



The Sizewell C Project

6.11 Volume 10 Project-wide, Cumulative and Transboundary Effects

Chapter 3 Assessment of Project-wide Effects

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Plates

None Provided.

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None Provided.

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None Provided.

3 Assessment of Project-Wide Effects

3.1 Introduction

3.1.1 This chapter provides the assessment of project-wide effects where environmental impacts from different components of the Sizewell C Project combine, resulting in the potential for a significant cumulative effect. If considered in isolation, the individual environmental impacts may not necessarily be significant.

i. Overview of the Sizewell C Project

3.1.2 The Sizewell C Project consists of the main development site and seven associated developments. The associated developments are designed to improve existing and provide additional supporting infrastructure servicing the surrounding area and the main development site. The locations of each of these sites in relation to one another are outlined below. Further details of the sites are provided in **Volume 1 Chapter 2** of the **Environmental Statement (ES)**, and site boundaries are shown on **Figure 1.1** of this Volume.

ii. Main Development Site

3.1.3 The main development site would be located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft and to the north-east of the town of Leiston. Once constructed, the main development site would be located directly north of the existing Sizewell A and B power station complex.

3.1.4 This site would be the largest of the development sites, with an onshore area of approximately 372ha and an offshore area of 640ha. This chapter excludes consideration of the off-site areas for fen meadow compensation, the marsh harrier habitat improvement area and the off-site sports facilities.

3.1.5 The section of the green rail route that falls within the footprint of the main development site is included in the assessment for the main development site. The section that falls outside of the main development site is considered an associated development; this is described in Section 3.1.13 below.

iii. Northern Park and Ride

3.1.6 The northern park and ride site would be located approximately 9km to the north-west of the main development site, to the west of Darsham village and the A12, to the east of the East Suffolk railway line, and to the north of Darsham railway station. The site would be approximately 27.9ha in size.

iv. Southern Park and Ride

3.1.7 The southern park and ride would be located approximately 18km to the south-west of the main development site, to the north-east of Wickham Market, to the east of the B1116, and to the north of the A12. The site would be approximately 26.4ha in size.

v. Two Village Bypass

3.1.8 The two village bypass would be located approximately 10km to the south-west of the main development site and would comprise a 2.4km single carriageway road near Farnham along the A12. At its western end, the bypass includes a section of the A12 to the south-west of Stratford St Andrew. At the eastern end, the bypass would join the A12 and A1094 Friday Street.

vi. Sizewell Link Road

3.1.9 The Sizewell link road would join the B1122 approximately 500m north-west of the main development site. The development would bypass Middleton Moor and Theberton over 6.8km before joining the A12 to the south of Yoxford.

vii. Yoxford and Other Highway Improvements

3.1.10 The Yoxford roundabout and other highways improvement sites cover several road junctions and highways across East Suffolk. These are located in various locations with varying distances from the main development site:

- A12 / B1122 Yoxford roundabout: located at Yoxford, approximately 6.5km to the north-west of the main development.
- Improvements to the A1094 / B1069 junction south of Knodishall: located to the east of Snape, approximately 4.5km to the south-west of the main development site.
- Improvements to the A12 / A144 junction south of Bramfield: located approximately 8km to the north-west of the main development site.
- Improvements to the A12 / B1119 junction at Saxmundham: located to the west of Saxmundham, approximately 7.5km to the west of the main development site.

3.1.11 Road safety analysis has also identified potential highway safety issues at two sites (the B1078 and B1079 junction east of Easton and Otley College and the A140 and B1078 junction west of Coddendam). Highway safety measures at these sites will be secured by obligations in a Section 106

Agreement (see draft **Section 106 Heads of Terms** appended to the **Planning Statement** (Doc. Ref. 8.4).

viii. **Freight Management Facility**

3.1.12 The freight management facility would be located approximately 40km to the south-west of the main development site, to the south-east of Ipswich at the A12 / A14 junction. The site would be approximately 11ha in size, bounded by the A14 to the north, Felixstowe Road to the south and arable land to the east and west.

ix. **Rail developments**

3.1.13 The rail development for the project includes an extension to the existing rail infrastructure and rail improvement works.

- **Extension:** The green rail route encompasses an extension of the railway line, within and outside of the main development site. The green rail route will be temporary infrastructure that will be operational during the peak year of construction and removed following construction. The section of the green rail route that extends outside of the main development site is referred to as the 'rail extension route', this is assessed within **Volume 9** of the **ES**. Therefore, the rail extension route will be referred to as part of the associated developments. Where the rail extension route and improvements to rail infrastructure are referred to together within this chapter, they will be referred to as 'rail developments'.
- **Improvements:** This would involve the replacement of the track on the Saxmundham to Leiston branch line and improvements to up to eight existing rail crossings. Rail improvements will be permanent developments.

x. **Scope of assessment**

3.1.14 The aim of the project-wide assessment is to identify and assess new, and/or different environmental effects which could arise when considering together the effects associated with different components of the Sizewell C Project, as detailed in the technical assessments of **Volumes 2 to 9** of the **ES**.

3.1.15 Some of the topic assessments reported in **Volume 2** of the **ES** are specific to the main development site only and do not have the potential to give rise to significant cumulative effects with other components of the Sizewell C Project. Therefore for these topics, no project-wide assessment is presented.

3.1.16 Where different proposals or activities within the main development site have the potential to result in in-combination effects, these are addressed within the site-specific topic chapters in **Volume 2** of the **ES**. For example, in-combination effects on benthic invertebrates from infrastructure installed in the marine environment and temperature rise due to cooling water discharges are assessed in the **Volume 2 Chapter 22** Marine Ecology chapter.

3.1.17 These topics include:

- **Chapter 20** Coastal Geomorphology and Hydrodynamics of **Volume 2** of the **ES**.
- **Chapter 21** Marine Water Quality and Sediments of **Volume 2** of the **ES**.
- **Chapter 22** Marine Ecology of **Volume 2** of the **ES**.
- **Chapter 23** Marine Historic Environment of **Volume 2** of the **ES**.
- **Chapter 24** Navigation of **Volume 2** of the **ES**.
- **Chapter 25** Radiological Effects of **Volume 2** of the **ES**.

3.1.18 Furthermore, some topic assessments reported in **Volume 2** of the **ES** are not site-specific and are project-wide. The conclusions of these assessments are therefore not repeated in this chapter. These topics include:

- **Chapter 8** Conventional Waste Management, of **Volume 2** of the **ES**.
- **Chapter 9** Socio-economics, of **Volume 2** of the **ES**.
- **Chapter 10** Transport, of **Volume 2** of the **ES**.
- **Chapter 26** Climate Change, of **Volume 2** of the **ES**.
- **Chapter 27** Major Accidents and Disasters, of **Volume 2** of the **ES**.
- **Chapter 28** Health and Wellbeing, of **Volume 2** of the **ES**.

