of floodplain flow due to spoil storage during construction and decommissioning	Coastal and fluvial floodplain	No– no impact pathway as areas of floodplain are very localised and could be avoided	Scoped out
Increased surface water runoff from	Existing land uses and infrastructure	No – no impact pathway given	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
converter station drainage during operation		attenuation of runoff through SuDS provision	
Increased flood risk due to permanent loss of floodplain storage/impediment to floodplain flow	Coastal and fluvial floodplain	No – no impact pathway, there would be no permanent works in the floodplain	Scoped out
Permanent physical disturbance and change to flow regimes	Hundred River and ordinary watercourse tributaries	No – no impact pathway as cables would be buried	Scoped out
Pollution of watercourses and physical disturbance during maintenance	Hundred River and ordinary watercourse tributaries	No – no impact pathway for a significant effect given the likely nature and scale of maintenance activities	Scoped out

2.5.7 Proposed Assessment Methodology

2.5.7.1 An overview of the proposed assessment methodology is provided in **Part 1, Chapter 5, EIA Approach and Methodology**.

Proposed Data Sources

2.5.7.2 The assessment will be informed by several published data sets and reports, which will be referenced to describe the baseline qualities of surface water receptors. Key data sources include:

- Catchment data explorer database of Cycle 2 and 3 Water Framework Directive information (Environment Agency, 2020)
- River Basin Management Plan (Environment Agency, 2018)
- Long term flood risk map for England, the Flood Map for Planning and the Historic Flood Map (Environment Agency, 2022)
- Data from Environment Agency flood models
- Drainage and flood data from Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments
- Water quality data from the Environment Agency archive (Environment Agency, 2018) and

- Data defining surface water catchment areas and hydrological properties (e.g. rainfall, slopes, and soil permeability) from the Flood Estimation Handbook webservice (CEH, 2008)

Proposed Assessment Methodology

- 2.5.7.3 The assessment will be based on guidance set out in Part 10 of Volume 11 of the Design Manual for Roads and Bridges (DMRB), LA113¹⁰⁷. Whilst primarily intended for use in assessing the impacts of highways projects on the water environment, the methodology is widely accepted as suitable for assessing the effects of other types of linear infrastructure. This promotes assessment that is proportionate to the scale and nature of the proposals and that considers the sensitivity of the local water environment to change.
- 2.5.7.4 The method provides guidance on assigning value (sensitivity) to receptors (for example, watercourses, floodplains) as well as criteria for assigning impact magnitude. The criteria consider the scale/extent of the predicted change and the nature and duration of the impact. Tables 2.5.7 and 2.5.8 below present the receptor value and impact magnitude criteria.

Table 2.5.7: Criteria for assigned receptor value (sensitivity)

Value of resource or receptor	Criteria	Typical examples
Very high	Nationally significant attribute of high importance	<p>Site protected/designated under European Commission (EC) or UK legislation (Special Area of Conservation, Special Protection Area, Site of Special Scientific Interest, Ramsar site)</p> <p>Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan (RBMP) and a Q95¹⁰⁸ > 1.0m³/s.</p> <p>Watercourse in natural equilibrium exhibiting a range of morphological features (e.g. pools, riffles) that is free from any modification or human influence</p> <p>Essential infrastructure or highly vulnerable development</p>
High	Locally significant attribute of high importance	<p>Watercourse having a WFD classification shown in a RBMP and a Q95 <1.0m³/s</p> <p>Very limited signs of modification or other human influences on morphology</p> <p>More vulnerable development</p>

¹⁰⁷ Highways England (2020). Design Manual for Roads and Bridges. LA 113 Road Drainage and the Water Environment. [online] Available at: <https://www.standardsforhighways.co.uk/prod/attachments/d6388f5f-2694-4986-ac46-b17b62c21727?inline=true>

¹⁰⁸ Q95 is the flow in a watercourse that is equalled or exceeded for 95% of the time in any given year

Value of resource or receptor	Criteria	Typical examples
Medium	Of moderate quality and rarity	Watercourses not having a WFD classification shown in a RBMP and Q95 > 0.001m ³ /s Watercourse showing signs of modifications and having a limited range of morphological features Less vulnerable development
Low	Lower quality, common place	Watercourses not having a WFD classification in a RBMP and a Q95 flow <0.001m ³ /s A highly modified watercourse, changed by human pressures. No morphological diversity Water compatible development

Table 2.5.8: Criteria for assigning impact magnitude

Magnitude of impact*	Criteria	Typical examples
Large adverse	Results in loss of attribute and/or quality and integrity of the attribute	Loss or extensive change to a fishery Loss or extensive change to a designated nature conservation site Reduction in waterbody WFD classification Pollution of a public water supply or loss of a major commercial/industrial/agricultural supply Extensive change to channel planform, replacement of large extent of natural bed/bans with artificial material Increase in peak flood level (1% annual exceedance probability) of > 100mm
Medium adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss in productivity if a fishery Pollution of a non-potential source of abstraction Contribution to reduction in waterbody WFD classification Degradation (quality or reliability) of a potable, commercial or agricultural water supply Replacement of natural bed material or banks with artificial material over more than 3% of the water body's total length Increase in peak flood level (1% annual exceedance probability) of > 50mm
Small adverse	Results in some measurable change in attribute	Minor effects on water supplies Slight change from baseline conditions of channel bed/banks

Magnitude of impact*	Criteria	Typical examples
	quality or vulnerability	Increase in peak flood level > 10mm
Negligible	Results in effect on attribute of insufficient magnitude to affect the use or integrity	Negligible change in peak flood level (< 10mm) No measurable impact on WFD waterbodies or river channel planform
Small beneficial	Results in some positive effect on an attribute or a reduced risk of negative effect occurring	Creation of flood storage and reduction in peak flood level (1% AEP) > 10mm
Medium beneficial	Results in moderate improvement of attribute quality	Contribution to improvement waterbody WFD classification Improvements to morphological diversity at the local scale Creation of flood storage and reduction in peak flood level (1% AEP) > 50mm
Large beneficial	Results in major improvement of attribute quality	Removal of existing polluting discharge or removing likelihood of polluting discharges to a watercourse Major improvement to morphological diversity at reach scale e.g. through culvert removal Improvement in waterbody WFD classification Creation of flood storage and reduction in peak flood level (1% AEP) > 100mm
No change	No change, either beneficial or detrimental, to attribute quality	

*terminology has been adapted from that used in LA113, DMRB (National Highways, 2020)

- 2.5.7.5 The significance of an effect is derived using the matrix set out **Part 1, Chapter 5, EIA Approach and Methodology**.
- 2.5.7.6 Given the size of the Project and the presence of areas of Flood Zone 3 within the study area, an FRA will be produced in accordance with the Energy National Policy Statement and local flood risk management guidelines published by the LLFA. The FRA will consider flood risk from all relevant sources during both construction and operation, incorporating allowance for climate change in accordance with published guidance, where applicable. It will also include details of the measures proposed to adhere to local drainage and flood risk planning policies.
- 2.5.7.7 A WFD Screening Assessment will also be produced for the Project, guided by Planning Advice Note 18: The Water Framework Directive. The effects of the Project on the Anglian River Basin Management Plan and the waterbodies therein will be described, and the assessment will set out how the Project design has been developed

to align with the requirements of the Directive. A qualitative approach is proposed, and the assessment will identify how the Project design will avoid waterbody deterioration, as well as any other mitigation necessary.

2.5.8 Conclusion

2.5.8.1 There are a range of water environment receptors/features within the proposed study area and several impact pathways have been identified that have the potential to result in significant effects on these receptors. However, other attributes of the water environment are considered unlikely to be significantly affected due to a lack of source-pathway receptor linkage.

Proposed Scope of the Assessment

2.5.8.2 A summary of the proposed scope of the assessment is provided in in Table 2.5.9.

Table 2.5.9: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
	Pollution risk from earthworks, soil stripping	Construction and decommissioning	Scoped in – options Site 1 Emerging preference and Alternative, Site 3 Alternative and Site 3 Option 2
Hundred River and ordinary watercourses/land drains in Hundred River catchment	Physical disturbance and impacts on flow regime for access and cable crossings	Construction and decommissioning	Scoped in – options above
	Permanent effects on water quality, flow regime and physical form	Operation and maintenance	Scoped out – options above
Ordinary watercourses/land drains in River Fromus catchment	Pollution risk from earthworks, soil stripping	Construction and decommissioning	Scoped in – Site 1 emerging preference, Site 3 emerging preference
	Physical disturbance and impacts on flow regime for access and cable crossings	Construction and decommissioning	Scoped in – options above

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
	Permanent effects on water quality, flow regime and physical form	Operation and maintenance	Scoped out – options above
Leiston Beck	Pollution risk from earthworks, soil stripping	Construction and decommissioning	Scoped in – Site 3 Alternative 1
	Physical disturbance and impacts on flow regime for access and cable crossings	Construction and decommissioning	Scoped in – Site 3 Alternative 1
	Permanent effects on water quality, flow regime and physical form	Operation and maintenance	Scoped out – Site 3 Alternative 1
Fluvial and coastal floodplains	Temporary loss of floodplain storage due to soil storage	Construction and decommissioning	Scoped in – all options except Site 1 Alternative and Site 3 Option 2
	Permanent loss floodplain storage due to AGI	Operation and maintenance	Scoped out – all options
Existing land use and infrastructure	Temporary increase in run off and impacts on land drainage infrastructure	Construction and decommissioning	Scoped in – all options
	Permanent increases in surface water runoff from new areas of impermeable land cover at AGIs	Operation and maintenance	Scoped out – all options
Existing water interests	Reduced water availability to support abstractions and assimilate discharges	All phases	Scoped out – all options

2.6 Geology and Hydrogeology

2.6.1 Introduction

- 2.6.1.1 This chapter presents how the geology and hydrogeology assessment will consider the potentially significant effects that may arise from the construction, operation, maintenance, and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.6.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.6.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;**
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;** and
 - **Part 2, Chapter 5, Water Environment**
- 2.6.1.4 This chapter is supported by the following figures:
- **Figure 2.6.1 Superficial Geology;**
 - **Figure 2.6.2 Bedrock Geology;**
 - **Figure 2.6.3 Hydrogeology;** and
 - **Figure 2.6.4 Potential Sources of Contamination.**
- 2.6.1.5 The Project has the potential for geology and hydrogeology effects through excavation/disturbance of potentially contaminated soil, creation of pathways for contamination during piling or foundation excavation, and changes to groundwater levels and flow (e.g. through dewatering).
- 2.6.1.6 For geology, the assessment will include potential effects relating to designated sites, mineral resources, and ground conditions (stability and contamination).
- 2.6.1.7 For hydrogeology the assessment will include potential effects relating to changes in groundwater levels or flow, or potential effects relating to contamination and changes in quality. It also includes potential effects on surface water from changes in groundwater quality, levels or flow (i.e. where there is hydraulic continuity).
- 2.6.1.8 Effects on surface water, groundwater flooding and groundwater in terms of the Water Framework Directive are considered in **Part 2, Chapter 5, Water Environment**.

- 2.6.1.9 Ecological aspects including potential significant effects on Groundwater Dependant Terrestrial Ecosystems are considered in **Part 2, Chapter 3, Ecology and Biodiversity**. However, this chapter will identify where ground conditions and/or groundwater within the Scoping Boundary may impact the groundwater supporting these ecosystems in relation to groundwater quality, levels and flow.
- 2.6.1.10 Effects on agricultural soil resources and soil quality are considered within **Part 2, Chapter 7, Agriculture and Soils**.

2.6.2 Regulatory and Planning Context

- 2.6.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on geology and hydrogeology associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

Environmental Protection Act (1990)¹⁰⁹

- 2.6.2.2 Part 2A of the Environmental Protection Act 1990¹⁰⁹ and associated Statutory Guidance is the primary legislation on contaminated land. It provides a framework for the assessment and, where necessary, the remediation of contaminated land. Part 2A focuses on the identification and remediation of land which in its current use poses an unacceptable risk to people or the environment.
- 2.6.2.3 The Statutory Guidance that accompanies the Environmental Protection Act 1990, include the Contaminated Land Statutory Guidance, 2012¹¹⁰ which provide a definition of what constitutes “contaminated land” and sets out the responsibilities of the Local Authority and the Environment Agency in the identification and management of contaminated land. The regulations also include a definition of 'risk', where a risk is said to be a combination of "*(a) the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and (b) the scale and seriousness of such harm or pollution if it did occur*".

Environmental Damage (Prevention and Remediation) Regulations (2015)¹¹¹

- 2.6.2.4 The Environmental Damage (Prevention and Remediation) Regulations 2015¹¹¹ aim to prevent new land contamination that will damage water or health. The Regulations also include enforcement procedures, including criminal sanctions, for breaches of the Regulations.

¹⁰⁹ Environmental Protection Act 1990 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> [Accessed 16 June 2022]

¹¹⁰ Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, 2012 [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/223705/pb13735cont-land-guidance.pdf

¹¹¹ The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 [online]. Available at: <https://www.legislation.gov.uk/uksi/2015/810/contents/made> [Accessed 16 June 2022]

Environmental Permitting (England and Wales) Regulations (2016)¹¹²

- 2.6.2.5 The Environmental Permitting (England and Wales) Regulations (2016)¹¹² include transposition of the EU Landfill Directive¹¹³ into UK law. These Regulations cover sites that are covered by environmental permits, such as landfills, and how these are regulated. The Project may cross sites where there are permits currently held.
- 2.6.2.6 These Regulations also cover the licensing of surface waters and groundwater abstractions and protect water resources through Source Protection Zones (SPZs). The Project may require abstractions or discharges during construction.

Landfill Directive¹¹³

- 2.6.2.7 The Landfill Directive¹¹³ was adopted by the European Community in 1999. Every Member State of the European Union (EU) was required to implement it from 16 July 2001. The Directive's overall objective is to prevent or reduce as far as possible the negative effects of landfilling on the environment, as well as any resulting risk to human health. It seeks to achieve this through specifying uniform technical standards at Community level. It also sets out requirements for the location, management, engineering, closure and monitoring for landfills. The Directive includes requirements relating to the characteristics of the waste to be landfilled. The Landfill Directive is currently implemented through the Environmental Permitting (England and Wales) Regulations 2016¹¹².

Water Resources Act (1991)¹¹⁴

- 2.6.2.8 The Water Resources Act (1991)¹¹⁴ aims to maintain and improve the quality of controlled waters. Part II of the Act covers the licencing of surface water and groundwater abstractions.

The Water Environment (Water Framework Directive) Regulations (2017)¹¹⁵

- 2.6.2.9 The Water Framework Directive (WFD) (2017)¹¹⁵ establish a framework for the protection of surface waters and groundwater and to prevent the deterioration of WFD water bodies.
- 2.6.2.10 A WFD assessment will be undertaken, this is described within **Part 2, Chapter 5, Water Environment**.

Environment Agency Groundwater Protection Position Statements (2018)¹¹⁶

- 2.6.2.11 The Environment Agency regulates activities that may impact groundwater resources, to prevent and limit pollution. This document is concerned with infrastructure schemes

¹¹² The Environmental Permitting (England and Wales) Regulations 2016 [online]. Available at: <https://www.legislation.gov.uk/uksi/2016/1154/contents/made> [Accessed 16 June 2022].

¹¹³ The Landfill Directive Council Directive 1999/31/EC 1991 [online]. Available at: <https://www.legislation.gov.uk/eudr/1999/31> [Accessed 16 June 2022].

¹¹⁴ Water Resources Act 1991 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1991/57/contents> [Accessed 16 June 2022].

¹¹⁵ The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [online]. Available at: <https://www.legislation.gov.uk/uksi/2017/407/contents/made> [Accessed 16 June 2022].

¹¹⁶ Groundwater Protection Position Statements 2018 [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf [Accessed 16 June 2022].

of national or regional significance, that pass through SPZs or are below the water table in Principal or Secondary aquifers.

2.6.2.12 Section A of the policy (general principles) includes the following

- A1: Wherever legislation allows, the Environment Agency will use a tiered, risk-based approach to regulate activities that may impact groundwater resources and to prevent and limit pollution;
- A2: Development must be appropriate to the sensitivity of the site. Where the potential consequences of a development or activity are serious or irreversible the Environment Agency will adopt the precautionary principle to manage and protect groundwater. The Environment Agency will also apply this principle in the absence of adequate information with which to conduct an assessment; and
- A3: The Environment Agency encourages everyone whose activities may impact upon groundwater to consider the groundwater protection hierarchy in their strategic plans when proposing new development or activities. The aim is to avoid potentially polluting activities being located in the most sensitive locations for groundwater.'

2.6.2.13 Section C Infrastructure states the following:

- 'If national need for the provision and location of major developments overrides Environment Agency objections, the Environment Agency will raise its concerns and make every use of environmental impact assessment in addition to other measures to achieve environmental protection. Where developments receive approval against Environment Agency advice, it will apply section A - general protection position statements.'

Planning Policy

National planning policy

National Policy Statements (NPS)

2.6.2.14 NPS EN-1¹¹⁷, in paragraph 5.10.9 it states that "Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place". Paragraph 5.10.22 also states "Where a proposed development has an impact upon a Mineral Safeguarding Area, the IPC should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources".

2.6.2.15 NPS EN-1¹¹⁷, in paragraph 5.3.7 it states that "development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives, where significant harm cannot be avoided, then appropriate compensation measures should be sought".

¹¹⁷ Department of Energy & Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: Overarching National Policy Statement for Energy (publishing.service.gov.uk) [Accessed 13/07/2022].

- 2.6.2.16 NPS EN-1¹¹⁷, in paragraph 5.15.3, states that the Environmental Statement should in particular describe “*any impacts of the proposed project on... source protection zones (SPZs) around potable groundwater abstractions*”
- 2.6.2.17 NPS EN-1¹¹⁷ is supported by National Policy Statement for Electricity Networks (EN-5)¹¹⁸. EN-5 contains paragraph 2.8.9 relating to geology and hydrogeology, which indicates that the IPC should consider for each specific project ‘*the environmental and archaeological consequences (undergrounding a 400kV line may mean disturbing a swathe of ground up to 40 metres across, which can disturb sensitive habitats, have an impact on soils and geology, and damage heritage assets, in many cases more than an overhead line would)*’.

The national planning policy framework

- 2.6.2.18 The National Planning Policy Framework¹¹⁹ (paragraphs 174, 183, 179, 210) relates to conserving and enhancing the natural and local environment and helping the sustainable use of minerals. The National Planning Policy is supported by the associated Planning Practice Guidance for the NPPF, including Land Affected by Contamination¹²⁰, June 2014 (updated July 2019); Land Stability¹²¹, March 2014 (updated July 2019); Natural Environment¹²², January 2016 (updated July 2019).

Local planning policy

- 2.6.2.19 The local planning policy relevant to the scope of potential impacts relating to geology and hydrogeology is as follows:

Suffolk Minerals and Waste Local Plan¹²³

- MP10 – Minerals Consultation and Safeguarding Areas

Suffolk Coastal Local Plan¹²⁴

- SCLP10.1 – Biodiversity and Geodiversity
- SCLP10.3 – Environmental Quality

¹¹⁸ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf [Accessed 16 June 2022].

¹¹⁹ Ministry of Housing Communities & Local Government (2021). National Planning Policy Framework. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

¹²⁰ Ministry of Housing Communities & Local Government (2019). Planning Practice Guidance: Land Affected by Contamination. [online] Available at: <https://www.gov.uk/guidance/land-affected-by-contamination>

¹²¹ Ministry of Housing Communities & Local Government (2019). Planning Practice Guidance: Land Stability. [online] Available at: <https://www.gov.uk/guidance/land-stability>

¹²² Ministry of Housing Communities & Local Government (2019). Planning Practice Guidance: Natural Environment. [online] Available at: <https://www.gov.uk/guidance/natural-environment>

¹²³ Suffolk County Council (2020). Suffolk Minerals and Waste Local Plan. [online] Available at: <https://www.suffolk.gov.uk/assets/planning-waste-and-environment/Minerals-and-Waste-Policy/Minerals-and-Waste-SMWLP-Adopted/Chapters-1-to-18-SMWLP-Adopted-July-2020.pdf#:~:text=1.1%20The%20Suffolk%20Minerals%20%26%20Waste%20Local%20Plan,the%20same%20from%20other%20forms%20of%20competing%20development.> [Accessed 30 June 2022].

¹²⁴ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf> [Accessed 30 June 2022].

Guidance and Advice Notes

2.6.2.20 The following core guidance documents provide the technical framework for applying a risk management process when dealing with land affected by contamination in a way that is consistent with government policies and legislation within the UK:

- Land Contamination: Risk Management (LCRM)¹²⁵;
- CIRIA 552: Contaminated Land Risk Assessment, A guide to good practice¹²⁶;
- BS 10175:2011+A2:2017 Investigation of potentially contaminated sites. Code of Practice¹²⁷; and
- The Environment Agency's Guiding Principles for Managing and Reducing Land Contamination (GPLC2)¹²⁸.

2.6.3 Study Area

2.6.3.1 For the purpose of establishing the baseline conditions and defining the scope of the EIA, the study area has been defined as the Suffolk Scoping Boundary plus a 250m buffer for geology and up to a 500m buffer for hydrogeology. Given the scale and nature of the Project, this is considered a robust yet proportionate approach, and although not directly relevant for this development type, accords with the study area recommended in Guidance for the Safe Development of Housing on Land Affected by Contamination¹²⁹.

2.6.3.2 The study area will be refined throughout the development of the Project, it is proposed that the study area for the EIA will be the proposed Order Limits plus the same buffer zones as described above.

2.6.4 Baseline Conditions

Data Sources

2.6.4.1 The Geology and Hydrogeology baseline described in this section has been informed by the following data sources:

- Britain from Above, historical aerial imagery archive¹³⁰,

¹²⁵ Environment Agency (2021). Land Contamination Risk Management. [online] Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

¹²⁶ Rudland D., Lancefield R. and Mayell P. (2001). Contaminated land risk assessment, a guide to good practice (C552). CIRIA. p. 1-159.)

¹²⁷ British Standards Institution (2011). BS 10175:2011+A2:2017, Investigation of potentially contaminated sites – code of practice. BSI. P. 1-134..

¹²⁸ Environment Agency (2016). Managing and Reducing Land Contamination: Guiding Principles (GPLC). [online] Available at: <https://www.gov.uk/government/publications/managing-and-reducing-land-contamination> [Accessed 16 June 2022].

¹²⁹ The National House Building Council, The Environment Agency and The Chartered Institute of Environmental Health (2008). Guidance for the Safe Development of Housing on Land Affected by Contamination. [online] Available at: <https://www.nhbc.co.uk/binaries/content/assets/nhbc/products-and-services/tech-advice-and-guidance/guidance-for-the-safe-development-of-housing-on-land-affected-by-contamination.pdf> [Accessed 16 June 2022].

¹³⁰ Britain from Above (2022). [online] Available at: <https://britainfromabove.org.uk/en> [Accessed 30 June 2022]

- British Geological Survey (BGS) Sheet 191 Saxmundham¹³¹, 1:50,000 scale solid and drift edition;
- BGS GeoIndex Viewer¹³²;
- BGS Hydrogeological Map of the Chalk and Lower Greensand of Kent, Sheet 3b¹³³;
- Coal Authority Interactive Map¹³⁴;
- Environment Agency (EA), Catchment Data Explorer¹³⁵;
- Environment Agency Report SC040016/R, New Groundwater Vulnerability Mapping Methodology in England and Wales¹³⁶;
- GeoSuffolk, records of Regionally Important Geological Sites (RIGS), referred to in Suffolk as Local Geological Sites (LoGS) and Suffolk County Geodiversity Sites¹³⁷;
- Natural England, Designated Sites View¹³⁸;
- Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map (DEFRA, 2022)¹³⁹; and
- National Library of Scotland, georeferenced historical maps for the period 1885 - 1970, (NLS, 2022)¹⁴⁰.

Baseline

Geology

Superficial deposits

2.6.4.2 The superficial geology present beneath the Suffolk Scoping Boundary is variable, as shown on **Figure 2.6.1 Superficial Geology**.

¹³¹ British Geological Survey (1996). Sheet 191, Saxmundham, 1:50,000 scale solid and drift, geological map, BGS, Keyworth.

¹³² British Geological Survey (2022). Geoindex Onshore. [online] Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> [Accessed 30 June 2022].

¹³³ British Geological Survey (1970). Sheet 3b: Hydrogeological Map of the Chalk and Lower Greensand of Kent – Folkestone Beds and Hythe Beds (1:126,720). BGS, Keyworth.

¹³⁴ The Coal Authority, Interactive Viewer (2022). [online] Available at: <https://mapapps2.bgs.ac.uk/coalauthority/home.html> [Accessed 30 June 2022].

¹³⁵ Environment Agency (2022). Catchment Data Explorer. [online] Available at: <https://environment.data.gov.uk/catchment-planning/WaterBody/GB520503613602> [Accessed 30 June 2022].

¹³⁶ Environment Agency (2017). Groundwater vulnerability mapping methodology. [online] Available at: <https://www.gov.uk/government/publications/updated-groundwater-vulnerability-maps-improvements-to-methodology-and-data> [Accessed 30 June 2022].

¹³⁷ Geosuffolk (2022). Suffolk County Geodiversity Sites. [online] Available at: https://geosuffolk.co.uk/images/GeologySites/Suffolk_County_Geodiversity_Sites_2021.pdf [Accessed 30 June 2022].

¹³⁸ Natural England (2022). Designated Sites View. 2022 [online] Available at: <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx> [Accessed 30 June 2022].

¹³⁹ Department for the Environment, Food and Rural Affairs (2022). Multi-Agency Geographic Information for the Countryside. [online] Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed 30 June 2022].

¹⁴⁰ National Library of Scotland (2022). Map Images. [online] Available at: <https://maps.nls.uk/geo/explore/side-by-side/#zoom=5&lat=56.00000&lon=-4.00000&layers=1&right=ESRIWorld> [Access 30 June 2022].

- 2.6.4.3 Superficial deposits are present across the majority of the Suffolk Scoping Boundary and comprise the various lithologies of the Lowestoft Formation, described by the BGS¹⁴¹ as “*chalky till, together with outwash sands and gravels, silts and clays*”.
- 2.6.4.4 Predominantly in the west of the Suffolk Scoping Boundary the Lowestoft Formation is indicated to comprise “diamicton” (commonly referred to as ‘boulder clay’). In the eastern part of the Suffolk Scoping Boundary the Lowestoft Formation comprises granular deposits of “sand and gravel”, with limited areas of “clay and silt”.
- 2.6.4.5 Elsewhere within the Suffolk Scoping Boundary there are also limited areas shown to be underlain by the following superficial deposits:
- In the southeast, adjacent to the coast, Tidal Flat Deposits, comprising “*consolidated soft silty clay, with layers of sand, gravel and peat*”;
 - Adjacent to the coastline a ‘strip’ of Marine Beach Deposits, comprising “*Shingle, sand, silt and clay*”;
 - Within the valley associated with the Hundred River deposits of Alluvium, comprising “normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel” is recorded;
 - Within the valley floor of the Leiston Beck in the northeast of the Suffolk Scoping Boundary, deposits of Peat are recorded; and
 - In the west of the Suffolk Scoping Boundary, within the valley formed by a tributary of the River Alde, a very limited area of Head, comprising “*gravel, sand and clay ... locally with lenses of silt, clay or peat and organic material*” are recorded.
- 2.6.4.6 There are also some areas within the Suffolk Scoping Boundary where the BGS mapping indicates an absence of superficial deposits¹³². These areas are predominantly adjacent to the Hundred River in the vicinity of Knodishall and Aldringham, within the valley to the northeast of Leiston, and adjacent to ‘Sizewell Gap’ (south of Sizewell).

Bedrock geology

- 2.6.4.7 The bedrock geology present beneath the Suffolk Scoping Boundary is shown on **Figure 2.6.2 Bedrock Geology**.
- 2.6.4.8 The majority of the northern two-thirds of the Suffolk Scoping Boundary is shown to be underlain by bedrock of the Crag Formation, described by the BGS¹⁴¹ as “*Sands, gravels, silts and clays. The sands are characteristically dark green [to] bright orange ... The gravels in the lower part of the group are almost entirely composed of flint*”. The BGS record that this Formation is up to 70m thick.
- 2.6.4.9 The majority of the southern third of the Suffolk Scoping Boundary is shown to be underlain by bedrock of the Chillesford Church Sand Member, described by the BGS¹⁴¹ as “*well sorted, fine-to medium-grained, micaceous, buff to pale brown, quartz sand*”. The BGS record that this Member is up to 13m thick.

¹⁴¹ British Geological Survey (2022). The BGS Lexicon of Named Rock Units. [online] Available at: <https://webapps.bgs.ac.uk/lexicon/> [Accessed 30 June 2022].

- 2.6.4.10 A smaller area adjacent to the coast in the south-east of the Suffolk Scoping Boundary is shown to be underlain by the Corraline Crag, described by the BGS as “*Carbonate-rich skeletal sands... Basal lag gravel rich in pebbles of phosphatic mudstone*”. The BGS record that this stratum is up to 25m thick.
- 2.6.4.11 Very limited areas in the south-east and north of the Suffolk Scoping Boundary are underlain by the Chillesford Clay Member, described by the BGS as “*pale grey silty clay, with rare sand laminae*”. The BGS record that this Member is up to 6m thick.
- 2.6.4.12 Underlying the Crag Formation, Corraline Crag and Chillesford Clay member in large parts of the Suffolk Scoping Boundary is the Thames Group, Lambeth Group, Ormesby Clay Formation and White Chalk Subgroup. There is the potential for some of these strata to be absent, with the White Chalk Subgroup and Crag Formation in direct contact.

Coal mining

- 2.6.4.13 The Coal Authority’s interactive map viewer¹³⁴ indicates that the Suffolk Scoping Boundary is not located within a coal mining reporting area or a development high risk area. The interactive map shows that there are no recorded mine entries, fissures or breaklines, areas of historical recorded shallow mining, coal outcrops, coal mine abandonment plans or Development High Risk Areas within the Suffolk Scoping Boundary.

Geo-conservation

- 2.6.4.14 A review of the GeoSuffolk records¹³⁷ and DEFRA’s MAGIC map¹³⁹ indicates that there are no Regionally Important Geological Sites (RIGS) (also referred to as Local Geological Sites [LoGS]), County Geo-Sites or geological Sites of Special Scientific Interest (SSSI) present within the Suffolk Scoping Boundary or wider study area.
- 2.6.4.15 The Leiston-Aldeburgh SSSI is located to the east of the Suffolk Scoping Boundary and Sizewell Marshes SSSIs are present in the northeast of the Suffolk Scoping Boundary, however neither of these SSSI are designated for geological reasons.
- 2.6.4.16 Alde-Ore Estuary SSSI and Ramsar is present immediately south of the Suffolk Scoping Boundary within the study area. This SSSI is designated¹³⁸ partly on the basis of its geological value, however both areas referred to in the designation (Orford Ness and cliffs at Gedgrave) are located approximately 9km to the south of the Suffolk Scoping Boundary.

Minerals

- 2.6.4.17 A review of the Suffolk County Council (SCC) Minerals and Waste Local Plan (MWLP)¹²³ indicates that approximately half of the Suffolk Scoping Boundary is located within a Mineral Consultation Area (MCA).

Radon

- 2.6.4.18 Based on the UK Radon maps¹⁴² the study area is in an area where less than 1% of homes are above the action level and therefore it is considered there is a low risk to the Project from Radon in relation to geology and hydrogeology.

Hydrogeology

Aquifer Designation – Superficial

- 2.6.4.19 DEFRA's MAGIC map¹³⁹ indicates that the superficial deposits are classified as follows:

- Lowestoft Formation – Diamicton = Secondary Undifferentiated Aquifer
- Lowestoft Formation - Clay and Silt = Secondary B Aquifer
- Lowestoft Formation - Sand and Gravel = Secondary A Aquifer
- Marine Beach and Blown Sand Deposits = Secondary A Aquifer
- Alluvium = Secondary A Aquifer
- Tidal Flat Deposits and Head Deposits = Unproductive Strata
- Peat = Unproductive Strata

- 2.6.4.20 Secondary A Aquifers are described by the Environment Agency (EA) as “permeable layers that can support local water supplies, and may form an important source of base flow to rivers”. Secondary B Aquifers are described by the EA as “mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers”. The Secondary Undifferentiated Aquifer classification is applied by the EA “where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value”¹⁴³.

- 2.6.4.21 Unproductive Strata are described by the EA as “largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them”¹⁴³.

- 2.6.4.22 Groundwater flow within the shallow aquifer is likely to be generally to the east/southeast towards the Hundred River and the sea. Groundwater levels and movement may exhibit some tidal influence in the eastern part of the Suffolk Scoping Boundary in proximity to the sea.

Aquifer designation – bedrock

- 2.6.4.23 The bedrock of the Crag Group, Chillesford Church Sand Member and White Chalk Subgroup is classified by the EA as a Principal Aquifer, defined by the EA as rock

¹⁴² UK Radon (2022). Radon Maps. [online] Available at: <https://www.ukradon.org/radonmaps/> [Accessed on 30 June 2022]

¹⁴³ Environment Agency (2017). Protect groundwater and prevent groundwater pollution. [online] Available at: <https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution> [Accessed 30 June 2022].

layers that “provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands”¹⁴³.

- 2.6.4.24 The bedrock deposits of the Chillesford Clay Member (limited extent only) and the Thames Ground are classified as Unproductive Strata and the Lambeth Group is classified as a Secondary A Aquifer.
- 2.6.4.25 The contours of “*Potentiometric surface of the Crag*” as shown on the relevant BGS’ hydrogeological map¹³³, indicate that the piezometric surface within the Suffolk Scoping Boundary is likely to be between five and zero metres above Ordnance Datum (mAOD).
- 2.6.4.26 The groundwater in the different strata (superficial and bedrock) may therefore be in hydraulic continuity.

Groundwater vulnerability

- 2.6.4.27 DEFRA’s MAGIC map¹³⁹ indicates that the groundwater in the north-western part of the Suffolk Scoping Boundary and the wider study area, i.e., approximately beneath areas where Lowestoft Formation Diamicton is present overlying the Crag Group, is of “Medium – High” vulnerability.
- 2.6.4.28 In the south-eastern part of the Suffolk Scoping Boundary and wider study area, i.e., where the Lowestoft Formation Clay and Silt, and Sand and Gravel overlie the Crag Group, the groundwater is shown to be of “Medium - Low” to “Medium – High” vulnerability.
- 2.6.4.29 The EA define High vulnerability as “Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits”, and areas of Low vulnerability as “Areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability”. Medium vulnerability is described as intermediate between Low and High vulnerability.

Groundwater source protection zones

- 2.6.4.30 Source Protection Zones in relation to the Suffolk Onshore Scheme are shown on **Figure 2.6.3 Hydrogeology**.
- 2.6.4.31 DEFRA’s MAGIC map¹³⁹ indicates that the majority of the study area is located within a groundwater Source Protection Zone (SPZ) 3 that appears to be associated with groundwater abstractions in Leiston, Knodishall and Saxmundham which appears to be abstracting from the Crag Formation.
- 2.6.4.32 A small part of the study area, to the south of Knodishall, is located within an SPZ 2.
- 2.6.4.33 A SPZ1 is defined as the inner zone which is a 50-day travel time of a pollutant to the source. A SPZ2 Outer Zone is defined as a 400-day travel time of a pollutant to a source. A SPZ3 is defined as the total catchment, which is the area around a source within which all the groundwater ends at the abstraction point¹⁴⁴.

¹⁴⁴ Environment Agency (2019). Groundwater Source Protection Zones. [online] Available at: <https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs> [Accessed 15 July 2022].

2.6.4.34 The map¹³⁹ also shows that the study area is not located within a groundwater Drinking Water Safeguard Zone (DWSZ) or a groundwater Nitrate Issues Priority Zone (NIPZ). The nearest groundwater DWSZ and NIPZ are located approximately 22km to the southwest and 44km to the northwest of the Suffolk Scoping Boundary, respectively.

Groundwater body

2.6.4.35 The EA's Catchment Data Explorer¹³⁵ indicates that groundwater beneath the Scoping Boundary and within the wider study area is part of the Waveney and East Suffolk Chalk and Crag groundwater body (ref: GB40501G400600). This groundwater body received an overall Water Framework Directive (WFD) classification of "Poor" in 2019. This classification can be further broken down into classifications of "Poor" for both chemical quality and quantitative status. The Chalk and the Crag are likely to be in direct continuity in some parts of the catchment, in large parts of the Suffolk Scoping Boundary they are separated by the Thames Group, Lambeth Group and Ormesby Clay.

Hydrology

2.6.4.36 The potential effects relating to hydrology are assessed within **Part 2, Chapter 5, Water Environment**, however where there is potential for groundwater to interact with and impact surface waters, those sensitive receptors are identified within this chapter in order to determine the potential effects from any contamination.

2.6.4.37 The Suffolk Scoping Boundary is situated within the catchments of the Hundred River, and the Leiston Beck, both of which are designated main rivers. The Hundred River flows generally to the southeast through / adjacent to the Suffolk Scoping Boundary before discharging into the sea at Thorpeness. The Leiston Beck flows generally northeast through the northeast part of the Suffolk Scoping Boundary before out falling to the sea at Minsmere.

2.6.4.38 The Environment Agency Catchment Data Explorer¹³⁵ indicates that both the Hundred River and Leiston Beck catchments were given a 'Moderate' Ecological Status and 'Fail' Chemical Status in 2019 due to an excess in organoboronic and mercury Compounds.

2.6.4.39 DEFRA's MAGIC map¹³⁹ indicates that the Suffolk Scoping Boundary is not located within a Drinking Water Protected Area for Surface Water.

Environmentally sensitive sites

2.6.4.40 A review of DEFRA's MAGIC map¹³⁹ indicates the following environmentally sensitive sites present within the study area:

- Leiston-Aldeburgh SSSI, located in the southeast of the study area. The Sandlings Special Protection Area (SPA) occupies approximately the northern half of the SSSI.
- Sizewell Marshes SSSI is present in the northeast of the Suffolk Scoping Boundary (area of coastal marshland) and the study area, located to the west of Sizewell Nuclear Power Station.
- Alde-Ore Estuary SSSI is present within the study area, approximately 100m south of the Suffolk Scoping Boundary, comprising marshland and estuary adjacent to

the River Alde. The Alde-Ore & Butley Estuaries Special Area of Conservation (SAC) and the Alde-Ore Estuary SPA occupy the same area as this SSSI. The estuary is also a wetland of international importance as designated by the Ramsar Convention.

- The Haven Local Nature Reserve (LNR) occupies a limited area of beach and coastal marshland in the southeast of the Suffolk Scoping Boundary, extending approximately 150m south into the study area.
- Two areas of ancient woodland are present in the south and southwest of the Suffolk Scoping Boundary.

Potentially contaminative land uses

2.6.4.41 Much of the Suffolk Scoping Boundary and wider study area appears to have remained as undeveloped agricultural land since the earliest available historical mapping from the National Library Scotland, dated 1885¹⁴⁰. In these areas it is considered that there is a very low risk of significant sources of potential contamination.

2.6.4.42 There are however areas within the Suffolk Scoping Boundary and wider study area that have a history of potentially contaminative land use or where the current land use is potentially contaminative. Where identified, readily available information relating to these Potential Sources of Contamination (PSC) has been gathered and is presented in the table below with a corresponding Risk Rating for their potential for generation of significant contamination. The locations of these are presented on **Figure 2.6.4 Potential Sources of Contamination**.

Table 2.6.1: Potential sources of contamination

PSC number	Name	Location	Description	Risk ranking
PSC within Suffolk Scoping Boundary				
1	Farms	Many located across the study area	Present since the earliest mapping dated 1885. Typically comprise a farmhouse with outbuildings, barns, farmyard etc. Potential for on-site storage of agrichemicals and fuels.	Low
2	Historical Pits and Quarries	Many located across the study area	Present since the earliest mapping dated 1885. Former pits and quarries, typically limited in size. Most first recorded in the late 1800s / early 1900s and typically not recorded after 1950 and potentially infilled.	Low

3	Historical brickworks	Approximate NGR 644590 E, 263086 N. Northern edge of Leiston	Former brick works and brick pit. Recorded from earliest available mapping dated 1885 until the map dated 1892-1914. The pits appear to have been infilled based on Google Earth Aerial photography dated of the site from 2000. Part of the historical brickworks is classified as a historical landfill by the Environment Agency (see PSC13)	Low
4	Historical Allotment Gardens	Approximate NGRs 645735 E, 263320 N and 641360 E, 260610 N.	Historical allotment gardens recorded in late 1800s / early 1900s.	Very Low
5	Concrete batching plant	Approximate NGR 641335 E, 264365 N	Concrete surfaced yard, storage of aggregates.	Low
6	Former RAF Leiston Airfield	Approximate 700m radius around NGR 642990 E, 264331 N	Historical airfield, constructed 1942 - closed 1955. Sold off / returned to public 1950s - 1965. Airfield within the Suffolk Scoping Boundary comprises runways, hangars, grassed land between runways. Airfield uses within the wider study area comprise fuel storage and technical areas. Potential for hydrocarbons, radiological contaminants, inorganic compounds, unexploded ordnance, asbestos.	Moderate to high
7	Aldhurst Farm Landfill	Approximate NGR 644955 E, 263262 N	Located within historical pit/quarry. Historical landfill operated between 1990 and 2006 by Mike Taylor. Licenced to receive inert, industrial, commercial and domestic waste. Has a gas control system. Ref: EAHLD02429, WRC Ref: 3500/0567, WML: 70716. Site Ref: SC10, SFK/LS/092/10. The pit/quarry is first shown on map dated 1888-1913. By the Google Aerial imagery dated 2000 the pit appears to have been restored.	Moderate

8	Abbey Pit Landfill	Approximate NGR 645150, 263780	Located within historical pit/quarry. Historical landfill. Details of operational dates and wastes received not available. Mapping dated 1888-1913, first shows the pit/quarry. The earliest available Google Aerial imagery dated 2000, shows no evidence of the landfill or a pit/quarry. Ref: EAHLD03297. WRC Ref: 3500.0605. Site Ref: OFSSC10.	Moderate
9	Waste Water Treatment Works	Approximate NGR 645115 E, 263158 N	Waste Water Treatment Works (WWTW). Small-scale works with primary and secondary treatment ¹⁴⁵ , discharging to the Leiston Beck. Historical mapping indicates that the WWTW was constructed in the late 1800s/early 1900s and comprised a 'tank' and a probable settlement lagoon. The WWTW was further developed during the 1900s with a new inlet works and additional tanks in the area of the former lagoon. The 1949 – 1970 map records a small area of possible sludge bed/refuse heap in the north-eastern corner of the WWTW.	Low
10	Railway (including dismantled railway)	Crosses Suffolk Scoping Boundary and study area in the northwest and southeast.	Present since the earliest mapping dated 1885. Railway line appears to have been constructed approximately "at-grade". Line between Leiston and Aldeburgh appears to have closed during the second half of the 20 th Century. However, the railway lines are still in place between Saxmundham and Leiston but appears to have been dismantled from Leiston onwards.	Low
11	Leiston Household Waste	East of Lover's Lane, Leiston, NGR	Household waste recycling centre, located entirely on hardstanding with no on site disposal. The site is licenced as a Household Waste	Low

¹⁴⁵ European Commission Urban Waste Water Website: United Kingdom (2022). [online] Available at: <https://uwatd.eu/United-Kingdom/treatment-plant/ukenanawtp000159/2018> [Accessed 30 June 2022].

	Recycling Centre	N645500, E263400	amenity Centre and the licence was first issued in 1994.	
PSCs within wider study area				
12	Carr's Pit Landfill	Located on western edge of former brick pit (PSC 3). Approximate NGR 644590 E, 263086 N.	Part of the historical brickworks (PSC3) and comprises a historical landfill operated between 1976 and 1987 by Henry Boot Ltd. Licenced to receive inert and commercial waste. Ref: EAHLD01884, WRC Ref: 3500/0617, Site Ref: 907/01/16/3	Moderate
13	Farms	Several located within wider study area. Present since the earliest mapping viewed dated 1885.	Typically comprise a farmhouse with outbuildings, barns, farmyard etc. Potential for on-site storage of agrichemicals and fuels.	Low
14.	Historical Pits and Quarries	Many located within wider study area. Present since the earliest mapping dated 1885.	Former pits and quarries, typically limited in size. Most first recorded in the late 1800s / early 1900s and typically not recorded after 1950 and potentially infilled.	Low
15	Electrical Substations x 3	Approximate NGRs 646610 E, 262710 N, 646860 E, 262850 N and, 643060 E, 261165 N	2 x large substations associated with Sizewell Nuclear Power Station – constructed on greenfield land between 2007 and 2019. Due to age of construction is considered unlikely to utilise Poly-Chlorinated Biphenyl (PCB) containing oils or oil-cooled cables (TPHs). Older substation at Coldfair Green constructed between 1970 and 2000 and may have used PCB containing oils.	Low
16	Brickworks	Approximate NGR 645310 E, 262180N	Historical brickworks present since the mapping dated 1888 to 1913 until the mid-20 th Century where it is no longer shown.	Low

Future Baseline

- 2.6.4.43 There are no foreseeable significant changes anticipated in relation to geology, hydrogeology or land contamination either prior to, or during, the construction and operational phases. It is assumed that any man-made changes (i.e., new developments) would be appropriately permitted and operated to prevent the creation of potentially adverse ground conditions or impacts to controlled waters.

2.6.5 Embedded and Control & Management Measures

Embedded Measures

- 2.6.5.1 The Project has, wherever possible, avoided sensitive features, such as groundwater SPZ 1, through the options appraisal.

Control and Management Measures

- 2.6.5.2 For the purpose of assessing the effects of the Project, it has been assumed that best practice health and safety and environmental controls will be in place during construction, in accordance with standard good practice across the construction industry.

- 2.6.5.3 The outline Code of Construction Practice (CoCP) contained within **Appendix 1.4.A Outline Code of Construction Practice** contains a list of relevant good practice measures which will be adopted, including the following key commitments relating to geology and hydrogeology:

- GH01: Intrusive ground investigations and assessment will be undertaken prior to construction which will inform appropriate geotechnical design in relation to the site/structure specific ground conditions including ground instability/adverse ground conditions.
- GH02: Construction methods such as appropriate piling techniques (if required) to minimise the risk of mixing of aquifer bodies through the creation of new pathways. This includes the provision of a Foundation Works Risk Assessment (FWRA), which would be undertaken once the proposed foundation solutions are known, in accordance with EA guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination' (EA, 2001).
- GH03: Use of appropriate occupational health and safety measures e.g. Personal Protective Equipment (PPE), and statutory health and safety compliance (e.g. compliance with the Confined Spaces Regulations, 1997 in relation to ground gas from working in confined spaces/trenches) to minimise the risks associated with anticipated/unexpected contamination. Based on risk assessment informed by site specific information.
- GH04: Appropriate training of construction and maintenance workers in the handling and use of potentially hazardous substances and the associated risks.
- GH05: All use and storage of chemicals to be undertaken in accordance with EA Pollution Prevention Guideline (PGG) notes, and controlled and monitored under

the Construction and Environmental Management Plan (CEMP) and general construction site good environmental and waste management procedures

- GH06: The control of earthworks or materials movement (including any re-use of materials) under appropriate Environmental Permits, exemptions or CL:AIRE 'The definition of Waste: The development industry Code of Practice (2011).
- GH07: Any temporary dewatering activities during construction will be undertaken in accordance with EA guidance, and if required, an Abstraction Licence and Environmental Permit (for the discharge) and will be limited to the depth and time required to facilitate construction activities.
- GH09: A protocol for dealing within any unexpected contamination.

2.6.6 Potential for Significant Effects

2.6.6.1 The geology and hydrogeology assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.6.6.2 The proposed scope of the geology and hydrogeology assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.6.6.3 This section identifies the sources and impacts that that are relevant to the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.6.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- existing contamination;
- excavation of trenchless crossings;
- dewatering activities;
- general construction activities such as foundations;
- discharge of groundwater from dewatering;
- damage to sensitive receptors from the built environment;
- introduction of new contamination; and
- ground gas.

Sources of operational impacts

- introduction of new contamination;

- introduction of impermeable surfaces; and
- ground gas.

Sources of maintenance impacts

- introduction of new contamination; and
- ground gas.

Sources of decommissioning impacts

2.6.6.5 It is considered that the sources of impacts during decommissioning would be of a similar nature to those considered during the construction phase. Decommissioning would also be undertaken in accordance with relevant environmental legislation current at the time and in accordance with any required licences and permits. Decommissioning activities would be subject to an environmental management plan that would identify and mitigate the potential impacts of decommissioning activities that could harm sensitive receptors.

Potential impacts

2.6.6.6 Table 2.6.2 identifies the potential impacts that could result from the sources identified above.

Table 2.6.2: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning	Existing contamination	Human health exposure to potential contamination through ground disturbance during construction and decommissioning	Yes - Has the potential to result in significant effects	Scoped in
Construction and decommissioning	Existing contamination	Mobilisation of existing contamination during general construction/decommissioning, impacting on land and/or groundwater quality	Yes - Has the potential to result in significant effects	Scoped in
Construction	Excavation of trenchless Crossings	Connection of two aquifer units at trenchless crossings	No - Not likely to result in a significant effect due to the incorporation of the	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			mitigation by design.	
Construction	Dewatering activities	Changes to groundwater levels, quality and groundwater flow caused by dewatering	Yes -Potential to result in a significant effect	Scoped in
Construction, maintenance, and decommissioning	Construction activities	Introduction of new potential contaminants to the environment from leaks, spills, fuels and oils	No - Not likely to result in a significant effect due to the incorporation of the mitigation by design.	Scoped out
Construction	Discharge of groundwater from dewatering	Physical and chemical changes to groundwater	No - Not likely to result in a significant effect due to the incorporation of the mitigation by design.	Scoped out
Construction, operation, maintenance, and decommissioning	Ground gas	Ingress and accumulation of ground gas in buildings/confined spaces/trenches – resulting in explosion/asphyxiation/exposure	Yes - Potential to result in a significant effect	Scoped in
Construction	General construction	Construction activities and the built development (operational phase) can be affected by natural geological hazards (dissolution features/soft ground/landslides/aggressive ground conditions etc)	No - Not likely to result in a significant effect due to the incorporation of the mitigation by design.	Scoped out
Construction	Built Environment	Damage to/destruction of designated sites of geological importance	Yes - Potential to result in a significant effect	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction and Operation	Built Environment	Sterilisation of safeguarded minerals	Yes -The Suffolk Scoping Boundary is within a mineral consultation area therefore there is the potential to result in significant effects.	Scoped in
Operation and maintenance	Existing contamination	Human health exposure to existing contamination	No - Not likely to result in a significant effect due to the nature of the project and the incorporation of the mitigation by design.	Scoped out
Operation and maintenance	Introduction of new contamination	Introduction of new potential contaminants to the environment from leaks, spills, fuels and oils during the operational phase	No - Not likely to result in a significant effect given the nature of the project and in consideration of best practice measures and maintenance.	Scoped out
Operation	Introduction of impermeable surfaces	Changes to groundwater levels and/or recharge rates	No - Not likely to result in significant effects due to the small surface area of the built parts of the project.	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
				Any new areas of hardstanding would be designed to meet current drainage standards (see Part 2, Chapter 5, Water Environment).

Impact Pathways with Receptors (Step 2)

Suffolk Converter Station Site 1 Emerging Preference

2.6.6.7 Table 2.6.3 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.6.3: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Human health exposure to existing contamination through ground disturbance during construction and decommissioning	Site workers, neighbours	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Mobilisation of existing contamination during general construction, impacting on land and/or groundwater quality	Environmentally sensitive sites, groundwater, Groundwater Dependant Terrestrial Ecosystems	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance

	(GWDTE), surface water, land quality.		
Changes to groundwater levels, quality and groundwater flow direction caused by dewatering and discharge	Environmentally sensitive sites, groundwater, GWDTE, surface water	Yes -Potential for dewatering to be required within the study area which could result in significant effects	Scoped in for construction Scoped out for operation, decommissioning, and maintenance
Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction/ maintenance workers, future users, built environment	Yes -Potential for gas generating strata within study area which could result in significant effects	Scoped in for construction, operation, maintenance and decommissioning
Damage to/destruction of designated sites of geological importance	Designated sites of geological importance	Yes -Designated sites located within the study area which could be damaged and could result in significant effects	Scoped in for construction Scoped out for operation, maintenance and decommissioning
Sterilisation of safeguarded minerals	Mineral reserves	Yes -Mineral reserves are present within the study area which could be damaged and result in significant effects.	Scoped in for construction and operation Scoped out for maintenance and decommissioning

Suffolk Converter Station Site 1 Alternative

2.6.6.8 Table 2.6.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.6.4: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
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Human health exposure to existing contamination through ground disturbance during construction and decommissioning	Site workers, neighbours	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Mobilisation of existing contamination during general construction, impacting on land and/or groundwater quality	Environmentally sensitive sites, groundwater, GWDTE, surface water, land quality	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Changes to groundwater levels, quality and groundwater flow direction caused by dewatering and discharge	Environmentally sensitive sites, groundwater, GWDTE, surface water	Yes -Potential for dewatering to be required within the study area which could result in significant effects	Scoped in for construction Scoped out for operation, maintenance and decommissioning
Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction/ maintenance workers, future users, built environment	Yes -Potential for gas generating within study area which could result in significant effects	Scoped in for construction, operation, maintenance and decommissioning
Sterilisation of safeguarded minerals	Mineral reserves	Yes -Mineral reserves are present within the study area which could be damaged and result in significant effects.	Scoped in for construction and operation Scoped out for maintenance and decommissioning

Suffolk Converter Station Site 3 Emerging Preference

2.6.6.9 Table 2.6.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.6.5: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Human health exposure to existing contamination through ground disturbance during construction	Site workers, neighbours	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Mobilisation of existing contamination during general construction, impacting on land and/or groundwater quality	Environmentally sensitive sites, groundwater, GWDTE, surface water, land quality	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Changes to groundwater levels, quality and groundwater flow direction caused by dewatering and discharge	Environmentally sensitive sites, groundwater, GWDTE, surface water	Yes -Potential for dewatering to be required within the study area which could result in significant effects	Scoped in for construction Scoped out for operation, decommissioning and maintenance
Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction/maintenance workers, future users, built environment	Yes -Potential for gas generating within study area which could result in significant effects	Scoped in for construction, operation, maintenance and decommissioning
Damage to/destruction of designated sites of geological importance	Designated sites of geological importance	Yes -Designated sites located within the study area which could be damaged and could result in significant effects	Scoped in for construction Scoped out for operation, maintenance and decommissioning
Sterilisation of safeguarded minerals	Mineral reserves	Yes -Mineral reserves are present within the study area which could be	Scoped in for construction and operation

damaged and result in significant effects.	Scoped out for maintenance and decommissioning
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Suffolk Converter Station Site 3 Alternative (Option 1)

2.6.6.10 Table 2.6.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1)**.

Table 2.6.6: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Human health exposure to existing contamination through ground disturbance during construction	Site workers, neighbours	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Mobilisation of existing contamination during general construction, impacting on land and/or groundwater quality	Environmentally sensitive sites, groundwater, GWDTE, surface water, land quality	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Changes to groundwater levels, quality and groundwater flow direction caused by dewatering and discharge	Environmentally sensitive sites, groundwater, GWDTE, surface water	Yes -Potential for dewatering to be required within the study area which could result in significant effects	Scoped in for construction Scoped out for operation, maintenance, and decommissioning
Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction/ maintenance workers, future users, built environment	Yes -Potential for gas generating within study area which could	Scoped in for construction, operation, maintenance and decommissioning

		result in significant effects	
Sterilisation of safeguarded minerals	Mineral reserves	Yes -Mineral reserves are present within the study area which could be damaged and result in significant effects.	Scoped in for construction and operation Scoped out for maintenance and decommissioning

Suffolk Converter Station Site 3 Alternative (Option 2)

2.6.6.11 Table 2.6.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

Table 2.6.7: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Human health exposure to existing contamination through ground disturbance during construction	Site workers, neighbours	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Mobilisation of existing contamination during general construction, impacting on land and/or groundwater quality	Environmentally sensitive sites, groundwater, GWDTE, surface water, land quality	Yes -Potential for existing contamination within the study area to result in significant effects	Scoped in for construction and decommissioning Scoped out for operation and maintenance
Changes to groundwater levels, quality and groundwater flow direction caused by dewatering and discharge	Environmentally sensitive sites, groundwater, GWDTE, surface water	Yes -Potential for dewatering to be required within the study area which could result in significant effects	Scoped in for construction Scoped out for operation,

			decommissioning and maintenance
Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction/maintenance workers, future users, built environment	Yes -Potential for gas generating within study area which could result in significant effects	Scoped in for construction, operation, maintenance and decommissioning
Damage to/destruction of designated sites of geological importance	Designated sites of geological importance	Yes -Designated sites located within the study area which could be damaged and could result in significant effects	Scoped in for construction Scoped out for operation, maintenance and decommissioning
Sterilisation of safeguarded minerals	Mineral reserves	Yes -Mineral reserves are present within the study area which could be damaged and result in significant effects.	Scoped in for construction and operation Scoped out for maintenance and decommissioning

2.6.7 Proposed Assessment Methodology

2.6.7.1 The proposed generic project wide approach to the assessment methodologies is presented in **Part 1, Chapter 5, EIA Approach and Methodology**. However, whilst this has informed the approach used in this chapter, it is necessary to set out how this methodology will be applied and adapted as appropriate, to address the specific needs of the assessment in relation to geology and hydrogeology.

Proposed Data Sources

2.6.7.2 The following data sources are proposed to be used to inform the assessment

- Historical borehole records held by the BGS;
- Groundwater abstraction details as available from the EA and LPAs;
- Any relevant information regarding historical ground contamination that the LPAs hold; and
- Any relevant information held by the LPAs regarding geological sites.

Proposed Assessment Methodology

- 2.6.7.3 The methodology which has been followed for the work undertaken to date, and which will be developed during the EIA process, builds on the guidance set out earlier in this chapter for environmental effects assessed as likely to be significant. Therefore, to inform the ES, additional data gathering will be undertaken, building on the initial appraisal of baseline conditions provided in this scoping report and incorporating any additional information received from the Environment Agency and Local Authority (in response to requests for information), together with stakeholder responses from the Scoping Opinion.
- 2.6.7.4 The baseline information will be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects of the project in relation to geology and hydrogeology. The risk based assessment will be undertaken following a tiered approach as supported by guidance provided in land contamination risk management (LCRM)¹²⁵, with progression through the different Tiers (Tier 1 Preliminary Risk Assessment, Tier 2 Generic Quantitative Risk Assessment and Tier 3 Detailed Quantitative Risk Assessment) dependent on the outcome of each previous Tier (therefore proportionate).
- 2.6.7.5 In the context of the length and size of the study area, and to provide a comprehensive yet proportionate assessment, an additional Tier (Tier 0) is proposed for the ES relating to geology and hydrogeology.
- 2.6.7.6 A Tier 0 assessment will be undertaken as a first stage screening of the Suffolk Scoping Boundary and study area to identify potential pollutant linkages and assign a risk rating based on potential for significant contamination to be present. Those sources which are assessed to have a moderate, high or very high potential risk of contamination will be taken forward for further assessment to ensure the assessment is targeted in areas where significant effects are most likely. Where a very low or low risk rating is assessed, these areas will not be taken forward for further assessment in the ES on the basis they have a low likelihood of significant effects. The potential risk of contamination will be identified based on the historical and current land use:

Table 2.6.8: Criteria for classifying potential for generating contamination

Classification score	Potential for generating contamination
Very Low	Land Use Examples: Residential, retail or office use, agriculture. Contamination Potential: Limited
Low	Land Use Examples: Recent small scale industrial and light industry Contamination Potential: Locally slightly elevated concentrations
Moderate	Land Use Examples: Railway yards, collieries, scrap yards, inert landfills Contamination Potential: Possible widespread slightly elevated concentrations and locally elevated
High	Land Use Examples: Heavy industry, non-hazardous landfills

	Contamination Potential: Possible widespread elevated concentrations
Very High	Land Use Examples: Hazardous waste landfills, gas works, chemical works Contamination Potential: Likely widespread elevated concentrations

- 2.6.7.7 Risks associated with unexpected contamination will be managed through the protocols and good practice measures identified within the CoCP.
- 2.6.7.8 In order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences, a source-pathway-receptor methodology is adopted, with the underlying principle that the identification of pollutant linkages consists of the following three elements
- A source/hazard (a substance or situation that has the potential to cause harm or pollution);
 - A pathway (a means by which the hazard moves along / generates exposure); and
 - A receptor/target (an entity that is vulnerable to the potential adverse effects of the hazard).
- 2.6.7.9 Whilst the contamination may be a hazard it would not constitute a risk unless a pathway and receptor are also present, and a pollutant linkage can be determined. Therefore, in assessing the potential for contamination to cause a significant effect: the extent and nature of the potential source or sources of contamination must be assessed; any pathways present must be identified; and sensitive receptors or resources identified and appraised to determine their value and sensitivity to contamination related impacts.
- 2.6.7.10 The methodology adopted in this chapter is qualitative with a progression from factual information (stated with reasonable certainty) regarding the baseline conditions, to appraisal informed by professional judgement and expression of opinions on the relative significance.
- 2.6.7.11 The risk assessment approach proposed in this methodology will be transposed into EIA classification as follows;
- For each potential effect the receptor sensitivity and impact magnitude will be assigned using the Tables 2.6.9 and 2.6.10 below, which will then be combined to give a significance of effect using the matrix provided in Table 2.6.11.
- 2.6.7.12 There is no equivalent published assessment methodology that relates to impacts relating to geology (e.g. geo-conservation). For consistency, a similar approach will be adopted to assess these effects (i.e. combination of receptor identification and associated sensitivity and magnitude of potential impacts) as stated above.
- 2.6.7.13 A Minerals Resource Assessment (MRA) will be completed, in accordance with the requirements of the mineral's local plans and with regard to Minerals Safeguarding

Practice Guidance¹⁴⁶. The MRA will be used to inform the assessment in the geology and hydrogeology chapter in relation to minerals.

2.6.7.14 A source-pathway-receptor linkage approach, as detailed above, will also be applied to assessing the potential effects on groundwater which relate to the geological/hydrogeological settings between the Order Limits and identified groundwater abstractions and receptors, in accordance with the policy guidance outlined at the start of this chapter. Localised Hydrogeological Risk Assessment may also be required where dewatering is proposed. Assessment of the impacts on groundwater receptors will be undertaken based on the approach and methodology described in Environment Agency, Hydrogeological Impact Appraisal for dewatering guidance (2007).

2.6.7.15 The proposed assessment approach in this chapter is based on desk study information. ‘Reasonable worst case’ assumptions regarding the likely ground conditions will be made when assessing effects in the ES, determined from the desk study information.

Sensitivity of receptors

2.6.7.16 The criteria used to determine the value and sensitivity of receptors specific to geology and hydrogeology are set out in Table 2.6.9. These criteria are based on the generic criteria presented in **Part 1, Chapter 5, EIA Approach and Methodology**.

Table 2.6.9: Value/sensitivity criteria

Value/sensitivity	General criteria
Very High	<p>Very high importance and rarity. International scale and limited potential for substitution</p> <p>Geology:</p> <p>Very rare and of international importance with no potential for replacement (e.g. UNESCO World Heritage Sites, UNESCO Global Geoparks, Site of Special Scientific Interest (SSSI) and Geological Conservation Review (GCR) where citations indicate features of international importance). Geology meeting international designation citation criteria which is not designated as such.</p> <p>Minerals:</p> <p>Existing Mineral sites</p> <p>Contamination:</p> <p>1) human health: very high sensitivity land use such as residential or allotments;</p>

¹⁴⁶ The Mineral Products Association, and The Planning Officer’s Society (2019). Minerals Safeguarding Practice Guide. [online] Available at: https://mineralproducts.org/MPA/media/root/Publications/2019/MPA_POS_Minerals_Safeguarding_Guidance_Document.pdf

2) surface water: Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan (RBMP) and $Q_{95} \geq 1.0 \text{ m}^3/\text{s}$. Site protected/designated under EC or UK legislation (Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), Ramsar site)

3) groundwater: Principal aquifer providing a regionally important resource and regionally important public water supplies, Source Protection Zone (SPZ) 1

Hydrogeology:

Principal aquifer providing a regionally important source and regionally important public water supplies. Groundwater quality associated with SPZ 1 associated with licensed abstractions.

Water supplying GWDTEs with a high groundwater dependence with a high environmental importance and international or national value, such as Ramsar sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSIs).

High

High importance and rarity. National scale and limited potential for substitution

Geology:

Rare and of national importance with little potential for replacement (e.g. geological SSSI, Area of Special Scientific Interest (ASSI), National Nature Reserves (NNR)). Geology meeting national designation criteria which is not designated as such.

Minerals:

Mineral preferred areas

Contamination:

1) human health: high sensitivity land use such as public open space;

2) surface water: Watercourse having a WFD classification shown in a RBMP and $Q_{95} < 1.0 \text{ m}^3/\text{s}$.

3) groundwater: Principal aquifer providing locally important resource or supporting a river ecosystem, SPZ2.

Hydrogeology:

Principal aquifer providing a locally important source and locally important public water supplies, SPZ 2.

Water supplying GWDTEs with a moderate groundwater dependence with high environmental importance and international or national value, such as Ramsar sites, SACs, SPAs and SSSIs; or water feeding highly groundwater dependent GWDTE with a national non-statutory UK Biodiversity Action Plan (BAP) priority

Medium	<p>Medium or high importance and rarity, regional scale, limited potential for substitution</p> <p>Geology:</p> <p>Regional importance with limited potential for replacement (e.g. RIGS). Geology meeting regional designation criteria which is not designated as such.</p> <p>Minerals:</p> <p>Mineral Safeguarded Areas and Mineral Consultation Area</p> <p>Contamination:</p> <p>1) human health: medium sensitivity land use such as commercial or industrial;</p> <p>2) surface water: Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001m³/s.</p> <p>3) groundwater: Secondary A Aquifers. extensive non-licensed private water abstractions (i.e. supplying ten or more properties or supplying large farming / animal estates). SPZ3.</p> <p>Hydrogeology:</p> <p>Secondary A aquifer. Groundwater flow and yield and quality associated with extensive non-licensed private water abstractions (i.e. supplying ten or more properties or supplying large farming / animal estates). Groundwater quality associated with SPZ2 (Outer Protection Zone) associated with licensed abstractions. Residential and commercial properties.</p> <p>Water supplying GWDTEs of low groundwater dependence with a high environmental importance and international or national value, such as Ramsar sites, SACs, SPAs and SSSIs; or water feeding moderately groundwater dependent GWDTE with a national non-statutory UK Biodiversity Action Plan (BAP) priority</p>
Low	<p>Low or medium importance and rarity, local scale</p> <p>Geology:</p> <p>Local importance / interest with potential for replacement (e.g. non designated geological exposures, former quarry's / mining sites).</p> <p>Minerals:</p> <p>Mineral present but outside of any MPS/MSA/MCA</p> <p>Contamination:</p> <p>1) human health: low sensitivity land use such as highways and rail;</p> <p>2) surface water: Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001m³/s.</p>

3) groundwater: Secondary B or Secondary Undifferentiated aquifer. Small scale private water abstractions (i.e. supplying fewer than ten properties).

Hydrogeology:

Secondary B or Secondary Undifferentiated aquifer. Groundwater flow and yield and quality associated with small scale private water abstractions (i.e. feeding fewer than ten properties). Groundwater quality associated with SPZ3 (Source Catchment Protection Zone) associated with licensed abstractions and with licensed abstractions for which no SPZ is defined.

Water supplying GWDTEs of low groundwater dependence with a national non-statutory UK BAP priority; or water supplying highly or moderately groundwater dependent GWDTE sites with no conservation designation.

Negligible

Very low importance and rarity, local scale

Geology:

No geological exposures, little / no local interest.

Mineral:

No mineral identified

Contamination:

1) human health: undeveloped surplus land / no sensitive land use proposed;

2) surface water: not present

3) groundwater: Unproductive strata

Hydrogeology:

Very poor groundwater quality and/or very low permeability make exploitation of groundwater unfeasible. No active groundwater supply.

Water supplying GWDTEs of low groundwater dependence with no designation or groundwater that supports a wetland not classified as a GWDTE, although may receive some minor contribution from groundwater

Impact magnitude

Table 2.6.10: Magnitude criteria

Magnitude	General criteria
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Large

Geology Adverse: Permanent loss of geological feature / designation and/or quality and integrity, severe damage to key characteristics, features or elements.

Contamination Adverse: Significant contamination identified, and contamination level significantly exceed human health and environmental assessment criteria with the potential for significant harm to be caused. Contamination heavily restricts future use of land

Contamination Benefit: Substantial betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation.

Hydrogeology Adverse: Major or irreversible change to groundwater aquifer(s) flow, water level, quality or available yield which endangers the resources currently available. Groundwater resource use / abstraction is irreparably impacted upon, with a major or total loss of an existing supply or supplies. Changes to water table level or quality would result in a major or total change in, or loss of, a groundwater dependent area, where the value of a site would be severely affected. Changes to groundwater aquifer(s) flow, water level and quality would result in major changes to groundwater baseflow contributions to surface water and/ or alterations in surface water quality.

Hydrogeology Beneficial: Major increase in groundwater resource availability. Results in the achievement of Good Status for a WFD groundwater body or GWDE which is currently failing its WFD objectives. Removal of existing or potential polluting discharge to groundwater

Medium

Geology Adverse: partial loss of geological feature / designation, potentially adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.

Contamination Adverse: Contamination levels marginally exceed human health and environment assessment criteria. Control / remediation measures are required to reduce risks to human health / make land suitable for intended use.

Contamination Benefit: Moderate Betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation.

Hydrogeology Adverse: Moderate long term or temporary significant changes to groundwater aquifer(s) flow, water level, quality or available yield which results in moderate long term or temporarily significant decrease in resource availability. Groundwater resource use / abstraction is impacted slightly, but existing supplies remain sustainable. Changes to water table level or groundwater quality would result in partial change in or loss of a groundwater dependent area, where the value of the site would be affected, but not to a major degree. Changes to groundwater aquifer(s) flow, water level and quality would result in moderate changes

to groundwater baseflow contributions to surface water and/ or alterations in surface water quality, resulting in a moderate shift from baseline conditions

Hydrogeology Beneficial: Moderate increase in groundwater resource availability. Contributes, in combination with other effects, to the achievement of Good Status for a WFD groundwater body or GWDTE which is currently failing its WFD objectives. Significant reduction of existing or potential polluting discharge to groundwater.

Small

Geology Adverse: minor measurable change in geological feature / designation attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.

Contamination Adverse: Contamination levels below human health and environment assessment criteria and remediation is not required. Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health;

Contamination Benefit: Slight betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation.

Hydrogeology Adverse: Minor changes to groundwater aquifer(s) flow, water level, quality or available yield leading to a noticeable change, confined largely to the Project area. Changes to water table level, groundwater quality and yield result in little discernible change to existing resource use. Changes to water table level or groundwater quality would result in minor change to groundwater dependent areas, but where the value of the site would not be affected. Changes to groundwater aquifer(s) flow, water level and quality would result in minor changes to groundwater baseflow contributions to surface water and / or alterations in surface water quality, resulting in a minor shift from baseline conditions.

Hydrogeology Beneficial: Minor increase in groundwater resource availability. Leads to improvement of a WFD groundwater body which is currently failing its WFD objectives but insufficient effect to achieve Good Status. Minor reduction of existing or potential polluting discharge to groundwater.

Negligible

Geology Adverse: Very minor loss or detrimental alteration to one or more characteristics, features or elements of geological feature / designation. Overall integrity of resource not affected.

Contamination: Contamination levels substantially below human health and environment assessment criteria and remediation is not required. No requirement for control measures to reduce risks to human health / make land suitable for intended use.

Hydrogeology Adverse: Very slight change from groundwater baseline conditions, approximating to ‘no change’ conditions. Dewatering effects create no or no noticeable effects.

Significance

Table 2.6.11: Significance matrix

		Value/sensitivity of receptor				
		Very High	High	Medium	Low	Negligible
Magnitude	Large	Major	Major/Moderate	Major/Moderate /Minor	Moderate/Minor	Minor/Negligible
	Medium	Major/Moderate	Major/Moderate	Moderate/Minor	Minor/Negligible	Negligible
	Small	Major/Moderate	Moderate/Minor	Moderate/Minor	Minor/Negligible	Negligible
	Negligible	Minor/Negligible	Minor/Negligible	Minor/Negligible	Negligible	Negligible

2.6.8 Conclusion

2.6.8.1 The Geology and Hydrogeology receptors that have been identified within the Scoping Boundary include human health, groundwater, surface waters, designated sites of geological importance, mineral reserves and land quality. The preliminary baseline assessment indicates that there is the potential for significant effects on these receptors, however with the implementation of both the embedded mitigation and good practice measures described, the significance of the potential effects can be reduced for certain impacts so that significant effects are unlikely. Where significant effects have been assessed as unlikely, those impacts are scoped out of further assessment. Where there is potential for significant effects, these impacts have been scoped into the ES and will be assessed further, in accordance with the methodology described. The impacts proposed to be scoped in and out of the assessment are summarised in Table 3.6.8.

Proposed Scope of the Assessment

2.6.8.2 A summary of the proposed scope of the assessment is provided in Table 2.6.12.

Table 2.6.12: Proposed scope of the assessment

Receptor	Potential significant effects	Project phase(s)	Proposed to be scoped in / out and for which option
Geology			
Built development	Damage to/destruction of the built development (operational phase) due to natural geological hazards (dissolution features/soft ground/landslides/aggressive ground conditions etc)	Construction, Operation, maintenance and decommissioning	Scoped out for all options
Designated sites of geological importance	Damage to/destruction of designated sites of geological importance	Construction	Scoped in for Site 1 Emerging Preference, Site 3 Emerging Preference
		Operation, maintenance and decommissioning	Scoped out for Site 1 Alternative and Site 3 Alternative
Mineral Reserves	Sterilisation of safeguarded minerals	Construction and Operation	Scoped in for all options
		Maintenance and decommissioning	Scoped out for all options
Contamination			
Site workers, neighbours	Human health exposure to existing potential contamination through ground disturbance during construction and decommissioning	Construction and decommissioning	Scoped in for all options
Environmentally sensitive sites, groundwater,	Mobilisation of existing contamination during general	Construction and decommissioning	Scoped in for all options

GWDTE, surface water, land quality	construction, impacting on land and/or groundwater quality	Operation and maintenance	Scoped out for all options
Environmentally sensitive sites, groundwater, GWDTE, surface water, land quality.	Introduction of new potential contaminants to the environment from leaks, spills, fuels and oils	Construction, operation, maintenance, and decommissioning	Scoped out for all options
Construction/maintenance workers, future users, built environment	Ingress and accumulation of ground gas in buildings/confined spaces/trenches (construction and operation) – resulting in explosion/asphyxiation/exposure	Construction, operation maintenance, and decommissioning	Scoped in for all options
Site workers, maintenance workers, neighbours	Human health exposure to existing contamination during operation and maintenance	Operation and maintenance	Scoped out for all options
Hydrogeology			
Environmentally sensitive sites, groundwater, GWDTE, surface water	Mixing of aquifer bodies due to the connection of aquifer units at trenchless crossings	Construction, operation, maintenance and decommissioning	Scoped out for all options
Environmentally sensitive sites, groundwater, GWDTE, surface water	Changes to groundwater levels, quality and groundwater flow direction caused by dewatering	Construction Operation, maintenance and decommissioning	Scoped in for all options Scoped out for all options
Environmentally sensitive sites, groundwater, GWDTE, surface water	Physical and chemical changes to groundwater from the discharge of groundwater from dewatering	Construction, operation, maintenance and decommissioning	Scoped out for all options
Environmentally sensitive sites, groundwater, GWDTE, surface water	Changes to groundwater levels and/or recharge rates from the introduction of impermeable surfaces	Construction, operation, maintenance and decommissioning	Scoped out for all options

2.7 Agriculture and Soils

2.7.1 Introduction

- 2.7.1.1 This chapter presents the Agriculture and Soils assessment which will consider the potentially significant effects that may arise from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**) on agricultural and soil receptors. This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.7.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary, hereafter referred to as the Suffolk Scoping Boundary, is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.7.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;** and
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**
- 2.7.1.4 This chapter is supported by the following figures:
- **Figure 2.7.1 Soilscape Mapping;**
 - **Figure 2.7.2 Provisional Agricultural Land Classification Mapping;**
 - **Figure 2.7.3 Detailed Agricultural Land Classification Mapping;** and
 - **Figure 2.7.4 Environmental Stewardship Agreements and Woodland Grant Schemes.**
- 2.7.1.5 The receptors included within this chapter comprise:
- The presence and potential impact on best and most versatile (BMV) land (as defined by the Agricultural Land Classification (ALC) system), including land affected temporarily during construction and the land required permanently.
 - The nature and potential impacts on landholdings in agricultural use, including land affected temporarily during construction and the land required permanently. This will cover issues of potential fragmentation, biosecurity risks and impacts on any land under agri-environmental, woodland or forestry schemes.
- 2.7.1.6 The assessment of potentially significant effects on agricultural and soil receptors will be supported by information presented in other chapters: **Part 2, Chapter 2, Ecology**

and Biodiversity; Part 2, Chapter 5, Water Environment; and Part 2, Chapter 6, Geology and Hydrogeology.

2.7.2 Regulatory and Planning Context

2.7.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on agriculture and soils associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

2.7.2.2 There is no primary legislation relevant to this topic.

Planning Policy

National planning policy

2.7.2.3 National Policy Statement (NPS) for Energy (EN-1)¹⁴⁷ contains paragraphs relating to agriculture and soils which have been considered within this chapter.

2.7.2.4 Paragraph 5.10.8 states that ‘Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed’.

2.7.2.5 Paragraph 5.10.15 states that the Secretary of State (formerly the Infrastructure Planning Commission) should ‘ensure that applicants do not site their scheme on the best and most versatile agricultural land without justification. It should give little weight to the loss of poorer quality agricultural land (in grades 3b, 4 and 5), except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy’.

2.7.2.6 EN-1 is supported by the National Policy Statement for Electricity Networks Infrastructure (EN-5)¹⁴⁸ which contains paragraphs relating to agriculture and soils which have been considered within this chapter. Paragraph 1.7.5 states that, in relation to a presumption that electricity lines should be put underground, ‘*effects on soil, water, ecology and archaeology are likely to be negative, at least in the short term, requiring significant mitigation, but there is uncertainty around long term effects depending on the specific location and sensitivity of the receiving environment*’. This is reiterated in paragraph 2.8.9 (third bullet point).

¹⁴⁷ Department for Business, Energy & Industrial Strategy (2021). Draft Overarching National Policy Statement for Energy (EN-1). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf

¹⁴⁸ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf

Local planning policy

2.7.2.7 Relevant policies from the East Suffolk Council Suffolk Coastal Local Plan, adopted 23rd September 2020¹⁴⁹, will also be considered. These are listed below:

- SCLP2.3: Cross-boundary mitigation of effects on Protected Habitats
- SCLP9.3 Coastal Change Management Area
- SCLP10.1: Biodiversity and Geodiversity
- SCLP10.3: Environmental Quality

Guidance

2.7.2.8 Several standards and non-statutory guidelines, which provide details of assessment methodologies and mitigation techniques, will also be referenced to inform the assessment, including:

- Construction Code of Practice for the sustainable re-use of soils on construction sites¹⁵⁰;
- Technical Information Note (TIN) 049¹⁵¹. Agricultural Land Classification: protecting the best and most versatile agricultural land;
- Good Practice Guide for Handling Soils¹⁵²; and
- A new perspective on land and soil in Environmental Impact Assessment¹⁵³.

2.7.3 Study Area

2.7.3.1 The study area for agriculture and soils comprises the land which would be directly affected by the Suffolk Onshore Scheme (through disturbance or temporary covering of the soils). This will be based on the proposed Order Limits in the ES but for the purposes of this Scoping Report the study area includes the land within the Suffolk Scoping Boundary. This is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

¹⁴⁹ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf>

¹⁵⁰ Department for Environment, Food and Rural Affairs (2009). Construction Code of Practice for the sustainable re-use of soils on construction sites. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf#:~:text=1.%20This%20Code%20of%20Practice%20for%20the%20sustainable,it%20is%20particularly%20intended%20for%20use%20in%20England

¹⁵¹ Natural England (2012). Technical Information Note TIN049. Agricultural Land Classification: protecting the best and most versatile agricultural land. [online] Available at: <https://www.iow.gov.uk/azservices/documents/2782-FE14-Natural-England-TIN049-Agricultural-Land-Classification.pdf>

¹⁵² Ministry of Agriculture, Fisheries and Food (2000). Good Practice Guide for Handling Soils. [online] Available at: <https://webarchive.nationalarchives.gov.uk/ukgwa/20090317221756/http://www.defra.gov.uk/farm/environment/land-use/soilguid/index.htm>

¹⁵³ Institute of Environmental Management & Assessment (2022). A new perspective on land and soil in Environmental Impact Assessment.

2.7.4 Baseline Conditions

Data Sources

2.7.4.1 The agriculture and soils baseline assessment has been informed by a desk study which has drawn on the following key information sources:

- Ordnance Survey mapping and aerial photography to establish land use and settlement patterns;
- Soilscape mapping showing the distribution of main soil types was assessed on the Land Information System website¹⁵⁴; ALC mapping, including provisional and (where available) detailed ALC mapping from the MAGIC website¹⁵⁵; and
- Extent of agri-environmental and woodland schemes from the MAGIC website.

Baseline

Soils

2.7.4.2 The solid geology underlying the study area is described as comprising of undifferentiated Neogene and Quaternary Rocks. This comprises gravel, sand, silt, and clay sedimentary bedrock formed up to 23 million years ago in the Quaternary and Neogene Periods. This solid geology is in the main overlain by diamicton till superficial deposits. This material was deposited around 3 million years ago in the Quaternary Period when the local environment was dominated by ice age conditions. Closer to the coast the superficial deposits are replaced by glacial sand and gravel formed up to 3 million years ago in the Quaternary Period.

2.7.4.3 The soil types present within the study area are comprised of three major types as seen on **Figure 2.7.1 Soilscape Mapping**. Along the eastern areas the soil is described as freely draining and slightly acidic sandy soils. Moving westwards the soils around Leiston are categorised as freely draining acid but base-rich highly fertile loamy soils. The north-western section of the proposed site around Saxmundham consists of slowly permeable, and seasonally wet slightly acid but base-rich loamy and clayey soils.

Agricultural land classification

2.7.4.4 **Figure 2.7.2 Provisional ALC Mapping** shows that the study area comprises Grades 2, 3, and 4 land. This mapping, at a scale of 1:250,000, does not distinguish between Grades 3a and 3b (and cannot be used to inform site-specific assessments) but provides an indication of the likely land classification.

2.7.4.5 There is some detailed ALC mapping available local to the study area, based on surveys undertaken between 1993 and 2016. The land around Sizewell, and fields to

¹⁵⁴ Cranfield University (2021). LandIS: The Land Information System. [online] Available at: <https://www.cranfield.ac.uk/themes/environment-and-agrifood/landis>

¹⁵⁵ Department for Environment, Food and Rural Affairs (2022). Multi-Agency Geographic Information for the Countryside (MAGIC). [online] Available at: <https://magic.defra.gov.uk/>.

the North near Minsmere have been mapped as a mix of Grade 3a, Grade 3b and Grade 4, with a small area of Grade 1 located east of Lover's Lane (as shown in **Figure 2.7.3 Detailed ALC Mapping**).