3.1.19 This chapter presents the assessments for project-wide effects for the technical topics listed below. Reference is made to the residual effects identified within the site-specific assessments in **Volumes 2 to 9**:

- Noise and Vibration.
- Air Quality.

- Landscape and Visual.
- Terrestrial Ecology and Ornithology.
- Amenity and Recreation.
- Terrestrial Historic Environment.
- Soils and Agriculture.
- Geology and Land Quality.
- Groundwater and Surface Water.

3.1.20 This chapter considers the likely project-wide effects during construction, operation, and removal and reinstatement (where applicable) of the Sizewell C Project. The assessments have considered the following phases of development:

- Construction assessment scenario which comprises:
 - the construction at the main development site and permanent associated development, including the operation and removal and reinstatement of temporary construction areas at the main development site at the later stages of construction; and
 - the construction, operation and removal and reinstatement of temporary off-site associated developments.
- Operational assessment scenario which comprises:
 - the operation of the permanent development at the main development site; and
 - the operation of permanent associated developments (i.e. two village bypass, Sizewell link road, highway and rail improvements).

3.1.21 For some assessments, the construction phase impacts for the Sizewell C Project are assessed for the early years of construction (assumed 2023) and the peak year of construction at the main development site (assumed 2028). Where these are relevant, they are referred to in the topic sections below.

3.2 Noise and vibration

a) Introduction

3.2.1 **Table 3.1** provides a summary of the Sizewell C Project components that have the potential to result in project-wide noise and vibration impacts. The assessment of the combined impacts is presented with reference to the site-

specific assessments presented in **Volume 2 Chapter 11** and **Chapter 4** of **Volumes 3** to **9** of the **ES**.

3.2.2 In **Table 3.1**, noise impacts across the project have been reviewed, and receptors or receptor groups identified where there is potential overlap of noise impacts from different elements of the project, and where two or more of the project elements could be close enough to receptors such that combined noise levels may have a significant effect.

Table 3.1: Summary of potential noise and vibration project-wide effects

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Sizewell C Project (road traffic) Main development site (construction) Rail extension route – (construction, operation and removal/reinstatement) 	Old Abbey Care Home, Leiston (Receptor 15) as shown in Volume 2, Chapter 11, Figure 11.1 .
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Sizewell C Project (road traffic) B1122 (Abbey Road) level crossing (construction) 	Abbey Road, Leiston (Receptor group 3) as shown in Volume 2, Chapter 11, Figure 11.1 .
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Main development site (construction) B1122 (Abbey Road) level crossing (construction) 	Abbey Road, Leiston (Receptor group 3) as shown in Volume 2, Chapter 11, Figure 11.1 .
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Sizewell C Project (road traffic) Saxmundham to Leiston branch line upgrade (construction) 	Valley Road North, Leiston (Receptor group 24) and Valley Road South, Leiston (Receptor group 25) as shown in Volume 2, Chapter 11, Figure 11.1 .
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Sizewell C Project (road traffic) Saxmundham to Leiston branch line (operational) 	Valley Road North, Leiston (Receptor group 24), Valley Road South, Leiston (Receptor group 25) as shown in Volume 2, Chapter 11, Figure 11.1 .
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Northern park and ride (construction and reinstatement) Sizewell C Project (road traffic) 	Properties in receptor groups A (Station Cottages), B (White House), C (Railway Cottage), D (Moat Hall) and G (Oak Hall) as shown in Volume 3, Chapter 4, Figure 4.1 .

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Airborne Noise – Construction phase	<ul style="list-style-type: none"> Yoxford and other highway improvements (construction) Sizewell C Project (road traffic) 	Properties in Yoxford including Satis House Hotel, Rookery Lodge, Woodland Cottages, Satis Coach House, White House/White Lodge, Sans Souci, Pinn’s Piece, Rookery Lodge, The Cottage, Sunnypatch, The Old Barn, and Rookery Cottages, as shown in Volume 7, Chapter 4, Figure 4.1.
Airborne Noise	<ul style="list-style-type: none"> Main development site (construction operations at LEEIE) Saxmundham to Leiston branch line (operation) 	Valley Road North, Leiston (Receptor group 24) and Valley Road South, Leiston (Receptor group 25) as shown in Volume 2, Chapter 11, Figure 11.1.
Ground borne Vibration	<ul style="list-style-type: none"> Main development site (construction) Saxmundham to Leiston branch line (construction) 	Valley Road North, Leiston (Receptor group 24) and Valley Road South, Leiston (Receptor group 25) as shown in Volume 2, Chapter 11, Figure 11.1.

b) **Assessment methodology**

3.2.3 The methodology for the assessment of potential project-wide noise and vibration impacts is based upon that described in **Appendix 6G** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant project-wide effects of the Sizewell C Project.

3.2.4 The project-wide assessment considers impacts on noise-sensitive residential receptors from a number of elements of the overall project. For the main development site, rail proposals and park and ride schemes assessments have been made for construction, removal and reinstatement phases. For new roads and other road improvements, construction and operational phases are considered. For new roads the operational phase is also considered.

c) **Project-wide effects during construction**

i. **Receptor 15 (Old Abbey Farm/Care Home)**

3.2.5 There is potential for a project-wide effect at Old Abbey Farm/Care Home during the early years of construction (Phases 1 and 2) due to noise from construction and operation of the rail extension route combining with main development site construction noise for a period of approximately 18 months

(rail extension route construction period), and between the working hours of 07:00 and 19:00. If both construction activities occurred simultaneously, then combined noise levels at Old Abbey Farm/Care Home would be dominated by the main development site construction activity so there would be no additional project-wide effect and any significant construction noise effects would be as reported in **Volume 2, Chapter 11**. A moderate adverse effect from noise is predicted to this receptor from the main development site during Phases 1 and 2 of construction. The effect is considered to be significant, but will not be greater in combination with the construction and operation of the green rail route. Details on proposed mitigation are set out in **Volume 2, Chapter 11**.

3.2.6 For Phase 3 and 4 (approximately 8.5 years) there is the potential for night-time construction site noise (between 23:00 and 07:00hrs) on the main development site to combine with noise from the operational rail extension route at Old Abbey Farm/Care Home, where there would be up to three deliveries at night. Both the average ($L_{Aeq,8hr}$) and maximum (L_{Amax}) sound levels from both activity areas have been assessed.

3.2.7 When these activities are simultaneous, then combined noise levels at Old Abbey Farm/Care Home would be dominated by the main development site construction activity (with operational rail extension noise levels more than 10dB below those from the main development site). The construction noise effects are reported in **Volume 2, Chapter 11** which concludes there is the potential for a moderate adverse effect arising from construction activities at the main development site, and therefore considered to be significant. In combination with the rail operations at night, it is not expected that the effects be any greater. Details on proposed mitigation are set out in **Volume 2, Chapter 11**.