- 2.7.4.6 Climate is unlikely to pose an overall limitation on ALC grade in relation to the criteria set out in the ALC Guidelines¹⁵⁶ (MAFF, 1988). Climate does, however, have an important influence on the interactive limitations of soil wetness and soil droughtiness, which is the balance between rainfall and water losses from the soil. The site has both relatively low rainfall and a long growing season, acting to decrease the severity of any potential soil wetness limitation, but increasing the severity of any potential soil droughtiness limitation.

Land use

- 2.7.4.7 A desk-based study using aerial photographs has shown that the land use appears to be principally arable, with areas of urban development at Leiston, Saxmundham and Thorpness.
- 2.7.4.8 There are areas of land within the study area under Countryside Stewardship (Higher Tier) Agreements, and areas south and east of Leiston under Entry Level plus Higher Level Environmental Stewardship agreements. There are also further small areas within the study area under Higher Level Environmental Stewardship, as well as Organic Entry Level plus Higher Level Stewardship areas to the north. Five small areas of land across the proposed site are also under Woodland Grant schemes (see **Figure 2.7.4 Environmental Stewardship Agreements and Woodland Grant Schemes**).

Future Baseline

- 2.7.4.9 It is considered that the baseline in relation to soils and ALC grades will not change from that described within the timeframe for the construction of this Project. Whilst there may be potential changes in relation to climate change, including greater rainfall intensity and droughts, that could affect soil conditions, land grade and farming practices, it is likely that these would only be visible over longer time frames.
- 2.7.4.10 There could potentially be changes to land management practices and business approaches across the landowners/land managers.

2.7.5 Embedded and Control & Management Measures

Embedded Measures

- 2.7.5.1 The assessment of effects will take account of mitigation, including measures embedded into the Project's design and good practice measures. Key measures are described below.
- 2.7.5.2 The temporary nature of many construction activities and the subsequent restoration of the land and its return to the preconstruction use is likely to result in the avoidance of long-term impacts on agricultural and soil receptors.

¹⁵⁶ Ministry of Agriculture, Fisheries and Food (1988). Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.

Control and Management Measures

2.7.5.3 Where effects cannot be avoided through design, commitments will be made and secured through Requirements in the DCO, to control and manage effects.

2.7.5.4 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the assessment relating to agriculture and soils are:

- GG03: A CEMP, a LEMP and an CTMP will be produced prior to construction. The CEMP shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.
- GG19: Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate.
- AS01: Soil management measures will be included within the CEMP. Measures would include but not be limited to the following:
 - details of the soil resources present;
 - how the topsoil and subsoil will be stripped and stockpiled;
 - suitable conditions for when soil handling will be undertaken, for example avoiding handling of waterlogged soil;
 - indicative soil storage locations;
 - how soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil;
 - specific measures for managing sensitive soils;
 - suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works;
 - approach to reinstating soil that has been compacted, where required; and
 - details of measures required for soil restoration.
- AS02: Where land is being returned to agricultural use, the appropriate soil conditions (for example through the replacement of stripped layers and the removal of any compaction) will be recreated. This will be achieved to a depth of 1.2m (or the maximum natural soil depth if this is shallower) except over the buried cables where the reinstated soil depth will be approximately 0.9m.
- AS03: Access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed through landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the project, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

- AS04: Existing water supplies for livestock will be identified pre-construction. Where supplies will be lost or access compromised by construction works, temporary alternative supplies will be provided. Water supplies will be reinstated following construction.
- AS05: Consultation with affected landowners will be carried out to investigate the current extent of land drainage. A scheme of pre-construction land drainage will be designed with the intent of maintaining the efficiency of the existing land drainage system and to assist in maintaining the integrity of the working area during construction. The project may include a system of 'cut-off' drains which feed into a new header drain and the project will also take into account surface water runoff measures.
- AS06: Should animal bones be discovered during construction, which may indicate a potential burial site, works will cease, and advice will be sought from the Animal Health Regional Office on how to proceed, relevant to the origin and age of the materials found.
- AS07: All movement of plant and vehicles between fields will cease in the event of a notification by Defra of a disease outbreak in the vicinity of the site that requires the cessation of activities. Advice will be sought from Defra in order to develop suitable working methods required to reduce the biosecurity risk associated with the continuation of works.
- AS08: Clay bungs or other vertical barriers will be constructed within trench excavations where deemed necessary by a suitably experienced person, to prevent the creation of preferential drainage pathways.

2.7.6 Potential for Significant Effects

- 2.7.6.1 The agriculture and soils assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.
- 2.7.6.2 The proposed scope of the agricultural and soils assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

- 2.7.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.
- 2.7.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- temporary removal of land from agricultural production;

- disruption and disturbance to agricultural operations (from noise, fragmentation by fencing and disruption to water supplies or land drainage); and
- temporary disturbance to soils (potentially resulting in long-term changes to one or more soil functions).

Sources of operational impacts

- permanent removal of land from agricultural production;
- permanent loss of soils; and
- electric and magnetic fields (EMFs).

Sources of maintenance impacts

- temporary removal of land from agricultural production;
- temporary disruption and disturbance to agricultural operations (from noise, fragmentation by fencing and disruption to water supplies or land drainage); and
- temporary disturbance to soils (potentially resulting in long-term changes to one or more soil functions).

Sources of decommissioning impacts

- temporary removal of land from agricultural production;
- temporary disruption and disturbance to agricultural operations (from noise, fragmentation by fencing and disruption to water supplies or land drainage); and
- temporary disturbance to soils (potentially resulting in long-term changes to one or more soil functions).

Potential impacts

Soils and ALC

Soils and ALC during construction

- 2.7.6.5 During construction there would be a potential loss of BMV land (ALC Grades 1, 2 and 3a) from agricultural productivity. There would also be disturbance to soils, either from access for overhead line installation/removal or due to the excavation and soil stripping working areas for the underground cable trenches, pylon footings, converter station footprint and areas required temporarily (such as construction compounds). There would also be the potential for impacts on the ecosystem services the soils provide. The good practice measures set out within the Outline CoCP and the good practice soil management measures set out within the CEMP for soil handling, storage and reinstatement, would reduce the effects on soils.
- 2.7.6.6 By the end of construction, all land required temporarily would be reinstated minimising the risk of long-term effects on soils or ALC. However, until soil surveys have been undertaken to understand the sensitivity of the soils to handling, storage and reinstatement the construction effects on soils and ALC will be scoped into the ES.

Soils and ALC during operation

- 2.7.6.7 During operation, there would be a permanent loss of areas of agricultural land and associated soils for the permanent infrastructure. It is unlikely that this would give rise to a significant effect; however, the land grades and soil types affected would be confirmed through the assessment process and as such permanent impacts on soils and ALC will initially be scoped into the assessment. This would be informed by a survey following published guidelines¹⁵⁷. However, if the site survey confirms that the permanent land affected is not BMV land or that the cumulative loss is below the magnitude threshold for a likely significant effect, then permanent loss of agricultural land during operation would be scoped out of the ES.
- 2.7.6.8 Any maintenance or repair works required which would result in disturbance to soils during operation of the project would be undertaken in accordance with good practice soil handling methods. No likely significant effects on soils or ALC during operational maintenance or repair activities are therefore concluded and this aspect is scoped out of the ES.

Land use

Land use during construction

- 2.7.6.9 During construction there would be potential impacts on agricultural operations due to disturbance (in particular where livestock are present), fragmentation, access restrictions or disruption to water supplies or land drainage. The measures set out within the Outline CoCP, including AS03, to maintain access throughout construction, would reduce the effects to agricultural land use. Effects on land drainage are covered in **Part 2, Chapter 5, Water Environment**.
- 2.7.6.10 By the end of the construction phase, all land required temporarily would be reinstated. As the footprint of the permanent infrastructure is limited and as impacts on agricultural operations will be dealt with through compensation agreements (which lies outside of the EIA process) it is considered that, on completion of the reinstatement of land required temporarily, there would be no significant effects on agricultural landholdings. Therefore, construction effects on land use are proposed to be scoped out of the ES.

Land use during operation

- 2.7.6.11 During operation, there would be limited effects on agricultural operations. Limited areas of agricultural land would be lost permanently and there is the potential for restrictions to activities immediately over or adjacent to buried cables or under overhead lines; however, these will be dealt with through compensation agreements (which lies outside of the EIA process). Any maintenance or repair works required which would result in disturbance to agricultural operations would be undertaken in accordance with good practice soil handling methods. Therefore, there are no likely significant effects on agricultural landholdings during operation and this aspect is proposed to be scoped out of the ES.
- 2.7.6.12 The majority of any financial consequences on individual landowners and farmers will be temporary, as most of the land will be reinstated by the end of the construction

¹⁵⁷ Ministry of Agriculture, Fisheries and Food (1988). Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.

phase and any claims regarding compensation will be addressed outside of the EIA process. As such, potential economic effects on individual landowners and farmers are proposed to be scoped out of the ES.

- 2.7.6.13 During operation, there can be landowner concerns that (EMFs) can affect land use. However, paragraph 2.10.8 of EN-5 states that, in relation to EMFs, ‘*there is little evidence that exposure of crops, farm animals or natural ecosystems to transmission line EMFs has any agriculturally significant consequences*’. National Grid will be undertaking a walkover of the Indicative Alignment to identify land use and activities that may require additional clearance of the conductors. Land uses include intensive activities involving horses, such as riding schools, stud farms and areas habitually used for loading or unloading horse boxes. With these measures in place, there would be no likely significant effects during operation on land use from EMF or microshocks, and this is proposed to be scoped out of the ES.
- 2.7.6.14 National Grid will provide the relevant information on EMFs in a separate document submitted as part of the application for development consent. This document will demonstrate compliance in accordance with the ICNIRP guidelines and paragraph 2.10.9 of EN-5.

Soils, ALC and land use during decommissioning

- 2.7.6.15 Decommissioning of the Project would consider all the relevant environmental legislation and technology available at the time. Decommissioning activities would be subject to an environmental management plan that would identify and mitigate the potential impacts of decommissioning activities that could harm sensitive receptors.
- 2.7.6.16 It is considered likely that the impacts associated with decommissioning would be similar to those identified during the construction phase, with land taken permanently returned to agricultural use where practicable.
- 2.7.6.17 Table 2.7.1 identifies the potential impacts that could result from the sources identified above.

Table 2.7.1: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction	Temporary removal of land from agricultural production	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
		Temporary loss of BMV land	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline	Scoped in (to be reviewed once soil surveys are complete).

			CoCP. Soil surveys will be undertaken to confirm this.	
Construction	Temporary disruption and disturbance to agricultural operations (from noise, fragmentation and disruption to water supplies and land drainage)	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Construction	Temporary disturbance to soils	Changes to one or more soil functions	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).
Operation	Permanent removal of land from agricultural production	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
		Permanent loss of BMV land	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).
Operation	Permanent loss of soils	Changes to one or more soil functions	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).
Operation	EMFs	EMFs impacting crops and livestock	No - Little evidence to indicate EMFs have a significant effect.	Scoped out

Maintenance	Temporary removal of land from agricultural production	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
		Temporary loss of BMV land	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).
Maintenance	Temporary disruption and disturbance to agricultural operations (from noise, fragmentation and disruption to water supplies and land drainage)	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Maintenance	Temporary disturbance to soils	Changes to one or more soil functions	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).
Decommissioning	Temporary removal of land from agricultural production	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
		Temporary loss of BMV land	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).

Decommissioning	Temporary disruption and disturbance to agricultural operations (from noise, fragmentation and disruption to water supplies and land drainage)	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Decommissioning	Temporary disturbance to soils	Changes to one or more soil functions	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in (to be reviewed once soil surveys are complete).

Impact Pathways with Receptors (Step 2)

- 2.7.6.18 This section identifies whether there are any impact pathways associated with all 5 options from the impacts identified above that could give rise to potentially significant effects on the receptors within the agricultural and soils study area or area.
- 2.7.6.19 Table 2.7.2 provides a summary of the impact pathways identified and the matters scoped into and out of the assessment for all options as shown on:
- **Figure 2.1.4 Suffolk Site 1 Emerging Preference and Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area;**
 - **Figure 2.1.5 Suffolk Site 3 Emerging Preference and Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area;**
 - **Figure 2.1.6 Suffolk Site 1 Alternative and Figure 2.1.11 Suffolk Site 1 Alternative Option Area;**
 - **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1) and Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area; and**
 - **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2) and Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area.**

Table 2.7.2: Impact pathways with receptors – all options

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Temporary removal of land from	BMV land	Yes -Land required temporarily to be returned to preconstruction	Scoped in

agricultural production during construction		condition through adherence to CoCP measures. Unlikely to be significant effect; to be confirmed once extent of BMV land and soil characteristics understood from surveys.	
	Agricultural landholdings	No - No potential for a significant effect relating to land area or disturbance/ disruption due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Permanent removal of land from agricultural production during operation	BMV land	Yes -Soil handling and re-use to be undertaken through adherence to CoCP measures. Unlikely to be significant effect; to be confirmed once extent of BMV land and soil characteristics understood from surveys.	Scoped in
	Agricultural landholdings	No - No potential for a significant effect relating to land area or disturbance/ disruption due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Temporary disturbance to soils during construction	Soil quality and associated ecosystem services	Yes -Land required temporarily to be returned to preconstruction condition through adherence to CoCP measures. Unlikely to be significant effect; to be confirmed once soil characteristics and resilience understood from surveys.	Scoped in
Permanent loss of soils during operation	Soil quality and associated ecosystem services	Yes -Soil handling and re-use to be undertaken through adherence to CoCP measures. Unlikely to be significant effect; to be confirmed once soil characteristics and resilience understood from surveys.	Scoped in
EMFs during operation	Agricultural operations	No - Little evidence to indicate EMFs have a significant effect.	Scoped out

Temporary removal of land from agricultural production due to maintenance activities	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
	BMV land	Yes - Unlikely to be significant effects due to inclusion of best practice construction methods set out within the Outline CoCP. Soil surveys will be undertaken to confirm this.	Scoped in
Temporary disruption and disturbance due to maintenance activities	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Temporary disturbance to soils during decommissioning activities	Soil quality and associated ecosystem services	Yes - Land required temporarily to be returned to preconstruction condition through adherence to CoCP measures. Unlikely to be significant effect; to be confirmed once soil characteristics and resilience understood from surveys.	Scoped in
Temporary removal of land from agricultural production due to decommissioning activities	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out
Temporary disruption and disturbance due to decommissioning activities	Reduction in agricultural productivity	No - No potential for a significant effect due to the restoration of land required temporarily and compensation agreements with individual landowners.	Scoped out

2.7.7 Proposed Assessment Methodology

2.7.7.1 An overview of the proposed assessment methodology is provided in **Part 1, Chapter 5, EIA Approach and Methodology**.

Proposed Data Sources

2.7.7.2 The following data sources are proposed to be used to inform the assessment:

- Soil surveys (as required);

- Ordnance Survey mapping and aerial photography to establish land use and settlement patterns;
- Soilscape mapping showing the distribution of main soil types was assessed on the Land Information System website; ALC mapping, including provisional and (where available) detailed ALC mapping from the MAGIC website ; and
- Extent of agri-environmental and woodland schemes from the MAGIC website.

Proposed Assessment Methodology

- 2.7.7.3 The assessment will be based on guidance set out by the Institute of Environmental Management and Assessment on how land and soil should be assessed in Environmental Impact Assessment¹⁵⁸. This recently published guidance and the sensitivity and magnitude tables have been based on guidance set out in LA109¹⁵⁹ Geology and Soils of the Design Manual for Roads and Bridges (DMRB) which has traditionally been used to assess the impacts of both highways' projects and other linear infrastructure projects on agriculture and soil receptors.
- 2.7.7.4 The IEMA guidance seeks to move practice away from a narrow focus on quantifying and financially compensating impacts on agricultural land and advocates a new and wider approach to assessing the soil functions, ecosystem services and natural capital provided by land and soils.
- 2.7.7.5 The sensitivity of receptors will be assessed based on the criteria set out in Table 2.7.3 below.

Table 2.7.3: Sensitivity of receptor criteria

Receptor sensitivity (in-situ soils)	Soil resource and soil functions
Very High	<p>Biomass production: ALC Grades 1 & 2</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a European site (e.g., SAC, SPA, Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland</p> <p>Soil carbon: Peat soils</p> <p>Soils with potential for ecological/landscape restoration</p> <p>Soil hydrology: Very important catchment pathway for water flows and flood risk management</p> <p>Archaeology, Cultural heritage, Community benefits and Geodiversity: SAMs and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest; Soils supporting</p>

¹⁵⁸ Institute of Environmental Management and Assessment (2022). A new perspective on land and soil in Environmental Impact Assessment.

¹⁵⁹ Highways England (2020). Design Manual for Roads and Bridges. LA 109 Geology and Soils. [online] Available at: <https://www.standardsforhighways.co.uk/prod/attachments/adca4c7d-4037-4907-b633-76eaed30b9c0?inline=true>

	<p>community/recreational/educational access to land covered by National Park designation</p> <p>Source of materials: Important surface mineral reserves that would be sterilised (i.e., without future access)</p>
High	<p>Biomass production: ALC Grade 3a</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a UK designated site (e.g., UNESCO Geoparks, SSSI or AONB, Special Landscape Area and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting semi-natural vegetation</p> <p>Soil carbon: Organo-mineral soils (e.g. peaty soils)</p> <p>Soil hydrology: Important catchment pathway for water flows and flood risk management</p> <p>Archaeology, Cultural heritage, Community benefits and Geodiversity: Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; Historic parks and gardens; RIGS; Soils supporting community/recreational/educational access to RIGS and AONBs;</p> <p>Source of materials: Surface mineral reserves that would be sterilised (i.e., without future access)</p>
Medium	<p>Biomass production: ALC Grade 3b</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected or valued features within non-statutory designated sites (e.g. Local Nature Reserves (LNR), Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), Special Landscape Areas; Non-Native Forest and woodland soils</p> <p>Soil carbon: Mineral soils</p> <p>Soil hydrology: Important minor catchment pathway for water flows and flood risk management</p> <p>Archaeology, Cultural heritage, Community benefits and Geodiversity: Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils supporting community/recreational/educational access to land</p> <p>Source of materials: Surface mineral reserves that would remain accessible for extraction</p>
Low	<p>Biomass production: ALC Grade 4 and 5</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting valued features within non-designated notable or priority habitats/landscapes. Agricultural soils</p> <p>Soil carbon: Mineral soils</p> <p>Soil hydrology: Pathway for local water flows and flood risk management</p> <p>Archaeology, Cultural heritage, Community benefits and Geodiversity: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community/recreational/educational access to land</p>

	Source of materials: Surface mineral reserves that would remain accessible for extraction
Negligible	As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions

2.7.7.6 The magnitude of impacts will be assessed based on the criteria set out in Table 2.7.4 below.

Table 2.7.4: Magnitude criteria

Magnitude of impact (change)	Description of impacts restricting proposed land use
Large	<p>Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss of soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team (including effects from ‘temporary developments’*)</p> <p>or</p> <p>Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20ha, or gain in soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team (including effects from ‘temporary developments’*)</p>
Medium	<p>Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha or loss of soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team (including effects from ‘Temporary Developments’*)</p> <p>or</p> <p>Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20ha, or gain in soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team</p>
Small	<p>Permanent, irreversible loss over less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes), or temporary, reversible loss of soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team</p> <p>or</p> <p>Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5ha or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features set out in Table 3.7.3 above, as advised by other topic specialists in EIA team</p>

Negligible	No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use
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*Temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils

2.7.7.7 The significance of an effect is then derived using the matrix set out in **Part 1, Chapter 5, EIA Approach and Methodology**.

2.7.8 Conclusion

2.7.8.1 The Suffolk Onshore Scheme has the potential to affect agriculture and soil receptors as a result of the temporary and permanent removal of land from agricultural production (including BMV land), disturbance to soils and disruption to agricultural operations. A suite of measures is set out in the Outline CoCP which seek to minimise the potential impacts on these receptors. Soil and ALC surveys will be undertaken in key areas where there would be permanent loss of land and sections of undergrounded cable to further inform the assessment.

Proposed Scope of the Assessment

2.7.8.2 A summary of the proposed scoping of the assessment is provided in Table 2.7.5.

Table 2.7.5: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
Temporary loss of BMV land	No likely significant effect; extent to be confirmed through ALC surveys	Construction, Maintenance, Decommissioning	Scoped in for all options
Permanent loss of BMV land	Potential for permanent loss of BMV land; extent to be confirmed through ALC surveys	Operation	Scoped in for all options
Soil quality and associated ecosystem services	No likely significant effect; to be confirmed through ALC surveys	Construction, Maintenance, Decommissioning	Scoped in for all options
Temporary loss of BMV land; Soil quality and associated	No likely significant effect	Operation	Scoped in for all options

ecosystem
services

Agricultural landholdings and effects of EMFs	No likely significant effect	Operation	Scoped out for all options
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Removal of land from agricultural use	No likely significant effect	Construction, Operation, Maintenance, Decommissioning	Scoped out for all options
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2.8 Traffic and Transport

2.8.1 Introduction

- 2.8.1.1 This chapter presents how the Traffic and Transport assessment will consider the potentially significant effects on heritage assets that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.8.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.8.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;** and
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**
- 2.8.1.4 This chapter is supported by the following figure:
- **Figure 2.8.1 Proposed Study Area in Suffolk (Traffic & Transport).**

2.8.2 Regulatory and Planning Policy Context

- 2.8.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on traffic and transport associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

- 2.8.2.2 There is no transport specific legislation relevant to the proposals.

Planning Policy

National planning policy

National Policy Statement for Energy (NPS EN-1, 2011)

2.8.2.3 The NPS for Energy (EN-1) was published in 2011 and provides the basis for decisions regarding nationally significant energy infrastructure. Section 5.14 outlines the planning policy for traffic and transport, including guidance on undertaking relevant parts of the EIA. The most relevant paragraphs for this purpose are 5.13.3 to 5.13.5 which are set out as follows:

- Paragraph 5.13.3, which states that if a project is likely to have significant transport implications a Transport Assessment should be included with the ES;
- Paragraph 5.13.4, which states that where appropriate, a Travel Plan to include demand management measures to mitigate transport impacts should be prepared; and
- Paragraph 5.13.5, which states that where additional transport infrastructure is proposed, this should be discussed with the relevant network providers (in terms of the possibility of co-funding by Government for any third-party benefits).

2.8.2.4 In addition, Section 3.1 relates to Infrastructure Planning Commission (IPC) decision making which includes the following:

- Paragraph 3.1.1, the UK needs all the types of energy infrastructure covered by this NPS in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions;
- Paragraph 3.1.2, it is for industry to propose new energy infrastructure projects within the strategic framework set by Government. The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies;
- Paragraph 3.1.3, the IPC should therefore assess all applications for development consent for the types of infrastructure covered by the energy NPSs on the basis that the Government has demonstrated that there is a need for those types of infrastructure and that the scale and urgency of that need is as described for each of them in this Part; and
- Paragraph 3.1.4, the IPC should give substantial weight to the contribution which projects would make towards satisfying this need when considering applications for development consent under the Planning Act 2008.

2.8.2.5 The NPS EN-1 is currently under review and an updated draft was published for consultation in September 2021, where the above paragraphs are proposed to be relocated to Section 5.14, supported by the following proposed updates:

- Paragraph 5.14.4, which also states that the assessment should consider any possible disruption to services and infrastructure (such as road, rail and airports); and

- Paragraph 5.14.8, which states that the Secretary of State (SoS) should only consider preventing or refusing development on highways grounds if there would be an unacceptable impact on highway safety, or residual cumulative impacts on the road network would be severe.

National Policy Statement for Electricity Networks Infrastructure (NPS EN-5, 2011)

2.8.2.6 The NPS for Electricity Networks Infrastructure (EN-5) was published in 2011 and sets out the policies relating to electricity networks infrastructure for consideration in conjunction with NPS EN-1.

2.8.2.7 The NPS EN-5 is currently under review and an updated draft was published for consultation in September 2021. While the adopted document does not refer to transport or highways requirements, the most relevant paragraphs are set out as follows:

- Paragraph 2.2.2, which discusses the factors that inform site selection for the proposed infrastructure; and
- Paragraph 2.2.3 and 2.2.4, which considers the land requirements to gain access for the purposes of installation and maintenance of networks.

National planning policy framework (July 2021)

2.8.2.8 The Government's National Planning Policy Framework (NPPF) was originally published in March 2012 and later revised in July 2021, outlining the Government's planning policies and how they are expected to be applied. The TA will set out the key guidance points of relevance to this application.

2.8.2.9 The most relevant paragraphs in the context of transport are set out below:

- Paragraph 104 outlines that 'transport issues should be considered from the earliest of stages of plan-making and development proposals'; this is to ensure that:
 - The potential impacts of development on transport networks can be addressed;
 - Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
 - Opportunities to promote walking, cycling and public transport use are identified and pursued;
 - The environmental impacts of traffic and transport infrastructure can be identified, assessed and considered – including appropriate opportunities for mitigation and for net gains in environmental quality; and
 - Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.
- Paragraph 110 outlines the key considerations when assessing sites to be allocated for development in plans or specific development applications. These are:

- Appropriate opportunities to promote sustainable transport modes can be (or have been) taken up, given the type of development and its location;
 - Safe and suitable access to the Order limits can be achieved for all users;
 - The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance; and
 - Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.
- Paragraph 111 states that development should only be prevented or refused on highways grounds where there would be an unacceptable impact on highway safety, or the residual cumulative impacts of development on the road network would be severe.
- Within this context, paragraph 112 states that applications for development should:
 - Give priority first to pedestrian and cycle movements and then, as far as possible, facilitate access to high quality public transport;
 - Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
 - Create places that are safe, secure and attractive, which minimise the scope for conflicts between pedestrians, cyclists and vehicles;
 - Allow for the efficient delivery of goods, and access by service and emergency vehicles; and
 - Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.
- As outlined in Paragraph 113, all developments that generate significant amounts of movement should be required to provide a Travel Plan, and the application should be supported by a Transport Statement or TA so that the likely impacts of the proposal can be assessed.

National planning practice guidance (2014)

2.8.2.10 The Government's Planning Practice Guidance; Travel Plans, TAs and Transport Statements in Decision Taking (2014) provides advice on when TAs and Transport Statements are required, and what they should contain. The most relevant paragraphs are summarised below:

- Paragraph 002 states that Travel Plans, TAs and Transport Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements;
- Paragraphs 004 and 005 state that TAs should primarily focus on evaluating the potential transport impacts of a development proposal and may propose mitigation measures to promote sustainable development in order to avoid unacceptable or "severe" impacts where necessary;

- Paragraph 006 states that TAs support national planning policy and can positively contribute to encouraging sustainable travel, reducing traffic generation and detrimental impacts, reducing carbon emissions and climate impacts, creating accessible, connected and inclusive communities, improving health outcomes and quality of life, improving road safety and reducing the need for new development to increase existing road capacity or provide new roads;
- Paragraph 007 states that TAs should be established at an early stage and be tailored to local circumstances, as well as proportionate to the size and scope of the proposed development. In addition, they should be brought forward through collaborative ongoing working between the local planning authority/transport authority, transport operators, rail network operators, as well as National Highways where there may be implications for the strategic road network and other relevant bodies; and
- Paragraphs 013 to 015 provide further details of when TAs are required, how the need and scope of a TA should be established and what information should be included.

Guidelines for the environmental assessment of road traffic (1993)

- 2.8.2.11 Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993) provides guidance on examining the environmental impacts of developments in terms of traffic and transportation.

Local planning policy

- 2.8.2.12 Local planning policy relating to transport and pertinent to the Suffolk Onshore Scheme is set out below.

Suffolk's Local Transport Plan (2011 – 2031)

- 2.8.2.13 The Local Transport Plan was prepared by Suffolk County Council (SCC) with an aim to provide a clear vision for the future of transport across the county up to 2031. The document outlines policies and provides a four-year implementation plan to manage and enhance the local transport network; the key aims and strategy focus on:
- The challenge of maintaining the highway network in good condition;
 - Tackling congestion in the larger towns by more efficient management of traffic, reducing the demand for car travel and promoting more sustainable means of travel;
 - Improved connectivity and accessibility in rural areas;
 - Seeking improvement to the A11, A12 and A14 trunk roads connecting businesses in Suffolk to each other and to their markets;
 - Seeking improvement to the rail network for freight and passengers;
 - Relief for our market towns suffering from high levels of through traffic; and
 - Recognising that securing high speed broadband throughout Suffolk is very important at present in addressing accessibility and connectivity issues throughout Suffolk and supporting business growth.

- 2.8.2.14 The Local Transport Plan (LTP) recognises the potential of promoting transport systems with the aim of reducing carbon emissions. In addition, the LTP supports the County's Sustainable Community Strategy to meet the following objectives:
- Creating a prosperous and vibrant economy;
 - Improving learning and skills for the future;
 - Creating the greenest county; and
 - Providing safe, healthy and inclusive communities.
- 2.8.2.15 The key measures proposed within the Implementation Plan are region, mode and route specific.

East Suffolk Council – Suffolk Coastal Local Plan (2020)

- 2.8.2.16 The Local Authority was created from a merger of the former Suffolk Coastal and Waveney district, and as such there are two adopted Local Plans within East Suffolk. The Study area is located within the former Suffolk Coastal district and subject to decision making with reference to the relevant Local Plan adopted in September 2020.
- 2.8.2.17 The Local Plan sets out a vision and a framework for the future development of the area, addressing needs and opportunities for housing, the economy, community facilities and infrastructure, as well as the basis for conserving and enhancing the natural and historic environment, mitigating and adapting to climate change, and achieving well designed places. Chapter 7 of the document sets out the Council's strategy for transport and infrastructure provision in the district and the relevant policies, which focuses on sustainable transport (Policy SCLP7.1) and parking (Policy SCLP7.2).

2.8.3 Study Area

- 2.8.3.1 At this stage, a total of five options are considered for the proposal, with the proposed study area therefore comprising the land requirement for all options collectively, including directly linked transport infrastructure adjacent to the land required for all options, and the inclusion of the village of Leiston, which is surrounded by the proposal options.
- 2.8.3.2 The proposed study area in Suffolk is defined by **Figure 1.1.2 Suffolk Scoping Boundary** and also includes additional parts of the highway network and the pedestrian/ cycle network including Public Rights of Way (PRoW) which may potentially be affected by the Suffolk Onshore Scheme. The proposed study area for traffic and transport is shown on **Figure 2.8.1 Proposed Study Area in Suffolk (Traffic & Transport)**.
- 2.8.3.3 The extent of the proposed study area for assessment in terms of highway impact will be subject to discussion, and agreement of this study area will be sought, with Suffolk County Council (SCC) as the local highway authority. Therefore, the proposed study area will be updated as required when the ES is prepared.
- 2.8.3.4 The proposed study area includes the following parts of the highway network for consideration:

- A1094 Saxmundham Road between Church Common and Aldeburgh;
- B1119 Church Hill/Saxmundham Road/Waterloo Avenue;
- B1122 Abbey Road;
- B1069 Snape Road;
- B1353 Aldringham Lane;
- B1122 Aldeburgh Road/Leiston Road
- All roads within and connected to the village of Leiston;
- Road links to Sizewell nuclear power stations and the Beach View Holiday Park;
- All roads within and connected to the village of Thorpeness including Thorpe Road;
- All roads within the west portion of Aldeburgh, from the roundabout junction of A1094 Saxmundham Road with B1122 Leiston Road;
- All roads within and connected to the village of Friston including B1121 Saxmundham Road; and
- Grove Road from Friston to the western edge of Saxmundham.

2.8.3.5 The following key local junctions along the perimeter of the Study Area will be considered:

- Junction of B1122 with Moat Road;
- Junction of Hawthorn Road with Moat Road;
- Junction of Hawthorn Road with Harrow Lane;
- Junction of Hawthorn Road with access road towards the Concrete Plant and Cakes and Ale Holiday Park;
- Junction of the B1121 with Clayhills Road;
- Junction of B1121 with Sandy Lane;
- Junction of the A1094 with the B1121;
- Junction of the A1094 with the B1069; and
- Roundabout junction of the A1094 with the B1122.

2.8.3.6 The proposed study area also includes the following walking and cycling routes (including PRoW) which will be considered:

- National Cycle Network Route 42, which runs from southwest to northeast across the centre of the Study Area;
- A significant number of PRoW, as set out within the SCC definitive map. The PRoW are located within the parishes of Leiston-cum-Sizewell, Theberton, Knodishall, Friston, Aldringham-cum-Thorpe, Aldeburgh, Sternfield, Saxmundham, and Snape;

- Promoted Route: Sandlings Walk from Ipswich to Lowestoft, which runs from north to south and across the east of the Leiston; and
- Suffolk Coast Path.

2.8.3.7 The specific transport and highways assets are set out and listed in the Baseline Conditions by Option. As a preferred option is taken forward, these assets will become subject to the assessment, with agreement from SCC.

2.8.4 Baseline Conditions

Data Sources

2.8.4.1 The traffic and transport baseline conditions described in this section have been informed by a review of the following data sources:

- Publicly available mapping and aerial imagery from Google Maps;
- Publicly available information on websites for public transport operators and online resources for promoted recreational routes; and
- Data held within the AECOM WebGIS platform, with transport infrastructure information, including routes and labelling for PRoW routes.

Baseline

Site 1 Emerging Preference

Highway network

2.8.4.2 The proposed Option Area includes portions of a number of main local highways. The most prominent is the A1094 to the west of Aldeburgh. This route operates with a single lane in each direction and is the main route between Aldeburgh and the A12(T). The portion of the A1094 within the Option Area provides access to a number of farms and operates with the national speed limit.

2.8.4.3 The Option Area includes a portion of the B1122 Leiston Road which runs from Aldeburgh to the south towards Aldringham and Leiston in the north. The portion of the B1122 within the Option Area provides access to a farm access and operates with a 30mph speed limit. The B1122 is not linked with any other main routes within the Option Area itself.

2.8.4.4 Thorpe Road is a coastal road linking Aldeburgh in the south with Thorpeness to the north. The route, which operates with the national speed limit, does not include any connectivity with any other routes within the Option Area.

2.8.4.5 The B1069 Snape Road bisects the centre of the Option Area and connects the A1094 to the south with the village of Knodishall Common to the north. Grove Road is also a north-south route through the Option Area, running northwards from the village of Friston. School Road forms a junction with Grove Road and runs eastwards towards Knodishall. Both Grove Road and School Road are unclassified with single lane carriageways subject to the national speed limit within the Option Area.

2.8.4.6 The Option Area includes a network of unmade tracks that provide agricultural access, some of which are connected to each other, as well as the A1094 and B1069 via a series of access points. The northwest perimeter of the Option Area also abuts the B1121 which runs from Sternfield to Friston and operates with a 30mph speed limit.

Public transport network

2.8.4.7 There are bus stops in both directions on the B1122 Linden Road at the south of the Option Area. The bus routes that operate along the B1122 are 64, 65 and 522. The 522 service operates between Saxmundham and Aldeburgh, with services operating from 07:00 and 17:00, at a frequency of one service per hour in each direction. The 64 service runs from Ipswich to Aldeburgh via Leiston between 06:00 and 20:00 at a frequency of one service per hour in each direction. The 65 service runs from Ipswich to Leiston via Woodbridge between 06:00 and 15:30 on an hourly frequency in each direction.

2.8.4.8 The B1121 along the southwest perimeter of the Option Area is used by bus route 521 between Aldeburgh and Halesworth. The service operates four times per day in each direction and can be accessed from stops at Friston to the west of the Option Area, and Sandy Lane further to the west.

2.8.4.9 There are no rail services within the Option Area, although Saxmundham railway station is located circa. 2.5km to the northwest of the Option Area. The station operates services between Lowestoft and Ipswich at one service per hour in each direction. There is a branch railway line between Saxmundham and Leiston, although this is solely for service access to Sizewell power station.

Active travel network

2.8.4.10 There is a significant number of bridleways and shared walking and cycling routes within the Option Area. The specific links within the Option Area are set out, with PROW ID, Route Code and Type of PROW as follows:

- 6318 E-103/006/0
Footpath
- 6333 E-103/016/0
Footpath
- 6334 E-103/019/0
Footpath
- 6335 E-103/020/0
Footpath
- 7442 E-260/001/0
Footpath
- 7445 E-260/007/0
Footpath
- 7446 E-260/008/0
Footpath
- 7972 E-354/004/0
Footpath
- 7973 E-354/019/0
Footpath
- 7974 E-354/005/0
Footpath
- 7975 E-354/006/0
Footpath
- 7976 E-354/007/0
Footpath
- 7977 E-354/007/A
Footpath
- 7978 E-354/008/0
Footpath

- 7447 E-260/009/0
Footpath
- 7449 E-260/012/0
Bridleway
- 7450 E-260/012/A
Bridleway
- 7452 E-260/013/A
Footpath
- 7455 E-260/017/0
Footpath
- 7969 E-354/001/0
Bridleway
- 7970 E-354/002/0
Bridleway
- 7971 E-354/003/0
Footpath
- 7986 E-354/016/0
Footpath
- 7988 E-354/018/0
Footpath
- 7989 E-354/018/A
Footpath
- 7990 E-354/020/0
Bridleway
- 7991 E-354/022/0
Footpath
- 10027 E-103/001/0
Footpath
- 14032 E-354/036/0
Bridleway

2.8.4.11 National Cycle Network Route 42, which runs from southwest to northeast direction across the west of the Option Area. The Suffolk Coast Path crosses the southeast of the Option Area, beyond the northern edge of Aldeburgh. Sandlings Walk, which is a promoted route from Ipswich to Lowestoft, runs east to west across the study area.

Site 1 Alternative

Highway network

- 2.8.4.12 The Option Area includes portions highways across rural land from the southwest perimeter of Knodishall, southeast perimeter of Leiston and leading towards land to the south of the Sizewell power station. The Option Area includes Sizewell Gap to the east, which is an unclassified road linking Leiston to Sizewell, that acts as a link road with ample visibility provided at junctions, including wide junction bellmouths along its length, and a footway along the southern side of the road.
- 2.8.4.13 Sizewell Gap provides a link onto Lovers Lane and the B1122 Abbey Road which run to the north of Leiston. The A1122 Abbey Road provides connections with Theberton in the north and Leiston to the south.
- 2.8.4.14 Within the centre, the Option Area includes extents and the junction of the B1353 and B1122 Aldeburgh Road at the southeast of Aldringham. The junction includes a slip lane from the B1122 southeast bound onto the B1353, and each link on the junction is provided with flared lanes. The two links, within the Option Area, operate with 30mph speed limits.
- 2.8.4.15 The B1069 Snape Road within the southwest of the Option Area, connects the A1094 with the village of Knodishall Common. The route has a single lane in each direction, without kerb lines or footway, and is a national speed limit route. Grove Road is also a

north-south route through the Option Area, running northwards from the village of Friston. School Road forms a junction with Grove Road and runs eastwards towards Knodishall Both Grove Road and School Road are unclassified with single lane carriageways subject to the national speed limit within the Option Area.

- 2.8.4.16 The Option Area includes a network of unmade tracks that provide agricultural access, some of which are connected to each other, as well as the A1094 and B1069 via a series of access points. The northwest perimeter of the Option Area also abuts the B1121 which runs from Sternfield to Friston and operates with a 30mph speed limit.

Public transport network

- 2.8.4.17 The bus stop and route serving the B1121 is the 521 service between Aldeburgh and Halesworth. The service operates four times per day in each direction and can be accessed from the Parrot & Punchbowl and Church Lane stops at the east of the Option Area.

- 2.8.4.18 There are three services operating on the B1122, the 64, 65 and 522. The 64 service runs from Ipswich to Aldeburgh via Leiston between 06:00 and 20:00 at a frequency of one service per hour in each direction. The 65 service runs from Ipswich to Leiston via Woodbridge between 06:00 and 15:30 on an hourly frequency in each direction. The 522 service operates between Saxmundham and Aldeburgh, with services operating from 07:00 and 17:00, at a frequency of one service per hour in each direction. The 522 bus route also operates along the B1119 at the northwest perimeter of the Option Area, with access points within Saxmundham, including from the Waitrose store on this road.

- 2.8.4.19 There are no rail services within the Option Area, although Saxmundham railway station is located circa. 2.5km to the northwest of the Option Area. The station operates services between Lowestoft and Ipswich at one service per hour in each direction. There is a branch railway line between Saxmundham and Leiston, although this is solely for service access to Sizewell power station.

Active travel network

- 2.8.4.20 There is a significant number of bridleways and shared walking and cycling routes within the Option Area. The specific links within the Option Area are set out, with PROW ID, Route Code and Type of PROW as follows:

- | | |
|---------------------------------|--------------------------------|
| ● 6349 E-106/008/0
Footpath | ● 7452 E-260/013/A
Footpath |
| ● 16991 E-260/030/0
Footpath | ● 7989 E-354/018/A
Footpath |
| ● 6370 E-106/028/0
Footpath | ● 7972 E-354/004/0
Footpath |
| ● 7988 E-354/018/0
Footpath | ● 8026 E-363/016/0
Footpath |
| ● 8036 E-363/024/0
Footpath | ● 6314 E-106/001/0
Footpath |

- 7971 E-354/003/0
Footpath
- 7990 E-354/020/0
Bridleway
- 7450 E-260/012/A
Bridleway
- 8041 E-363/029/0
Footpath
- 7976 E-354/007/0
Footpath
- 8034 E-363/022/0
Footpath
- 6347 E-106/006/0
Bridleway
- 8024 E-363/014/A
Footpath
- 7975 E-354/006/0
Footpath
- 6407 E-106/067/0
Footpath
- 7455 E-260/017/0
Footpath
- 7970 E-354/002/0
Bridleway
- 8040 E-363/028/0
Bridleway
- 6338 E-106/003/0
Footpath
- 16992 E-260/031/0
Footpath
- 7969 E-354/001/0
Bridleway
- 8035 E-363/023/0
Footpath
- 7447 E-260/009/0
Footpath
- 8038 E-363/026/0
Bridleway
- 14032 E-354/036/0
Bridleway
- 8037 E-363/025/0
Footpath
- 8039 E-363/027/0
Bridleway
- 7991 E-354/022/0
Footpath
- 8031 E-363/019/0
Bridleway
- 6362 E-106/026/0 Byway
Open to All Traffic
- 7449 E-260/012/0
Bridleway
- 7977 E-354/007/A
Footpath
- 7974 E-354/005/0
Footpath
- 7986 E-354/016/0
Footpath
- 7978 E-354/008/0
Footpath
- 7446 E-260/008/0
Footpath
- 8033 E-363/021/0
Footpath
- 6405 E-106/065/0
Footpath
- 7445 E-260/007/0
Footpath
- 7973 E-354/019/0
Footpath
- 8025 E-363/015/0
Bridleway
- 6369 E-106/027/0
Bridleway

- 8023 E-363/014/0
Footpath

2.8.4.21 National Cycle Network Route 42, which runs from southwest to northeast direction across the west of the Option Area. The Suffolk Coast Path crosses the Option Area, at Sizewell. Sandlings Walk, which is a promoted route from Ipswich to Lowestoft, runs east to west across the study area, with a further portion running north to south at Sizewell.

Site 3 Emerging Preference

Highway network

2.8.4.22 The proposed Option Area includes five main portions of the surrounding highway network. The most prominent is the A1094 to the west of Aldeburgh. This route operates single lanes in each direction and is the main route between Aldeburgh and the A12(T). The portion of the A1094 within the Option Area includes a number of farm accesses and operates with the national speed limit.

2.8.4.23 The Option Area includes a small portion of the B1122 Leiston Road which runs from Aldeburgh to the south towards Aldringham and Leiston in the north. The portion of the B1122 within the Option Area provides access to a farm access and operates with a 30mph speed limit. The B1122 is not linked with any other main routes within the Option Area.

2.8.4.24 Thorpe Road is a coastal road to the west of the Option Area which links Aldeburgh in the south with Thorpeness to the north. The route, which operates with the national speed limit, does not include connectivity with any other key routes within the Option Area.

2.8.4.25 The B1069 Snape Road bisects the centre of the Option Area and connects the A1094 to the south with the village of Knodishall Common to the north. Grove Road is also a north-south route through the centre Option Area, running northwards from the village of Friston. Grove Road is unclassified and is a single lane carriageway, subject to a 30mph speed limit to the south and the national speed limit towards the north portion of the Option Area. School Road also forms a junction with Grove Road and runs eastwards towards Knodishall. There are a number of unmade tracks which provide agricultural access within the centre of the Option Area via the A1094 and the B1069.

2.8.4.26 The northwest section of the Option Area includes several minor rural roads which provide agricultural access. The northwest perimeter of the Option Area also interacts with the B1119 and B1121 routes, which run from Saxmundham to Leiston and Sternfield to Friston respectively. The B1121 operates with a 30mph speed limit whereas the B1119 is subject to the national speed limit, at the extents abutting the study area.

Public transport network

2.8.4.27 There are bus stops in both directions on the B1122 Linden Road at the south of the Option Area. The bus routes that operate along the B1122 are 64, 65 and 522. The 522 service operates between Saxmundham and Aldeburgh, with services operating from 07:00 and 17:00, at a frequency of one service per hour in each direction. The 64 service runs from Ipswich to Aldeburgh via Leiston between 06:00 and 20:00 at a

frequency of one service per hour in each direction. The 65 service runs from Ipswich to Leiston via Woodbridge between 06:00 and 15:30 on an hourly frequency in each direction.

2.8.4.28 The B1121 along the southwest perimeter of the Option Area is used by bus route 521 between Aldeburgh and Halesworth. The service operates four times per day in each direction and can be accessed from stops at Friston to the west of the Option Area, and Sandy Lane further to the west. The 522 bus route also operates along the B1119 at the northern perimeter of the Option Road, with access points within Saxmundham, including from the Waitrose store on this road.

2.8.4.29 There are no rail services within the Option Area, although Saxmundham railway station circa. 900m to the northwest of the Option Area. The station operates services between Lowestoft and Ipswich at one service per hour in each direction. There is a branch railway line between Saxmundham and Leiston, although this is solely for service access to Sizewell power station.

Active travel network

2.8.4.30 There is a significant number of bridleways and shared walking and cycling routes within the Option Area. The specific links within the Option Area are set out, with PROW ID, Route Code and Type of PROW as follows:

- 8904 E-491/006/0
Footpath
- 7988 E-354/018/0
Footpath
- 7971 E-354/003/0
Footpath
- 8907 E-491/012/0
Bridleway
- 8903 E-491/005/0
Footpath
- 7990 E-354/020/0
Bridleway
- 7450 E-260/012/A
Bridleway
- 7976 E-354/007/0
Footpath
- 7975 E-354/006/0
Footpath
- 7455 E-260/017/0
Footpath
- 7979 E-354/009/0
Footpath
- 7452 E-260/013/A
Footpath
- 7989 E-354/018/A
Footpath
- 7972 E-354/004/0
Footpath
- 14032 E-354/036/0
Bridleway
- 7464 E-260/029/0
Bridleway
- 7991 E-354/022/0
Footpath
- 7453 E-260/015/0
Footpath
- 7449 E-260/012/0
Bridleway
- 7977 E-354/007/A
Footpath
- 7986 E-354/016/0
Footpath
- 7978 E-354/008/0
Footpath

- 7970 E-354/002/0
Bridleway
- 8902 E-491/004/0
Footpath
- 16992 E-260/031/0
Footpath
- 7969 E-354/001/0
Bridleway
- 7454 E-260/016/0
Footpath
- 7997 E-354/031/0
Footpath
- 7447 E-260/009/0
Footpath
- 10027 E-103/001/0
Footpath
- 8906 E-491/010/0
Bridleway
- 7456 E-260/018/0
Footpath
- 7446 E-260/008/0
Footpath
- 7457 E-260/020/0
Footpath
- 6333 E-103/016/0
Footpath
- 7445 E-260/007/0
Footpath
- 7973 E-354/019/0
Footpath
- 6318 E-103/006/0
Footpath
- 12866 E-260/026/0
Bridleway
- 8644 E-460/023/0
Footpath
- 6334 E-103/019/0
Footpath

2.8.4.31 National Cycle Network Route 42, which runs from southwest to northeast direction across the centre of the Option Area. The Suffolk Coast Path crosses the Option Area, north of Aldeburgh. Sandlings Walk, which is a promoted route from Ipswich to Lowestoft, runs east to west across the south of the study area.

Site 3 Alternative (Option 1)

Highway network

2.8.4.32 The Option Area includes portions of highways across rural land from the northern perimeters of Leiston and Knodishall, leading towards land to the south of the Sizewell power station. The Option Area includes Sizewell Gap, which is an unclassified road linking Leiston to Sizewell, that acts as a link road, with ample visibility provided at junctions, including wide junction bellmouths along its length, and a footway along the southern side of the road.

2.8.4.33 Sizewell Gap provides a link onto Lovers Lane and the B1122 Abbey Road which run to the north of Leiston. The A1122 Abbey Road provides connections with Theberton in the north and Leiston to the south.

2.8.4.34 The north of the Option Area is bisected by a series of routes including Abbey Lane, Harrow Lane, The Green and Workhouse Lane, which are rural lanes which operate national speed limit. To the west, a portion of the B1119 crosses the Option Area, and runs from Saxmundham to Leiston and operates with the national speed limit, at the

extent within the study area. The Option Area also includes a number of other unmade tracks that provide agricultural access.

2.8.4.35 The Option Area also includes portions of highways predominantly on the perimeter, including the B1121 to the southwest which runs from Sternfield to Friston. The B1121 operates with a 30 mph speed limit at the extents abutting the study area.

2.8.4.36 At the south-western portion of the Option Area, Grove Road is a north-south route which runs southwards towards the village of Friston. The road is unclassified and is a single lane carriageway with a national speed limit on the portion within the Option Area.

Public transport network

2.8.4.37 The bus stop and route serving the B1121 is the 521 service between Aldeburgh and Halesworth. The service operates four times per day in each direction and can be accessed from the Parrot & Punchbowl and Church Lane stops at the east of the Option Area.

2.8.4.38 There are three services operating on the B1122, the 64, 65 and 522. The 64 service runs from Ipswich to Aldeburgh via Leiston between 06:00 and 20:00 at a frequency of one service per hour in each direction. The 65 service runs from Ipswich to Leiston via Woodbridge between 06:00 and 15:30 on an hourly frequency in each direction. The 522 service operates between Saxmundham and Aldeburgh, with services operating from 07:00 and 17:00, at a frequency of one service per hour in each direction. The 522 bus route also operates along the B1119 to the west of the Option Area, with access points within Saxmundham, including from the Waitrose store on this road.

2.8.4.39 There are no rail services within the Option Area, although Saxmundham railway station is located circa. 900m to the west of the Option Area. The station operates services between Lowestoft and Ipswich at one service per hour in each direction. There is a branch railway line between Saxmundham and Leiston, although this is solely for service access to Sizewell power station.

Active travel network

2.8.4.40 There is a significant number of bridleways and shared walking and cycling routes within the Option Area. The specific links within the Option Area are set out, with PROW ID, Route Code and Type of PROW as follows:

- 9045 E-515/001/0
Footpath
- 6370 E-106/028/0
Footpath
- 8904 E-491/006/0
Footpath
- 8042 E-363/030/0
Footpath
- 7459 E-260/022/0
Footpath
- 7998 E-354/032/0
Bridleway
- 8037 E-363/025/0
Footpath
- 8039 E-363/027/0
Bridleway
- 7464 E-260/029/0
Bridleway
- 8031 E-363/019/0
Bridleway

- 8036 E-363/024/0
Footpath
- 8907 E-491/012/0
Bridleway
- 8022 E-363/013/0
Bridleway
- 8903 E-491/005/0
Footpath
- 7976 E-354/007/0
Footpath
- 7975 E-354/006/0
Footpath
- 7455 E-260/017/0
Footpath
- 7979 E-354/009/0
Footpath
- 8040 E-363/028/0
Bridleway
- 8902 E-491/004/0
Footpath
- 8030 E-363/018/0
Footpath
- 8035 E-363/023/0
Footpath
- 7454 E-260/016/0
Footpath
- 8038 E-363/026/0
Bridleway
- 8906 E-491/010/0
Bridleway
- 7456 E-260/018/0
Footpath
- 7453 E-260/015/0
Footpath
- 6362 E-106/026/0 Byway
Open to All Traffic
- 7977 E-354/007/A
Footpath
- 8015 E-363/006/0
Footpath
- 7986 E-354/016/0
Footpath
- 7978 E-354/008/0
Footpath
- 7457 E-260/020/0
Footpath
- 8033 E-363/021/0
Footpath
- 8019 E-363/010/0
Footpath
- 8905 E-491/008/0
Footpath
- 8644 E-460/023/0
Footpath
- 6369 E-106/027/0
Bridleway

2.8.4.41 National Cycle Network Route 42, which runs from southwest to northeast direction across the centre of the Option Area. The Suffolk Coast Path crosses the Option Area, at Sizewell. Sandlings Walk, which is a promoted route from Ipswich to Lowestoft, also crosses the Option Area at Sizewell.

Site 3 Alternative (Option 2)

Highway network

- 2.8.4.42 The Option Area includes portions of highways across rural land from the southwest perimeter of Knodishall and southeast perimeter of Leiston, leading towards land to the south of the Sizewell power station. The Option Area to the east includes Sizewell Gap, which is an unclassified road linking Leiston to Sizewell, that acts as a link road with ample visibility provided at junctions, including wide junction bellmouths along its length, and a footway along the southern side of the road.
- 2.8.4.43 Sizewell Gap provides a link onto Lovers Lane and the B1122 Abbey Road which run to the north of Leiston. The A1122 Abbey Road provides connections with Theberton in the north and Leiston to the south.
- 2.8.4.44 Within the centre, the Option Area includes extents and the junction of the B1353 and B1122 Aldeburgh Road at the southeast of Aldringham. The junction includes a slip lane from the B1122 southeast bound onto the B1353, and each link on the junction is provided with flared lanes. The two links, within the Option Area, operate with 30mph speed limits.
- 2.8.4.45 The B1069 Snape Road also bisects the centre of the Option Area and connects the A1094 to the south with the village of Knodishall Common to the north. Grove Road is also a north-south route through the centre Option Area, running northwards from the village of Friston. Grove Road is unclassified and is a single lane carriageway, subject to a 30mph speed limit to the south and the national speed limit towards the north portion of the Option Area. School Road also forms a junction with Grove Road and runs eastwards towards Knodishall. There are a number of unmade tracks which provide agricultural access within the centre of the Option Area via the A1094 to the south and the B1069.
- 2.8.4.46 The northwest section of the Option Area includes several minor rural roads which provide agricultural access. The northwest perimeter of the Option Area also interacts with the B1119 and B1121 routes, which run from Saxmundham to Leiston and Sternfield to Friston respectively. The B1121 operates with a 30mph speed limit whereas the B1119 is subject to the national speed limit, at the extents abutting the study area.

Public transport network

- 2.8.4.47 There are three services operating on the B1122, the 64, 65 and 522. The 64 service runs from Ipswich to Aldeburgh via Leiston between 06:00 and 20:00 at a frequency of one service per hour in each direction. The 65 service runs from Ipswich to Leiston via Woodbridge between 06:00 and 15:30 on an hourly frequency in each direction. The 522 service operates between Saxmundham and Aldeburgh, with services operating from 07:00 and 17:00, at a frequency of one service per hour in each direction. The 522 bus route also operates along the B1119 at the northwest perimeter of the Option Area, with access points within Saxmundham, including from the Waitrose store on this road.
- 2.8.4.48 The B1121 towards the western perimeter of the Option Area is used by bus route 521 between Aldeburgh and Halesworth. The service operates four times per day in each

direction and can be accessed from stops at Friston to the west of the Option Area, and Sandy Lane further to the west.

- 2.8.4.49 There are no rail services within the Option Area, although Saxmundham railway station is located circa. 900m to the west of the Option Area. The station operates services between Lowestoft and Ipswich at one service per hour in each direction. There is a branch railway line between Saxmundham and Leiston, although this is solely for service access to Sizewell power station.

Active travel network

- 2.8.4.50 There is a significant number of bridleways and shared walking and cycling routes within the Option Area. The specific links within the Option Area are set out, with PROW ID, Route Code and Type of PROW as follows:

- 6349 E-106/008/0
Footpath
- 16991 E-260/030/0
Footpath
- 6370 E-106/028/0
Footpath
- 8904 E-491/006/0
Footpath
- 7988 E-354/018/0
Footpath
- 8036 E-363/024/0
Footpath
- 7971 E-354/003/0
Footpath
- 8907 E-491/012/0
Bridleway
- 8903 E-491/005/0
Footpath
- 7990 E-354/020/0
Bridleway
- 7450 E-260/012/A
Bridleway
- 8041 E-363/029/0
Footpath
- 7976 E-354/007/0
Footpath
- 8034 E-363/022/0
Footpath
- 8906 E-491/010/0
Bridleway
- 7456 E-260/018/0
Footpath
- 8023 E-363/014/0
Footpath
- 7452 E-260/013/A
Footpath
- 7989 E-354/018/A
Footpath
- 7972 E-354/004/0
Footpath
- 8026 E-363/016/0
Footpath
- 6314 E-106/001/0
Footpath
- 14032 E-354/036/0
Bridleway
- 8037 E-363/025/0
Footpath
- 8039 E-363/027/0
Bridleway
- 7464 E-260/029/0
Bridleway
- 7991 E-354/022/0
Footpath
- 8031 E-363/019/0
Bridleway

- 6347 E-106/006/0
Bridleway
- 8024 E-363/014/A
Footpath
- 7975 E-354/006/0
Footpath
- 6407 E-106/067/0
Footpath
- 7455 E-260/017/0
Footpath
- 7979 E-354/009/0
Footpath
- 7970 E-354/002/0
Bridleway
- 8040 E-363/028/0
Bridleway
- 8902 E-491/004/0
Footpath
- 6338 E-106/003/0
Footpath
- 16992 E-260/031/0
Footpath
- 7969 E-354/001/0
Bridleway
- 8035 E-363/023/0
Footpath
- 7454 E-260/016/0
Footpath
- 7997 E-354/031/0
Footpath
- 7447 E-260/009/0
Footpath
- 8038 E-363/026/0
Bridleway
- 10027 E-103/001/0
Footpath
- 7453 E-260/015/0
Footpath
- 6362 E-106/026/0 Byway
Open to All Traffic
- 7449 E-260/012/0
Bridleway
- 7977 E-354/007/A
Footpath
- 7986 E-354/016/0
Footpath
- 7978 E-354/008/0
Footpath
- 7446 E-260/008/0
Footpath
- 7457 E-260/020/0
Footpath
- 8033 E-363/021/0
Footpath
- 6405 E-106/065/0
Footpath
- 6333 E-103/016/0
Footpath
- 7445 E-260/007/0
Footpath
- 7973 E-354/019/0
Footpath
- 12866 E-260/026/0
Bridleway
- 8025 E-363/015/0
Bridleway
- 8644 E-460/023/0
Footpath
- 6369 E-106/027/0
Bridleway

2.8.4.51 National Cycle Network Route 42, which runs from southwest to northeast direction across the centre of the Option Area. The Suffolk Coast Path crosses the Option Area, at Sizewell. Sandlings Walk, which is a promoted route from Ipswich to Lowestoft, also

crosses the Option Area at Sizewell, and across the southernmost portion of the area, between Knoddishall Common and the A1094 route.

Future Baseline

- 2.8.4.52 The ES will consider future baseline conditions for the land within the proposed study area for the relevant assessment year. For example, base traffic flows will be factored up to the future base year using growth factors derived from TEMPro v7.2 for the relevant areas impacted by the Suffolk Onshore Scheme. In addition, consideration will be given to any committed developments or highway schemes that are due to be under construction or operational during the future baseline year; see **Part 2, Chapter 13, Cumulative Effects** for further details.

2.8.5 Embedded and Control & Management Measures

Embedded Measures

- 2.8.5.1 The Project will need to comply with design safety standards including NETS SQSS and the suite of National Grid policies and processes which contains details on design standards required to be met when designing, constructing and operating its projects.
- 2.8.5.2 The proposed High Voltage Direct Cable (HVDC) cable route will typically be installed within a 40m wide working width. The exception to this is where environmental or engineering constraints mean additional land is required such as where the proposed HVDC route is required to cross obstacles such as roads, watercourses or railway lines using a trenchless technique. In these locations working width may be required to be larger in order to accommodate the larger construction equipment required to undertake installation works.
- 2.8.5.3 Trenchless methods will typically be utilised where obstacles (watercourses, roads, railway lines, flood defences or other utilities) require to be crossed. This would involve the installation of ducts below the obstacle. The cables would then be pulled through the ducts. This method is designed to avoid any potential impacts on the railway network.
- 2.8.5.4 The specific proposed construction method for the selected Option will be set out in further detail within the ES chapter.

Control and Management Measures

- 2.8.5.5 In addition to the embedded design mitigation measures, a number of control and management measures will be implemented as detailed in the outline Code of Construction Practice (CoCP). This will include the preparation of a Framework Construction Traffic Management Plan (CTMP).
- 2.8.5.6 The Outline CoCP which is contained in **Appendix 1.4.A Outline Code of Construction Practice** contains a list of relevant good practice measures, including the following key commitments relating to traffic and transport:
- GG03: A Construction Traffic Management Plan (CTMP) will be produced prior to construction.

- GG12: Appropriate site layout and housekeeping measures will be implemented by the contractor(s) at all construction sites. This will include but not be limited to:
 - Managing staff/vehicles entering or leaving site, especially at the beginning and end of the working day; and
 - Managing potential off-site contractor and visitor parking.
- GG13: Vehicles will be correctly maintained and operated in accordance with the manufacturers recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards for the vehicle type.
- TT01: The CTMP will set out measures to reduce route and journey mileage to and from, as well as around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It will also provide suitable control for the means of access and egress to the public highway and set out measures for the maintenance and upkeep of the public highway. The plan will also identify access for emergency vehicles. It will also set out measures to reduce safety risks through construction vehicle and driver quality standards.
- TT02: The contractor(s) will implement a monitoring and reporting system to check compliance with the measures set out within the CTMP. This will include the need for a GPS tracking system to be fitted to Heavy Goods Vehicles to check for compliance with authorised construction routes. The contractor(s) will also be expected to monitor the number of construction vehicles between the site and the strategic road network. Deviations from the authorised routes or changes to traffic levels that are higher than the CTMP assumptions will require discussion of the need for additional mitigation measures with highways authorities.
- TT03: All designated Public Rights of Way (PRoW) will be identified, and any potential temporary closures applied for/detailed in the DCO. All designated PRoW crossing the working area will be managed with access only closed for short periods while construction activities occur. Any required temporary diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns.

2.8.5.7 In addition to the above, construction vehicles will be managed at any road/rail/pedestrian/cycle crossing points and further details will be provided within the Framework CTMP.

2.8.6 Potential for Significant Effects

2.8.6.1 The traffic and transport assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.8.6.2 The proposed scope of the traffic and transport assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

- 2.8.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.
- 2.8.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures describe in section 5.
- 2.8.6.5 The nature of the Suffolk Onshore Scheme is such that the greatest impact is likely to occur during the construction phase and this will be the focus of the assessment of transport effects presented in the ES.
- 2.8.6.6 During the operational and maintenance phase, the Suffolk Onshore Scheme will be manned by a limited number of operatives across the site, with additional infrequent trips associated with maintenance/inspections or repairs when required. Staff vehicles and those used for maintenance are primarily expected to be pickup trucks and vans, with HGVs rarely accessing the site. Therefore, due to the low level of trips likely to be generated, it is proposed to exclude operational and maintenance phase transport effects from the EIA. Further detail of the operational and maintenance phase transport arrangements will be set out in the ES and Transport Assessment to support this approach.
- 2.8.6.7 In the event that the Project is decommissioned, there is expected to be fewer HGV, LGV and construction worker arrivals and departures associated with the decommissioning phase of the Suffolk Onshore Scheme than during the construction phase. It is therefore considered reasonable to assume that the impacts will be the same as, or not greater than, the construction phase. Therefore, and given that the exact timing of this scenario is unknown, it is proposed to adopt the assessment of the construction phase to determine the anticipated impact of the Suffolk Onshore Scheme during its decommissioning phase. Further detail of the decommissioning stage transport arrangements will be set out in the ES and Transport Assessment to support this approach.
- 2.8.6.8 It is recognised that a potential source of impacts arises from hazardous loads. These include the transport of explosives, gases, flammable liquid/solids, oxidising/toxic substances, radioactive material or corrosive substances. SF6 Gas will be required for the circuit breakers, oil for the transformers, and other mixed, non-SF6 gases will be used in the Gas Insulated Switchgear. These inputs are expected to be predominantly required during the construction and decommissioning phases and the transport of hazardous loads will be considered accordingly within the ES and Transport Assessment.
- 2.8.6.9 Although the Suffolk Onshore Scheme is located near to a number of settlements including Leiston, Saxmundham and Aldeburgh, the majority of staff and/or visitors (associated with each phase) are expected to travel by vehicle as opposed to on foot, by bicycle or by public transport for logistical reasons e.g. due to travel distance or the requirement to carry equipment. Therefore, this has not been detailed in this Scoping Report although for completeness these modes will be reviewed within the Transport Assessment.

2.8.6.10 Vehicular access during each phase is anticipated to be taken from the A and B routes including the A1094 from Benhall to Aldeburgh, which is a link from the A12. The B1121, B1119 and B1122 also provide the main vehicle routes into the Study Area. Further details on proposed access to the Suffolk Onshore Scheme will be included within the ES and the Transport Assessment which will be submitted with the DCO application.

2.8.6.11 The ES and Transport Assessment will assess the peak construction period, which will include Heavy Goods Vehicle (HGV) movements, Light Goods Vehicle (LGV) movements and vehicle movements associated with construction worker arrivals and departures. Construction traffic forecasts will be confirmed in the ES and Transport Assessment.

Sources of construction impacts

2.8.6.12 A summary of the potential sources of construction impacts (traffic and transport) is as follows:

- Construction works e.g. where these require temporary traffic management, or result in temporary diversions or closures to the highway network or pedestrian/cycle routes including PRoW;
- Construction routes e.g. where these interact with the existing transport networks (road/rail/pedestrian/cycle) such as at vehicle crossing points; and
- Construction vehicles:
 - HGVs;
 - LGVs;
 - Construction staff vehicles; and
 - Abnormal loads.

Sources of operational impacts

2.8.6.13 A summary of the potential sources of operational impacts (traffic and transport) is as follows:

- Operational staff vehicles.

Sources of maintenance impacts

2.8.6.14 A summary of the potential sources of maintenance impacts (traffic and transport) is as follows:

- Maintenance staff vehicles relating to monthly visual inspections, and rolling three year maintenance cycle; and
- Repair staff vehicles (including LGVs) relating to refurbishment and repair works, including the transportation of materials for such works.

Sources of decommissioning impacts

2.8.6.15 The potential sources of decommissioning impacts (traffic and transport) are considered to be the same as those set out above for the construction phase, albeit these would relate to the decommissioning phase.

Potential impacts

2.8.6.16 A summary of the potential impacts of the Suffolk Onshore Scheme is set out below in Table 2.8.1. The potential impacts and proposal to scope in / out is consistent across all of the Options.

Table 2.8.1: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction	Construction works, routes and vehicles	Additional severance to pedestrians and cyclists	Yes	Scoped in
Construction	Construction works, routes and vehicles	Additional delay to drivers	Yes	Scoped in
Construction	Construction works, routes and vehicles	Additional delay to pedestrians	Yes	Scoped in
Construction	Construction works, routes and vehicles	Decline in pedestrian and cyclist amenity	Yes	Scoped in
Construction	Construction works, routes and vehicles	Additional fear and intimidation to pedestrians and cyclists	Yes	Scoped in
Construction	Construction works, routes and vehicles	Decline in road safety	Yes	Scoped in
Construction	Construction works, routes and vehicles	Results in PRow Diversions and/or Closures	Yes	Scoped in
Construction	Construction vehicles	Additional hazardous loads	Yes	Scoped in
Operation	Operational staff vehicles	Additional severance to pedestrians and cyclists	No - (limited traffic movements)	Scoped out

Operation	Operational staff vehicles	Additional delay to drivers	No - (limited traffic movements)	Scoped out
Operation	Operational staff vehicles	Additional delay to pedestrians	No - (limited traffic movements)	Scoped out
Operation	Operational staff vehicles	Decline in pedestrian and cyclist amenity	No - (limited traffic movements)	Scoped out
Operation	Operational staff vehicles	Decline in road safety	No - (limited traffic movements)	Scoped out
Operation	Operational staff vehicles	Results in PRoW Diversions and/or Closures	No - (limited traffic movements)	Scoped out
Operation	Operational staff vehicles	Additional hazardous loads	No - (few expected)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Additional severance to pedestrians and cyclists	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Additional delay to drivers	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Additional delay to pedestrians	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Decline in pedestrian and cyclist amenity	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Decline in road safety	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Results in PRoW Diversions and/or Closures	No - (limited traffic movements)	Scoped out
Maintenance	Maintenance and repair staff vehicles	Additional hazardous loads	No - (few expected)	Scoped out
Decommissioning	Decommissioning works, routes and vehicles	Additional severance to pedestrians and cyclists	Yes	Scoped in (to be inferred by assessment of construction)

Decommissioning	Decommissioning works, routes and vehicles	Additional delay to drivers	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning works, routes and vehicles	Additional delay to pedestrians	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning works, routes and vehicles	Decline in pedestrian and cyclist amenity	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning works, routes and vehicles	Additional fear and intimidation to pedestrians and cyclists	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning works, routes and vehicles	Decline in road safety	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning works, routes and vehicles	Results in PRow Diversions and/or Closures	Yes	Scoped in (to be inferred by assessment of construction)
Decommissioning	Decommissioning vehicles	Additional hazardous loads	Yes	Scoped in (to be inferred by assessment of construction)

Impact Pathways with Receptors (Step 2)

2.8.6.17 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within each of the options that comprise the proposed study area. Further details of the road links, junctions, PRow and national/regional walking and cycling routes relevant to each Option Area are set out within section 4.

Suffolk Converter Station Site 1 Emerging Preference

2.8.6.18 Table 2.8.2 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.8.2: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning Additional severance to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional delay to drivers	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by drivers so no impact pathway	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by drivers so no impact pathway	Scoped out
Construction and decommissioning Additional delay to pedestrians	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking routes	Yes	Scoped in
Construction and decommissioning Decline in pedestrian and cyclist amenity	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional fear and intimidation to	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in

pedestrians and cyclists	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Decline in road safety	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – no collision data available for footpaths and bridleways (not utilised by vehicles so no impact)	Scoped out
	National/regional walking and cycling routes	No – no collision data available for walking and cycling routes (not utilised by vehicles so no impact)	Scoped out
Construction and decommissioning Results in PRoW Diversion and/or Closures	Road links	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	Road junctions	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	Construction and decommissioning Additional hazardous loads	Road links	Yes
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by vehicles or hazardous loads so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by vehicles or	Scoped out

hazardous loads so no impact

Suffolk Converter Station Site 1 Alternative

2.8.6.19 Table 2.8.3 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.8.3: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning Additional severance to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional delay to drivers	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by drivers so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by drivers so no impact	Scoped out
Construction and decommissioning Additional delay to pedestrians	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking routes	Yes	Scoped in
Construction and decommissioning	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in

Decline in pedestrian and cyclist amenity	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional fear and intimidation to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Decline in road safety	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – no collision data available for footpaths and bridleways (not utilised by vehicles so no impact)	Scoped out
	National/regional walking and cycling routes	No – no collision data available for walking and cycling routes (not utilised by vehicles so no impact)	Scoped out
	Road links	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
Construction and decommissioning Results in PRoW Diversions and/or Closures	Road junctions	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	Road links	Yes	Scoped in

Construction and decommissioning Additional hazardous loads	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by vehicles or hazardous loads so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by vehicles or hazardous loads so no impact	Scoped out

Suffolk Converter Station Site 3 Emerging Preference

2.8.6.20 Table 2.8.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.8.4: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning Additional severance to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional delay to drivers	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by drivers so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by drivers so no impact	Scoped out
	Road links	Yes	Scoped in

Construction and decommissioning Additional delay to pedestrians	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking routes	Yes	Scoped in
Construction and decommissioning Decline in pedestrian and cyclist amenity	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional fear and intimidation to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Decline in road safety	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – no collision data available for footpaths and bridleways (not utilised by vehicles so no impact)	Scoped out
	National/regional walking and cycling routes	No – no collision data available for walking and cycling routes (not utilised by vehicles so no impact)	Scoped out
Construction and decommissioning Results in PRoW Diversions and/or Closures	Road links	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
	Road junctions	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out

	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	No – this impact pathway relates solely to PRoW, not applicable to this receptor type	Scoped out
Construction and decommissioning Additional hazardous loads	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by vehicles or hazardous loads so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by vehicles or hazardous loads so no impact	Scoped out

Suffolk Converter Station Site 3 Alternative (Option 1)

2.8.6.21 Table 2.8.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**.

Table 2.8.5: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning Additional severance to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional delay to drivers	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		utilised by drivers so no impact	
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by drivers so no impact	Scoped out
Construction and decommissioning Additional delay to pedestrians	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking routes	Yes	Scoped in
Construction and decommissioning Decline in pedestrian and cyclist amenity	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional fear and intimidation to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Decline in road safety	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – no collision data available for footpaths and bridleways (not utilised by vehicles so no impact)	Scoped out
	National/regional walking and cycling routes	No – no collision data available for walking and cycling routes (not utilised by vehicles so no impact)	Scoped out
	Road links	No – this impact pathway relates	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning Results in PRow Diversion and/or Closures		solely to PRow, not applicable to this receptor type	
	Road junctions	No – this impact pathway relates solely to PRow, not applicable to this receptor type	Scoped out
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	No – this impact pathway relates solely to PRow, not applicable to this receptor type	Scoped out
Construction and decommissioning Additional hazardous loads	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by vehicles or hazardous loads so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by vehicles or hazardous loads so no impact	Scoped out

Suffolk Converter Station Site 3 Alternative (Option 2)

2.8.6.22 Table 2.8.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

Table 2.8.6: Impact pathways with receptors– Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Construction and decommissioning	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Additional severance to pedestrians and cyclists	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional delay to drivers	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – footpaths and bridleways not utilised by drivers so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by drivers so no impact	Scoped out
Construction and decommissioning Additional delay to pedestrians	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking routes	Yes	Scoped in
Construction and decommissioning Decline in pedestrian and cyclist amenity	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Additional fear and intimidation to pedestrians and cyclists	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	Yes	Scoped in
	National/regional walking and cycling routes	Yes	Scoped in
Construction and decommissioning Decline in road safety	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRoW	No – no collision data available for footpaths and bridleways (not	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		utilised by vehicles so no impact)	
	National/regional walking and cycling routes	No – no collision data available for walking and cycling routes (not utilised by vehicles so no impact)	Scoped out
Construction and decommissioning Results in PRow Diversion and/or Closures	Road links	No – this impact pathway relates solely to PRow, not applicable to this receptor type	Scoped out
	Road junctions	No – this impact pathway relates solely to PRow, not applicable to this receptor type	Scoped out
	PRow	Yes	Scoped in
	National/regional walking and cycling routes	No – this impact pathway relates solely to PRow, not applicable to this receptor type	Scoped out
Construction and decommissioning Additional hazardous loads	Road links	Yes	Scoped in
	Road junctions	Yes	Scoped in
	PRow	No – footpaths and bridleways not utilised by vehicles or hazardous loads so no impact	Scoped out
	National/regional walking and cycling routes	No – walking and cycling routes not utilised by vehicles or hazardous loads so no impact	Scoped out

2.8.7 Proposed Assessment Methodology

Proposed Data Sources

- 2.8.7.1 To inform the assessment of the Suffolk Onshore Scheme, information from a number of sources will be collected. The sources which will be used are set out below:
- Local travel and network information from various sources including SCC and local rail and bus operators;
 - Personal Injury Accident (PIA) data from SCC;
 - OS/Architectural Base Mapping to ascertain an accurate geographical representation of the areas in the vicinity of the Suffolk Onshore Scheme;
 - Highway boundary information from SCC;
 - Mode share data from the 2011 Census (or 2021 data if available and considered appropriate given the context of COVID-19); and
 - Various traffic count and speed survey data where required (see below).
- 2.8.7.2 Peak hour traffic flows will be identified from historic data held by SCC with respect to the A1094, B1069, B1119, B1121, B1122, B1353, and the unclassified routes of Sizewell Gap, Lovers Lane, Abbey Lane that provides links across the northern portion of the Study Area, from the edge of Saxmundham to Leiston and Sizewell. The data would be requested from traffic survey company databases if available. If suitable data is not available traffic counts will be undertaken at locations in the vicinity of the Suffolk Onshore Scheme to determine the baseline traffic conditions on the surrounding highway network. The extent of the traffic data and scope for any traffic surveys that may be required will be agreed with the Highway Authority (Suffolk County Council), as a statutory consultee, where possible.
- 2.8.7.3 To determine the impact of the Suffolk Onshore Scheme, a number of scenarios will be assessed using the information collated above. The scenarios considered appropriate for assessment are:
- Baseline (2022) – AM, PM and Daily; and
 - Peak Construction Year (to be confirmed) With and Without Development – AM, PM and Daily.
- 2.8.7.4 The proposed construction period for the Suffolk Onshore Scheme is 2026 to 2030, and the peak construction year will be identified when the ES is prepared as this is not currently known.
- 2.8.7.5 The Transport Assessment Scoping Report will be formally presented to SCC as a statutory consultee in order to seek to agree the scope of the Transport Assessment. In the event that junction capacity analysis is required, this will be discussed and agreed with SCC where necessary.
- ### Proposed Assessment Methodology
- 2.8.7.6 In accordance with the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993) for

assessing the environmental impacts of road traffic as well as professional judgement, the following criteria will be considered in this assessment.

- Severance;
- Pedestrian delay;
- Pedestrian and cyclist amenity;
- Fear and intimidation;
- Driver delay;
- Highway safety;
- PRow diversions and/or closures; and
- Hazardous and dangerous loads.

2.8.7.7 The IEMA guidelines set out two rules in identifying potential links for analysis:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%); and
- Rule 2: include any other specifically sensitive areas (e.g. accident black spots, conservation areas, hospitals, links with high pedestrian flows etc) where traffic flows have increased by 10% or more.

2.8.7.8 Based on this, it is proposed to assess links where traffic flows are expected to increase by 30% or more. However, it is not proposed to assess links where there is expected to be a less than a 30% increase in traffic flows as a result of the Suffolk Onshore Scheme, unless any specifically sensitive areas are identified. In addition, it is proposed to assign a very low magnitude of change as there is expected to be fewer than 30 additional vehicle trips per hour during each of the development peak hours as a result of the Suffolk Onshore Scheme, irrespective of the proportional increase in traffic flows.

2.8.7.9 In addition to the above, potential traffic-related effects will also be considered by other topics, including (and not limited to) the following examples:

- Potential effects of construction traffic on sites of ecological and nature conservation value are considered in **Part 2, Chapter 3, Ecology and Biodiversity**;
- Potential effects of construction traffic on air quality are considered in **Part 2, Chapter 9, Air Quality**;
- Potential effects of construction traffic on noise and vibration are considered in **Part 2, Chapter 10, Noise and Vibration**; and
- Potential effects of construction traffic on tourists, visitor attractions and other businesses are considered in **Part 2, Chapter 11, Socio Recreation and Tourism**.

2.8.7.10 The type of traffic which is anticipated to be generated by the Suffolk Onshore Scheme will be categorised as follows; primarily general traffic, LGVs, HGVs and Abnormal Indivisible Loads (AILs). The vehicle routeing and movement associated with the

Project's construction will be considered in detail and will be discussed through consultation with the relevant Highway Authority (Suffolk County Council).

- 2.8.7.11 Once the locations and volumes of the proposed traffic have been identified it will be necessary to identify those receptors that may be impacted upon, due to the increase in vehicle movements. This will be done by identifying the percentage increase in vehicular activity along the identified construction routes following the collection of traffic data. The Automatic Traffic Counts (ATCs) will be used to derive baseline Annual Average Daily Traffic (AADT) for individual links, subdivided into 24 hour and 18 hour counts for total traffic and HGVs.
- 2.8.7.12 Typically, when assessing the impacts of traffic effects, there are a range of particular groups and locations which may be sensitive to changes in traffic conditions compliant with the criteria previously outlined.
- 2.8.7.13 These are outlined in the IEMA Guidance as 'Affected Parties', as follows:
- People at home;
 - People in workplaces;
 - Sensitive groups including children, elderly and disabled;
 - Sensitive locations, e.g. hospitals, churches, schools, historic buildings;
 - People walking;
 - People cycling;
 - Open spaces, recreational sites, shopping areas;
 - Sites of ecological/nature conservation value; and
 - Sites of tourist/visitor attraction.
- 2.8.7.14 The IEMA guidance states that this list of affected parties is not exhaustive. One affected party that is not on the list but will nevertheless be considered in this assessment is 'other road users'. All of the affected parties have one thing in common which is that their potential exposure to changes in traffic volumes comes about through their proximity to a construction traffic route.
- 2.8.7.15 It is important to note that the IEMA methodology does not consider the duration of effect, especially whether it is temporary (construction and decommissioning) or permanent (operational traffic). As such, effects that, using this methodology, may appear to be significant, may be considered not significant if the effect is temporary or infrequent (occurring only occasionally during construction for example).
- 2.8.7.16 To calculate the trip distribution of workers travelling to and from the proposed construction compounds each day, a simple gravity model will be developed (based on 2011 Census data, given that relevant 2021 Census data is not currently available). Construction traffic associated with the Suffolk Onshore Scheme will be distributed onto the local highway network to calculate the resultant percentage increase on each link.
- 2.8.7.17 Assessments will be undertaken at the peak of construction, and this may cover more than one year as the peak year for traffic volumes can vary along various routes depending on which section of the Suffolk Onshore Scheme they serve.

2.8.7.18 Currently, it is anticipated that construction may take approximately two years. If historical data is utilised, base traffic flows will be factored up to the future base year in order to establish baseline flows and then factored up further to the identified peak year of construction. Growth factors will be derived from TEMPro v7.2 for the relevant areas impacted by the Suffolk Onshore Scheme. Meanwhile, the peak construction traffic flows will be derived by analysing construction traffic data and construction programmes provided by Design Engineers.

Transport Assessment

2.8.7.19 The ability of the highway network to accommodate the development traffic will be assessed and reported in a Transport Assessment (TA) which will form a technical annex to the ES Chapter. The TA will include information on:

- A review of relevant national, regional and local policies;
- Description of the existing baseline conditions – a description of the roads, railway lines, footpaths, bridleways and cycle paths crossed by the route and/or impacted by the works. The requirement to carry out any surveys on these routes will be agreed with the relevant planning authority;
- A review of the road safety data for the most recent five-year period within the proposed study area;
- Description of the Project and Suffolk Onshore Scheme setting out timescales for construction, identification of route sections, typical working width layout, compound locations, access routes to compounds, construction methods for individual railway and road crossings (where required);
- Traffic generation of compounds and any other relevant sites for construction staff with a profile of arrivals and departures for the day and HGV traffic with a profile of arrivals and departures for the day;
- Distribution and assignment of trips to the network with construction traffic distributed based on a simple gravity model of worker catchment area and HGVs assigned from the A road network;
- Mitigation measures; and
- Summary and conclusions.