3.2.8 In addition, maximum noise levels (L_{max}) at night from main development site construction combining with rail extension route operation has been assessed. Predicted noise levels would result in a negligible effect for both activities in isolation, therefore noise levels combined would also be not significant.

ii. **Receptor group 3 (Abbey Road, Leiston)**

3.2.9 There is potential for a project-wide effect at receptors on B1122 (Abbey Road) in Leiston during the early years of construction due to combined noise from B1122 (Abbey Road) level crossing construction and main development site road traffic. No significant effects are predicted at these receptors as a result of construction noise from the B1122 (Abbey Road) level crossing works and a significant project-wide effect is unlikely, particularly given that the adverse effect from main development site early years road traffic is only

predicted between 06:00 and 08:00 which limits the potential for combined effects.

3.2.10 A further potential project-wide effect at receptors on B1122 (Abbey Road) in Leiston exists during the early years of construction due to noise from main development site construction combining with B1122 (Abbey Road) level crossing construction. No significant residual effects are predicted from either source in isolation, and this is unlikely to change in combination.

iii. **Receptor 13 (Leiston Abbey, including Pro Corda music school)**

3.2.11 There is potential for construction noise from the main development site to occur at the same time as noise from the construction of the rail extension route and / or the Abbey Road crossing. Similarly, construction noise from the main development site may combine with noise from the operation of the rail line.

3.2.12 All predicted noise levels would be low or very low at this receptor. The worst case combination of works which might occur would be if the noisiest period of construction work at the main development site were to occur at the same time as the noisiest period of work during the construction of Abbey Road crossing. If these two sets of activities were to occur at the same time, the overall noise level in combination would remain low in magnitude and therefore the overall effect would be not significant.

3.2.13 As detailed in **Volume 2 Chapter 11** and **Volume 9 Chapter 4**, low magnitude impacts predicted at the residential elements of Leiston Abbey, would result in a minor adverse effect. However, as a high sensitivity receptor, a higher category of effect is possible, which could be moderate adverse or major adverse, depending on the timing of the works relative to the activities at Leiston Abbey. These combined effects are therefore considered significant. SZC Co. will undertake a further, bespoke assessment of impacts from the Sizewell C Project on the Pro Corda Music School at Leiston Abbey. The results of this assessment would inform any additional mitigation requirements which will be secured through further planning obligations. SZC Co. is committed to further liaison with Pro Corda to take account of their specific needs relating to noise impacts and any required mitigation.

iv. **Receptor 14 (Lovers Lane / Sandy Lane Junction)**

3.2.14 During Phase 1 and 2 of the main development site construction, a minor or moderate effect is expected during the day. This is likely to overlap with a period when there is expected to be a moderate adverse effect as a result of early years construction road traffic noise on Lovers Lane.

3.2.15 The two different noise source types (road traffic noise and construction noise) are experienced differently and the assessment methods are not compatible so there is no recognised way to combine these effects. In the circumstances, professional judgement must be used to determine where any combined effect might be experienced.

3.2.16 At this location, the combined effects of these two noise sources may result in a perceived worsening of effects during the day during some early phase construction work at LEEIE. Should this be the case, and the resultant noise levels exceed the SOAEL, the provisions set out in the **Noise Mitigation Scheme (Volume 2 Appendix 11H)** will be applied to avoid the exceedance.

v. [Receptor groups 24 and 25 \(Valley Road North and South\)](#)

3.2.17 There is potential for a project-wide effect at receptors on, and around Valley Road, and the eastern end of Carr Avenue in Leiston during the early years of construction due to combined noise from main development site construction and noise generated by the proposed branch line upgrade works. A moderate adverse effect, and therefore significant effect, is predicted during soil stripping and levelling on the land to the east of Eastlands Industrial Estate (LEEIE) and some receptors could simultaneously experience a moderate adverse effect, and therefore significant construction noise from proposed branch line upgrade works. There is therefore the potential for the effects to be more significant, however the effects would only occur at any receptor for a relatively short period at the start of Phase 1 (site establishment and preparation for earthworks), and so the potential for project-wide effects is limited. Once main development site soil stripping and levelling (at the LEEIE) is complete, any significant effects at these receptors would be dictated by noise generated from the branch line upgrade works and any significant construction noise effects would be as reported in **Volume 9, Chapter 4** of the **ES**.

3.2.18 A further potential project-wide effect at residential receptors on and around Valley Road and the eastern end of Carr Avenue in Leiston exists during the early years of construction due to vibration from proposed rail improvement works combining with main development site construction noise. However, noise and vibration are perceived differently and both occurring simultaneously would not necessarily have a project-wide effect for vibration. Potential effects would also only occur at any receptor for a relatively short period at the start of Phase 1 (site establishment and preparation for earthworks) making potential project-wide effects unlikely.

3.2.19 Noise from the operation of the rail branch line between Saxmundham and Leiston could also combine with main development site construction noise (at the LEEIE) during the early years of construction to result in a project-

wide effect, although any project-wide effects are unlikely to be significant either in isolation or in combination.

vi. [Receptors A, B, C, D and G in Darsham](#)

- 3.2.20 Potential project-wide effects also exist around the northern park and ride at Darsham, where minor adverse effects are predicted at these receptors during the construction and reinstatement phases, but could combine with increases in construction-related road traffic noise (associated with the main development site) on the A12 during the early years of construction. Increases in road traffic noise in at these receptors would result in a negligible effect, so no significant residual effects are predicted from either in isolation and this is unlikely to change in combination.

vii. [Receptors in Yoxford](#)

- 3.2.21 There is also potential for a project-wide effect due to noise from construction works at the Yoxford roundabout combining with construction-related road traffic noise increases on the B1122 (Middleton Road) where it connects to this roundabout. During Yoxford roundabout construction there are predicted to be negligible or minor adverse effects only. Significant adverse effects are predicted at some receptors due to increased road traffic noise on the B1122 (Middleton Road) during the early years of main development site construction. There is potential for construction and road traffic noise-related effects to occur simultaneously, although cumulative noise levels would be predominantly dictated by the road traffic noise level, and would not be significantly higher if roundabout construction was also ongoing. Potential project-wide effects are therefore unlikely to give rise to a greater significant effect than already predicted for the traffic noise assessment as detailed in **Volume 7 Chapter 4** and **Volume 2 Chapter 11**.

- 3.2.22 Finally, there is the potential for a project-wide effect due to noise from operation of the branch line combined with construction and operation of the LEEIE for a period of approximately 1 year until the rail route extension is completed and operational. Potentially effected receptors are dwellings on Valley Road (north and south) and the eastern end of Carr Avenue. It should be noted that there is no recognised method in these circumstances for combining sound levels from different source types/activities and therefore determining the combined significance. The predicted noise levels from both LEEIE construction and the operational branch line during this period are relatively low and would have a negligible noise effect at these receptor areas. Given that there would only be two daytime trains only using the branch line for this one year period, it concluded that project-wide noise effects would remain negligible for these combined activities.