Defining Significance

2.8.7.20 The significance of effect is determined through consideration of two elements; the magnitude of the impact and the sensitivity of the receptor. The following sections outline the approach that would be used to determine these factors.

Sensitivity, value, or importance

2.8.7.21 The general criteria for defining the importance or sensitivity of receptors are set out in Table 2.8.7. Key factors influencing this include:

- The value of the receptor or resource based upon empirical and/or intrinsic factors, for example considering any legal or policy protection afforded which is indicative of the receptor or resources' value internationally, nationally or locally; and
- The sensitivity of the receptor or resource to change, for example is the receptor likely to acclimatise to the change. This will consider legal and policy thresholds which are indicative of the ability of the resources to absorb change.

Table 2.8.7: Categorising the overall sensitivity of receptors

Receptor sensitivity	Receptor examples
Very High	<p>Highway Links and Junctions: More than two sensitive users present (e.g. schools, play areas, care/retirement homes, disabled parking bays, hospitals, places of worship, historic buildings)</p> <p>Walk/Cycle Links including PRoW: Heavily trafficked highway with on-road pedestrian/cycle route</p>
High	<p>Highway Links and Junctions: Two sensitive users present (e.g. schools, play areas, care/retirement homes, disabled parking bays, hospitals, places of worship, historic buildings)</p> <p>Walk/Cycle Links including PRoW: Lightly trafficked highway with on-road pedestrian/cycle route</p>
Medium	<p>Highway Links and Junctions (at least one of the following):</p> <ul style="list-style-type: none"> • One sensitive user present (e.g. schools, play areas, care/retirement homes, disabled parking bays, hospitals, places of worship, historic buildings) • Many residential properties with direct frontage to highway link being used as construction route • Pedestrians using footways, PRoW and/or crossings on highway link • Cyclists using on-road designated cycle routes along highway link <p>Walk/Cycle Links including PRoW: Heavily trafficked highway with off-road pedestrian/cycle route</p>
Low	<p>Highway Links and Junctions (at least one of the following):</p> <ul style="list-style-type: none"> • Few residential properties with direct frontage to the highway link being used as a construction traffic route • Workplaces with direct frontage to highway link being used as construction route • Cyclists using off-road designated cycle routes along highway link <p>Walk/Cycle Links including PRoW: Lightly trafficked highway with off-road pedestrian/cycle route</p>

Receptor sensitivity	Receptor examples
Neutral	Highway Links and Junctions: No receptors along link Walk/Cycle Links including PRow: Pedestrian/cycle route not running alongside highway

2.8.7.22 An assessment of the railway network is proposed to be scoped out from the Traffic and Transport chapter given that trenchless methods will be employed when installing cables to avoid any potential impacts on the railway, and that any vehicle crossing points of the railway (if required) will be managed to ensure operational rail safety. It is also notable that the only extents of railway within the Study Area are part of a branch line that provides service access to Sizewell and does not admit passengers.

Magnitude

2.8.7.23 The IEMA guidelines state that the magnitude of each impact should be determined as the predicted deviation from the baseline conditions.

2.8.7.24 This assessment will consider a range of potential effects that could be experienced during the construction stage of the Suffolk Onshore Scheme and this section identifies how magnitude will be considered for each.

2.8.7.25 **Severance** is defined in the IEMA guidelines as the “*perceived division that can occur with a community when it becomes separated by a major traffic artery*”. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. The assessment will consider both total traffic and the proportion of HGVs. The guidance for thresholds of magnitude is taken from DMRB Volume 11, Section 3, Part 8.

2.8.7.26 **Pedestrian Delay** is considered to be affected by the changes in volume, composition or speed of traffic, in terms of their respective impacts on the ability of pedestrians to cross roads. In general, increases in traffic levels and/or traffic speeds are likely to lead to greater increases in pedestrian delay. Effects are only likely to be realised when the total two-way traffic on the carriageway exceeds 1,400 vehicles per hour (IEMA Guidelines).

2.8.7.27 **Pedestrian and Cyclist Amenity** is broadly defined as “the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic”. The guidance suggests that a tentative threshold for judging the significance of changes in pedestrian and cycle amenity would be where the traffic flow is halved or doubled.

2.8.7.28 **Fear and Intimidation** occurs through a combination of traffic flow, speed, proportion of HGVs and the proximity of the above to people or receptors on highway links. These indicators are often heightened by a perceived lack of protection or buffers from the highway or through narrow or non-existent footways. The assessment will consider each road on a case by case basis, however there are indicative thresholds provided in the IEMA guidelines which are presented in Table 2.8.8 below.

- 2.8.7.29 **Driver Delay** is an effect cited in the IEMA guidance and relates to incremental increases in traffic (as outlined in Table 2.8.8 below). As a further consideration, where any temporary road closures or traffic management is likely to be in place to enable the construction of the Suffolk Onshore Scheme, any additional potential delay caused by these resultant diversion routes will be reported.
- 2.8.7.30 **Highway Safety** considers Personal Injury Collision (PIC) data obtained for the most recent five-year period available at junctions and links along the proposed construction traffic routes. These will be used to assess whether the additional traffic during construction of the Suffolk Onshore Scheme would be likely to have a detrimental effect of road safety.
- 2.8.7.31 **PRoW Diversions and/or Closures** will be considered on the basis of the type of impact i.e. whether a temporary PRoW closure or diversion is proposed, as well as any increases in pedestrian journey length following a closure/ diversion and how long any potential disruption to an existing route would occur for. The assessment will consider the indicative thresholds presented in Table 2.8.9 below which have been derived based on professional judgement.
- 2.8.7.32 With regard to **Hazardous and Dangerous Loads**, the guidance indicates that “the Statement should include a risk or catastrophe analysis to illustrate the potential for an accident to happen and the likely effect of such an event”. Analysis of the road network within the proposed study area and understanding of the Suffolk Onshore Scheme works indicates that there are no particular features, such as a significant vertical drop immediately beyond the carriageway, which would suggest that the transfer of materials poses a particular risk beyond that which would be expected on the general highway network. However, there will be a requirement to transport gas and oil during the Project (particularly during the construction and decommissioning phases) which are categorised as Hazardous and Dangerous Loads (see Section 2.8.6).
- 2.8.7.33 In view of the above, the impacts of Hazardous and Dangerous Loads will be considered within the ES, in the form of a qualitative risk assessment to establish the likelihood and extent of such effects. The projected impacts of the Suffolk Onshore Scheme will be measured separately, dependent upon the receptor, for the construction and decommissioning periods. The Framework CTMP and the ES will include details of measures that will be employed to ensure the safe vehicular transport of components to and from the Suffolk Onshore Scheme.
- 2.8.7.34 Tables 2.8.8 and 2.8.9 summarise the criteria that will be used to assess the magnitude of effect (based on increases i.e. ‘adverse’ effects), along with the thresholds that will be used to determine whether effects are considered large, medium, small and negligible. Depending on the baseline information available, the various thresholds identified for the proportional increases in traffic flow relate to peak hour flows and daily flows (whichever is highest). Within these tables, neither the sensitivity of receptors, nor the duration of effects, is taken into consideration. These tables are formed using IEMA Guidelines and professional judgement.

Table 2.8.8: Categorising the overall magnitude of effect of a highway link or junction

Impact	Negligible	Small	Medium	Large
Severance	Increase in total traffic flows of 29% or under (or increase in HGV flows under 10%).	Increase in total traffic flows of 30-59% (or increase in HGV flows of between 20%-39%).	Increase in total traffic flows of 60%-89% (or increase in HGV flows between 40%-89%).	Increase in total traffic flows or HGV flows of 90% and above.
Pedestrian Delay	Total traffic flows under 1,400 per hour.	Where traffic flows exceed 1,400 vehicles per hour the severity of the impact will be determined based on the thresholds identified above for severance.		
Pedestrian and Cycle Amenity	Increase in total traffic flows of 49% or under.	Increase in total traffic flows of 50-69%.	Increase in total traffic flows of 70%-99%.	Increase in total traffic flows of 100% or above.
Fear and Intimidation	Increase in total traffic flows or HGV flows of 29% or under (or increase in HGV flows under 10%).	Increase in total traffic flows of 30-59% (or increase in HGV flows of between 10%-39%).	Increase in total traffic flows of 60%-89% (or increase in HGV flows between 40%-89%).	Increase in total traffic flows or HGV flows of 90% and above.
Driver Delay	Increase in total traffic flow of less than 29%.	Increase in total traffic flow of between 30% and 59%.	Increase in total traffic flow of between 60% and 89%.	Increase in traffic flow of 90% and above.
Highway Safety	Increase in total traffic flows of 30% or under (or increase in HGV flows under 10%).	All links estimated to experience increases in total traffic flows above 30% or increases in HGV flows above 10% are analysed further on a case by case basis.		
Hazardous Loads	Based on the probability of a personal injury collision, categorised as fatal or serious, involving a hazardous load occurring.			

2.8.7.35 An assessment of national/regional walking and cycling routes, as well as PRow will also be carried out where these are directly affected by construction works or intersected by a construction route (for example), including in terms of severance, pedestrian delay, pedestrian and cycle amenity and for fear and intimidation, by reviewing the thresholds as identified in Table 2.8.8 above where relevant. In terms of PRow diversions and/or closures, the following thresholds are proposed to identify magnitude of effect based on professional judgement.

Table 2.8.9: Categorising the overall magnitude of effect of a PRow diversion and/or closure

Impact	Negligible	Small	Medium	Large
PRow Diversions and/or Closures	A temporary PRow diversion (no closure) with either no increase in pedestrian journey length or an increase in pedestrian journey length for one to five days.	A temporary PRow diversion (no closure) with an increase in pedestrian journey length for one to four weeks.	A short term PRow closure (for less than four weeks in any 12 month period) without a diversion route; OR A temporary PRow diversion (no closure) with an increase in pedestrian journey length for more than four weeks.	A short term PRow closure (for more than four weeks in any 12 month period) without a diversion route.

2.8.7.36 Tables 2.8.8 and 2.8.9 above set out the proposed magnitude thresholds for the respective environmental effects that will be considered in the ES. With the exception of PRow Diversion and Closure effects, all effects have a proposed magnitude that does not, initially, consider the duration over which an effect is likely to be experienced.

2.8.7.37 Duration is considered when assessing the overall significance of residual effects, noting that the DMRB Volume 11 Section 2 Part 5 states in Paragraph 1.47:

“Recognition should be made that permanent impacts will be more significant than those of a temporary nature. For example, the impact may only occur during a single phase of the project construction and may be temporary. Alternatively, the impact may be long-term or irreversible and hence permanent. It is, therefore, important that the assessment distinguishes between permanent and temporary impacts”.

2.8.7.38 All of the traffic and transport effects associated with the construction and decommissioning of the Suffolk Onshore Scheme would be temporary effects. Some temporary effects would be likely to last longer than others, and these will be clearly reported in the ES. Following the quantified assessment, residual effects will be reported taking into account professional judgement on the duration over which effects are likely to be experienced.

Significance

2.8.7.39 In order to determine the effect on specific receptors, both the sensitivity of receptors and the magnitude of impact, as outlined above, are considered. Table 2.8.10 below shows the matrix that has been used to determine the effect category. Effects which are classified as **major** or **moderate** are considered to be significant (shown in **bold**).

Table 2.8.10: Significance matrix

Magnitude of Effect	Receptor Sensitivity				
	Very High	High	Medium	Low	Neutral
Large	Major	Major/ Moderate	Major/ Moderate/ Minor	Moderate/ Minor	Minor/ Negligible
Medium	Major/ Moderate	Major/ Moderate	Moderate/ Minor	Minor/ Negligible	Negligible
Small	Major/ Moderate/ Minor	Moderate/ Minor	Moderate/ Minor	Minor/ Negligible	Negligible
Negligible	Minor/ Negligible	Minor/ Negligible	Minor/ Negligible	Negligible	Negligible

2.8.8 Conclusion

- 2.8.8.1 This scoping chapter presents the potential for effects in respect of the traffic and transport that may arise from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.8.8.2 The proposed scope of assessment is set out in the following section for each of the five options.

Proposed Scope of the Assessment

- 2.8.8.3 A summary of the proposed scope of the assessment for Site 1 Emerging Preference is provided in Table 2.8.11.

Table 2.8.11: Proposed scope of the assessment for Site 1 Emerging Preference

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out for Site 1 Emerging Preference
Road links	Severance	Construction and decommissioning	Scoped in

	Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Operation and maintenance	Scoped out
Road junctions	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out
PRoW	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation PRoW Diversions and/or Closures	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out
National/regional walking and cycle routes	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out

2.8.8.4 A summary of the proposed scope of the assessment for Site 1 Alternative is provided in Table 2.8.12.

Table 2.8.12: Proposed scope of the assessment for Site 1 Alternative

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out for Site 1 Alternative
Road links	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out

	Driver Delay Highway Safety Hazardous Loads		
Road junctions	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Construction and decommissioning Operation and maintenance	Scoped in Scoped out
PRoW	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation PRoW Diversions and/or Closures	Construction and decommissioning Operation and maintenance	Scoped in Scoped out
National/regional walking and cycle routes	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation	Construction and decommissioning Operation and maintenance	Scoped in Scoped out

2.8.8.5 A summary of the proposed scope of assessment for Site 3 Emerging Preference is provided in Table 2.8.13.

Table 2.8.13: Proposed scope of the assessment for Site 3 Emerging Preference

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out for Site 3 Emerging Preference
Road links	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Construction and decommissioning Operation and maintenance	Scoped in Scoped out

Road junctions	Severance	Construction and decommissioning	Scoped in
	Pedestrian Delay		
PRoW	Pedestrian and Cycle Amenity	Operation and maintenance	Scoped out
	Fear and Intimidation		
	Driver Delay		
	Highway Safety		
	Hazardous Loads		
National/regional walking and cycle routes	Severance	Construction and decommissioning	Scoped in
	Pedestrian Delay		
PRoW	Pedestrian and Cycle Amenity	Operation and maintenance	Scoped out
	Fear and Intimidation		
	PRoW Diversions and/or Closures		
National/regional walking and cycle routes	Severance	Construction and decommissioning	Scoped in
	Pedestrian Delay		
National/regional walking and cycle routes	Pedestrian and Cycle Amenity	Operation and maintenance	Scoped out
	Fear and Intimidation		

2.8.8.6 A summary of the proposed scope of assessment for Site 3 Alternative (Option 1) is provided in Table 2.8.14.

Table 2.8.14: Proposed scope of the assessment for Site 3 Alternative (Option 1)

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out for Site 3 Alternative (Option 1)
Road links	Severance	Construction and decommissioning	Scoped in
	Pedestrian Delay		
Road links	Pedestrian and Cycle Amenity	Operation and maintenance	Scoped out
	Fear and Intimidation		
	Driver Delay		
	Highway Safety		
	Hazardous Loads		
Road junctions	Severance	Construction and decommissioning	Scoped in

	Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Operation and maintenance	Scoped out
PRoW	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation PRoW Diversions and/or Closures	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out
National/regional walking and cycle routes	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out

2.8.8.7 A summary of the proposed scope of assessment for Site 3 Alternative (Option 2) is provided in Table 2.8.15.

Table 2.8.15: Proposed scope of the assessment for Site 3 Alternative (Option 2)

Receptor	Potential for significant effect	Project Phase(s)	Proposed to be scoped in/out for Site 3 Alternative (Option 2)
Road links	Severance Pedestrian Delay Pedestrian and Cycle Amenity Fear and Intimidation Driver Delay Highway Safety Hazardous Loads	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out
Road junctions	Severance Pedestrian Delay Pedestrian and Cycle Amenity	Construction and decommissioning	Scoped in
		Operation and maintenance	Scoped out

	Fear and Intimidation Driver Delay Highway Safety Hazardous Loads		
PRoW	Severance Pedestrian Delay	Construction and decommissioning	Scoped in
	Pedestrian and Cycle Amenity Fear and Intimidation PRoW Diversions and/or Closures	Operation and maintenance	Scoped out
National/regional walking and cycle routes	Severance Pedestrian Delay	Construction and decommissioning	Scoped in
	Pedestrian and Cycle Amenity Fear and Intimidation	Operation and maintenance	Scoped out

2.9 Air Quality

2.9.1 Introduction

2.9.1.1 This chapter presents how the air quality assessment will consider the potentially significant effects on air quality that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

2.9.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.

2.9.1.3 This chapter should be read in conjunction with:

- **Part 1, Chapter 4, Project Description;**
- **Part 1, Chapter 5, EIA Approach and Methodology;** and
- **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**

2.9.2 Regulatory and Planning Context

2.9.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on air quality associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

- EU Framework Directive 96/62/EC¹⁶⁰;
- Directive 2008/50/EC on ambient air quality and cleaner air for Europe¹⁶¹;
- Part IV of the Environment Act (1995, amended 2021)¹⁶²;

¹⁶⁰ Council Directive 96/62/EC (1996). Ambient Air Quality Assessment and Management [online]. Available at: <https://www.legislation.gov.uk/eudr/1996/62>

¹⁶¹ Directive 2008/50/EC of the European Parliament and of the Council (2008). Ambient Air Quality and Cleaner Air for Europe [online]. Available at: <https://www.legislation.gov.uk/eudr/2008/50/introduction>

¹⁶² Environment Act 1995 (amended 2021) [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/part/4/enacted>

- Air Quality Standards Regulations¹⁶³;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007)¹⁶⁴; and
- The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018¹⁶⁵.

Planning Policy

National Planning Policy

- Overarching National Policy Statement for Energy (EN-1)¹⁶⁶ – Section 5.2 of EN-1 suggests that if a project is likely to have adverse effects on air quality an assessment of the impacts should be included in the Environmental Statement (ES). Paragraph 5.2.7 puts forth a number of aspects associated with the assessment of air quality that should be included in the ES, for example, “existing air quality levels and the relative change in air quality from existing levels”; and
- National Planning Policy Framework (Revised) (NPPF)¹⁶⁷.

Local Planning Policy

- East Suffolk Council- Suffolk Coastal Local Plan¹⁶⁸; and
- East Suffolk Air Quality Strategy 2021¹⁶⁹.

Guidance

- National Planning Policy Guidance (update) (NPPG)¹⁷⁰;
- Institute of Air Quality Management Guidance on the assessment of dust from demolition and construction, 2014¹⁷¹;

¹⁶³ The Air Quality Standards Regulations 2010 [online]. Available at: <https://www.legislation.gov.uk/uksi/2010/1001/contents>

¹⁶⁴ Department for Environment, Food and Rural Affairs (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf

¹⁶⁵ The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018. [online] Available at: <https://www.legislation.gov.uk/uksi/2018/764/made>

¹⁶⁶ Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

¹⁶⁷ Ministry of Housing Communities and Local Government (2021). National Planning Policy Framework. [online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹⁶⁸ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf>

¹⁶⁹ East Suffolk Council (2021). East Suffolk Air Quality Strategy. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Environment/Environmental-Protection/Air-Quality/AQ-Strategy-2021.pdf>

¹⁷⁰ Department for Levelling Up, Housing and Communities, and Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance – Air Quality. [online] Available at: <https://www.gov.uk/guidance/air-quality--3>

¹⁷¹ Institute of Air Quality Management (2014). Guidance on the assessment of dust from demolition and construction. Institute of Air Quality Management, London. V.1.1.1.

- Institute of Air Quality Management and Environmental Protection UK: Land-use Planning & Development Control: Planning for Air Quality. v1.2. Institute of Air Quality Management, London¹⁷²; and
- Local Air Quality Management Technical Guidance (LAQM.TG(16))¹⁷³.

2.9.3 Study Area

- 2.9.3.1 The Institute of Air Quality Management (IAQM) construction dust guidance¹⁷¹ requires that construction dust impacts are assessed up to 350m from the locations of demolition, construction and earthworks activities for human receptors and up to 50m for ecological receptors. Construction activities are assumed to take place anywhere within the Suffolk Scoping Boundary, therefore as a worst-case approach, the construction dust study area will include up to 350m from the edge of the Suffolk Scoping Boundary. The construction phase Study Area also includes the first 50m of any road within 500m from the main site entrance(s) used by the site construction vehicles, as per IAQM construction dust guidance¹⁷¹.
- 2.9.3.2 The number of vehicles associated with the construction phase of the Suffolk Onshore Scheme is not yet confirmed; however, it is anticipated that detailed assessment of construction vehicle emissions will be scoped out as traffic flows are expected to be below the IAQM screening criteria¹⁷². This will be confirmed upon receipt and screening of construction traffic data. If construction Heavy Duty Vehicle (HDV) flows are expected to be greater than 100 Annual Average Daily Traffic (AADT) flows on a road during the construction phase or 25 AADT within an Air Quality Management Area (AQMA), then exhaust emissions from construction vehicles will be modelled at receptors within 200m of these roads.
- 2.9.3.3 The IAQM development control guidance¹⁷² details its own indicative criteria with respect to change as a result of a project's operational phase that, if met, highlight the need for an assessment, rather than necessarily defining the boundaries of a study area. The criteria are:
- A change in Light Duty Vehicle (LDV) flows of >100 AADT within or adjacent to an AQMA, or >500 AADT elsewhere;
 - A change in HDV flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere;
 - Where a road is realigned by 5m or more and is within an AQMA;
 - Where a junction is added or removed close to existing receptors; and
 - Where there are one or more substantial combustion processes where there is a risk of impacts at relevant receptors.
- 2.9.3.4 The same screening criteria will be used to define the study area should the operational phase be scoped in for assessment. However, operational phase traffic flows are expected to be below these screening criteria and therefore it is proposed to scope out

¹⁷² Institute of Air Quality Management and Environmental Protection UK (2017). Land-use Planning & Development Control: Planning for Air Quality. Institute of Air Quality Management, London. V.1.2.

¹⁷³ Department for Environment, Food and Rural Affairs (2018). Local Air Quality Management Technical Guidance (TG16). [online] Available at: <https://www.scottishairquality.scot/sites/default/files/publications/2022-08/LAQM-TG16-April-21-v1.pdf>

the assessment of operational vehicle emissions as air quality impacts will be negligible.

2.9.4 Baseline Conditions

Data Sources

2.9.4.1 Baseline data has been collated to determine the existing air quality conditions in the area that is likely to be affected by the Suffolk Onshore Scheme. A review of the existing baseline will be undertaken to establish an understanding of the baseline air quality environment, to identify areas that are likely to be sensitive to changes in emissions as a result of the Suffolk Onshore Scheme. The air quality environment baseline described in this section has been informed by the following data sources:

- Defra UK Air website¹⁷⁴ – to establish predicted background concentrations for Nitrogen Dioxide (NO₂), Particulate Matter less than 10 microns in diameter (PM₁₀) and Particulate Matter less than 2.5 microns in diameter (PM_{2.5}).
- Local authority websites and annual Air Quality Status Reports – to determine existing AQMAs and local air quality monitoring results:
- East Suffolk Council website¹⁷⁵;
- Suffolk County Council website¹⁷⁶; and
- East Suffolk Council Air Quality Annual Status Report¹⁷⁷.
- MAGIC website¹⁷⁸ – to identify ecological sites within the air quality Study Area.

Baseline

2.9.4.2 As required by Part IV of the Environment Act (1995), all local authorities produce Annual Status Reports (ASRs) each year. The most recently available reports for East Suffolk is the 2021 ASR¹⁷⁷ which summarises air quality within their areas during 2020.

2.9.4.3 A review of the most recently published ASR¹⁷⁷ confirmed that exceedances of the NO₂ annual mean objective set in the AQS have been identified, resulting in the current declaration of the following AQMAs:

- Woodbridge AQMA – declared in 2006, due to be revoked;
- Stratford St Andrew AQMA – declared in 2014.

2.9.4.4 The Suffolk Scoping Boundary area is not located close to or within either of the East Suffolk Council AQMAs.

¹⁷⁴ Department of Environment, Food and Rural Affairs (2022). UK Air – An Information Resource. [online] Available at: <https://uk-air.defra.gov.uk/>

¹⁷⁵ East Suffolk Council (2022). East Suffolk Council website. [online] Available at: <https://www.eastsuffolk.gov.uk/>

¹⁷⁶ Suffolk County Council (2022). Suffolk County Council website. [online] Available at: <https://www.suffolk.gov.uk/>

¹⁷⁷ East Suffolk Council (2021). 2021 Air Quality Annual Status Report. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Environment/Environmental-Protection/Air-Quality/East-Suffolk-Council-ASR-2021.pdf>

¹⁷⁸ Department for Environment, Food and Rural Affairs (2022). Multi-Agency Geographic Information for the Countryside. [online] Available at: <https://magic.defra.gov.uk/>

2.9.4.5 The closest monitoring location to the Suffolk Scoping Boundary is diffusion tube site FAR2abc which is a triplicate site in Farnham monitored by East Suffolk Council. The annual average NO₂ concentration at this site is well below the AQS objective for the last five years of monitoring.

2.9.4.6 A review of the available modelled background concentrations for the Suffolk Scoping Boundary and surrounding area has been carried out using Defra predicted annual mean background concentrations provided in 1km x 1km grid squares. Background concentrations for 2022 are well below the relevant objective values for all pollutants.

Future Baseline

2.9.4.7 Background pollutant concentrations are predicted to decrease in future years, along with air pollutant concentrations from vehicle emissions sources due to improvements in technologies and increased emissions standards. This is supported by trends observed from local authority monitoring data and future predicted Defra background map concentrations.

2.9.5 Embedded and Control & Management Measures

Embedded Measures

2.9.5.1 The routing and siting of the Suffolk Onshore Scheme has been evolved to avoid settlement areas as far as possible.

Control and Management Measures

2.9.5.2 Construction phase mitigation measures will be proposed as a function of the dust soiling and human health risk ratings allocated by following the IAQM construction dust guidance¹⁷¹. The IAQM construction dust guidance¹⁷¹ also details an extensive list of potential mitigation measures by construction activity. Appropriate mitigation measures identified from the construction dust risk assessment will be secured through a Code of Construction Practice (CoCP), that will be secured as a requirement in the draft Development Consent Order (DCO).

2.9.5.3 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. The Outline CoCP contains a list of relevant good practice measures, including the following key commitments relating to air quality:

- GG04: The CEMP shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.
- GG10: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- GG13: Plant and vehicles will conform to relevant applicable standards for the vehicle type as follows:

- Euro 4 (NOx) for petrol cars, vans and minibuses;
- Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and
- Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).
- Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including cable drums and excavated materials, drop heights will be limited.
- GG18: Wheel washing will be provided at each main compound access point on to the highway. An adequate supply of water will be made available at these locations at all times. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- GG19: Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate.
- GG20: Bonfires and the burning of waste material will be prohibited.
- TT01: The CTMP will set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It will also provide suitable control for the means of access and egress to the public highway and set out measures for the maintenance and upkeep of the public highway. The plan will also identify access for emergency vehicles. It will also set out measures to reduce safety risks through construction vehicle and driver quality standards and measures to manage abnormal loads.

2.9.5.4 During construction, mitigation measures will be employed to ensure that dust emissions are minimised to a negligible impact, such as:

- Site management (logging of incidents/complaints);
- Monitoring (site inspections, soiling checks, compliance with Dust Management plan, etc);
- Preparing and maintaining the site (locate dust causing activities away from receptors, barriers, cleaning, enclosed specific operations with high potential for dust production, cover stockpiles, etc);
- Operating vehicle/machinery and sustainable travel (comply with NRMM standards, no idling, use mains electricity, travel plan etc);
- Operations (employ dust suppression, use enclosed chutes, minimise drop heights, etc);
- Demolition measures (damp down, avoid explosive blasting, soft strip interiors before demolition, etc);

- Earthworks measures (revegetate promptly, use hessian mulches and cover with topsoil, etc);
- Construction measures (avoid scabbling, keep aggregates damp, ensure fine powder materials are delivered enclosed and stored in silos, ensure bags are sealed after use); and
- Trackout measures (wash access and local roads, avoid dry sweeping of large areas, ensure vehicle-borne materials are covered, install hard surface haul routes, wheel washing, etc).

2.9.5.5 Construction dust mitigation measures are considered tertiary mitigation i.e., actions that are standard best practices used to manage commonly occurring environmental effects.

2.9.6 Potential for Significant Effects

2.9.6.1 The air quality assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.9.6.2 The proposed scope of the air quality assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.9.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.9.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section.

Sources of construction impacts

2.9.6.5 Construction phase activities associated with the Project such as earthworks and trackout (the transport of dust and dirt from the construction site onto the public road network) can give rise to adverse impacts from fugitive emissions of dust such as nuisance and health impacts if left unmitigated. A construction dust risk assessment is therefore required to identify the risk and determine the appropriate mitigation measures to mitigate construction dust impacts. Additionally, the movement of materials and waste to and from the site by construction vehicles can lead to adverse impacts from increased exhaust emissions of air pollutants, such as nitrogen dioxide and particulate matter.

2.9.6.6 There may also be increases in NO₂, PM₁₀ and PM_{2.5} concentrations due to emissions from non-road mobile machinery (NRMM) used during construction. However, it is proposed for construction vehicle emissions to be scoped out and this will be confirmed with relevant consultees following screening of construction traffic flow data.

2.9.6.7 The potential sources of construction impacts are therefore:

- Construction activities such as earthworks and trackout resulting in emissions of dust;
- Emissions from NRMM; and
- Emissions from construction traffic.

Sources of operational impacts

2.9.6.8 Traffic trips associated with the operation of the Project are anticipated to be below the IAQM indicative criteria¹⁷² for potential significant effects. Therefore, air quality impacts associated with operational phase vehicle emissions will be negligible and are proposed to be scoped out of further assessment.

2.9.6.9 There are no other operational phase emissions sources or air quality impacts associated with the Project anticipated for inclusion in the air quality assessment.

Sources of maintenance impacts

2.9.6.10 Traffic trips associated with the maintenance of the Project are anticipated to be below the IAQM indicative criteria¹⁷² for potential significant effects. Therefore, air quality impacts associated with operational phase vehicle emissions will be negligible and are proposed to be scoped out of further assessment.

2.9.6.11 Any potential NRMM emissions or dust generating activities associated with maintenance would be transient and temporary in nature, therefore there are no other maintenance emissions sources or air quality impacts associated with the Project anticipated for inclusion in the air quality assessment.

Sources of decommissioning impacts

2.9.6.12 The decommissioning phase of the Project will be assessed following the same approach as construction to consider any dust impacts associated with demolition and potential impacts from vehicle emissions. Therefore the potential sources of decommissioning impacts are:

- decommissioning activities such as earthworks and trackout resulting in emissions of dust;
- emissions from NRMM; and
- emissions from decommissioning traffic.

Potential impacts

2.9.6.13 The most common air quality impacts that may arise during demolition and construction activities are;

- dust deposition, resulting in the soiling of surfaces and reduction in amenity; and
- elevated PM₁₀ concentrations, as a result of dust generating activities on site.

2.9.6.14 These impacts may affect human and ecological receptors. The IAQM construction dust guidance¹⁷¹ defines a human receptor as:

“any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM₁₀ over a time period relevant to the Air Quality Objectives. In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as buildings housing cultural heritage collections (e.g. museums and galleries), vehicle showrooms, food manufacturers, electronics manufacturers, amenity areas and horticultural operations (e.g. salad or soft-fruit production).”

2.9.6.15 An ecological receptor is defined as:

“any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g. on foraging habitats)”.

2.9.6.16 The potential for dust emissions will be assessed for each activity that is likely to take place and considers three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM₁₀.

2.9.6.17 Construction dust impacts are likely to be temporary in nature and have the potential to be well controlled through best practice mitigation measures.

2.9.6.18 Table 2.9.1 identifies the potential impact that could result from the sources identified above.

Table 2.9.1: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction	Construction activities such as earthworks and trackout resulting in emissions of dust	Dust deposition and human health impacts	Yes - Negligible	Scoped in
	Emissions from NRMM	Change in local air pollutant concentrations	No - Not significant due to temporary and transient nature and incorporation of best practice measures (CoCP)	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	Emissions from construction traffic	Change in local air pollutant concentrations	No - Not significant due to traffic numbers anticipated to be below IAQM screening criteria	Scoped out
Operation	Operational traffic vehicle emissions	Change in local air pollutant concentrations	No - Not significant due to traffic numbers anticipated to be below IAQM screening criteria	Scoped out
Maintenance	Maintenance traffic vehicle emissions	Change in local air pollutant concentrations	No - Not significant due to traffic numbers anticipated to be below IAQM screening criteria	Scoped out
Decommissioning	Decommissioning activities such as earthworks and trackout resulting in emissions of dust	Dust deposition and human health impacts	Yes - Negligible	Scoped in
	Emissions from NRMM	Change in local air pollutant concentrations	No - Not significant due to temporary and transient nature and incorporation of best practice measures (CoCP)	Scoped out
	Emissions from decommissioning traffic	Change in local air pollutant concentrations	No - Not significant due to traffic numbers anticipated to	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			be below IAQM screening criteria	

Impact Pathways with Receptors (Step 2)

- 2.9.6.19 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the air quality study area.
- 2.9.6.20 It should be noted that potential air quality impacts associated with the Project are anticipated to be the same for all options as construction dust impacts would be mitigated to negligible effect following a dust risk assessment and vehicle emissions are proposed to be scoped out as not significant.
- 2.9.6.21 Table 2.9.2 identifies the potential impact pathways with receptors for all options as shown on:
- **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**;
 - **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**;
 - **Figure 2.1.6 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**;
 - **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**; and
 - **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

Table 2.9.2: Impact pathways with receptors

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Dust deposition and human health impacts during construction	Nearby Air Quality Sensitive Receptors	Yes - Negligible	Scoped in
Change in local air pollutant concentrations	Nearby Air Quality Sensitive Receptors	No - Not significant due to traffic numbers anticipated to be below IAQM screening criteria	Scoped out

2.9.7 Proposed Assessment Methodology

2.9.7.1 Detailed technical assessment methodologies are presented in **Part 1, Chapter 5, EIA Approach and Methodology**. This section provides an overview of the methodologies used in the assessment of air quality from the Project.

Proposed Data Sources

2.9.7.2 No additional data sources are proposed other than those outlined in section 4. Should detailed dispersion modelling of vehicle emissions be required following the screening of construction traffic data then one year of meteorological data would be obtained from a nearby met station for the base year.

Proposed Assessment Methodology

Construction dust assessment

2.9.7.3 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These will be assessed in accordance with the methodology outlined in the IAQM construction dust guidance¹⁷¹.

2.9.7.4 If there are no ecological receptors within 50m or human receptors within 350m of the Suffolk Onshore Scheme boundary, or within 50m of the haul routes (up to 500m from the site entrance(s)) then the need for a construction dust assessment is to be screened out. However, if there are receptors within in these distances then an assessment should be carried out. Initial review of the study area has identified that receptors are present and therefore a construction dust risk assessment is required.

2.9.7.5 A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large; and
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity.

2.9.7.6 The two factors are combined to determine the risk of dust impacts without mitigation applied.

2.9.7.7 The relevant criteria to define the potential magnitude of dust emission includes the following factors detailed in Table 2.9.3

Table 2.9.3: Dust emission magnitude criteria

Magnitude	Criteria
Small	Demolition volume under 20,000m ³ less than 10m above ground level, total site area less than 2,500m ² , soil type with large grain size, total material moved less than 20,000 tonnes, construction material with low potential for dust release, less than 10 HDV trips per day, unpaved road length less than 50m etc.

Medium	Demolition activities 10m-20m above ground level, moderately dusty soil type, potentially dusty construction material, total material moved 20,000-100,000 tonnes, 10 to 50 HDV trips per day, unpaved road length 50-100m etc.
Large	On-site crushing and screening demolition, demolition activities greater than 20m above ground level, total site area greater than 10,000m ² , more than 10 heavy earth moving vehicles active at any one time, more than 10,000 tonnes of material moved, on site concrete batching, sandblasting, more than 50 HDV trips per day, unpaved road length greater than 100m etc.

2.9.7.8 The influencing factors to define receptor sensitivity to dust impacts are detailed in Table 2.9.4.

Table 2.9.4: Receptor sensitivity criteria

Sensitivity	Criteria
High	Where human receptors expected to be present continuously for extended periods of time e.g. residential properties, hospitals, schools and care homes. Internationally or nationally designated ecological sites.
Medium	Where users would expect to enjoy a reasonable level of amenity and value could be diminished by dust soiling e.g. parks and places of work. Nationally designated ecological sites.
Low	Where enjoyment of amenity would not reasonably be expected and exposure would be for limited periods e.g. footpaths, shopping streets and car parks. Locally designated ecological sites.

2.9.7.9 The IAQM construction dust guidance¹⁷¹ categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual impacts are 'not significant'. A higher dust risk rating requires more stringent mitigation measures in order to limit residual effects.

Vehicle emissions assessment

2.9.7.10 Assessment of vehicle emissions will be undertaken should the screening of traffic data meet the criteria set out by IAQM development control guidance¹⁷².

2.9.7.11 If these criteria are not exceeded, then the IAQM development control guidance¹⁷² considers air quality impacts associated with a scheme in terms of traffic emissions to be negligible and no further assessment is required

2.9.7.12 Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in NO₂ and particulate matter concentrations as a result of the Project.

Detailed dispersion modelling would be undertaken using Atmospheric Dispersion Modelling Software (ADMS) to predict pollutant concentrations at worst case receptor locations within 200m of affected vehicle routes and compared against relevant AQS objectives. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM development control guidance¹⁷².

2.9.7.1 The significance of impacts would be assessed dependent upon the percentage change in concentration between the without and with Project scenarios, relative to the relevant air quality objectives, as presented in Table 2.9.5.

Table 2.9.5: IAQM impact descriptors for individual receptors

Long term average concentration at receptor in assessment year	% change in concentration relative to air quality assessment level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 - 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 - 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

2.9.8 Conclusion

2.9.8.1 With regards to air quality impacts associated with the Suffolk Onshore Scheme, the assessment of construction dust is scoped into the assessment. It is proposed that construction traffic vehicle emissions are scoped out of the assessment due to the number of vehicles anticipated to be below the IAQM screening criteria¹⁷², subject to confirmation upon receipt of construction traffic data.

Proposed Scope of the Assessment

2.9.8.2 A summary of the proposed scope of the assessment is provided in Table 2.9.6.

Table 2.9.6: Proposed scope of the assessment

Receptor	Potential for significant effects	Project phase(s)	Proposed to be scoped in/out and for which option
Nearby Air Quality	Dust deposition	Construction and Decommissioning	Scoped in for all options

Sensitive Receptors			
Nearby Air Quality Sensitive Receptors	Human health dust impacts	Construction and Decommissioning	Scoped in for all options
Nearby Air Quality Sensitive Receptors	Increase in vehicle emissions	Construction, Operational, Maintenance and Decommissioning	Scoped out for all options
Nearby Air Quality Sensitive Receptors	Emissions from NRMM	Construction and Decommissioning	Scoped out for all options

2.10 Noise and Vibration

2.10.1 Introduction

- 2.10.1.1 This chapter presents how the noise and vibration assessment will consider the potentially significant effects that may arise from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.
- 2.10.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.10.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;** and
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**
- 2.10.1.4 This chapter is supported by the following figure:
- **Figure 2.10.1 – Noise and Vibration Baseline – Suffolk.**
- 2.10.1.5 The potential effects of noise and vibration on ecological receptors and heritage assets are considered in **Part 2, Chapter 3, Ecology and Biodiversity**, and **Part 2, Chapter 4, Cultural Heritage**, respectively.

2.10.2 Regulatory and Planning Context

- 2.10.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on noise and vibration associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

- 2.10.2.2 The below legislation will be considered when identifying potential constraints to the Suffolk Onshore Scheme, design options and mitigation.

- The Control of Pollution Act 1974¹⁷⁹; and
- Environmental Protection Act 1990¹⁸⁰.

Planning Policy

National Planning Policy

- 2.10.2.3 The assessment will take account of the relevant National Policy Statements (NPSs) for energy: the Overarching National Policy Statement for Energy (EN-1)¹⁸¹ and the National Policy Statement for Electricity Networks (EN-5)¹⁸². These NPSs are, as of June 2022, in the process of being updated and therefore relevant sections of the draft NPSs are also included below, where relevant.
- 2.10.2.4 EN-1 states that ‘where noise impacts are likely to arise from the proposed development, the applicant should include the following in the noise assessment’ including a description of the noise generating aspects leading to noise impacts, noise sensitive properties that may be affected, an assessment of the effect of predicted changes in the noise environment at noise sensitive properties and measures to be employed in mitigating noise.
- 2.10.2.5 EN-5 contains the following guidance relating to noise which has been considered within this chapter:
- ‘The IPC should ensure that relevant assessment methodologies have been used in the evidence presented to them, and that the appropriate mitigation options have been considered and adopted. Where the applicant can demonstrate that appropriate mitigation measures will be put in place, the residual noise impacts are unlikely to be significant.’
- 2.10.2.6 The National Planning Policy Framework (NPPF) (2012; revised in 2021)¹⁸³ details the Government’s planning policies for England and how these are expected to be applied. The NPPF includes statements relating to noise and the requirement to take it into account in the planning process. Section 174 indicates that the planning system should contribute to and enhance the natural and local environment by:
- ‘preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.’
- 2.10.2.7 Section 185 is specifically related to noise, requiring planning policy decisions to:

¹⁷⁹ Control of Pollution Act 1974 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40> [Accessed July 2022].

¹⁸⁰ Environmental Protection Act 1990 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> [Accessed July 2022]

¹⁸¹ Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

¹⁸² Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

¹⁸³ Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. [online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

- mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; and
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

2.10.2.8 The terms ‘significant adverse effect’ and ‘adverse effect’ reflect the terminology used in the Noise Policy Statement for England, 2010 (NPSE)¹⁸⁴ which sets out the long-term vision of Government noise policy:

‘to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.’

2.10.2.9 The NPSE outlines three aims for the effective management and control of environmental, neighbour and neighbourhood noise:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

2.10.2.10 In its aims, the NPSE uses the key phrases “significant adverse” and “adverse”. The NPSE states in its explanatory note that there are two established concepts that are currently being applied to noise impacts, which are:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected.
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

2.10.2.11 The NPSE then extends this concept to include:

- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

2.10.2.12 The NPSE notes that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to vary for different noise sources, receptors and times. It is for the project to identify relevant SOAELs taking account of the sources of exposure and receptors.

2.10.2.13 The NPPF and NPSE do not, therefore, provide absolute limits on noise that are acceptable or unacceptable in a given situation. It does however, set out the need to use planning decisions, including through the use of conditions, to avoid or mitigate adverse impacts on health and quality of life resulting from noise. The Planning Practice Guidance for Noise (PPGN)¹⁸⁵ advises on how planning can manage potential noise impacts. In this guidance it advises that local planning authorities’ plan making

¹⁸⁴ Department for Environment, food and Rural Affairs (2010). Noise Policy Statement for England. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf

¹⁸⁵ Department for Levelling Up, Housing and Communities, and Ministry of Housing, Communities and Local Government (2019). Planning Practice Guidance – Noise. [online] Available at: <https://www.gov.uk/guidance/noise--2> [Accessed July 2022].

and decision taking should take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

2.10.2.14 PPGN provides a noise exposure hierarchy explaining how effects of noise can be categorised, as reproduced in Table 2.10.1.

Table 2.10.1: PPGN noise exposure hierarchy

Response	Example of outcomes	Increasing effect level	Action
Not present	No effect	No Observed Effect	No specific measures required
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response.		
Lowest Observed Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite,	Unacceptable Adverse Effect	Prevent

Response	Example of outcomes	Increasing effect level	Action
	significant, medically definable harm, e.g. auditory and non-auditory.		

Local planning policy

2.10.2.15 Relevant policies from the East Suffolk Council Suffolk Coastal Local Plan, adopted September 2020¹⁸⁶. These are reproduced in Table 2.10.2.

Table 2.10.2: Local planning policies applicable to Suffolk Onshore Scheme

Document	Planning policy	Purpose
Suffolk Coastal Local Plan, Adopted September 2020	SCLP10.3: Environmental Quality	<p>Development proposals will be expected to protect the quality of the environment and to minimise and, where possible, reduce all forms of pollution and contamination.</p> <p>Development proposals will be considered in relation to impacts on;</p> <ul style="list-style-type: none"> a) Air quality, and the impact on receptors in Air Quality Management Areas; b) Soils and the loss of agricultural land; c) Land contamination and its effects on sensitive land uses; d) Water quality and the achievement of Water Framework Directive objectives; e) Light pollution; and f) Noise pollution. <p>Proposals should seek to secure improvements in relation to the above where possible.</p> <p>The cumulative effect of development, in this regard, will be considered.</p>
	SCLP11.2: Residential Amenity	<p>When considering the impact of development on residential amenity, the Council will have regard to the following:</p> <ul style="list-style-type: none"> a) Privacy/overlooking; b) Outlook; c) Access to daylight and sunlight; d) Noise and disturbance; e) The resulting physical relationship with other properties; f) Light spillage; g) Air quality and other forms of pollution; and

¹⁸⁶ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://east Suffolk.inconsult.uk/consult.ti/suffolkcoastallocalplan2020/viewCompoundDoc?docid=11955764&partid=11958292>

h) Safety and security.

Development will provide for adequate living conditions for future occupiers and will not cause an unacceptable loss of amenity for existing or future occupiers of development in the vicinity.

2.10.3 Study Area

2.10.3.1 This section describes the study areas for each aspect of the noise and vibration assessment. The study areas for each aspect of the noise and vibration assessment are shown in **Figure 2.10.1 Noise and Vibration Baseline – Suffolk**.

Construction Noise Study Area

2.10.3.2 The study area for construction noise impacts within the ES will consider noise sensitive receptors (NSRs) within 300m of the Suffolk Onshore Scoping Boundary, excluding construction traffic on the public highway which is assessed separately. This is based on guidance in British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' (BS 5228-1)¹⁸⁷, which states that caution is needed when making construction noise predictions beyond 300m due to meteorological effects, particularly when a soft ground correction factor has been applied. A 300m construction noise study area is also advocated by DMRB LA 111 (Highways England, 2020)¹⁸⁸. This will be refined as the Suffolk Onshore Scheme develops.

Construction Traffic Noise Study Area

2.10.3.3 The construction traffic routes are not currently defined at this stage. However, noise from construction traffic on the existing road network will be assessed for each applicable road based on guidance from DMRB LA 111 (Highways England, 2020). The assessment principally considers the change in Basic Noise Level (BNL) of each road, calculated in line with the methodology described in technical memorandum Calculation of Road Traffic Noise (CRTN)¹⁸⁹, with a subsequent assessment of the impacts on NSRs within 50m of routes where a change in BNL of at least 1dB is identified due to construction traffic.

Construction Vibration Study Area

2.10.3.4 The proposed study area for construction vibration impacts, based on guidance from BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration' (BS 5228-2)¹⁹⁰ and DMRB LA 111, will

¹⁸⁷ British Standards Institute (2008). BS 5228-1:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites: Noise.

¹⁸⁸ Highways England (2020). Design Manual for Roads and Bridges - LA 111 Noise and Vibration. [online] Available at: <https://www.standardsforhighways.co.uk/prod/attachments/cc8cfc7-c235-4052-8d32-d5398796b364?inline=true>

¹⁸⁹ Department of Transport and Welsh Office (1988). Calculation of Road Traffic Noise. London. HMSO

¹⁹⁰ British Standards Institute (2008). BS 5228-1:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites: Noise.

consider NSRs within 100m of the Suffolk Scoping Boundary. This will be refined as the Suffolk Onshore Scheme develops.

Operational Noise Study Area

- 2.10.3.5 The study area for operational noise impacts from the proposed converter station and substation is 1000m from the Suffolk converter station Site Option Areas and proposed Friston substation/extension, based on guidance from ISO 9613:1996 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of calculation' (ISO 9613)¹⁹¹. There will be particular emphasis on the NSRs closest to the converter station and/or Substation. This will be refined as the Suffolk Onshore Scheme develops.
- 2.10.3.6 The AC connection between the proposed converter station the National Grid connection point at the proposed Friston substation will be via underground cables. Noise from underground cables are proposed to be scoped out since their operation does not generate material levels noise.

Operational Vibration Study Area

- 2.10.3.7 There are no material sources of operational vibration proposed as part of the Suffolk Onshore Scheme. Operational vibration is therefore proposed to be scoped out of further assessment.

2.10.4 Baseline Conditions

Data Sources

- 2.10.4.1 The noise and vibration baseline described in this section has been informed by the following data sources Defra strategic noise mapping (2017)¹⁹²;
- Ordnance Survey mapping;
 - East Anglia ONE NORTH Offshore Windfarm Environmental Statement Volume, Chapter 25 – Noise and Vibration.
 - East Anglia TWO Offshore Windfarm Environmental Statement Volume, Chapter 25 – Noise and Vibration.
- 2.10.4.2 Pertinent baseline information is provided in **Figure 2.10.1 Noise and Vibration Baseline – Suffolk**.

¹⁹¹ International Standards Organisation (1996). ISO 9613:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of calculation.

¹⁹² Department for Environment, Food and Rural Affairs (2019). Strategic noise mapping: explaining which noise sources were included in the 2017 noise maps. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902825/strategic-noise-mapping-round3.pdf

Baseline

- 2.10.4.3 The study area includes a mix of predominantly residential and rural environments. The noise climate is therefore expected to be relatively quiet away from main transport routes.
- 2.10.4.4 The main sources of noise are likely to include road traffic from the A12 to the west and, the A1094 which runs between the A12 at Friday Street to the west and Aldeburgh to the east. There will also be lower levels of traffic on local roads. Away from road traffic sources, ambient sound levels would be expected to be lower. There is also a train line running east-west through the Suffolk Onshore Scoping Boundary between Saxmundham in the west and Leiston in the east. Sizewell nuclear power station is the only major industrial facility in the area, albeit, outside just of the study area, approximately 500m to the north-east of the Suffolk Onshore Scoping Boundary.
- 2.10.4.5 There are built-up residential areas at:
- Saxmundham to the west;
 - Friston to the south;
 - Goldfair Green to the south;
 - Aldeburgh to the southeast;
 - Sizewell to the northeast; and
 - Leiston to the northeast.
- 2.10.4.6 There are also a relatively large number of isolated NSRs and small settlements within the study area located between the main built-up residential areas identified above.
- 2.10.4.7 Defra strategic noise mapping indicates that ambient noise levels are moderate to high in the vicinity of the A12 and A1094 but reduce to relatively low levels beyond approximately 300m from the roads.
- 2.10.4.8 There are no Noise Important Areas (NIA) on the existing local public highway along routes within which may be used for construction traffic associated with the Suffolk Onshore Scheme. NIAs are determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England.
- 2.10.4.9 There are however NIAs in the wider area on main transport routes (e.g. The A12 at Farnham and Little Glemham to the southwest) which are not likely to be significantly affected by the Suffolk Onshore Scheme.
- 2.10.4.10 With regards to background sound levels, which are applicable to the assessment of operational noise, the 2018 noise survey data indicates that background sound levels at the nearest NSRs are likely to be in the order of 32 to 37 dB $L_{A90,T}$ during daytime periods, and 24 to 36 dB $L_{A90,T}$ during night-time periods (further noise surveys will be conducted as part of this Suffolk Onshore Scheme). These sound levels are typical for a rural area.
- 2.10.4.11 With regards to the vibration baseline, it is assumed that existing vibration levels are negligible in the study area.

Future Baseline

- 2.10.4.12 The future baseline has the potential to change in isolated areas due to proposed infrastructure projects in the area; principally the East Anglia One North and East Anglia Two Offshore Windfarms, with the proposed Friston substation forming part of that application. Baseline noise surveys would likely be conducted prior to commencing of the operation or construction of the substation and as such consideration will be given to pre-development background noise levels in the assessment of operational noise from additional plant required at Friston in relation to the Suffolk Onshore Scheme in order to control cumulative effects.

2.10.5 Embedded and Control & Management Measures

Embedded Measures

Construction noise and vibration

- 2.10.5.1 Where feasible, the Suffolk Onshore Scheme has avoided NSRs, such as settlements, through routeing and siting.

Operational noise

- 2.10.5.2 At this stage, the proposed converter station and substation have not yet been designed. However, they will be designed to meet applicable noise limits at nearby NSRs using readily available techniques. This will include consideration of plant selection, site layout, screening, and enclosures, as may be considered appropriate. Additionally, the converter station and substation siting has avoided NSR, such as settlements, through the optioneering process.
- 2.10.5.3 Similarly, the AC connection between the proposed converter station the substation will be via underground cables. Underground cables do not generate material levels of noise.
- 2.10.5.4 There are no material sources of vibration from the operation of the converter station and substation. There are, however, sources of low levels of vibration including transformers and cooling plant. Such plant would be expected to be installed on anti-vibration mountings and levels of vibration would not be expected to be perceptible, even in close proximity to the equipment.

Control and Management Measures

Construction noise control and management measures

- 2.10.5.5 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the noise and vibration assessment are:
- GG04 - The CEMP shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.

- GG06 - Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the project. Topics will include but are not limited to:
 - working hours and noise and vibration reducing measures; and
 - agreed traffic routes, access points, etc.
- GG11 - Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- GG26 - Members of the community and local businesses will be kept informed regularly of the works through active community liaison. This will include notification of noisy activities, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the project. All construction-related complaints will be logged by the contractor(s) in a complaints register, together with a record of the responses given and actions taken.
- NV01 - Construction working will be undertaken within the agreed working hours set out within the Development Consent Order (DCO). Best practicable means to reduce construction noise will be set out within the CEMP.

2.10.5.6 In developing the noise control measures to be used, the following hierarchy will be followed:

- Control at source – for example the selection of quieter equipment;
- The choice of location for equipment on site;
- Control of working hours; and
- The provision of acoustic enclosures around equipment or barriers around work sites.

2.10.5.7 As per the hierarchy above, the first source of control for noise pollution is to control at the source. To this end, where reasonably practicable, efforts will be made to use equipment that reduces the noise produced where located in close proximity to NSRs.

2.10.5.8 Where works may be required to be undertaken outside of the core hours, the local planning authority will be notified in advance along with any neighbouring receptors.

Operational noise control and management Measures

2.10.5.9 It is anticipated that further detailed assessment of operational noise from the proposed converter station and substation, once the design has been finalised, detailing specific mitigation measures, would be secured via DCO Requirement.

Operational vibration control and management measures

2.10.5.10 There are no material sources of operational vibration proposed as part of the Project. Some converter station and substation plant would include rotating and moving parts, such as the fans of cooling equipment. However, levels of vibration generated by such plant is low and applicable plant, including transformers, would be expected to be

mounted on suitable anti-vibration mounts. These are primarily to protect the plant itself from potential vibration impacts but also serve to attenuate vibration generated by the plant. Vibration would therefore not be expected to be perceptible even in very close proximity to plant.

2.10.6 Potential for Significant Effects

2.10.6.1 The noise and vibration assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.10.6.2 The proposed scope of the noise and vibration assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.10.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.10.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- noise effects from construction activities;
- vibration effects from construction activities; and
- noise effects from construction traffic.

Sources of operational impacts

- noise effects from the converter station; and
- noise effects from the substation.

Sources of maintenance impacts

- noise and vibration effects from maintenance activities.

Sources of decommissioning impacts

- noise and vibration effects from decommissioning activities.

Potential impacts

2.10.6.5 Table 2.10.3 identifies the potential impacts that could result from the sources identified above.

Table 2.10.3: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction	Noise from construction activities	Construction noise at NSRs	Yes -There will be potential significant effects due to construction noise at NSRs within the study area. However, this depends on the nature and the duration of activities, the distance between the noise source and the NSR, and the good practice measures employed to reduce noise.	Scoped in
Construction	Vibration from construction activities	Construction vibration at NSRs	Yes -There will be potential significant effects on human receptors (i.e. nuisance) due to construction vibration at NSRs within the study area. The level of significance will depend on the nature and the duration of activities, the distance between the source of vibration and the NSR, and the good practice measures employed to reduce vibration. However, the duration of such activities would be expected to be relatively short at any one location, and, together with the implementation of good practice measures, significant	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			effects from such works are not expected.	
Construction	Vibration from construction activities	Construction vibration at structures	Yes -Construction vibration would not be expected to cause damage to buildings or structures unless very high levels of vibration are generated. Such levels would only be expected to occur where vibration generating activities occur very close to structures, within several meters, and specific control measures would be in place in such instances.	Scoped in
Construction	Noise from construction traffic	Construction traffic noise at NSRs	Yes -There is the potential for significant effects at NSRs close to construction traffic routes depending on the number of construction vehicle movements and existing traffic flows along proposed routes.	Scoped in
Construction	Vibration from construction traffic	Construction traffic vibration at NSRs	No - Vibration from traffic on the public highway is caused by irregularities in the road surface. Where the road surface is free from irregularities, such as potholes, significant vibration	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			effects would not be expected, even at relatively short distances. This is confirmed by the Design Manual for Roads and Bridges LA 111 Noise and Vibration (2020) (DRMB).	
Operation	converter station and substation	Operational noise at NSRs	<p>Yes -There are a number of potential sources of audible noise from converter station and substation. Each of these has its own characteristic frequency spectrum and pattern of occurrence due to the nature of the noise-generating mechanisms involved. The primary sources of noise are likely to be transformers, cooling equipment, alternating current (AC) and direct current (DC) switch gear, and AC filters and voltage smoothing equipment.</p> <p>Transformer noise is almost constant, with a hum occurring at exact harmonics of the supply frequency; 100Hz and 200Hz components are usually dominant. Transformers</p>	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Operation			<p>generally run continuously except for occasional maintenance and fault outages. Transformer coolers typically emit a broadband noise; however, their operation depends on temperature and loading.</p>	Scoped out
			<p>No - Switchgear noise is generated, in the main, by the operation of circuit breakers, for which the noise emissions are 'impulsive' in character (i.e. of short duration). Switchgear operations would be very infrequent. Modern switchgear of the Sulphur Hexafluoride (SF6) type operates with a dull 'thud'. Switchgear would operate infrequently and is therefore proposed to be scoped out.</p> <p>Auxiliary plant may comprise standby diesel generators and air compressors to provide emergency back-up power to cooling plant. When present and operating, these may contribute to the broadband noise</p>	

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Operation	Operational vibration at NSRs	<p>climate. They do not run continuously, and in any case, would be housed in a building or outdoor acoustic enclosure. Noise from such assets is therefore not considered significant, given its emergency function and as such is proposed to be scoped out.</p>	<p>No - There are no material sources of operational vibration proposed as part of the Project. Some converter station plant would include rotating and moving parts, such as the fans of cooling equipment. However, levels of vibration generated by such plant is low and all plant, including transformers, would be expected to be mounted on suitable anti-vibration mounts. These are primarily to protect the plant itself from potential vibration impacts but also serve to attenuate vibration generated by the plant. Vibration would therefore not be expected to be perceptible even in</p>	Scoped out

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			very close proximity to plant.	
Operation	Maintenance activities	Operational noise and vibration at NSRs	Yes -Maintenance of the underground cables and the converter station would be infrequent, localised, and would follow good practice measures for the reduction of noise and vibration where required. Noise and vibration effects from maintenance activities would be expected to be no worse, and typically less than, the effects of during the construction phase.	Scoped in
Operation	Underground cables	Operational noise and vibration at NSRs	No - Underground cables are practically quiet. Operational noise from underground cables is scoped out of the ES	Scoped out
Operation	Operational road traffic	Operational road traffic noise and vibration at NSRs	No - The Suffolk Onshore Scheme is not likely to generate significant levels of additional road traffic during operation, with a low level of manned activity at the converter station site and occasional maintenance activities.	Scoped out
Decommissioning	Decommissioning activities	Decommissioning noise and vibration at NSRs	Yes - Decommissioning of the underground cables and the	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			converter station would follow good practice measures for the reduction of noise and vibration where required. Noise and vibration effects from decommissioning activities would be expected to be similar to the effects of during the construction phase.	

Impact Pathways with Receptors (Step 2)

2.10.6.6 Table 2.10.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Onshore Scheme for all options as shown on:

- **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**;
- **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**;
- **Figure 2.1.6 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**;
- **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**; and
- **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area**.

Table 2.10.4: Impact pathways with receptors – all options

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Disturbance from construction noise	Residential and non-	Yes -There will be potential significant effects due to construction noise at	Scoped in

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	residential NSR	NSRs within the study area. However, this depends on the nature and the duration of activities, the distance between the noise source and the NSR, and the good practice measures employed to reduce noise.	
Disturbance from construction vibration	Residential and non-residential NSR	Yes -There will be potential significant effects on human receptors (i.e. nuisance) due to construction vibration at NSRs within the study area. The level of significance will depend on the nature and the duration of activities, the distance between the source of vibration and the NSR, and the good practice measures employed to reduce vibration. However, the duration of such activities would be expected to be relatively short at any one location, and, together with the implementation of good practice measures, significant effects from such works are not expected.	Scoped in
Structural damage from construction vibration	Structures	Yes -Construction vibration would not be expected to cause damage to buildings or structures unless very high levels of vibration are generated. Such levels would only be expected to occur where vibration generating activities occur very close to structures, within several meters, and specific control measures would be in place in such instances.	Scoped in
Disturbance from construction traffic noise	Residential and non-residential NSR	Yes -There is the potential for significant effects at NSRs close to construction traffic routes depending on the number of construction vehicle movements and existing traffic flows along proposed routes.	Scoped in
Disturbance from construction traffic vibration	Residential and non-residential NSR	No - Vibration from traffic on the public highway is caused by irregularities in the road surface. Where the road surface is free from irregularities, such as potholes, significant vibration effects would not be expected, even at	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
		relatively short distances. This is confirmed by the Design Manual for Roads and Bridges LA 111 Noise and Vibration (2020) (DRMB).	
Disturbance from operational noise from Proposed (converter station and Substation)	Residential and non-residential NSR	<p>Yes -There are a number of potential sources of audible noise from converter stations and substations. Each of these has its own characteristic frequency spectrum and pattern of occurrence due to the nature of the noise-generating mechanisms involved. The primary sources of noise are likely to be transformers, cooling equipment, alternating current (AC) and direct current (DC) switch gear, and AC filters and voltage smoothing equipment.</p> <p>Transformer noise is almost constant, with a hum occurring at exact harmonics of the supply frequency; 100Hz and 200Hz components are usually dominant. Transformers generally run continuously except for occasional maintenance and fault outages. Transformer coolers typically emit a broadband noise; however, their operation depends on temperature and loading.</p>	Scoped in
Disturbance from operational vibration	Residential and non-residential NSR	<p>No - There are no material sources of operational vibration proposed as part of the Project. Some converter station plant would include rotating and moving parts, such as the fans of cooling equipment. However, levels of vibration generated by such plant is low and all plant, including transformers, would be expected to be mounted on suitable anti-vibration mounts. These are primarily to protect the plant itself from potential vibration impacts but also serve to attenuate vibration generated by the plant. Vibration would therefore not be expected to be perceptible even in very close proximity to plant.</p>	Scoped out

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Disturbance from operational traffic noise	Residential and non-residential NSR	No - The Suffolk Onshore Scheme is not likely to generate significant levels of additional road traffic during operation, with a low level of manned activity at the converter station site and occasional maintenance activities.	Scoped out
Disturbance from noise and vibration from maintenance activities	Residential and non-residential NSR	Yes -Maintenance of the underground cables and the converter station would be infrequent, localised, and would follow good practice measures for the reduction of noise and vibration where required. Noise and vibration effects from maintenance activities would be expected to be no worse, and typically less than, the effects of during the construction phase.	Scoped in
Disturbance from decommissioning noise and vibration	Residential and non-residential NSR	Yes -Decommissioning of the underground cables and the converter station would follow good practice measures for the reduction of noise and vibration where required. Noise and vibration effects from decommissioning activities would be expected to be similar to the effects of during the construction phase.	Scoped in

2.10.7 Proposed Assessment Methodology

2.10.7.1 The assessment methodology for the EIA is outlined in **Part 1, Chapter 5, EIA Approach and Methodology**. This section provides an overview of the methodologies proposed to be used in the assessment of noise and vibration from the Suffolk Onshore Scheme.

Proposed Data Sources

2.10.7.2 The following data sources would be used in the noise and vibration assessment:

- AddressBase Plus data;
- Noise survey data;
- Project design information;
- Construction programme, schedule, and plant data (if available);

- Baseline and construction traffic data;
- Topography data;
- Converter station plant and/or specification data (if available).

2.10.7.3 Where detailed data is not available at the time of the ES, suitable assumptions will be made and documented. In terms of construction data, information would be based on the methodologies used in similar projects. With regards to the converter station, it is unlikely that a full design will be available at the time of the ES. As such, the ES will serve to determine noise limits for the proposed converter station via the noise survey data. It is anticipated that further detailed assessment of operational noise from the proposed converter station, once the design has been finalised, detailing specific mitigation measures, would be secured via DCO Requirement to meet the determined noise criteria.

Ascribing Sensitivity

2.10.7.4 NSRs are determined partly on property type, for example residential properties are of a higher sensitivity than factories and offices.

2.10.7.5 Although all residential NSRs are sensitive to noise and vibration, there are also cases where the sensitivity of an NSR may depend on the pre-existing noise climate. For example, NSRs falling with NIAs (existing high noise areas) may be more sensitive to increases in noise than those outside NIAs. Consideration will be given to such instances as part of the assessment of construction traffic noise impacts.

2.10.7.6 The sensitivity of residential NSRs is factored into the assessment criteria for noise and vibration impacts through the various guidance documents. The significance of effects at residential NSR is therefore directly related to magnitude of effect. However, additional consideration of sensitivity may be required in certain cases for non-residential NSRs. Consideration would also be given to the times that the specific NSR is expected to be used (e.g. if daytime only). The criteria used to determine the value and sensitivity of non-residential NSRs specific to noise and vibration are set out in Table 2.10.5. These values are based on standard practice.

Table 2.10.5: Criteria for determining value/sensitivity (Non-Residential NSRs)

Sensitivity/value	Criteria
Very High	Schools and education premises, hospitals, clinics.
High	Care Homes, places of worship, community centres, libraries.
Medium	Areas primarily used for leisure activities including PRowWs, sports facilities, and sites of historic or cultural importance, camp sites, hotels, gardens, parks.
Low	Offices, cafes/bars with external areas.
Negligible	Industrial or retail premises

Ascribing Impact Magnitude

Construction noise

- 2.10.7.7 Construction noise impacts will be assessed in accordance with BS 5228-1 and will take account of the guidance of DMRB.
- 2.10.7.8 Construction noise levels will be calculated at NSRs within the study area in accordance with the methodology described in Annex F of BS 5228-1. The predicted construction noise levels at NSRs will be compared against applicable noise thresholds as detailed in Section E.3.2 of BS 5228-1 (the 'ABC' method) together with temporal criteria as detailed in DMRB. Given the rural area of the majority of the Suffolk Onshore Scheme area, the lower threshold values (Category 'A') would be applied as a worst-case assessment to all residential NSR in lieu of baseline noise monitoring for construction impacts.
- 2.10.7.9 The lowest observed adverse effect level (LOAEL) and the significant adverse effect level (SOAEL) will be established in accordance with Table 2.10.6.

Table 2.10.6: Construction noise effect levels at residential receptors

Time period	LOAEL	SOAEL
Weekdays 7:00am to 7:00pm, and Saturdays 7:00am to 1:00pm	50dB L _{Aeq,T}	65dB L _{Aeq,T}
Weekdays 7:00pm to 11:00pm, Saturdays 1:00pm to 11:00pm, and Sundays 7:00am to 11:00pm	50dB L _{Aeq,T}	55dB L _{Aeq,T}
Night-time 11:00pm to 7:00am	40dB L _{Aeq,T}	45dB L _{Aeq,T}

Construction vibration

- 2.10.7.10 Construction vibration levels will be calculated and assessed in accordance with the methodologies described in BS 5228-2 and will take account of the guidance of DMRB. No vibration baseline study is proposed.
- 2.10.7.11 Vibration levels from construction activities will be calculated in accordance with the methodology described in Annex E of BS 5228-2. Predicted vibration levels will be compared against applicable guidance values for both potential annoyance to human receptors together with temporal criteria detailed in DMRB.
- 2.10.7.12 Construction vibration effect threshold levels, including applicable LOAEL and SOAEL, are shown Table 2.10.7.

Table 2.10.7: Construction vibration effect magnitudes at residential receptors

Magnitude	Vibration level mm/s PPV*	Effect
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Negligible	0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration
Small	0.3	Vibration might be just perceptible in residential environments (LOAEL)
Medium	1.0	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents (SOAEL)
Large	10	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments

* Peak Particle Velocity

Construction traffic noise

- 2.10.7.13 Noise from construction traffic on the public highway will be calculated in accordance with CRTN and assessed against the criteria detailed in DMRB. The BNL from roads within the construction traffic study area will be calculated in accordance with CRTN for the do-nothing and do-something scenarios in the construction year. The calculated BNL values will be compared to determine the magnitude of the impact as detailed in Table 2.10.8.

Table 2.10.8: Magnitude of impact from construction traffic at residential receptors

Magnitude	Increase in BNL of closest public road used for construction traffic (dB)
Large	Greater than or equal to 5.0
Medium	Greater than or equal to 3.0 and less than 5.0
Small	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

Operational converter station and substation noise

- 2.10.7.14 The assessment of operational noise will follow the methodology stated in BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142)¹⁹³.
- 2.10.7.15 Noise limits will be determined based on background sound level surveys at locations representative of nearby NSR. Surveys will be conducted in accordance with the requirements of BS 4142 and in general accordance with the methodology detailed in

¹⁹³ British Standards Institute (2019). BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. BSI

BS 7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures' (BS 7445)¹⁹⁴.

- 2.10.7.16 BS 4142 assesses the potential significance of effects by comparing the 'rating sound level' of an industrial source to the typically representative 'background sound level' at the location of nearby receptors. The sound rating is a combination of the specific sound level at the NSR and any applicable penalties that may be required for acoustic character, such as tonality or impulsivity.
- 2.10.7.17 The specific sound level at nearby NSR will be predicted by incorporating the available converter station design information in a computer noise model, based on the methodology detailed in ISO 9613.
- 2.10.7.18 The predicted sound rating levels will be compared against the relevant noise limits determined from the baseline sound level survey data. The lower the rating level is relative to the measured background sound level, the less likely it is that there will be an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 2.10.7.19 When considering context, BS 4142 references BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (BS 8233)¹⁹⁵ as providing context where background and rating noise levels are low. BS 8233 recommends internal sound levels in habitable spaces such as living rooms and bedrooms.
- 2.10.7.20 As noted above, it is anticipated that further detailed assessment of operational noise from the proposed converter station, once the design has been finalised, detailing specific mitigation measures would be secured via a condition attached to the outline planning permission, if granted. The assessment will therefore focus on setting of noise limits such that adverse impacts are avoided. It is standard practice to set the limit for operational noise such that the sound rating level does not exceed the background sound level, such that the impact is negligible (defined in BS 4142 as 'low'). The magnitude impacts for operational noise are detailed in Table 2.10.9.

Table 2.10.9: Magnitude of impact from operational converter station and substation noise

Magnitude	Comparison of sound rating level and background sound level
Large	Rating level > 10dB above the background sound level
Medium	Rating level between 5 and 9 dB above background sound level
Small	Rating level between 0 and 4 dB above background sound level
Negligible	Rating level below background sound level

¹⁹⁴ British Standards Institute (2003). BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures. BSI

¹⁹⁵ British Standards Institute (2014). BS 8233:2014 Guidance on sound insulation and noise reduction for buildings. BSI

Maintenance noise and vibration

2.10.7.21 Noise and vibration effects from maintenance activities during operation will be assessed as per construction noise and vibration impacts, as described above.

Decommissioning noise and vibration

2.10.7.22 Noise and vibration effects from decommissioning activities during operation will be assessed as per construction noise and vibration impacts, as described above.

Ascribing Significance of Effect

Construction, maintenance, and decommissioning noise and vibration – residential receptors

2.10.7.23 Noise and vibration from construction, maintenance, and decommissioning activities, and construction traffic noise will constitute a significant adverse effect where it is determined that a Large or Medium magnitude of impact will occur at a residential NSR for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; or
- a total number of days exceeding 40 in any six consecutive months.

Operational noise and vibration – residential receptors

2.10.7.24 Operational noise impacts will constitute a significant adverse effect where it is determined that a Large or Medium magnitude of impact will occur at residential NSRs.

Significance of effect at non-residential NSR

2.10.7.25 With regards to non-residential receptors, the significance of effect will be determined via the matrix shown in Table 2.10.10, taking account of the sensitivity of the NSR and the impact magnitude. For construction impacts, the duration of impact will also be taken into account, as above.

Table 2.10.10: Significance matrix at non-residential NSR

		NSR sensitivity:				
		Very High	High	Medium	Low	Negligible
Impact magnitude	Large	Major	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Moderate	Minor	Negligible
	Small	Moderate	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible

2.10.7.26 Major and moderate effects are typically considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement will also be applied in reaching conclusions as to the significance of effects.

2.10.8 Conclusion

2.10.8.1 This chapter has considered the scoping of noise and vibration impacts during the construction, operation, and decommissioning of the Suffolk Onshore Scheme and describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an EIA.

Proposed Scope of the Assessment

2.10.8.2 A summary of the proposed scope of assessment is provided in Table 2.10.11.

Table 2.10.11: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
Nearby NSRs	Construction noise	Construction	Scoped in for all options
Nearby NSRs and structures	Construction vibration	Construction	Scoped in for all options
Nearby NSRs	Construction traffic noise	Construction	Scoped in for all options
Nearby NSRs	Operational converter station and substation noise	Operation	Scoped in for all options
Nearby NSRs	Operational vibration	Operation	Scoped out for all options
Nearby NSRs	Operational road traffic	Operation	Scoped out for all options
Nearby NSRs	Operational maintenance noise and vibration	Operation	Scoped in for all options
Nearby NSRs	Decommissioning noise and vibration	Decommissioning	Scoped in for all options

2.11 Socio-economics, Recreation and Tourism

2.11.1 Introduction

- 2.11.1.1 This chapter presents how the socio-economics, recreation and tourism assessment will consider the potentially significant effects that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment, and how the potential significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).
- 2.11.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary hereafter referred to as the Suffolk Scoping Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.11.1.3 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description for the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;** and
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme.**
- 2.11.1.4 This chapter is supported by the following figure:
- **Figure 2.11.1 Suffolk Onshore Scheme Socio-economic Recreation and Tourism Study Areas and Receptors.**
- 2.11.1.5 The assessment will consider potentially significant socio-economic, recreation and tourism effects on the following receptors:
- Employment (including training and apprenticeship opportunities);
 - Users of recreational routes and Public Rights of Way (PRoW);
 - Local communities that could be affected by community severance; and
 - Residential properties, local businesses, visitor attractions, community facilities, open space and development land.

2.11.2 Regulatory and Planning Context

- 2.11.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. There is no legislation of relevance to the assessment of socio-economics, recreation and tourism effects. Detailed below is a

summary of planning policy of relevance to socio-economics, recreation and tourism. It includes relevant paragraphs of the Overarching National Policy Statement for Energy (EN1)¹⁹⁶; the National Policy Statement for Electricity Networks Infrastructure (EN-5)¹⁹⁷; the National Planning Policy Framework (NPPF)¹⁹⁸; and National Planning Practice Guidance (NPPG)¹⁹⁹, as well as relevant local planning policy.

Legislation

2.11.2.2 No legislation of relevance to socio-economic, recreation and tourism effects.

Planning Policy

National planning policy

National Policy Statement for Energy (EN-1)

2.11.2.3 Paragraphs 5.12.2 – 5.12.5 of the Overarching National Policy Statement for Energy (EN-1)¹⁹⁶ details requirements for NSIP applications to consider all relevant socio-economic impacts, and to highlight that socio-economic impacts may be linked to other impacts (for example links between visual impacts and tourism and local businesses). Socio-economic impacts may include:

- “the creation of jobs and training opportunities;
- the provision of additional local services;
- effects on tourism;
- the impact of a changing influx of workers during the different construction, operation and decommissioning phases...There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and
- cumulative effects.”

National Policy Statement for Energy (EN-5)

2.11.2.4 The National Policy Statement for Electricity Networks Infrastructure (EN-5)¹⁹⁷ supplements EN-1, with additional guidance specific to the development of electricity networks infrastructure. This document makes no reference to socio-economics, recreation or tourism.

¹⁹⁶ Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

¹⁹⁷ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

¹⁹⁸ Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

¹⁹⁹ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021). Planning Practice Guidance. [online] Available at: <https://www.gov.uk/government/collections/planning-practice-guidance>

National planning policy framework

2.11.2.5 The National Planning Policy Framework (NPPF)¹⁹⁸ sets out various policies with respect to the social and economic objectives of the planning system.

- Paragraph 8 outlines the economic objective of the planning system ‘to help build a strong, responsive, and competitive economy by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity’.
- Paragraph 100 states ‘decisions should protect and enhance public rights of way’.

National planning practice guidance

2.11.2.6 The National Planning Practice Guidance (NPPG)¹⁹⁹ provides guidance including on: planning and the economy and to consider the existing and potential future needs of the population in terms of economic development, jobs and employment opportunities; and on open space, sports and recreation facilities, public rights of way and local green space. The contents of the NPPG are not materially relevant to the assessment of socio-economic, recreation and tourism effects as the content does not influence the undertaking of the assessment of effects.

Local planning policy

2.11.2.7 Local planning policy to the socio-economic, recreation and tourism assessment includes:

- Suffolk County Council (SCC) Energy Infrastructure Policy²⁰⁰;
- Suffolk Coastal Local Plan, 2020²⁰¹, including:
 - Policy SCLP3.1: Strategy for Growth;
 - Policy SCLP3.4: Proposals for Major Energy Infrastructure Projects;
 - Policy SCLP6.1: Tourism;
 - Policy SCLP8.2: Open Space; and
- Leiston Neighbourhood Plan²⁰².

2.11.2.8 Additional planning guidance documents relevant to the socio-economic, recreation and tourism assessment includes:

- New Anglia Local Enterprise Partnership (LEP), Norfolk and Suffolk Economic Strategy²⁰³;

²⁰⁰ Suffolk County Council (2021). Suffolk County Council’s Energy Infrastructure Policy. [online] Available at: <https://www.suffolk.gov.uk/assets/planning-waste-and-environment/major-infrastructure-projects/SCC-Energy-Policy.pdf>

²⁰¹ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://eastsuffolk.inconsult.uk/consult.ti/suffolkcoastallocalplan2020/viewCompoundDoc?docid=11955764&partid=11958292>

²⁰² Leiston-cum-Sizewell Town Council (2017). Leiston Neighbourhood Plan 2015-2029. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Neighbourhood-Planning/Designated-Neighbourhood-Areas/Leiston/Leiston-NP-Made-Version-March-2017.pdf>

²⁰³ New Anglia (2022). Norfolk and Suffolk Economic Strategy. [online] Available at: <https://newanglia.co.uk/wp-content/uploads/2022/01/FINAL-Norfolk-and-Suffolk-economic-strategy-Jan-2022.pdf>

- New Anglia LEP, Local Energy East Strategy²⁰⁴;
- New Anglia LEP Economic Recovery Restart Plan²⁰⁵;
- New Anglia LEP Visitor Economy Recovery Plan²⁰⁶; and
- New Anglia LEP Energy Sector Recovery and Resilience Plan²⁰⁷.

2.11.3 Study Area

- 2.11.3.1 The study area for socio-economic, recreation and tourism varies depending on the likely spatial extent of the effect under consideration.
- 2.11.3.2 The Scoping Report sets out potential effects with respect to the Suffolk Scoping Boundary (as set out in **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**).
- 2.11.3.3 Effects on employment will be considered within the local authority of East Suffolk, the local authority that the Suffolk Scoping Boundary falls within.
- 2.11.3.4 Effects on users of recreational routes and PRoW will consider impacts on routes and PRoW likely to be affected by alterations in their use. This will include all routes located within 500m of the Suffolk Scoping Boundary.
- 2.11.3.5 The study area for local communities that could be affected by community severance will consider communities that may potentially be directly and indirectly affected by the Suffolk Onshore Scheme. These will include communities directly connected by recreational routes and PRoW. The communities that could be impacted are within 1km of the Suffolk Scoping Boundary and which is illustrated on **Figure 2.11.1 Suffolk Onshore Scheme Socio-economic Recreation and Tourism Study Areas and Receptors**.
- 2.11.3.6 The study area for residential properties, local businesses, visitor attractions relevant for tourism, community facilities, open space and development land will consider receptors that could be directly or indirectly affected by the Suffolk Onshore Scheme. The receptors that could be impacted are within 500m of the Suffolk Scoping Boundary **Figure 2.11.1 Suffolk Onshore Scheme Socio-economic Recreation and Tourism Study Areas and Receptors**. Potential significant effects included within the Landscape and Visual chapter will also be reviewed and receptors beyond 500m will be considered should significant amenity impacts be identified.

²⁰⁴ New Anglia (2018). Local Energy East Strategy. [online] Available at: <https://newanglia.co.uk/wp-content/uploads/2020/04/LEE-Strategy-LOW-RES.pdf>

²⁰⁵ New Anglia (2020). Economic Recovery Restart Plan. [online] Available at: <https://newanglia.co.uk/wp-content/uploads/2020/11/Recovery-Plan-Progress-Report-autumn-2020-FINAL.pdf>

²⁰⁶ New Anglia (2020). A Recovery Plan for the Visitor Economy. [online] Available at: https://newanglia.co.uk/wp-content/uploads/2020/07/New-Anglia_Norfolk-Suffolk-Unlimited_Visitor-Economy-Recovery-FOR-WEB.pdf

²⁰⁷ New Anglia (2020). Energy Sector Recovery and Resilience Plan. [online] Available at: <https://newanglia.co.uk/wp-content/uploads/2021/05/New-Anglia-LEP-Energy-Recovery-and-Resilience-Plan-V5.pdf>

2.11.4 Baseline Conditions

Data Sources

2.11.4.1 The socio-economic, recreation and tourism assessment baseline environment described in this section has been informed by the following data sources:

- Office of National Statistics (ONS), (2021), Mid-Year Population Estimates²⁰⁸;
- ONS, (2021), Claimant count by sex and age (May 2022)²⁰⁹;
- ONS, (2021), Annual Population Survey (January 2021 to December 2021)²¹⁰; and
- Ministry of Housing, Community and Local Government (MHCLG), (2020), English Indices of Deprivation (2019)²¹¹.

2.11.4.2 The baseline for recreational routes and PRow is based on:

- SCC Definitive Map and Statement of public rights of way²¹²; and
- Sustrans National Cycle Network route map²¹³.

2.11.4.3 The baseline for private assets is based on desk research with reference to:

- East Suffolk Policies Map²¹⁴

2.11.4.4 The baseline for development land is based on:

- Suffolk Coastal Local Plan; and
- SCC planning applications portals.

Baseline

2.11.4.5 The Suffolk Scoping Boundary is located within the East Suffolk local authority. In 2020, East Suffolk had an estimated population of approximately 250,300.

²⁰⁸ Office for National Statistics (2021). Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2020. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimate/latest>

²⁰⁹ Office for National Statistics (2022). CLA02: Claimant Count by age group (Experimental Statistics). [online] Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/outofworkbenefits/datasets/cla02claimantcountbyagegroup>

²¹⁰ Office for National Statistics (2021). Annual Population Survey (January 2020 to December 2020). [online] Available at: <https://www.nomisweb.co.uk/datasets/apsnew>

²¹¹ Ministry of Housing, Communities & Local Government (2019). English Indices of Deprivation 2019. [online] Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

²¹² Suffolk County Council (2022). Definitive Map and Statement of public rights of way. [online] Available at: <https://www.suffolk.gov.uk/roads-and-transport/public-rights-of-way-in-suffolk/view-definitive-maps-of-public-rights-of-way/> [Accessed July 2022].