3.2.23 In summary, no additional mitigation is proposed in response to predicted project-wide noise or vibration effects during construction of Sizewell C.

d) [Removal and reinstatement](#)

i. [Receptor 15 \(Old Abbey Farm/Care Home\)](#)

3.2.24 There is potential for a project-wide effect at Old Abbey Farm/Care Home due to noise from the rail extension removal and reinstatement combining with main development site removal and reinstatement (Phase 5) between the daytime working hours of 07.00 and 19.00. If occurring simultaneously then noise levels at Old Abbey Farm/Care Home would be dominated by main development site removal and reinstatement activity (with removal and reinstatement of the rail extension route noise levels more than 10dB below those from the main development site) to the extent that there would be no additional project-wide effect. Significant construction noise effects from the main development site are reported in **Volume 2, Chapter 11**. A moderate adverse effect is predicted to this receptor from Phase 5 during the busiest month when works are at their closest to the receptor.

ii. [Receptor group 3 \(Abbey Road, Leiston\)](#)

3.2.25 A potential project-wide effect exists at receptors on B1122 (Abbey Road), Leiston due to noise from main development site restoration combining with noise from removal and reinstatement of the B1122 (Abbey Road) level crossing. However, no significant residual effects are predicted from either component in isolation and this is unlikely to change even if they occurred simultaneously.

e) [Project-wide effects during operation](#)

3.2.26 The noise and vibration effects have been assessed for all activities associated with the operational phase of Sizewell C. Noise levels from operational new roads, existing roads, and the operational station are not expected to combine at any receptors and result in a project-wide effect. Similarly, project-wide effects are not expected with respect to vibration during this phase.

3.3 [Air quality](#)

a) [Introduction](#)

3.3.1 **Table 3.2** provides a summary of the Sizewell C Project components that have the potential to result in significant project-wide air quality impacts. The assessments of the combined impacts are presented with reference to the

site-specific assessments presented in **Volume 2, Chapter 12** and **Volumes 3 to 9, Chapter 5** of the **ES**.

Table 3.2: Summary of potential air quality project-wide cumulative effects

Potential Impact	SZC Components with Potential to Interact Cumulatively	Receptors with the Potential to Experience Project-Wide Effects
Generation of particulate matter and transport emission from construction activities.	Main development site (construction). Proposed rail extension route and proposed rail improvement works (construction and operation).	Air quality sensitive receptors (LE1 to LE3, LE9, LE12, LE15 to LE19, LE34 to LE38 and LE40) within 500m of affected roads and 350m of the proposed development sites.

3.3.2 The project-wide effects on air quality from traffic associated with the Sizewell C Project are presented in the Transport Emissions Assessment, provided in **Volume 2, Chapter 12** and **Appendix 12B** of the **ES**. The Transport Emissions Assessment includes an assessment of the early years (2023), when all proposed developments are under construction. This scenario considers emissions from road traffic during construction of the main development site and the associated developments. There is the potential for project-wide effects on sensitive air quality receptors resulting from the construction of the main development site and the rail extension route, as summarised in **Table 3.2**.

3.3.3 The assessment also considers the peak year of construction (2028), when construction activity is anticipated to be at peak on the main development site and all the associated developments are fully operational. The rail extension route and the main development site have the potential to have project-wide effects on air quality from the generation of particulate matter and transport emissions. This scenario considers emissions from both road and rail traffic (which will be operating on the proposed rail developments) during peak year of construction of the main development site.

3.3.4 For each development of the Sizewell C Project, where there is the potential for traffic impacts on air quality associated with the construction and operation of other components of the Sizewell C Project to combine with construction and operational impacts of each development, the assessment is presented in the relevant site-specific chapter. For example, the assessment of in-combination impacts from the construction traffic working on the northern park and ride and impacts from traffic on the A12 on properties close to the site is presented in **Volume 3, Chapter 5** of the **ES**: Air quality.

b) Assessment methodology

3.3.5 The methodology for the assessment of potential cumulative air quality impacts is based upon that described in **Appendix 6H** in **Volume 1** of the **ES** (as applied to the site-specific assessments). In addition, professional judgement has been used to determine the significance of effects of the Sizewell C Project on air quality.

3.3.6 The project-wide assessment considers impacts on residential receptors, as identified in **Table 3.2**.

c) Project-wide effects during construction

i. Project-wide effects during early years construction

3.3.7 There will be a temporal overlap between construction on the main development site and the proposed rail developments in the early years whilst the rail developments are under construction. The rail developments are contiguous with the main development site.

3.3.8 There is the potential for cumulative impacts from the generation of particulate matter and transport emissions from construction activities on properties along the B1122 (Abbey Road), in Leiston town centre, and along King George's Avenue. These properties all fall within 350m from the rail developments and main development site and 200m from affected roads within 500m from the sites.

3.3.9 Any residual construction dust effects from the main development site and the proposed rail developments, with the application of proposed mitigation, on sensitive receptors in Leiston are assessed to be **not significant**, as detailed in **Volume 2, Appendix 12A** and **Volume 9, Appendix 5A** of the **ES**. The potential for impact from dust arising from both developments in combination would also likely be **not significant** with the implementation of the proposed mitigation measures detailed in the **Code of Construction Practice (CoCP)** (Doc Ref. 8.11). The mitigation measures represent the highest level of mitigation as they are appropriate for a site with the highest risk of dust emissions (classed as high risk). These were proposed after taking into account project-wide effects from construction activities associated with different sites. The proposed mitigation will appropriately mitigate any cumulative dust emissions resulting from construction of the main development site and the rail extension route.

3.3.10 The Transport Emissions Assessment, provided in **Volume 2, Appendix 12B** of the **ES** assesses transport emissions resulting from the Sizewell C Project as a whole and considers the cumulative effects of construction of the main development site and the associated developments together during

the 2023 (early year) and 2028 (peak year of construction) scenarios. The residual combined impacts from transport emissions associated with the main development site and rail developments on sensitive receptors in Leiston are negligible. The overall effects resulting from construction of the main development site in combination with effects resulting from construction of the rail developments would be **not significant** for all potentially affected receptors listed in **Table 3.2**, as reported in the Transport Emissions Assessment, provided in **Volume 2, Appendix 12B** of the **ES** which covers combined transport impacts on air quality from all developments in the Sizewell C Project during the early years construction scenario.

ii. **Project-wide effects during peak year of construction**

3.3.11 The Transport Emissions Assessment considers the cumulative effects of road traffic and rail traffic during the peak year of construction of the main development site during the 2028 average day and busiest day peak year scenario. The residual combined construction impacts from road traffic and rail emissions, construction dust, and associated non-road mobile machinery (NRMM) emissions from the main development site on sensitive receptors in Leiston are negligible. The overall effects resulting from the construction of the main development site in combination with effects resulting from operation of the rail developments would be **not significant** due to: no further combined emissions above that reported for the peak year of construction of the main development site, provided in **Volume 2, Chapter 12** of the **ES**; and the Transport Emissions Assessment which reports the effects from transport associated with all Sizewell C Project developments combined during the peak year of construction scenario, provided in **Volume 2, Appendix 12B** of the **ES**.

iii. **Removal and reinstatement of the rail developments**

3.3.12 The scale of works associated with the removal and reinstatement phase of the rail developments would generate a similar level of dust and transport emissions to the construction phase of these developments, represented by the 2023 early years scenario. The air quality effects resulting from the removal and reinstatement phase of the rail developments, combined with construction of the main development site, would be **not significant**.

d) **Project-wide effects during operation**

3.3.13 The Transport Emissions Assessment includes an assessment of road traffic in 2034, when the Sizewell C Project will be operational. The effects on air quality resulting from road traffic associated with the operational phase of the Sizewell C Project have been assessed as **not significant**. There is no potential for project-wide air quality effects during operation due to the geographical separation of the of the main development site and permanent

associated developments, which are greater than the zone of influence (ZOI) for air quality.