²¹³ Ordnance Survey Maps (2022). Map of the National Cycle Network. [online] Available at: <https://explore.osmaps.com/?lat=52.229585&lon=1.342731&style=Standard&zoom=7.5461&overlays=os-ncn-layer&type=2d&placesCategory=> [Accessed April 2022].

²¹⁴ East Suffolk Council (2020). Suffolk Coastal Local Plan - Policies Map. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/Policies-Maps-Part-1-inc.-Erratum-updated-February-2021.pdf>

- 2.11.4.6 The Suffolk Scoping Boundary comprises predominantly agricultural land as well as a number of isolated residential properties. There are a number of towns and villages which lie outside of, but close to the Suffolk Scoping Boundary. These include:
- Aldeburgh town which lies adjacent to the south of the Suffolk Scoping Boundary;
 - Leiston town is located adjacent to the inner boundary of the Suffolk Scoping Boundary
 - Saxmundham town is adjacent to the western border of the Suffolk Scoping Boundary;
 - Aldringham village is adjacent to the inner boundary of the Suffolk Scoping Boundary;
 - Knodishall village is adjacent to the inner boundary of the Suffolk Scoping Boundary;
 - Friston village is adjacent to the Suffolk Scoping Boundary to the south west;
 - Sizewell village is adjacent to the northeast of the Suffolk Scoping Boundary; and
 - Benhall is a village located approximately 500m to the west of the Suffolk Scoping Boundary;
 - Theberton village is approximately 800m to the north of the Suffolk Scoping Boundary;
- 2.11.4.7 Approximately 6.8% of Lower Layer Super Output Areas (LSOAs) located in East Suffolk are ranked within the most deprived decile of LSOAs in England. Out of the 317 local authorities in England, East Suffolk is ranked as the 146th most deprived.

Employment and labour market

- 2.11.4.8 In 2020, the proportion of the population of East Suffolk that was of working-age (16-64 years) was 55.6% which was lower than the proportion for the East region (60.6%) and England and Wales (62.2%).
- 2.11.4.9 In 2021, the economic activity rate among the working age population in East Suffolk of 79.1% was lower than the East average (81.1%), but slightly higher than England and Wales (78.9%).
- 2.11.4.10 In the same year, the unemployment rate among the working age population in East Suffolk was 4.1%. This was higher than the East average (3.9%) but lower than across England and Wales (4.6%). The claimant count (as a proportion of residents aged 16-64 years), recorded in May 2022, was 3.0% in East Suffolk. This is broadly in line with the count in the East (3.1%) but lower than across England and Wales (3.9%).
- 2.11.4.11 In 2021 the proportion of the population that held a higher level NVQ Level 4+ qualification in East Suffolk (39.4%) was broadly in line with the proportion across the East (39.5%), but lower than across England and Wales (42.9%). The proportion of the population with no formal qualifications in East Suffolk (5.5%) was lower than both the East region (5.7%) and England and Wales (6.5%).

Recreational routes and PRow

- 2.11.4.12 The study area for recreational routes and PRow is intersected by a number of recreational routes and PRow, including National Cycle Network Route 42 (NCR 42), an on-road cycle route running between Friston and Leiston Abbey.

Residential properties

- 2.11.4.13 Residential areas in the communities of Aldeburgh, Aldringham, Knodishall, Friston, Behall Green, Saxmundham, Leiston, and Sizewell listed in paragraph 2.11.4.6 are located within the study area. The remainder of the study area for residential properties comprises a sparsely populated rural area and contains some dispersed private properties and farm buildings.

Business premises

- 2.11.4.14 There are a large number of businesses located within the study area.
- 2.11.4.15 A number of isolated businesses located within the Suffolk Scoping Boundary including Breedon Saxmundham Concrete Plant and Happy Days Retro Vacations near Saxmundham, Redhouse Christmas Barn and a holiday rental property near Benhall, a number of holiday rental properties and Aldringham Tea Room to the south of Aldringham, and Aldeburgh Golf Club northwest of Aldeburgh.
- 2.11.4.16 There are further businesses located within the settlements of Aldeburgh, Aldringham, Knodishall, Friston, Benhall, Saxmundham, Leiston, and Sizewell listed in paragraph 2.11.4.6.

Visitor attractions

- 2.11.4.17 The Scallop at Aldeburgh Beach lies within the southern portion of the Suffolk Scoping Boundary and within the study area. The Red House in Aldeburgh, a museum, lies with 100m to the south of the Suffolk Scoping Boundary. Leiston Abbey lies within 300m to north of the Suffolk Scoping Boundary.

Community facilities

- 2.11.4.18 There are a large number of community facilities within the study area. They are all located within settlements surrounding the Suffolk Scoping Boundary and are listed in Table 2.11.1.

Table 2.11.1: Community facilities within the study area

Settlement	Community facility	Type
Aldringham	Aldringham Care Home	Care home
Friston	Friston Village Hall	Community asset
Leiston	Summerhill School	Education

	Aylward Park School	Education
	Suffolk New College – On The Coast	Education
	Alde Valley Academy	Education
	Leiston Community Centre	Community asset
	Waterloo Centre	Community asset
	Leiston Library	Community asset
	The Leiston Surgery	Health and wellbeing
	Leiston Fire Station	Emergency services
	Leiston Leisure Centre	Sports and leisure
	Sizewell Sports and Social Club	Sports and leisure
Knodishall	Knodishall Village Hall	Community asset
	Coldfair Green County Primary School	Education
Leiston Abbey	Leiston Old Abbey Residential Home	Care home
	Pro Corda Leiston Abbey	Education

Open Space

2.11.4.19 There are a number of open spaces and publicly accessible greenspaces within the study area which are listed in Table 2.11.2.

Table 2.11.2: Open spaces within the study area

Settlement	Open space
Leiston	Leiston Park
	Leiston Allotments
	Leiston Primary School playing fields
Knodishall	Knodishall Playground
	Knodishall Common

Aldeburgh	Aldeburgh Beach
	Church Field Road open space
	Kemps Field
Saxmundham	Saxmundham Park
Friston	Friston Playground

Development land

2.11.4.20 There are four residential site allocations in the Suffolk Coastal Local Plan located within the study area:

- Allocation for up to 10 dwellings on the Land to the rear of Rose Hill (Policy SCLP12.27) - to the south east of the Suffolk Scoping Boundary near Aldeburgh;
- Allocation for up to 40 dwellings on the Land to the East of Aldeburgh Road (Policy SCLP12.42), also to the south east of the Suffolk Scoping Boundary near Aldringham;
- Allocation for up to 40 dwellings on the Land North-East of Street Farm in Saxmundham (Policy SCLP12.30) to the west of the Suffolk Scoping Boundary;
- Allocation for up to 16 dwellings on the Land at School Road in Knodishall (Policy SCLP12.55) located 500m north of the Suffolk Scoping Boundary.

2.11.4.21 In addition, there is one planning application for the development of a site to provide 15 dwellings in Leiston located approximately 400m of the inner boundary of the Suffolk Scoping Boundary (DC/22/1770/AM). The application is awaiting a decision.

Future Baseline

2.11.4.22 ONS population projections²¹⁵ show over the 10-year period from 2022 to 2032 the population across East Suffolk is expected to grow by 5.3% to approximately 268,800 people. This increase is greater than the projected rate of increase in the East (4.0%) and across England as a whole (4.0%) over the same period.

2.11.4.23 The future baseline for residential properties, businesses, community facilities, open spaces, visitor attractions and development land over the medium-term is highly uncertain. Due to this uncertainty, for the purposes of this assessment, it is assumed the future baseline for the Suffolk Onshore Scheme study area would be unchanged from the current baseline to the completion of the Suffolk Onshore Scheme, except where new development is expected to be delivered in line with allocated and planned development sites as set out above.

²¹⁵ Office for National Statistics (2018). Population Projections. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections>

2.11.5 Embedded and Control & Management Measures

Embedded Measures

- 2.11.5.1 Mitigation measures will be included in the design (Mitigation by Design) where practicable to help avoid, prevent or reduce effects on the environment. The Suffolk Onshore Scheme has been routed and sited to avoid residential areas where possible.

Control and Management Measures

- 2.11.5.2 An outline Code of Construction Practice (CoCP) is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the socio-economics, recreation and tourism assessment are:
- GG03: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP) and a Construction Traffic Management Plan (CTMP) will be produced prior to construction;
 - GG05: A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the CEMP. The Environmental Clerk of Works will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures;
 - GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition and use. Hedgerows, fences and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner agreement; and
 - GG26: Members of the community and local businesses will be kept informed regularly of the works through active community liaison. This will include notification of noisy activities, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the project. All construction-related complaints will be logged by the contractor(s) in a complaints register, together with a record of the responses given and actions taken.
- 2.11.5.3 Where possible, measures would be implemented to ensure accessibility to recreational routes and PRoWs, community facilities and healthcare facilities, residential properties, businesses, visitor attractions and development land is maintained. This will be achieved through the use of best practice measures, including with regard to phasing of construction works and if necessary, providing diversions for users. Severance will also be reduced through careful siting of construction compounds and lay down areas, and careful planning of construction activities through consultation with landowners. Where temporary or permanent disruption to PRoW or other recreational routes is unavoidable, suitable diversions would be agreed with the relevant local planning authorities and implemented where required.

2.11.5.4 Direct impacts to land use would be managed through negotiations with stakeholders including landowners and owners of businesses to mitigate impact.

2.11.6 Potential for Significant Effects

2.11.6.1 The socio-economics, recreation and tourism assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.

2.11.6.2 The proposed scope of the socio-economics recreation and tourism assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

2.11.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.

2.11.6.4 The potential for the Suffolk Onshore Scheme to result in the potential significant effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- generation of construction-related employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain;
- generation of Gross value added (GVA);
- potential temporary closure or diversions to PRow and recreational routes;
- potential temporary severance of access to community facilities for residents; and
- potential temporary adverse land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land.

Sources of operational impacts

- potential permanent closure or diversions to PRow and recreational routes;
- potential permanent severance of access to community facilities for residents;
- potential permanent adverse land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land;
- potential creation of permanent operational phase employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain; and
- potential generation of Gross value added (GVA) during the operational phase.

Sources of maintenance impacts

2.11.6.5 The sources of maintenance impacts are assessed to be the same as those listed as sources of construction impacts.

Sources of decommissioning impacts

2.11.6.6 The sources of decommissioning impacts are assessed to be the same as those listed as sources of construction impacts.

Potential impacts

2.11.6.7 Table 2.11.3 below identifies the potential impact that could result from the sources identified above.

Table 2.11.3: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction, maintenance and decommissioning	Generation of construction-related employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain.	Generation of construction-related employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk.	Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.	Scoped in
	Generation of Gross value added (GVA)	Generation of Gross value added (GVA) in East Suffolk,	Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			East Suffolk economies.	
	Potential temporary closure or diversions to PRow and recreational routes.	Potential temporary closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary causing disruption to users.	Yes -Disruption to PRow or other recreational routes during the construction maintenance and decommissioning phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential temporary severance of access to community facilities	Potential temporary severance of access to community facilities within 1km of the Suffolk Scoping Boundary for local residents, leading to deterioration of social cohesion and affecting mental health.	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential temporary land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land.	Potential temporary land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the	Yes -A number of residential properties, local businesses, visitor attractions, community facilities, open spaces and development land allocations have been identified within the study area	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
		Suffolk Scoping Boundary.	which could be impacted by land take or amenity impacts.	
Operation	Potential permanent closure or diversions to PRow and recreational routes.	Potential permanent closure or diversions to PRow and recreational routes within 500 m of the Suffolk Scoping Boundary.	Yes -Disruption to PRow or other recreational routes during the operation phase would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential permanent severance of access to community facilities.	Potential permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary for local residents, leading to deterioration of social cohesion and affecting mental health.	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential permanent adverse land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or	Potential permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the	Yes -A number of residential properties, local businesses, visitor attractions, community facilities, open spaces and development land allocations have been identified within the study area	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
	development land.	Suffolk Scoping Boundary.	which could be impacted by land take or amenity impacts.	
	Creation of permanent operational phase employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain.	Creation of permanent operational phase employment, training and apprenticeship opportunities, both directly at work sites and indirectly in East Suffolk.	No - The scale of operational employment generated is likely to be very limited.	Scoped out
	Generation of Gross value added (GVA) during the operational phase.	Generation of Gross value added (GVA) in East Suffolk during the operational phase.	No - The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.	Scoped out

Impact Pathways with Receptors (Step 2)

- 2.11.6.8 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potentially significant effects on the receptors within the socioeconomics, recreation and tourism study areas.

Suffolk Converter Station Site 1 Emerging Preference

- 2.11.6.9 Table 2.11.4 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Emerging Preference as shown on as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.11.4: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Generation of employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk.	Employment levels within East Suffolk.	<p>Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.</p> <p>No - The scale of operational employment generated is likely to be very limited.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Generation of Gross value added (GVA) in East Suffolk.	Local economy within East Suffolk.	<p>Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy.</p> <p>No - The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Potential temporary or permanent closure or diversions to PRoW and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRoW and recreational routes within 500m of Suffolk Scoping Boundary.	<p>Yes -Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions</p>	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
		would be agreed with SCC.	
Potential temporary or permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary.	Local communities within 1km of the Suffolk Scoping Boundary, including Aldeburgh, Aldringham, Knodishall and Friston.	Yes - As above, disruption to PRow or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all project phases
Potential temporary or permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the Suffolk Scoping Boundary.	<p>Residential properties within 500m of the Suffolk Scoping Boundary including those located in Aldeburgh, Aldringham, Knodishall and Friston.</p> <hr/> <p>Businesses within 500m of the Suffolk Scoping Boundary including those located in Aldeburgh, Aldringham, Knodishall and Friston.</p> <hr/> <p>Visitor attractions within 500m of the Suffolk Scoping Boundary including The Scallop at Aldeburgh Beach and The Red House in Aldeburgh.</p> <hr/> <p>Community facilities within 500m of the Suffolk Scoping Boundary</p>	Yes - A number of residential properties, local businesses, visitor attractions, community facilities, open spaces and development land allocations have been identified within the study area.	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
	including, Aldringham Care Home, Friston Village Hall, Knodishall Village Hall, Coldfair Green County Primary School.		
	Development land within 500m of the Suffolk Scoping Boundary including Land to the rear of Rose Hill, Land to the East of Aldeburgh Road and Land at School Road.		
	Open space within 500m of the Suffolk Scoping Boundary including Knodishall Playground, Knodishall Common, Aldeburgh Beach, Church Field Road open space, Kemps Field and Friston Playground.		

Suffolk Converter Station Site 1 Alternative

2.11.6.10 Table 2.11.5 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 1 Alternative Preference as shown on as shown on **Figure 2.1.7 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area** and.

Table 2.11.5: Impact Pathways with receptors– Suffolk Site 1 Alternative

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Generation of employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk.	Employment levels within East Suffolk.	<p>Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.</p> <p>No - The scale of operational employment generated is likely to be very limited.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Generation of Gross value added (GVA) in East Suffolk.	Local economy within East Suffolk.	<p>Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy. The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Potential temporary or permanent closure or diversions to PRoW and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRoW and recreational routes within 500m of Suffolk Scoping Boundary.	<p>Yes -Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions</p>	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
		would be agreed with SCC.	
Potential temporary or permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary.	Local communities within 1km of the Suffolk Scoping Boundary including Sizewell, Leiston, Aldringham, Knodishall and Friston.	Yes - As above, disruption to PRoW or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all project phases
Potential temporary or permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the Suffolk Scoping Boundary.	<p>Residential properties within 500m of the Suffolk Scoping Boundary including those located in Sizewell, Leiston, Aldringham, Knodishall and Friston.</p> <p>Businesses within 500m of the Suffolk Scoping Boundary including those located in Sizewell, Leiston, Aldringham, Knodishall and Friston.</p> <p>Community facilities within 500m of the Suffolk Scoping Boundary including Aldringham Care Home, Friston Village Hall, Alde Valley Academy, Suffolk New College, Leiston Leisure Centre,</p>	Yes - A number of residential properties, local businesses, community facilities, open spaces and development land allocations have been identified within the study area.	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Sizewell Sports and Social Club, Knodishall Village Hall and Coldfair Green County Primary School.		
	Development land within 500m of the Suffolk Scoping Boundary including Land at School Road and Land to the East of Aldeburgh Road.		
	Open space within 500m of the Suffolk Scoping Boundary including Friston Playground, Knodishall Playground, Knodishall Common, Leiston Allotments and Leiston Primary School playing fields.		
	Visitor attractions within 500m of the Suffolk Scoping Boundary		

Suffolk Converter Station Site 3 Emerging Preference

2.11.6.11 Table 2.11.6 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Emerging Preference as shown on as shown on and **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**

Table 2.11.6: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
<p>Generation of employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk.</p>	<p>Employment levels within East Suffolk.</p>	<p>Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.</p> <p>No - The scale of operational employment generated is likely to be very limited.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
<p>Generation of Gross value added (GVA) in East Suffolk.</p>	<p>Local economy within East Suffolk.</p>	<p>Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy.</p> <p>No - The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
<p>Potential temporary or permanent closure or diversions to PRow and recreational routes within 500m of the</p>	<p>Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.</p>	<p>Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions</p>	<p>Proposed to be scoped in for all project phases</p>

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Suffolk Scoping Boundary.		would be agreed with SCC.	
Potential temporary or permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary.	Local communities within 1km of the Suffolk Scoping Boundary including Benhall, Saxmundham, Friston, Knodishall, Aldringham and Aldeburgh.	Yes - As above, disruption to PRoW or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all project phases
Potential temporary or permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the Suffolk Scoping Boundary.	Residential properties within 500m of the Suffolk Scoping Boundary including those located in Saxmundham, Friston, Knodishall, Aldringham and Aldeburgh. <hr/> Businesses within 500m of the Suffolk Scoping Boundary including those located in Saxmundham, Friston, Knodishall, Aldringham and Aldeburgh. <hr/> Visitor attractions within 500m of the Suffolk Scoping Boundary including The Scallop at Aldeburgh Beach and The Red House in Aldeburgh.	Yes - A number of residential properties, local businesses, visitor attractions, community facilities, open spaces and development land allocations have been identified within the study area.	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Community facilities within 500m of the Suffolk Scoping Boundary including Aldringham Care Home, Friston Village Hall, Knodishall Village Hall and Coldfair Green County Primary School.		
	Development land within 500m of the Suffolk Scoping Boundary including Land to the rear of Rose Hill, Land to the East of Aldeburgh Road, Land at School Road and Land North-East of Street Farm		
	Open space within 500m of the Suffolk Scoping Boundary including Knodishall Playground, Knodishall Common, Aldeburgh Beach, Church Field Road open space, Kemps Field, Friston Playground and Saxmundam Park.		

Suffolk Converter Station Site 3 Alternative (Option 1)

2.11.6.12 Table 2.11.7 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 1) as shown on as shown on **Figure 2.1.7 Suffolk Site 3**

Alternative (Option 1) and Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area.

Table 2.11.7: Impact pathways with receptors – Suffolk Site 3 Alternative (Option1)

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Generation of employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk	Employment levels within East Suffolk.	<p>Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.</p> <p>No - The scale of operational employment generated is likely to be very limited.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Generation of Gross value added (GVA) in East Suffolk.	Local economy within East Suffolk.	<p>Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy.</p> <p>No - The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Potential temporary or permanent closure or diversions to PRoW and recreational	Users of PRoW and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRoW or other recreational routes during all phases would be avoided as	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
routes within 500m of the Suffolk Scoping Boundary.		far as possible. Where necessary, suitable diversions would be agreed with SCC.	
Potential temporary or permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary.	Local communities within 1km of the Suffolk Scoping Boundary including Sizewell, Leiston, Saxmundham, Benhall, Kondishall and Friston.	Yes - As above, disruption to PRoW or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all project phases
Potential temporary or permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the Suffolk Scoping Boundary.	<p>Residential properties within 500m of the Suffolk Scoping Boundary including those located in Sizewell, Leiston, Saxmundham and Friston.</p> <p>Businesses within 500m of the Suffolk Scoping Boundary including those located in Sizewell, Leiston, Saxmundham and Friston.</p> <p>Visitor attractions within 500m of the Suffolk Scoping Boundary including Leiston Abbey.</p> <p>Community facilities within 500m of the Suffolk Scoping Boundary including Friston Village Hall, Summerhill School, Aylward</p>	Yes -A number of residential properties, local businesses, visitor attractions, community facilities, open spaces and development land allocations have been identified within the study area.	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
	Park School, Suffolk New College, Leiston Community Centre, Waterloo Centre, Leiston Library, The Leiston Surgery, Leiston Fire Station, Sizewell Sports and Social Club, Leiston Old Abbey Residential Home and Pro Corda Leiston Abbey.		
	Development land within 500m of the Suffolk Scoping Boundary including Land North-East of Street Farm and planning application DC/22/1770/AM.		
	Open space within 500m of the Suffolk Scoping Boundary including, Leiston Park, Leiston Allotments, Leiston Primary School Playing Fields, Saxmundam Park and Friston Playground.		

Suffolk Converter Station Site 3 Alternative (Option 2)

2.11.6.13 Table 2.11.8 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment for the Suffolk Site 3 Alternative (Option 2) as shown on as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 2) Option Area** and

Table 2.11.8: Impact pathways with receptors– Suffolk Site 3 Alternative (Option 2)

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Generation of employment, training and apprenticeship opportunities, both directly at work sites and indirectly in the supply chain in East Suffolk	Employment levels within East Suffolk.	<p>Yes -The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases.</p> <p>No - The scale of operational employment generated is likely to be very limited.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Generation of Gross value added (GVA) in East Suffolk.	Local economy within East Suffolk.	<p>Yes -The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy.</p> <p>No - The scale of operational employment generated is likely to be very limited and therefore any effect on GVA will be small.</p>	<p>Proposed to be scoped in for construction, maintenance and decommissioning</p> <p>Scoped out for operation</p>
Potential temporary or permanent closure or diversions to PRow and recreational routes within 500m of the	Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.	<p>Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions</p>	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
Suffolk Scoping Boundary.		would be agreed with SCC.	
Potential temporary or permanent severance of access to community facilities within 1km of the Suffolk Scoping Boundary.	Local communities within 1km of the Suffolk Scoping Boundary including Saxmunham, Benhall, Friston, Knodishall, Aldringham, Leiston and Sizewell.	Yes - As above, disruption to PRow or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all project phases
Potential temporary or permanent land take or amenity impacts on residential properties, local businesses, visitor attractions, community facilities, open space or development land within 500m of the Suffolk Scoping Boundary.	Residential properties within 500m of the Suffolk Scoping Boundary including those located in Saxmunham, Friston, Knodishall, Aldringham, Leiston and Sizewell. Businesses within 500m of the Suffolk Scoping Boundary including those located in Saxmundham, Friston, Knodishall, Aldringham, Leiston and Sizewell. Community facilities within 500m of the Suffolk Scoping Boundary including Aldringham Care Home, Friston	Yes -A number of residential properties, local businesses, community facilities, open spaces and development land allocations have been identified within the study area.	Proposed to be scoped in for all project phases

Impact	Receptors	Potential for significant effects	Proposed to be scoped in/out
	<p>Village Hall, Alde Valley Academy, Suffolk New College, Leiston Leisure Centre, Sizewell Sports and Social Club, Knodishall Village Hall and Coldfair Green County Primary School.</p>		
	<p>Development land within 500m of the Suffolk Scoping Boundary including Land at School Road, Land to the East of Aldeburgh Road and Land North-East of Street Farm.</p>		
	<p>Open space within 500m of the Suffolk Scoping Boundary including Leiston Allotments, Leiston Primary School playing fields, Knodishall Playground, Knodishall Common, Saxmundham Park and Friston Playground.</p>		
	<p>Visitor attractions within 500m of the Suffolk Scoping Boundary</p>		

2.11.7 Proposed Assessment Methodology

2.11.7.1 The assessment methodology for the EIA is outlined in **Part 1, Chapter 5, EIA Approach and Methodology**.

Proposed Data Sources

2.11.7.2 A desk-based baseline assessment will be undertaken using a range of sources to provide a description of the socio-economic conditions within the socio-economic and land use study areas set out above. This will be done using established statistical sources, and in consultation with stakeholders, where relevant. Relevant policy will be reviewed at the local regional and national levels to identify the key issues of relevance to the Project.

Proposed Assessment Methodology

2.11.7.3 An assessment of potential impacts will be undertaken to determine the effect of the Suffolk Onshore Scheme on the baseline socio-economic conditions. The methodology for assessing socio-economic impacts will follow standard EIA guidance and will entail:

- Assessment of the likely scale, permanence and significance of effects associated with socio-economics, recreation & tourism receptors; and
- An assessment of the potential cumulative impacts with other projects within the surrounding area.

2.11.7.4 The assessment of potential socio-economic impacts will use policy thresholds and expert judgment to assess the scale and nature of the impacts of the Project against baseline conditions. For socio-economics, recreation and tourism there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that effects are categorised based upon the relationship between the scale (or magnitude) of effect and the sensitivity (or value) of the affected resource or receptor.

2.11.7.5 As such, the socio-economics, recreation and tourism effects will be assessed on the basis of:

- *Consideration of sensitivity to impact:* specific values in terms of sensitivity are not attributed to socio-economic resources/receptors due to their diverse nature and scale, however the assessment takes account of the qualitative (rather than quantitative) 'sensitivity' of each receptor and, in particular, their ability to respond to change based on recent rates of change and turnover (if appropriate); and
- *Scale of impact:* this entails consideration of the size of the impact on people or business in the context of the area in which effects will be experienced.

2.11.7.6 The assessment aims to be objective and quantify effects as far as possible. However, some effects can only be evaluated on a qualitative basis. Effects are proposed to be defined as follows:

- *Beneficial classifications of effect*: indicate an advantageous or beneficial effect on an area, which may be minor, moderate, or major in effect;
- *Negligible classifications of effect*: indicate imperceptible effects on an area;
- *Adverse classifications of effect*: indicate a disadvantageous or adverse effect on an area, which may be minor, moderate or major in effect; and
- *No effect classifications*: indicate that there are no effects on an area.

2.11.7.7 Based on consideration of the above, where an effect is assessed as being beneficial or adverse, the scale of the effect are proposed to be assigned using the below criteria:

- *Minor*: a small number of receptors are beneficially or adversely affected. The effect will make a small measurable positive or negative difference on receptors at the relevant area(s) of effect;
- *Moderate*: a noticeable number of receptors are beneficially or adversely affected. The effect will make a measurable positive or negative difference on receptors at the relevant area(s) of effect; and
- *Major*: all or a large number of receptors are beneficially or adversely affected. The effect will make a measurable positive or negative difference on receptors at the relevant area(s) of effect.

2.11.7.8 Those effects which are found to be moderate or major are considered to be 'significant' and those which are minor or negligible are 'not significant'.

2.11.7.9 Duration of impact will also be considered, with more weight given to reversible long-term or permanent changes than to temporary ones. Temporary impacts are considered to be those associated with the construction works. Long-term reversible impacts are generally those associated with the completed and operational development.

Assumptions and Limitations

2.11.7.10 The commercial agreement for land, including productive land, between the proponent and land owners is beyond the scope of this assessment and the future Environmental Statement (ES) documentation.

2.11.7.11 The approximately four year construction period is expected to require a peak workforce across the Suffolk Onshore, Kent Onshore and Offshore Schemes of between 300-400 workers. A proportion of these workers are likely to live locally to the site, while a proportion will travel to the site to work. More detail on the average and peak number of workers expected to work on each of the Offshore and Onshore Schemes across the construction period, and the proportion of workers who will be expected to live locally to the site will be set out in the Preliminary Environmental Information Report.

2.11.8 Conclusion

2.11.8.1 This chapter of the Scoping Report has set out the proposed scope and methodology for the ES assessment of socio-economic effects arising from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. The socio-economic, recreation and tourism receptors that have been identified within the respective study areas surrounding the Suffolk Onshore Scheme include local communities, the local economy within East Suffolk, users of PRoW and open space, residential and business properties, visitor attractions, development land, and community facilities within the respective study areas. The preliminary baseline assessment indicates that there is the potential for significant effects on these receptors.

Proposed Scope of the Assessment

2.11.8.2 A summary of the proposed scope of the assessment is provided in Table 2.11.9

Table 2.11.9: Proposed scope of the assessment

Receptor	Potential for significant effect	Project phase(s)	Proposed to be scoped in/out and for which option
Employment levels within East Suffolk	The Suffolk Onshore Scheme will generate direct and indirect temporary employment, training and apprenticeship opportunities both on Site and in the supply chain during the construction, maintenance and decommissioning phases. The scale of operational employment generated is likely to be very limited.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped out for all options
Local economy within East Suffolk	The employment and wider economic activity created during the construction maintenance and decommissioning phases will generate GVA within the local East Suffolk economy. The scale of operational employment generated is likely to be very limited	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped out for all options

	and therefore any effect on GVA will be small.		
Users of PRow and recreational routes within 500 m of the Suffolk Scoping Boundary.	Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Local communities within 1 km of Suffolk Scoping Boundary.	As above, disruption to PRow or other recreational routes would be avoided as far as possible at all phases. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Residential properties within 500m of the Suffolk Scoping Boundary.	A number of residential properties, local businesses, community facilities, open spaces and development land allocations have been identified within the study area.	Construction, maintenance and decommissioning	Scoped in for all options
Businesses within 500m of the Suffolk Scoping Boundary		Operation	Scoped in for all options
Community facilities within 500m of the Suffolk Scoping Boundary			
Development land within 500m of the Suffolk Scoping Boundary			
Open space within 500m of the Suffolk Scoping Boundary			

Visitor attractions within 500m of the Suffolk Scoping Boundary	Visitor attractions have been identified in the study area for Site 1 – Emerging Preference, Site 3 – Emerging Preference and Site 3 – Alternative (Option 1).	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options

2.12 Health and Wellbeing

2.12.1 Introduction

- 2.12.1.1 This chapter presents how the Health and Wellbeing assessment will consider the potential effects that may arise from the construction, and operation, maintenance and decommissioning of the Suffolk Onshore Scheme (as described in **Part 1, Chapter 4, Description of the Project**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential effects to be considered within the assessment, and how the potential effects will be assessed for the purpose of an EIA.
- 2.12.1.2 The Project Scoping Boundary is illustrated on **Figure 1.1.1 Project Scoping Boundary** and the Suffolk Onshore Scheme Scoping Boundary (hereafter referred to as the Suffolk Scoping Boundary) is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary**.
- 2.12.1.3 The assessment will consider potential health and wellbeing effects on the following receptors:
- Quality of life and safety of local residents, workers and visitors;
 - Users of recreational routes and Public Rights of Way (PRoW);
 - Users of open space;
 - Users of local community services and social infrastructure; and
 - Local communities that could be affected by community severance.
- 2.12.1.4 This chapter should be read in conjunction with:
- **Part 1, Chapter 4, Description of the Project;**
 - **Part 1, Chapter 5, EIA Approach and Methodology;**
 - **Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;**
 - **Part 2, Chapter 2, Landscape and Visual;**
 - **Part 2, Chapter 6, Geology and Hydrogeology;**
 - **Part 2, Chapter 8, Traffic and Transport;**
 - **Part 2, Chapter 9, Air Quality;**
 - **Part 2, Chapter 10, Noise and Vibration;** and
 - **Part 2, Chapter 11, Socio-economics Recreation and Tourism**
- 2.12.1.5 This chapter is supported by the following figure:

- **Figure 2.12.1 Suffolk Onshore Scheme Health and Wellbeing Study Areas and Receptors.**

2.12.2 Regulatory and Planning Context

2.12.2.1 **Part 1, Chapter 2, Regulatory and Planning Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy and guidance relevant to the assessment of potential effects on health and wellbeing associated with the construction, operation, maintenance and decommissioning of the Project is presented below.

Legislation

2.12.2.2 Relevant legislation includes the Planning Act 2008²¹⁶ provides the legislative basis for, and defines, the application process under which a Development Consent Order (DCO) is sought.

2.12.2.3 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017; and The Marine Works (Environmental Impact Assessment) Regulations 2007²¹⁷ also require the EIA for infrastructure projects to consider potential impacts on health and wellbeing.

Planning Policy

National planning policy

National Policy Statement for Energy (EN-1)

2.12.2.4 Paragraphs 4.3.1 – 4.3.5 of the Overarching National Policy Statement for Energy (NPS EN-1)¹⁹⁶ details requirements for National Policy Statement (NPS) applications to consider all relevant impacts to health and wellbeing.

National Policy Statement for Energy (EN-5)

2.12.2.5 The NPS for Electricity Networks Infrastructure (NPS EN-5)¹⁹⁷ supplements EN-1, with additional guidance specific to the development for electricity networks infrastructure. This document provides guidance on the effects of electro-magnetic fields (EMFs) and their impact on health.

National Planning Policy Framework (NPPF)

2.12.2.6 The National Planning Policy Framework (NPPF)²¹⁸ sets out various policies with respect to the health and wellbeing objectives of the planning system. Chapter 8 on ‘Promoting healthy and safe communities’ outlines the health and community

²¹⁶ The Planning Act 2008 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>

²¹⁷ Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). [online] Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

²¹⁸ Ministry of Housing Communities & Local Government (2021). National Planning Policy Framework. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

objectives of the NPPF, including the management of PRoW access to open spaces and access to community amenities.

National planning practice guidance

2.12.2.7 The National Planning Practice Guidance (NPPG)²¹⁹ provides additional guidance to the NPPF. Guidance of particular relevance to health includes Paragraphs 92 to 103 which set out how the design and use of the built and natural environment are major determinants of health and wellbeing, and how in turn positive planning can contribute to healthier communities.

Additional national guidance

2.12.2.8 Additional national guidance relevant to health and wellbeing includes:

- Design Manual for Roads and Bridges (DMRB) Document LA112²²⁰;
- NHS Healthy Urban Development Unit (HUDU)²²¹ Rapid Health Impact Assessment (HIA) Tool;
- Public Health England (PHE) Guidance: Spatial Planning for Health: An evidence resource for designing healthier places²²²;
- PHE Strategy 2020 to 2025²²³;
- The Marmot Review: Fair Society Healthy Lives (2010)²²⁴;
- Health Equity in England 10 Years On (2020)²²⁵; and
- Build Back Fairer – The Covid-19 Marmot Review (2020)²²⁶.

Local planning policy

2.12.2.9 Local planning policy and guidance of relevance to the socio-economic, recreation and tourism assessment includes:

²¹⁹ Department for Levelling Up, Housing and Communities, and Ministry of Housing Communities & Local Government (2019). Planning Practice Guidance. [online] Available at: <https://www.gov.uk/government/collections/planning-practice-guidance>

²²⁰ Highways England (2020). Design Manual for Roads and Bridges: LA112 - Population and human health. v.11. Design Manual for Roads and Bridges, Volume 11, Section 3, Part 6. Population and human health. LA112.

²²¹ NHS London Healthy Urban Development Unit (2019). Rapid Health Impact Assessment Tool. [online] Available at: <https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf#:~:text=The%20Rapid%20HIA%20tool%20The%20tool%20is%20designed,renewal%20programmes%20and%20outline%20and%20etailed%20planning%20applications.>

²²² Public Health England (2017). Spatial Planning for Health: An evidence resource for designing healthier places. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729727/spatial_planning_for_health.pdf

²²³ Public Health England (2019). PHE Strategy 2020 to 2025. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831562/PHE_Strategy_2020-25.pdf

²²⁴ Marmot, M. (2010). Fair Society, Healthy Lives: The Marmot Review. Strategic Review of Health Inequalities in England Post 2010. [online] Available at: <https://www.parliament.uk/globalassets/documents/fair-society-healthy-lives-full-report.pdf>

²²⁵ Marmot, M., Allen, J., Boyce, T., Goldblatt, P., and Morrison, J. (2020). Health Equity in England: The Marmot Review 10 Years On. [online] Available at: <https://www.health.org.uk/publications/reports/the-marmot-review-10-years-on>

²²⁶ Marmot, M., Allen, J., Goldblatt, P., Morrison, J., and Herd, E. (2020). Build Back Fairer: The COVID-19 Marmot Review. [online] Available at: <https://www.health.org.uk/publications/build-back-fairer-the-covid-19-marmot-review>

- New Anglia LEP, Local Energy East Strategy²²⁷;
- Suffolk County Council (SCC) Energy Infrastructure Policy²²⁸;
- Suffolk Coastal Local Plan, 2020²²⁹, including:
 - Policy SCLP3.4: Proposals for Major Energy Infrastructure Projects; and
 - Policy SCLP8.2: Open Space.
- Leiston Neighbourhood Plan; and²³⁰
- Draft East Suffolk Cycling and Walking Strategy²³¹.

2.12.3 Study Area

2.12.3.1 The study area for the health and wellbeing assessment will vary by the type of impact being assessed, these include:

- The human health profile baseline study area will comprise a local ward area comprising the wards in which the Suffolk Onshore Scheme is located, within which there is a high likelihood that effects arising from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme could be experienced: Aldeburgh and Leiston ward and Saxmundam ward in East Suffolk. Where data is not available at the ward level, local authority level data will be provided for East Suffolk district.
- The study areas for assessing the health and wellbeing impacts of the Suffolk Onshore Scheme will be influenced by the geographic extent of the relevant technical assessments, these include:
 - **Part 2, Chapter 2, Landscape and Visual;**
 - **Part 2, Chapter 6, Geology and Hydrogeology;**
 - **Part 2, Chapter 8, Transport and Transport;**
 - **Part 2, Chapter 9, Air Quality;**
 - **Part 2, Chapter 10, Noise and Vibration;** and
 - **Part 2, Chapter 11, Socio-economics, Recreation and Tourism.**

2.12.3.2 The assessment will refer to the study areas identified by the relevant EIA chapters.

²²⁷ New Anglia (2018). Local Energy East Strategy. [online] Available at: <https://newanglia.co.uk/wp-content/uploads/2020/04/LEE-Strategy-LOW-RES.pdf>

²²⁸ Suffolk County Council (2021). Suffolk County Council's Energy Infrastructure Policy. [online] Available at: <https://www.suffolk.gov.uk/assets/planning-waste-and-environment/major-infrastructure-projects/SCC-Energy-Policy.pdf>

²²⁹ East Suffolk Council (2020). Suffolk Coastal Local Plan. [online] Available at: <https://eastsuffolk.inconsult.uk/consult.ti/suffolkcoastallocalplan2020/viewCompoundDoc?docid=11955764&partid=11958292>

²³⁰ Leiston-cum-Sizewell Town Council (2017). Leiston Neighbourhood Plan 2015-2029. [online] Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Neighbourhood-Planning/Designated-Neighbourhood-Areas/Leiston/Leiston-NP-Made-Version-March-2017.pdf>

²³¹ East Suffolk Council (2021). Draft East Suffolk Cycling and Walking Strategy. [online] Available at: <https://storymaps.arcgis.com/stories/cbc57e4a9cc24e4e7d174fb34b1bf0e>

2.12.4 Baseline Conditions

Data Sources

2.12.4.1 This overview of community health indicators is based on the following public data sources:

- Office for National Statistics (ONS). Mid-year sub-national population estimate data (2020)²³²;
- ONS 2011 Census Data²³³;
- PHE Local Health Data²³⁴; and
- ONS Claimant Count Data²³⁵.

Baseline

2.12.4.2 Table 2.12.1 sets out a summary of key health indicators across the local ward and local authority study areas, compared to regional (East) and national (England) averages.

Table 2.12.1: Community health profile

	Local wards	East Suffolk/Suffolk Coastal*	East of England	England
Population (2020)	16,990	250,373	6,269,161	56,550,138
Population aged under 16 (%) (2020)	16.0%	16.7%	19.4%	19.2%
Population aged over 65 (%) (2020)	30.9%	27.7%	20.0%	18.5%
Unemployment rate	4.2%	3.9%	5.3%	6.3%
Unemployment (% working age population claiming out of work benefits)	2.7%	2.8%	3.0%	3.8%

²³² Office for National Statistics (2020). Sub-national population projections for England. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojection sforengland/2018based>

²³³ Office for National Statistics (2012). Census 2011. [online] Available at: <https://www.ons.gov.uk/census/2011census>

²³⁴ Office for Health Improvement and Disparities (2019). Local Health. [online] Available at: <https://www.gov.uk/government/collections/local-health-public-health-data-and-mapping-tool-for-small-areas>

²³⁵ Office for National Statistics (2022). CLA02: Claimant Count by age group (Experimental Statistics). [online] Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/outofworkbenefits/datasets/cla02claimantcountbyagegroup>

General Health – bad or very bad (%)	5.9%	4.5%	4.7%	5.5%
Long term health problem or disability (%)	23.0%	18.5%	16.7%	17.6%
Life Expectancy at Birth (males) (2018-2020)	N/a	80.4	80.2	79.4
Life Expectancy at Birth (females) (2018-2020)	N/a	83.8	83.8	83.1
Inequality in Life Expectancy at Birth (males 2018-2020)	N/a	7.3	7.9	9.7
Inequality in Life Expectancy at Birth (females 2018-2020)	N/a	5.4	6.2	7.9
Obese children (Year 6) (%)	N/a	15.8%	19.1%	21.0%
Under 75 mortality rate from all causes (2018-2020) (per 100,000 people)	N/a	297.6	303.5	336.5

*Prior to 2015 the Suffolk Onshore Scheme was located in Suffolk Coastal Local Authority.

Future Baseline

- 2.12.4.3 ONS population projections²³⁶ show over the 10-year period from 2022 to 2032 the population across East Suffolk is expected to grow by 5.3% to approximately 268,800 people. This increase is greater than the projected rate of increase in the East (4.0%) and across England as a whole (4.0%) over the same period.
- 2.12.4.4 Due to the broad range of individual and environmental determinants that can influence physical and mental health outcomes, the future community health baseline over the medium-term is highly uncertain. Due to this uncertainty, for the purposes of this assessment, it is assumed the future baseline for the Suffolk Onshore Scheme study area would be unchanged from the current baseline to the completion of the Suffolk Onshore Scheme.

²³⁶ Office for National Statistics (2018). Population Projections. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections>

2.12.5 Embedded and Control & Management Measures

Embedded Measures

- 2.12.5.1 The Suffolk Onshore Scheme has been routed and sited to avoid residential areas where possible.
- 2.12.5.2 The design of the Suffolk Onshore Scheme will be compliant with the guidelines and policies relating to electromagnetic fields stated in NPS EN-5, including the International Commission on Non-Ionizing Radiation Protection guidelines (1998).

Control and Management Measures

- 2.12.5.3 An outline Code of Construction Practice (CoCP) for the Suffolk Onshore Scheme is provided in **Appendix 1.4.A Outline Code of Construction Practice**. Measures outlined in the CoCP which are relevant to the control and management of impacts that could affect health and wellbeing are:
- GG02GG03: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP) and a Construction Traffic Management Plan (CTMP) will be produced prior to construction;
 - GG05: A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works (ECoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls as outlined in the CEMP. The ECoW will monitor the works to ensure these proceed in accordance with the relevant environmental measures as set out in the DCO application and its Environmental Statement (ES) and adhere to the required best practice and mitigation measures as set out in the relevant applicable guidelines;
 - GG06: Construction workers will undergo specific training to increase their awareness of environmentally sensitive sites across the Project as applicable to their role. Topics will include, but will not be limited to, the following:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - working hours and noise and vibration reduction measures;
 - working with potentially contaminated materials;
 - waste management and storage; and
 - flood risk response actions;
 - GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting will be located away from sensitive receptors such as residential properties or ecological sites as far as practicable;
 - GG13: Plant and vehicles will conform to relevant applicable standards for the vehicle type as follows:

- Euro 4 (NOx) for petrol cars, vans and minibuses;
- Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and
- Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).
- Vehicles will be correctly maintained and operated in accordance with manufacturer’s recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so;
- GG20: Bonfires and the burning of waste material on-site will be prohibited;
- GG21: Construction lighting will be of the lowest luminosity necessary to safely perform each task. It will be designed, positioned and directed to reduce the intrusion into adjacent properties, protected species and habitats;
- GG23: An Emergency Action Plan will be developed for the construction phase which will outline procedures to be implemented in case of unplanned emergency events including but not limited to site flooding and pollution incidents; and
- GG26: Members of the community and local businesses will be kept informed regularly of the planned and ongoing works through active community liaison. This will include notification of noisy activities, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the Project. All construction-related complaints will be logged by the appointed contractor(s) in a complaints register, together with a record of the responses given and actions taken.

2.12.6 Potential for Significant Effects

- 2.12.6.1 The health and wellbeing assessment will consider the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4, Description of the Project**.
- 2.12.6.2 The proposed scope of the health and wellbeing assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5, EIA Approach and Methodology**.

Sources and Impacts (Step 1)

- 2.12.6.3 This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme.
- 2.12.6.4 The potential for the Suffolk Onshore Scheme to result in potential effects described in this section takes into account the embedded and control and management measures described in section 5.

Sources of construction impacts

- Potential temporary and permanent impacts on the quality of life and safety of local residents, visitors and workers arising from construction of the Suffolk Onshore Scheme related to air quality, noise, landscape amenity and traffic and transport;
- Potential temporary and permanent impacts related to accessibility of PRoW recreational routes and open space, impacting local residents, visitor and workers' accessibility to these active travel routes;
- Potential temporary and permanent accessibility impacts on PRoW and recreational routes impacting local resident access to local community services and social infrastructure; and
- Potential temporary and permanent impacts on community cohesion arising from impacts to accessibility and community engagement work impacting local residents.

Sources of operational impacts

- Potential permanent accessibility impacts on PRoW and recreational routes and open space, impacting local residents, visitor and worker accessibility to active travel routes and open space;
- Potential permanent accessibility impacts on PRoW and recreational routes impacting local resident access to local community services and social infrastructure;
- Potential permanent impacts on community cohesion arising from permanent accessibility impacts; and
- Potential permanent quality of life impacts on residents and visitors arising from noise disturbance; and
- Potential permanent impacts on local residents arising from the generation of electro-magnetic fields (EMFs).

Sources of maintenance impacts

2.12.6.5 The sources of maintenance impacts are assessed to be the same as those listed as sources of construction impacts.

Sources of decommissioning impacts

2.12.6.6 The sources of decommissioning impacts are assessed to be the same as those listed as sources of construction impacts.

Potential impacts

2.12.6.7 Table 2.12.2 below identifies the potential impacts that could result from the sources identified above.

Table 2.12.2: Sources and impacts

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
Construction, maintenance and decommissioning	Potential temporary and permanent impacts of construction, maintenance and decommissioning on air quality, noise, landscape amenity and traffic and transport.	Potential temporary quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Yes -Potential health related effects experienced during construction, maintenance and decommissioning of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects.	Scoped in
	Potential temporary closure or diversions to PRow and recreational routes.	Potential temporary closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary causing disruption to users.	Yes -Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential temporary and permanent severance of access to open space.	Potential temporary severance of access to open space within 500m	Yes -As above, disruption to PRow or other recreational routes and access to open	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
		of the Suffolk Scoping Boundary for local residents, workers and visitors affecting mental health.	space during all phases of the would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	
	Potential temporary and permanent severance of access to community services and social infrastructure.	Potential temporary closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local residents' access to local community services and social infrastructure.	Yes -As above, disruption to PRow, other recreational routes or roads offering access to community services and social infrastructure during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential temporary and permanent severance of access to local communities.	Potential temporary severance of access to local communities within 1km of the Suffolk Scoping Boundary for local residents, leading to deterioration of community cohesion and	Yes -As above, disruption to PRow or other recreational routes which facilitate community cohesion during construction, maintenance and decommissioning phases of the Suffolk Onshore Scheme would be avoided as far as possible.	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
		affecting mental health.	Where necessary, suitable diversions would be agreed with SCC.	
Operation	Potential permanent closure or diversions to PRow and recreational routes.	Potential permanent closure or diversions to PRow and recreational routes within 500 m of the Suffolk Scoping Boundary.	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential permanent severance of access to open space.	Potential permanent severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors affecting mental health.	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential permanent severance of access to community services and social infrastructure.	Potential permanent severance of access to community services and social infrastructure within 1km of	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
		the Suffolk Scoping Boundary for local residents, leading to deterioration of social cohesion and affecting mental health.	necessary, suitable diversions would be agreed with SCC.	
	Potential permanent severance of access to local communities.	Potential permanent severance of access to local communities within 1km of the Suffolk Scoping Boundary for local residents, leading to deterioration of community cohesion and affecting mental health.	Yes -Disruption to PRow or other recreational routes affecting access to facilities would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Scoped in
	Potential permanent impacts of operational noise.	Potential permanent quality of life impacts on residents and visitors within 1km of the Suffolk Scoping Boundary.	Yes -Potential health related effects experienced during the operation of the Suffolk Onshore Scheme would be determined through the topic specific assessments but are expected to	Scoped in

Project phase	Source	Impact	Potential for significant effects	Proposed to be scoped in/out
			include noise effects.	
	Potential permanent impacts of operation associated with the generation of EMFs.	Potential permanent impacts on local residents and workers associated with the generation of EMFs.	No - The Applicant will ensure that policies and procedures are in place at the design phase to ensure that all equipment will comply with public EMF exposure limits.	Scoped out

Impact Pathways with Receptors (Step 2)

- 2.12.6.8 This section identifies whether there are any impact pathways from the impacts identified above that could give rise to potential effects on the receptors within the health and wellbeing study areas.
- 2.12.6.9 Table 2.12.3 to Table 2.12.7 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the assessment of health and wellbeing for the Suffolk Onshore Scheme as shown on **Figure 1.1.2 Suffolk Onshore Scheme Scoping Boundary** and for each of the five options.
- 2.12.6.10 Table 2.12.3 summarises the impact pathways for Suffolk Site 1 Emerging Preference as shown on **Figure 2.1.4 Suffolk Site 1 Emerging Preference** and **Figure 2.1.9 Suffolk Site 1 Emerging Preference Option Area**.

Table 2.12.3: Impact pathways with receptors – Suffolk Site 1 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Local residents, workers and visitors within the relevant technical assessment study areas. This may include receptors within Aldeburgh, Aldringham, Knodishall and Friston.	Yes - Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but	Proposed to be scoped in for all phases

		are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors.	Users of open space within 500m of Suffolk Scoping Boundary including Knodishall Playground, Knodishall Common, Aldeburgh Beach, Church Field Road open space, Kemps Field and Friston Playground.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local	Community facilities within 500m of the Suffolk Scoping Boundary including, Aldringham Care Home, Friston Village Hall, Knodishall Village Hall, Coldfair Green County Primary School.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

residents' access to local community services and social infrastructure.			
Potential temporary and permanent severance of access to local communities within 1km of the Suffolk Scoping Boundary for local resident.	Local communities within 1km of the Suffolk Scoping Boundary, including Aldeburgh, Aldringham, Knodishall and Friston.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

2.12.6.11 Table 2.12.4 summarises the impact pathways for Suffolk Site 1 Alternative as shown on **Figure 2.1.6 Suffolk Site 1 Alternative** and **Figure 2.1.11 Suffolk Site 1 Alternative Option Area**.

Table 2.12.4: Impact pathways with receptors – Suffolk Site 1 Alternative

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Local residents, workers and visitors within the relevant technical assessment study areas. This may include receptors within Sizewell, Leiston, Aldringham, Knodishall and Friston.	Yes - Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	Proposed to be scoped in for all phases

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors.	Users of open space within 500m of Suffolk Scoping Boundary including Friston Playground, Knodishall Playground, Knodishall Common, Leiston Allotments and Leiston Primary School playing fields.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local residents' access to local community services and social infrastructure.	Community facilities within 500m of the Suffolk Scoping Boundary including, Aldringham Care Home, Friston Village Hall, Alde Valley Academy, Suffolk New College, Leiston Leisure Centre, Sizewell Sports and Social Club, Knodishall Village Hall and Coldfair Green County Primary School.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access	Local communities within 1km of the Suffolk Scoping	Yes - Disruption to PRow or other recreational routes	Proposed to be scoped in for all phases

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
to local communities within 1km of the Suffolk Scoping Boundary for local resident.	Boundary, including Sizewell, Leiston, Aldringham, Knodishall and Friston.	during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	

2.12.6.12 Table 2.12.5 summarises the impact pathways for Suffolk Site 3 Emerging Preference as shown on **Figure 2.1.5 Suffolk Site 3 Emerging Preference** and **Figure 2.1.10 Suffolk Site 3 Emerging Preference Option Area**.

Table 2.12.5: Impact pathways with receptors – Suffolk Site 3 Emerging Preference

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Local residents, workers and visitors within the relevant technical assessment study areas. This may include receptors within Benhall, Saxmundham, Friston, Knodishall, Aldringham and Aldeburgh.	Yes - Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	Proposed to be scoped in for all phases
Potential temporary or permanent closure or diversions to PRow and recreational routes within 500m	Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary,	Proposed to be scoped in for all phases

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
of the Suffolk Scoping Boundary.		suitable diversions would be agreed with SCC.	
Potential temporary and permanent severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors.	Users of open space within 500m of Suffolk Scoping Boundary including Knodishall Playground, Knodishall Common, Aldeburgh Beach, Church Field Road open space, Kemps Field, Friston Playground and Saxmundam Park.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local residents' access to local community services and social infrastructure.	Community facilities within 500m of the Suffolk Scoping Boundary including, Aldringham Care Home, Friston Village Hall, Knodishall Village Hall and Coldfair Green County Primary School.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to local communities within 1km of the Suffolk Scoping Boundary for local resident.	Local communities within 1km of the Suffolk Scoping Boundary, including Benhall, Saxmundham, Friston, Knodishall, Aldringham and Aldeburgh.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

2.12.6.13 Table 2.12.6 summarises the impact pathways for Suffolk Site 3 Alternative (Option 1) as shown on **Figure 2.1.7 Suffolk Site 3 Alternative (Option 1)** and **Figure 2.1.12 Suffolk Site 3 Alternative (Option 1) Option Area**.

Table 2.12.6: Impact pathways with receptors– Suffolk Site 3 Alternative (Option 1)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Local residents, workers and visitors within the relevant technical assessment study areas. This may include receptors within Sizewell, Leiston, Saxmundham, Benhall, Kondishall and Friston.	Yes - Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	Proposed to be scoped in for all phases
Potential temporary and permanent closure or diversions to PRoW and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRoW and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors.	Users of open space within 500m of Suffolk Scoping Boundary including Leiston Park, Leiston Allotments, Leiston Primary School Playing Fields, Saxmundam Park and Friston Playground.	Yes - Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local residents' access to local community services and social infrastructure.	Community facilities within 500m of the Suffolk Scoping Boundary including, Friston Village Hall, Summerhill School, Aylward Park School, Suffolk New College, Leiston Community Centre, Waterloo Centre, Leiston Library, The Leiston Surgery, Leiston Fire Station, Sizewell Sports and Social Club, Leiston Old Abbey Residential Home and Pro Corda Leiston Abbey.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to local communities within 1km of the Suffolk Scoping Boundary for local resident.	Local communities within 1km of the Suffolk Scoping Boundary, including Sizewell, Leiston, Saxmundham, Benhall, Kondishall and Friston.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

2.12.6.14 Table 2.12.7 summarises the impact pathways for Suffolk Site 3 Alternative (Option 2) as shown on **Figure 2.1.8 Suffolk Site 3 Alternative (Option 2)** and **Figure 2.1.13 Suffolk Site 3 Alternative (Option 1) Option Area**.

Table 2.12.7: Impact pathways with receptors – Suffolk Site 3 Alternative (Option 2)

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
Potential temporary and permanent quality of life and safety impacts on local residents, workers and visitors within the relevant technical assessment study areas.	Local residents, workers and visitors within the relevant technical assessment study areas. This may include receptors within Saxmunham, Benhall, Friston, Knodishall, Aldringham, Leiston and Sizewell.	Yes - Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	Proposed to be scoped in for all phases
Potential temporary and permanent closure or diversions to PRoW and recreational routes within 500m of the Suffolk Scoping Boundary.	Users of PRoW and recreational routes within 500m of Suffolk Scoping Boundary.	Yes - Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to open space within 500m of the Suffolk Scoping Boundary for local residents, workers and visitors.	Users of open space within 500m of Suffolk Scoping Boundary including, Leiston Allotments, Leiston Primary School playing fields, Knodishall Playground, Knodishall Common, Saxmundham Park	Yes - Disruption to PRoW or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

Impact pathway	Receptors	Potential for significant effects	Proposed to be scoped in/out
	and Friston Playground.		
Potential temporary and permanent closure or diversions to PRow and recreational routes within 500m of the Suffolk Scoping Boundary impacting on local residents' access to local community services and social infrastructure.	Community facilities within 500m of the Suffolk Scoping Boundary including, Aldringham Care Home, Friston Village Hall, Alde Valley Academy, Suffolk New College, Leiston Leisure Centre, Sizewell Sports and Social Club, Knodishall Village Hall and Coldfair Green County Primary School.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases
Potential temporary and permanent severance of access to local communities within 1km of the Suffolk Scoping Boundary for local resident.	Local communities within 1km of the Suffolk Scoping Boundary, including Saxmunham, Benhall, Friston, Knodishall, Aldringham, Leiston and Sizewell.	Yes - Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Proposed to be scoped in for all phases

2.12.7 Proposed Assessment Methodology

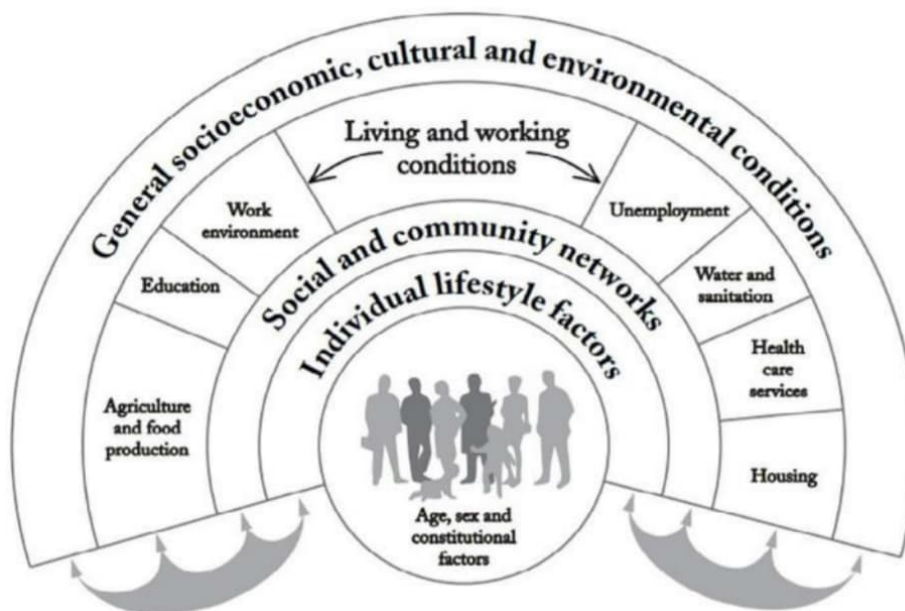
- 2.12.7.1 There is no consolidated methodology or practice for the assessment of effects on human health and wellbeing. Best practice principles are provided in the NHS England's Healthy Urban Development Unit's Rapid Health Impact Assessment (HIA) Toolkit 2019 and this toolkit will form the basis of the approach to assessing the impacts on health arising from the Suffolk Onshore Scheme.
- 2.12.7.2 The World Health Organisation (WHO) Europe defines health as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or

infirmity²³⁷. Public health therefore encompasses general wellbeing, not just the absence of illness.

2.12.7.3 The health and wellbeing of individuals is determined by a broad range of individual constitutional and behavioural factors, as well as broader environmental, social and economic factors. Some factors are direct and obvious, others are indirect.

2.12.7.4 Dahlgreen and Whitehead's model of the main determinants of health illustrates the breadth of possible influences on health, as show in Image 2.12.1. At the centre of the illustration are factors that are largely fixed – including individual age, sex, constitutional and genetic factors. Outside of this are factors generally described as the wider or broader determinants of health. The model emphasises interactions between the layers. Moving outwards from the centre, individual lifestyle choices are embedded in social norms and community networks, and in living and working conditions, which in turn are shaped by and related to the wider socioeconomic and cultural environment.

Image 2.12.1 Determinants of health

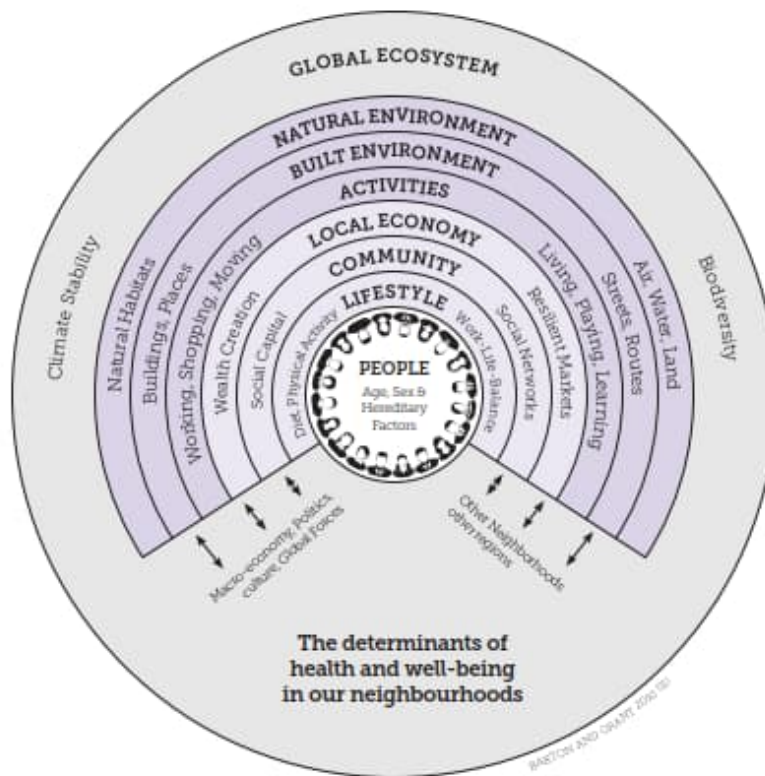


Source: Dahlgreen and Whitehead, 1993

2.12.7.5 This model has been developed to show elements of the built environment and communities that are the key determinants of health, as shown in Image 2.12.2.

²³⁷ World Health Organisation (2018). Health inequities and their causes. [online] Available at: <https://www.who.int/news-room/facts-in-pictures/detail/health-inequities-and-their-causes>

Image 2.12.2 Determinants of health in neighbourhoods



Source: Barton and Grant, 2006

2.12.7.6 Within a population there can also be health inequalities, defined by the WHO as “differences in health status or in the distribution of health determinants between different population groups. For example, differences in mobility between elderly people and younger populations or differences in mortality rates between people from different social classes”²³⁸.

Baseline

2.12.7.7 Relevant policy will be reviewed at the local, regional and national levels to identify the key issues of relevance to the Suffolk Onshore Scheme.

2.12.7.8 A baseline assessment will be undertaken using a range of sources to provide a description of the health conditions within the health study areas as set out above. This will be done using established statistical sources and desk based research.

Assessment of Potential Effects

2.12.7.9 As set out above the factors contributing to individual health and wellbeing are broad, and the health of existing and new residents, workers and visitors will be largely

²³⁸ World Health Organisation (2018). Health inequities and their causes. [online] Available at: <https://www.who.int/news-room/facts-in-pictures/detail/health-inequities-and-their-causes>

determined by individual age and constitutional factors and lifestyle factors unrelated to the Suffolk Onshore Scheme.

- 2.12.7.10 Taking account of these factors, the health assessment will use relevant guidance set out in the framework for assessment set out by the *NHS HUDU Planning for Health Rapid HIA Tool* to consider how the Suffolk Onshore Scheme could influence health – including how it could influence health inequalities, during the construction, maintenance, operational and decommissioning phases.
- 2.12.7.11 The HUDU assessment tool identifies eleven broad determinants that are likely to be influenced by specific development proposals and can be influenced through design and management measures, against which the likely impacts of new developments can be assessed. Of these, the following five broad determinants are relevant to the potential health impacts arising from the Scheme:
- Access to health and social care services and other social infrastructure;
 - Access to open space and nature;
 - Air quality, noise and neighbourhood amenity;
 - Accessibility and active travel; and
 - Social cohesion and inclusive design.
- 2.12.7.12 Due to the diverse nature of health determinants and outcomes which are assessed, and the difficulty of quantifying these with respect to health outcomes, NHS HUDU guidance does not provide a methodology for assessing the significance of effects. In line with this, the assessment of likely health impacts of the Suffolk Onshore Scheme will be described qualitatively, based on professional judgement and best practice guidance, and effects will be assessed as ‘positive’, ‘negative’, ‘neutral’ or ‘uncertain’, using the criteria set out in Table 2.12.8.
- 2.12.7.13 Where an impact is identified, actions will be proposed to mitigate any negative impact on health, or to realise opportunities to create health benefits. It should be noted that in many cases, mitigation will be embedded within the design of the Suffolk Onshore Scheme, and the implementation of this will be an underlying assumption of the assessment.

Table 2.12.8: Health assessment impact categories

Impact category	Description
Positive	A beneficial impact is identified
Neutral	No discernible health impact is identified
Negative	An adverse impact is identified
Uncertain	Where uncertainty exists as to the overall impact

2.12.7.14 The assessment will draw on the findings of related technical assessments, as listed in section 2. The geographical extent of health effects will be determined by the assessments set out in those related chapters.

2.12.8 Conclusion

Summary

2.12.8.1 This chapter of the Scoping Report has set out the proposed scope and methodology for the ES assessment of health and wellbeing effects arising from the construction, operation, maintenance and decommissioning of the Suffolk Onshore Scheme. The socio-economic, recreation and tourism receptors that have been identified within the respective study areas surrounding the Suffolk Onshore Scheme include local communities, residents and workers, as well as visitors and users of PRow, open space and community facilities within the respective study areas.

Proposed Scope of the Assessment

2.12.8.2 A summary of the proposed scope of the assessment is provided in Table 2.12.9.

Table 2.12.9: Proposed scope of the assessment

Receptor	Potential for significant effects	Project phase(s)	Proposed to be scoped in/out and for which option
Local residents, workers and visitors within the relevant technical assessment study areas.	Potential health related effects experienced as a result of the Suffolk Onshore Scheme would be determined through the topic specific assessments, but are expected to include air quality, noise and vibration, landscape amenity and traffic and transport effects during the construction, maintenance and decommissioning phase, and noise and vibration during the operational phase.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Users of PRow and recreational routes within 500m of Suffolk Scoping Boundary.	Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options

Users of open space within 500m of Suffolk Scoping Boundary.	Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Community facilities within 500m of the Suffolk Scoping Boundary.	Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Local communities within 1km of the Suffolk Scoping Boundary.	Disruption to PRow or other recreational routes during all phases would be avoided as far as possible. Where necessary, suitable diversions would be agreed with SCC.	Construction, maintenance and decommissioning	Scoped in for all options
		Operation	Scoped in for all options
Local residents and workers in close proximity to the Suffolk Scoping Boundary.	The Applicant will ensure that policies and procedures are in place at the design phase to ensure that all equipment will comply with public EMF exposure limits.	Construction, maintenance and decommissioning	Scoped out for all options
		Operation	Scoped out for all options

2.13 Cumulative Effects

2.13.1 Introduction

2.13.1.1 This chapter presents how the intra-project and inter-project cumulative effects assessment will consider the potentially significant cumulative effects that may arise from the Suffolk Onshore Scheme. A description of intra-project and inter-project cumulative effects is presented in **Part 1, Chapter 5, EIA Approach and Methodology**.

2.13.1.2 This chapter should be read in conjunction with:

- **Part 1, Chapter 4, Description of the Project;**
- **Part 1, Chapter 5, EIA Approach and Methodology;** and
- **Part 2, Technical Chapters 2-12.**

2.13.1.3 This chapter is supported by the following figures:

- **Figure 2.13.1 Zone of Influence for the Suffolk Onshore Scheme;**
- **Figure 2.13.2 All Projects and Development Plans located within the Zone of Influence for the Suffolk Onshore Scheme;** and
- **Figure 2.13.3 Projects proposed to be taken forward to Stage 2 for the Suffolk Onshore Scheme.**

2.13.2 Intra-Project

2.13.2.1 The proposed method for assessing the intra-project cumulative effects is presented in **Part 1, Chapter 5, EIA Approach and Methodology**. This describes a proposed three staged approach that will be used to assess whether the culmination of effects on an individual receptor is likely to lead to an overall effect of greater significance.

2.13.2.2 The first stage (pre-screening) in the process is to identify whether individual or groups of receptors could be affected by more than one type of effect (usually where they are considered by more than one technical chapter).

2.13.2.3 Where multiple types of effects are considered within one chapter, the findings are not proposed to be presented within the Intra-Project Cumulative Effects Chapter. This is likely to be:

- effects on ecological receptors as the Ecology and Biodiversity Chapter will identify all potential types of effects on ecological receptors; and
- effects on Human Health as the Human Health Chapter will identify all potential types of effect.

2.13.2.4 Where this first stage identifies that either:

- there is only one type of effect for a particular receptor; or
- only one topic has identified effects on that receptor,

- it is considered that there will be no potential for an intra-project effects and receptors will not be taken through to the next stage (screening) of the assessment.

2.13.2.5 An initial pre-screening assessment is presented in Table 2.13.1 showing how the receptor groups are likely to interact between chapters. This will be revisited as part of the ES to ensure all receptors considered within the ES are taken through this pre-screening assessment.

Table 2.13.1: Pre-screening stage

Receptors	Technical chapters+											
	2	3	4	5	6	7	8	9	10	11	12	
Landscape elements	✓		✓									
Residential receptors	✓							✓	✓	✓		
Commercial receptors										✓	✓	
Designated Sites	✓	✓			✓			✓	✓	✓		
Ecological receptors	✓	✓						✓				
Notable Habitats (terrestrial and aquatic)	✓	✓		✓				✓				
Designated heritage assets			✓									
Non-designated heritage assets			✓									
Water resources (existing abstractions and discharges)				✓	✓							
Watercourses and waterbodies				✓	✓							
Flood risk receptors				✓								
BMV Agricultural Land						✓						
Agricultural holdings						✓						
Soil						✓					✓	
Public rights of way	✓							✓			✓	
Cycle Routes	✓							✓				
Roads								✓				
Communities	✓				✓					✓	✓	
Geology					✓							
Mineral Reserves					✓							
Groundwater					✓							
Human Health					✓							✓

+ Chapter numbers refer to the Scoping Technical Chapters: Chapter 2 Landscape and Visual (Part 2.2); Chapter 3 Ecology and Biodiversity (Part 2.3); Chapter 4 Cultural Heritage (Part 2.4), Chapter 5 Water Environment (Part 2.5); Chapter 6 Geology and Hydrogeology, (Part 2.6); Chapter 7 Agriculture and Soils (Part 2.7); Chapter 8 Traffic and Transport (Part 2.8); Chapter 9 Air Quality (Part 2.9); Chapter 10 Noise and Vibration (Part 2.10) and Chapter 11 Socioeconomic Recreation and Tourism (Part 2.11); and Human Health (Part 2.12)

2.13.3 Inter-Project

2.13.3.1 The proposed method for assessing the inter-project cumulative effects is presented in **Part 1, Chapter 5, EIA Approach and Methodology**. The following section sets out the methodology for Stage 1 and Stage 2 in relation to the Suffolk Onshore Scheme.

Stage 1

2.13.3.2 Stage 1 of the approach outlined in PINS Advice Note Seventeen requires a 'long list' of other developments to be identified, as well as high level information, such as the location/application boundary. This initial long list is provided in **Appendix 1.5.A Inter Project Cumulative Effects Long List** and will be continually reviewed and updated as required.

Establishing the ZOI

2.13.3.3 The first step in identifying the long list is to establish the Zone of Influence (ZOI) for the Suffolk Onshore Scheme. **Part 1, Chapter 5, EIA Approach and Methodology** describes how the ZOI has been defined based on the largest study area of the technical chapters.

2.13.3.4 The study areas proposed for technical chapters 2-12 are summarised in Table 2.13.2. The rationale for these study areas are explained in section 3 of the relevant technical topic chapters 2-12.

Table 2.13.2: Study areas for environmental topics

Environmental topic	Study areas
Ecology and Biodiversity	10km
Landscape and Visual	3km
Historic Environment	1km
Water Environment, Geology and Hydrogeology, Air Quality	<0.5km
Noise and Vibration, Geology, Agriculture and Soils, Traffic and Transport*	<0.25km

*at this stage construction traffic routes are not yet known, however it is not anticipated that construction traffic routes ultimately assessed within the ES routes would extend beyond 10km due to the proximity of the strategic road network. This will be reviewed once construction traffic routes are known.

2.13.3.5 The largest topic study area has been identified as 10km from the Suffolk Onshore Scheme Scoping Boundary, therefore a ZOI of 20km from the Suffolk Onshore Scheme Scoping Boundary has been set to establish the long list of developments. This is illustrated on **Figure 2.13.1 Zone of Influence for the Suffolk Onshore Scheme**.

2.13.3.6 This will be kept under review of the Project develops and the long list updated as required.

Identify the long list of ‘Other Developments’

- 2.13.3.7 A long list of other projects within the ZOI has been established and is presented in **Appendix 1.5.A Inter Project Cumulative Effects Long List** and on **Figure 2.13.2 Long List Projects within the Suffolk Onshore Scheme Zone of Influence**. This has been established using the guidance provided in Advice Note Seventeen and the ‘other developments’ have been categorised into three Tiers as described in **Part 1, Chapter 5, EIA Approach and Methodology**. The long list has been established by a search of the Planning Inspectorate’s Programme of Projects (undertaken in July 2022) and planning applications held on the following relevant planning authority websites:
- East Suffolk District Council
 - Mid Suffolk District Council
- 2.13.3.8 Allocated sites in Local Plans or other Development Plans which were not yet subject to planning applications have also been identified on the long list.
- 2.13.3.9 Minor planning applications have been excluded from the assessment, as these relate to projects of small scale and local significance. These projects are highly unlikely to give rise to significant cumulative environmental effects over and above the Suffolk Onshore Scheme in isolation.

Stage 2

- 2.13.3.10 The long list is presented in **Appendix 1.5.A Inter Project Cumulative Effects Long List** and those projects relevant to the Suffolk Onshore Scheme are illustrated on **Figure 2.13.2 Long List Projects within the Suffolk Onshore Scheme Zone of Influence**. The projects included on the long list were then screened as to the nature and scale of development to identify whether they would be likely to result in a potential for a significant cumulative effect with the Suffolk Onshore Scheme.
- 2.13.3.11 The long list of projects to be proposed to be taken forward to Stage 2 are listed in Table 2.13.3 below and illustrated on **Figure 2.13.3 Projects proposed to be taken to Stage 2 for the Suffolk Onshore Scheme**.

Table 2.13.3: Projects proposed to be taken forward for Stage 2

ID	Application ref (where applicable)	Planning authority	Project and location	Description	Tier	Distance from Project Scoping Boundary (km)
1	EN10012	PINS	Development Consent Order for the Sizewell C Nuclear Power Station	The Sizewell C Project	Tier 1	0.72
6	EN010078	PINS	East Anglia TWO Offshore	An offshore wind farm which could consist of	Tier 1	1.62

			Windfarm - Southern North Sea approx. 32.6km from the Suffolk Coast. Onshore cable route connecting to onshore substation	up to 75 turbines, generators and associated infrastructure, with an installed capacity of up to 900MW		
7	N/A	PINS	Nautilus - Offshore interconnector between UK and Belgium	Proposed second Interconnector between Great Britain and Belgium. It would create a new 1.4 gigawatts (GW) high voltage direct current (HVDC) electricity link	Tier 2	0.66
202	DC/20/4846 /EIA	East Suffolk	B-17 Solar Farm Parham Airfield Parham Suffolk	EIA Screening Opinion - Proposed Solar Energy Scheme	Tier 2	6.53
221	DC/20/3142 /FUL	East Suffolk	High Lodge Leisure Darsham Road Hinton Blythburgh Saxmundham Suffolk IP17 3QT	Redevelopment of golf course and vacant paddock land for the siting of 170 holiday lodges, 3 tree houses, new Facilities Building, Maintenance and Housekeeping Building, car parking and associated highway works.	Tier 1	4.69
228	DC/21/3254 /FUL	East Suffolk	Land and buildings at Croft Farm Hulver Lane Snape Suffolk IP17 1QU	Change of use for agricultural land and part of an existing agricultural building to a touring caravan site for up to 30 caravans and associated facilities including toilets, showers and a guest reception.	Tier 1	2.29
233	DC/21/5550 /FUL	East Suffolk	Land at Park Farm Loudham Hall Road Loudham Woodbridge Suffolk IP13 0NW	Erection of a solar photovoltaic (PV) array, with a total export capacity of up to 21 MW. Each of the solar panels will be mounted on a fixed panel system. The	Tier 1	10.79

panels are covered by high transparency solar glass with an anti-reflective coating which minimises glare and glint, while aiding in the maximum absorption of the available sunlight. The panels are dark grey/blue in colour and are mounted on a frame of anodized aluminium alloy and galvanized steel.

234	DC/19/4987 /EIA	East Suffolk	Land at Rock Barracks Heath Road Woodbridge Suffolk IP12 3LZ	EIA Screening Opinion - Photovoltaic PV Solar Park of approximately 1.5MW along with associated PV equipment.	Tier 2	13.87
245	DC/21/4044 /EIA	East Suffolk	Land south of Darsham Station Main Road Darsham Suffolk	EIA Screening Opinion - Proposed residential development of up to 110 dwellings	Tier 2	4.85
248	DC/21/1001 /FUL	East Suffolk	Land to the north and south of New Road east of Silverlace Green Parham Suffolk	Construction and operation of a solar farm together with all associated works, equipment and necessary infrastructure	Tier 1	7.81
253	DC/21/2387 /EIA	East Suffolk	Land west of Sandpit House and Sewage Pumping Station Loudham Hall Road Pettistree Suffolk	EIA Screening Opinion - Proposed development of a 21 MWp Solar PV Development	Tier 2	7.38
263	DC/22/2276 /EIA	East Suffolk	Proposed reservoir at Grange Farm Yoxford Road Westelton Suffolk	EIA Screen Opinion - Proposed Reservoir.	Tier 1	3.94
266	DC/18/2794 /EIA	East Suffolk	Saxmundham to Peasenhall Water Mains	Installation of approximately 7.7 kilometres of 250mm	Tier 1	6.74

			Installation Suffolk	diameter pipeline between Lodgewood Water Tower in Peasenhall and Saxmundham Water Tower.		
269	DC/17/4188 /EIA	East Suffolk	Site SSP12 Rendlesham Suffolk	Screening opinion - erection of up to 75 dwellings.	Tier 2	10.40
				1. In outline, comprising a Visitor Centre (maximum 2,000sq.m GEA) and a maximum of 9,500sq.m (GEA) of floorspace to provide administration, storage, welfare and canteen facilities with all matters reserved apart from access. 2. In full, for the demolition of the existing Outage Store, Laydown Area, Operations Training Centre, Technical Training Facility, Visitor Centre, and Rosery Cottage garage; removal of technical training and pool car park (63 spaces), Coronation Wood car park (21 spaces), Visitor Centre car park (16 spaces) and northern outage car park (576 spaces); meantime use of the Technical Training Centre as an interim Visitor Centre followed by its demolition; and erection of new (all floorspace in GEA) Outage Store (2,778sq.m), Laydown Area (11,990sq.m) including New Western Access Road,		0.72
270	DC/19/1637 /FUL	East Suffolk	Sizewell B Power Station Complex and adjoining land Sizewell Power Station Road Sizewell Leiston Suffolk IP16 4UR		Tier 1	

Yardman's Office (23sq.m), Training Centre (4,032sq.m), Rosery Cottage garage (30sq.m), Replacement Car Park (2,363sq.m) providing 112 spaces, and Outage Car Park (15,525sq.m) providing (576 spaces) including new access road (and alternative access to bridleway), footpath and amended junction at Sizewell Gap; and associated landscaping earthworks/recontouring, tree felling and boundary treatment.

271	DC/20/4646 /FUL	East Suffolk	Sizewell B Sizewell Power Station Complex and adjoining Land Sizewell Power Station Road Sizewell Leiston Suffolk IP16 4UR	Hybrid application seeking outline planning permission, with all matters reserved, for up to 9,500 square metres Gross External Area (GEA) to provide administration, storage, welfare and canteen facilities and a visitor centre of up to 1,000 square metres GEA. Detailed planning permission is sought for demolition of some existing structures and redevelopment to include a training centre and interim visitor centre, an outage store, lay down area, car and cycle parking, landscaping, associated infrastructure (including utilities, plant and highway	Tier 1	0.72
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				works), tree felling and other relevant works.		
272	DC/21/5408 /EIA	East Suffolk	Sizewell C Sizewell Power Station Road Sizewell Leiston Suffolk	Formal screening opinion pursuant to Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ¹ (herein referred to as the EIA Regulations) in relation to a proposed development on land north of the Sizewell B Power station, Sizewell, Leiston. The proposed development comprises two types of geotechnical trials, these being: (i) ground anchor trials; and (ii) deep soil mixing trials, both located within the proposed Sizewell C power stations main platform area (herein referred to as the Proposed Development). The trials will be undertaken to inform the geotechnical design development for the enabling works of the proposed Sizewell C power station. The Proposed Development is located within the ESC's administrative boundary.	Tier 1	0.72
277	DC/21/5515 /FUL	East Suffolk	Town Farm Town Farm Lane Kelsale Cum Carlton Saxmundham Suffolk IP17 2RJ	Erection of 21 MW Solar PV Development with associated equipment and ecological improvement works on Land at Town Farm, Town Hall Lane,	Tier 1	3.13

			Kelsale cum Carlton, IP17 2RJ			
278	DC/21/2943 /EIA	East Suffolk	Town Farm Town Farm Lane Kelsale Cum Carlton Suffolk	Screening Opinion - The erection of a 21MWp Solar PV Development	Tier 2	2.98
279	DC/21/4643 /EIA	East Suffolk	UKZ139 BC Wissett Solar Farm Grays Lane Wissett Suffolk	EIA Screening Opinion - Proposed solar photovoltaic (PV) farm, with battery energy storage	Tier 2	16.04
285	DC/21/0002 2	Mid Suffolk	Brundish Manor The Street Brundish Woodbridge Suffolk IP13 8BL	Full Planning Application - Change of Use of land and siting 180No (45kw) photovoltaic array in paddock.	Tier 1	15.23
287	N/A	East Suffolk	EuroLink - Offshore interconnector between UK and The Netherlands	Proposed second link to the Netherlands of 1.4GW by 2030. Current proposal for interconnector / hybrid - windconnector	Tier 3	0
288	N/A	East Suffolk	East Anglia Green	The East Anglia Green Energy Enablement (GREEN) project is a proposal to build a new high voltage network of 150km line reinforcement between Norwich, Bramford and Tilbury.	Tier 3	24

2.13.4 Conclusion

2.13.4.1 As outlined above inter and intra cumulative effects are proposed to be scoped into the EIA and the results will be presented in the Environmental Statement (ES). **Appendix 1.5.A Inter-Project Cumulative Effects Long List** considers each scoped in environmental discipline, the ZOI and whether effects associated with each of the developments could interact with the effects associated with this project. Table 2.13.3 outlines the proposed short-listed developments that further information including, design, location, programme, operation and decommissioning information and reported environmental effects will be gathered for, to inform which of those developments will be assessed as part of the inter-project cumulative effects assessment.