3.4 Landscape and Visual

a) Introduction

3.4.1 **Table 3.3** provides a summary of the Sizewell C Project components that have the potential to result in significant project-wide landscape and visual effects. The assessments of the combined impacts are presented with reference to the site-specific assessments presented in **Volume 2, Chapter 13** and **Volumes 3 to 9, Chapter 6** of the **ES**.

Table 3.3: Summary of potential landscape and visual project-wide cumulative effects

Potential Impact	SZC Components with Potential to Interact Cumulatively	Receptors with the Potential to Experience Project-Wide Effects
Removal of landscape features and effects of construction activity on local landscape character. Direct effects on local landscape character.	Main development site (construction). Freight management facility Rail developments Sizewell Link Road	Estate Sandlands landscape character type (LCT) Ancient Estate Claylands
Views of construction.	Main development site Yoxford and other highways improvements Sizewell Link Road	Visual Receptor Group 4: Middleton, Westleton and Darsham Visual Receptor Group 9: Theberton and Knodishall Green Visual Receptor Group 10: Eastbridge and Leiston Abbey Visual Receptor Group 16: North of Leiston Key Routes (Road and Rail): A12, East Suffolk railway line Key Routes (cycling): Sustrans RCR 42
Direct and indirect effects on landscape character and views of construction.	Main development site Sizewell Link Road	Minsmere River Valley Special Landscape Area (SLA)

b) Assessment Methodology

3.4.2 The methodology for the assessment of potential cumulative landscape and visual impacts is based upon that described in **Appendix 6I** in **Volume 1** of the **ES** (as applied to the site-specific assessments). In addition, professional

judgement has been used to determine the significance of effects of the Sizewell C Project on landscape and visual.

3.4.3 The cumulative assessment considers impacts on residential receptors, as identified in **Table 3.3**.

c) Project-wide effects during construction

i. Project-wide effects during early years of construction

3.4.4 During the early years of the construction phase the potential for project-wide effects is anticipated to occur where a proposed development occurs in the same LCT or where there is the potential for in-combination or sequential views to construction activity at the main development site or associated development sites. Potential also occurs for in combination effects on areas of designated landscape.

3.4.5 Project-wide effects on landscape character are anticipated to occur during the early years of the construction within the Estate Sandlands LCT, where the main development site, freight management facility and rail developments would be located within the same LCT. The freight management facility would be sufficiently remote from the main development site to avoid any likely combined effects and the effects from the rail developments are considered to be limited to within very close proximity of the site boundaries. Therefore, in both cases, the predicted impacts of the individual components of the Sizewell C Project on landscape character would not combine to represent a greater project-wide effect.

3.4.6 Project-wide effects on landscape character are also anticipated to occur during the early years of the construction within the Ancient Estate Claylands LCT, where the main development site, northern park and ride, Sizewell link road and rail extension route would be located within the same LCT. The associated development sites are either sufficiently remote from the main development site or the effects from these sites are considered to be limited to within very close proximity of the site boundaries. Therefore, the predicted impacts of the individual components of the Sizewell C Project on landscape character would not combine to represent a greater project-wide effect.

3.4.7 Project-wide visual effects are anticipated to occur during the early years of the construction between the main development site and/or one or more of the associated development sites for the following visual receptors:

- Visual Receptor Group 4: Middleton, Westleton and Darsham.
- Visual Receptor Group 9: Theberton and Knodishall Green.

- Visual Receptor Group 10: Eastbridge and Leiston Abbey.
- Visual Receptor Group 16: North of Leiston.
- Key Routes (Road and Rail) - A12.
- Key Routes (Road and Rail) - East Suffolk railway line.
- Key Routes (Cycling) - Sustrans RCR 42.

3.4.8 In all cases, the combined visual effects of construction activity at the main development site and the associated development sites would be no greater than the largest identified effects arising from the main development site or relevant associated development sites alone. This is because the associated development sites are either sufficiently remote from the main development site and each other to ensure that they would not be perceived in the same part of any view or would not be located close enough to each other to combine to represent a greater project-wide visual effects.

3.4.9 Project-wide effects on designated landscapes are anticipated to occur during the early years of the construction where the main development site and Sizewell link road would be located within or near the Minsmere River Valley SLA. Given that the landscape and visual impacts from Sizewell link road would be limited to within very close proximity of the site boundaries, and that it would be located outside the SLA, the combined effects of construction activity at the main development site and Sizewell link road would be no greater than identified for the effects arising from the individual components alone.

3.4.10 No project-wide effects on designated landscapes are anticipated to occur for the Suffolk Coast and Heaths AONB, the Suffolk Heritage Coast, the Hundred River Valley SLA, the River Alde Valley SLA, the River Deben/ River Ore Valley SLA or the River Yox Valley SLA.

ii. **Project-wide effects during peak year of construction**

3.4.11 During the peak year of construction of the main development site the potential for project-wide effects is anticipated to occur where a proposed development occurs in the same landscape character type or where there is the potential for in-combination effects or sequential views to construction activity at the main development site and operational associated development sites. Potential also occurs for in-combination effects on areas of designated landscape.

3.4.12 Project-wide effects on landscape character are anticipated to occur during the peak year of construction of the main development site within the Estate Sandlands LCT, where the main development site, freight management

facility and rail extension route and other rail improvements would be located within the same LCT, and the Ancient Estate Claylands LCT, where the main development site, northern park and ride, Sizewell link road and rail extension route would be located within the same LCT. The associated development sites are either sufficiently remote from the main development site (particularly in the case of the freight management facility) or the landscape effects from the proposed developments are considered to be limited to within very close proximity to the site boundaries. Therefore, in both cases, the predicted impacts of the individual components of the Sizewell C Project on the landscape character would not combine to represent a greater project-wide effect.

3.4.13 Project-wide visual effects are anticipated to occur during peak year of construction of the main development site and/or one or more of the operational associated development sites for the following visual receptors:

- Visual Receptor Group 4: Middleton, Westleton and Darsham
- Visual Receptor Group 9: Theberton and Knodishall Green
- Visual Receptor Group 10: Eastbridge and Leiston Abbey
- Visual Receptor Group 16: North of Leiston
- Key Routes (Road and Rail) - A12
- Key Routes (Road and Rail) - East Suffolk railway line
- Key Routes (Cycling) - Sustrans Regional Cycle Route 42

3.4.14 In all cases, the combined effects of construction activity at the main development site and the operational associated development sites would be no greater than the largest identified effects arising from construction of the main development site or relevant associated development sites alone. This is because the associated development sites are either sufficiently remote from the main development site and each other to ensure that they would not be perceived in the same part of any view or would not be located close enough to each other to combine to represent greater project-wide visual effects.

3.4.15 Project-wide effects on designated landscapes are anticipated to occur during peak year of construction of the main development site where the main development site and the operational Sizewell link road would be located within or near the Minsmere River Valley SLA. Given that the visual and landscape impacts from the Sizewell link road would be limited to within very close proximity of the site boundaries, and that the proposed Sizewell link road would be located outside the SLA, the combined effects of ongoing

construction activity at the main development site and operational Sizewell link road would be no greater than identified for the effects arising from the individual components alone.

3.4.16 No project-wide effects on designated landscapes are anticipated to occur for the Suffolk Coast and Heaths AONB, the Suffolk Heritage Coast, the Hundred River Valley SLA, the River Alde Valley SLA, the River Deben/ River Ore Valley SLA or the River Yox Valley SLA.

iii. **Project-wide effects during removal and reinstatement of associated development sites**

3.4.17 It is judged that landscape and visual effects during the removal and reinstatement of associated development sites would be no worse than set out for early years construction.

3.4.18 During the removal and reinstatement phase the potential for project-wide effects is anticipated to occur where proposed removal works occur in the same LCT or where there is the potential for in-combination or sequential views to removal and reinstatement activity at the main development site or temporary associated development sites. Potential also occurs for in-combination effects on areas of designated landscape.

3.4.19 Project-wide effects on landscape character are anticipated to occur during removal and reinstatement within the Estate Sandlands LCT and the Ancient Estate Claylands LCT, where the main development site, freight management facility and rail extension route would be located within the same two LCTs. The freight management facility would be sufficiently remote from the main development site to avoid any likely combined project-wide effects on the Estate Sandlands LCT. The predicted effects of the rail extension route would be limited to within very close proximity of the site boundary and therefore the predicted impacts of the individual components of the Sizewell C Project on landscape character would not combine to represent a greater project-wide effect on either LCT.

3.4.20 Project-wide visual effects are anticipated to occur during removal and reinstatement between the main development site and the rail extension route for the following visual receptors:

- Visual Receptor Group 10: Eastbridge and Leiston Abbey
- Visual Receptor Group 16: North of Leiston
- Key Routes (Cycling): Sustrans Regional Cycle Route 42

3.4.21 In all cases, the combined effects of removal and reinstatement activity at the main development site and the associated development sites would be no

greater than the largest identified effects arising from the main development site or relevant associated development sites alone. This is because the presence of existing vegetation and buildings would ensure that they would not be perceived in the same part of any view or would not be located close enough to each other to combine to represent a greater project-wide visual effects.

3.4.22 In addition, project-wide visual effects are anticipated to occur during removal and reinstatement along the A12 between the northern and southern park and ride sites. Due to the separation between the park and ride sites, the predicted visual effects of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

3.4.23 No project-wide effects on designated landscapes are anticipated to occur during removal and reinstatement for the Suffolk Coast and Heaths AONB, the Suffolk Heritage Coast or the SLAs.

d) Project-wide effects during operation

3.4.24 It is judged that landscape and visual effects during the operation of the main development site and the permanent associated development sites, at Sizewell link road, two village bypass and Yoxford roundabout, would be no worse than set out for early years construction.

3.4.25 During operation the potential for project-wide effects is anticipated to occur where the main development site and the permanent associated development sites are located within the same LCT or where there is the potential for in-combination or sequential views to the operational Sizewell C Project. Potential also occurs for in-combination effects on areas of designated landscape.

3.4.26 Project-wide effects on landscape character are anticipated to occur during operation within the Ancient Estate Claylands LCT, where the main development site and Sizewell link road would be located within the same LCT. Due to the topography of the land and proximity of the sites, the combined effect of the operation of the main development site and Sizewell link road would be no greater than identified for the effects arising from the individual project components alone.

3.4.27 Project-wide visual effects are anticipated to occur during operation between the main development site and/or one or more of the associated development sites for the following visual receptors:

- Visual Receptor Group 4: Middleton, Westleton and Darsham.
- Visual Receptor Group 9: Theberton and Knodishall Green.

- Visual Receptor Group 10: Eastbridge and Leiston Abbey.

3.4.28 In all cases, the combined effects of the operation of the main development site and the permanent associated development sites would be no greater than the largest identified effects arising from the main development site or relevant associated development sites alone. This is because the presence of existing vegetation and buildings would ensure that they would not be perceived in the same part of any view or would not be located close enough to each other to combine to represent a greater project-wide visual effects.

3.4.29 In addition, project-wide visual effects are anticipated to occur during operation along the A12 between the two village bypass, Sizewell link road and Yoxford roundabout. Due to the separation between these associated developments, the predicted visual effects of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

3.4.30 Project-wide effects on designated landscapes are anticipated to occur during operation where the main development site and Sizewell link road would be located within or near the Minsmere River Valley SLA. Given that the visual and landscape impacts from the Sizewell link road would be limited to within very close proximity of the site boundaries, and that the proposed Sizewell link road would be located outside the SLA, the combined effects would be no greater than identified for the effects arising from the individual components alone.

3.4.31 No project-wide effects on designated landscapes are anticipated to occur for the Suffolk Coast and Heaths AONB, the Suffolk Heritage Coast, the Hundred River Valley SLA, the River Alde Valley SLA, the River Deben/ River Ore Valley SLA or the River Yox Valley SLA.

3.5 Terrestrial ecology and ornithology

a) Introduction

3.5.1 **Table 3.4** provides a summary of the Sizewell C Project components that have the potential to result in project-wide ecological effects in either construction or operation. The assessment of the combined impacts is presented with reference to the site-specific assessments presented in **Volume 2 Chapter 14** and **Volumes 3 to 9 Chapter 7** of the **ES**.

Table 3.4: Summary of potential terrestrial ecology project-wide cumulative effects

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Alteration of local hydrology and hydrogeology.	<ul style="list-style-type: none"> Main development site Yoxford Sizewell link road Green rail route 	Minsmere to Walberswick Heaths and Marshes Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar Site, and Site of Special Scientific Interest (SSSI)
Habitat loss and fragmentation.	<ul style="list-style-type: none"> Main development site Two village bypass Sizewell link road 	Habitats including hedgerows and lowland mixed deciduous woodland
Habitat loss and fragmentation.	All sites	Farmland Birds (species of conservation concern)
Habitat loss, fragmentation and incidental mortality.	<ul style="list-style-type: none"> Northern park and ride Sizewell link road Rail extension 	Great crested newts
Habitat loss (roosts, foraging), fragmentation, noise disturbance and light disturbance.	All sites excluding Yoxford	Bats
Land take (loss and fragmentation), incidental mortality and disturbance effects.	<ul style="list-style-type: none"> Main development site Two village bypass 	Water voles Otters

b) Assessment methodology

3.5.2 The methodology for the assessment of potential project-wide ecology and ornithology impacts is based upon that described in **Appendix 6J** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

3.5.3 The project-wide assessment considers impacts on terrestrial ecology for construction and operation, and removal and reinstatement (where relevant).

c) Project-wide effects during construction

i. Alteration of local hydrology and hydrogeology

3.5.4 The proposals at the main development site, rail extension route, Yoxford and Sizewell link road all have the theoretical potential to impact the Minsmere River catchment on a project-wide basis. However, mitigation measures have been incorporated into the Sizewell C Project design, the programme and the CoCP on a site by site basis during construction to ensure no significant effects occur locally. In this case, no significant effects are predicted on Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI on an individual basis, as a result of any hydrological change during construction. With this mitigation, no effects are predicted on a project-wide basis.

ii. Habitat loss and fragmentation (woodlands, hedgerows, farmland birds)

3.5.5 The loss of both woodland and hedgerows across the Sizewell C Project during construction is considered to result in effects which are minor and not significant at each relevant location given the limited quantities of habitat to be temporarily impacted during the construction phase. This conclusion on a site by site basis has also been drawn as a result of the extensive mitigation being implemented at the end of the construction phase.

3.5.6 Overall, on a project-wide basis, impacts in relation to habitat loss are considered to be temporarily moderate adverse and **significant** during the construction phase. However, substantial avoidance measures have been incorporated into the scheme design in **the associated development design principles** (Doc Ref 8.3) and the main development site description of development (**Volume 2, Chapters 2 to 4**).

3.5.7 Wet woodland habitat is present at Sizewell Marshes SSSI at the main development site and has been considered as part of the site-specific assessment. There would be no other loss of wet woodland at the associated development sites. During the construction phase, some minor adverse effects are anticipated to woodlands adjacent to the associated developments, through impacts such as dust dispersal. These impacts are anticipated to be localised and would be managed through the implementation of an **outline Dust Management Plan (oDMP)** (**Volume 2, Appendix 12A**). Given the localised nature of dust dispersal on wet woodland, it is envisaged this would be a minor adverse effect and would be **not significant**.

3.5.8 The loss of habitats for the farmland bird assemblages across the Sizewell C Project will result in effects which are considered to be minor and **not significant** at each relevant location. The existing arable habitats which

would be lost across the Sizewell C Project are of relatively low value for the farmland bird assemblage, with relatively low densities recorded during survey. The project-wide effect on the farmland bird assemblage during construction is therefore judged to be to be minor adverse and **not significant**.

iii. **Habitat loss, fragmentation and incidental mortality (great crested newt)**

3.5.9 Three elements of the Sizewell C Project, the Northern park and ride, the Sizewell link road and the rail extension route have the potential to impact populations of great crested newts during the construction phase. In particular, the Sizewell Link Road will lead to the loss of several ponds with the confirmed presence of great crested newts and some areas of terrestrial habitat during the construction phase. At the other two locations, ponds with confirmed presence are being retained in adjacent areas and the impacts relate primarily to possible loss of terrestrial habitats and fragmentation.

3.5.10 However, given the measures applied locally, through individual packages of embedded primary mitigation in each location, including development of enhanced terrestrial habitats and replacement ponds as relevant, no significant adverse effects are predicted for any element of the scheme during construction. The project-wide effect is therefore judged to be **not significant**.

iv. **Habitat loss (roosts, foraging), fragmentation, noise disturbance and light disturbance (bats)**

3.5.11 All elements of the Sizewell C Project, with the likely exception of Yoxford roundabout, have the potential to impact populations of bats. At the main development site, impacts are predominantly associated with the construction phase and relate to habitat loss, fragmentation, combined with the potential impacts of lighting and noise. The direct loss of confirmed roosts is low but roosts might be lost through disturbance from nearby construction noise. Mitigation is proposed through provision of alternative roosts and the minimisation of light spill and noise screening. At the associated development sites, confirmed roost loss is again low or avoided and the impacts are predominantly associated with potential fragmentation along the Sizewell link road and the two village bypass. Fragmentation would arise during construction but will be minimised in the longer term through woodland and hedgerow planting, the creation of bat hop-over points and the use of culverts. Where appropriate, avoidance measures have been implemented to ensure that roosts are retained and do not fall beneath the footprint of any of the developments (where practicable).

3.5.12 However, given the measures applied locally, through individual packages of embedded primary mitigation in each location, other than the significant

adverse effect on barbastelle bats arising as a result of habitat fragmentation at the main development site during construction, no significant adverse effects are predicted for any element of the scheme.

v. [Land take \(loss and fragmentation\), incidental mortality and disturbance effects \(water vole, otter\)](#)

3.5.13 The Sizewell C Project proposals at both the main development site (relating to the Leiston Drain, Sizewell Drain and other watercourses within the Sizewell Marshes SSSI) and on the two village bypass (at the River Alde) have the potential to impact both water voles and otters. The impacts on both species at the River Alde initially arise during construction. These are mitigated in this phase by retaining the River Alde on its existing alignment, leaving extensive terrestrial bank top habitats, and ensuring buffer zones are maintained in the vicinity of the river banks. No significant fragmentation effects are therefore predicted on an individual scheme basis or project-wide basis. In addition, appropriate working methodologies, licensing and supervision would be implemented on each site (where appropriate) to ensure no incidental mortality during construction. At the main development site, replacement habitats for water voles have been created at Aldhurst Farm and would be used for a translocation for the species, whilst the habitats along both the Leiston Drain and Sizewell Drain would be reinstated.

3.5.14 Given the measures applied locally, no significant adverse effects are predicted for any element of the scheme in relation to either water voles or otters. The project-wide effect during construction is therefore judged to be **not significant**.

d) [Project-wide effects during operation](#)

i. [Alteration of local hydrology and hydrogeology](#)

3.5.15 The proposals at the main development site, rail extension route, Yoxford and Sizewell link road all have the theoretical potential to impact the Minsmere River catchment on a project-wide basis. However mitigation measures have been incorporated into the Sizewell C Project design including operational drainage design to ensure no significant effects occur locally during the operational phase. In this case, no significant effects are predicted on Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI on an individual basis during operation, as a result of any hydrological change. Therefore, no further effects are predicted on a project-wide basis.

ii. **Habitat loss and fragmentation (woodlands, hedgerows, breeding birds, farmland birds)**

3.5.16 The loss of both woodland and hedgerows across the Sizewell C Project is considered to result in effects which are minor and **not significant** at each relevant location given the limited quantities of habitat to be temporarily impacted during the construction phase and those affected permanently, during the long-term operational phase. This conclusion on a site by site basis has also been concluded as a result of the extensive mitigation being implemented.

3.5.17 In the longer term, once woodland and hedgerow planting has fully established, particularly on the main development site, the Sizewell link road and the two village bypass, there would be net gains in the extent of both woodland and hedgerows at each project element and also at the project-wide level. The project-wide impacts on woodland and hedgerows is therefore judged to be minor and **not significant** in the operational phase.

3.5.18 The loss of habitats for both the farmland bird assemblage across the Sizewell C Project is considered to result in effects which are considered to be minor and **not significant** at each relevant location. In the long-term there will be a net loss of arable habitats at individual sites and across the Sizewell C Project. The net loss of arable habitat would remain once all elements of the Sizewell C Project are operational, with substantive conversion of existing arable habitats to acid grassland, woodland and scrub (see the **Outline Landscape and Ecology Management Plan (oLEMP)**) (Doc Ref. 8.2) on the main development site. This habitat conversion on the main development site would be of benefit to at least some of the farmland bird assemblage. The construction of the Sizewell link road and the two village bypass would lead to the loss of existing arable land to develop the road infrastructure but also to the creation of extensive areas of neutral grasslands, woodland and hedgerows associated with the adjacent soft estate. The existing arable habitats which would be lost across the Sizewell C Project are of relatively low value for the farmland bird assemblage, with relatively low densities recorded during survey. The project-wide effect on the farmland bird assemblage is therefore judged to be **not significant** in the operational phase.

iii. **Habitat loss, fragmentation and incidental mortality (great crested newt)**

3.5.19 Three elements of the Sizewell C Project, the Northern park and ride, the Sizewell link road and the rail extension route have the potential to impact populations of great crested newts as described above during the construction phase. The operational design includes individual packages of embedded primary mitigation in each location, including development of enhanced terrestrial habitats and replacement ponds as relevant, which

would be well established during the operational phase as well as culverts and drop kerbs where relevant to maintain connectivity across the alignment. No significant adverse effects are predicted for any element of the scheme during the operational phase. The project-wide effect is therefore judged to be **not significant**.

iv. **Habitat loss (roosts, foraging), fragmentation, noise disturbance and light disturbance (bats)**

3.5.20 All elements of the Sizewell C Project, with the likely exception of Yoxford roundabout, have the potential to impact populations of bats as described above during the construction phase. At the main development site, impacts are predominantly associated with the construction phase and relate to habitat loss and fragmentation, combined with the potential impacts of lighting and noise. In the operational phase of the main development site, additional habitats would be established and over the long term would provide enhanced foraging habitats for bats and greater connectivity across the EDF Energy estate. At the associated development sites, the impacts are predominantly associated with potential fragmentation along the Sizewell link road and the two village bypass. However, this will be minimised in the longer term through woodland and hedgerow planting and the creation of bat hop-over points and the use of culverts.

3.5.21 Given the measures applied locally, through individual packages of embedded primary mitigation in each location, including development of enhanced terrestrial habitats, bat hop-overs and culverts as relevant, no significant adverse effects are predicted for any element of the scheme. The project-wide effect is therefore judged to be **not significant**.

v. **Land take (loss and fragmentation), incidental mortality and disturbance effects (water vole, otter)**

3.5.22 The Sizewell C Project proposals at both the main development site (relating to the Leiston Drain, Sizewell Drain and other watercourses within the Sizewell Marshes SSSI) and on the two village bypass (at the River Alde) have the potential to impact both water voles and otters. The impacts on both species at the River Alde arising during operation are to be mitigated by including a wide bridge within the design. This would leave extensive terrestrial bank top habitats and retain the River Alde on its existing alignments, with 'otter ledges' provided within the bridge for any periods when the river is out of bank. No significant fragmentation effects are therefore predicted on an individual scheme basis at this location or project-wide basis. At the main development site, replacement habitats for water voles have already been created at Aldhurst Farm and habitats along Leiston Drain and Sizewell Drain would be reinstated, leaving a greater area of habitat for water voles than existed previously. No significant adverse effects

are predicted for any element of the scheme in relation to either water voles or otters. The project-wide effect during the operational phase is therefore judged to be **not significant**.

3.6 Amenity and recreation

a) Introduction

3.6.1 **Table 3.5** provides a summary of the Sizewell C Project components that have the potential to result in project-wide amenity and recreation impacts. The assessment of the combined impacts are presented with reference to the site-specific assessments presented in **Volume 2 Chapter 15** and **Volumes 3 to 9 Chapter 8** of the **ES**.

Table 3.5: Summary of amenity and recreation project-wide effects

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Diversions Views of construction Noise	Main development site Sizewell link road	Receptor Group 10: Eastbridge and Leiston Abbey
Traffic Increases in number of people Effects on tranquillity	Main development site Rail	Receptor Group 16: North of Leiston Regional Cycle Route 42

b) Assessment methodology

3.6.2 Receptor groups and Regional Cycle Route 42 are shown on **Figures 15.6** and **15.7** in **Volume 2 Chapter 15** of the **ES**. Receptor groups are discrete geographic areas that have been defined for the purpose of the assessment of the main development site in **Volume 2 Chapter 15** of the **ES**, encompassing a number of recreational resources such as Public Rights of Way (PRoW) and open access land, with broadly similar characteristics in relation to the landscape they lie within and their proximity and relationship to the main development site (e.g. topography, land cover, and the potential for receptors to see the proposed development or hear noise from the proposed development).

3.6.3 The methodology for the assessment of potential project-wide amenity and recreation impacts is based upon that described in **Appendix 6K** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

- c) Project-wide effects during construction
 - i. Diversions of PRow and Regional Cycle Route 42, views of construction, noise, traffic, increases in numbers of people, effects on tranquillity, effect during early years construction.

3.6.4 Project-wide effects are anticipated to occur during the early years of construction of the main development site and/or one or more of the associated development sites for the following amenity and recreation receptors:

- Receptor Group 10: Eastbridge and Leiston Abbey.
- Receptor Group 16: North of Leiston.
- Long distance linear recreation route: Regional Cycle Route 42.

3.6.5 PRow E-515/013/0 within receptor group 10 would be diverted to its permanent alignment during the construction of Sizewell link road. Some receptors within receptor group 10 would experience views of and noise from construction activity at the main development site and Sizewell link road. Additional traffic caused by the Sizewell C Project on the B1122, A12 and other roads during construction of the main development site has already been included in the assessment of effects for the main development site in **Volume 2 Chapter 15** and for the Sizewell link road in **Volume 6 Chapter 8** of the **ES**. Where in-combination effects are possible, the effects would be no greater than for those identified for the main development site as moderate, adverse (**significant**) for receptor group 10. The effects due to a local diversion of PRow E-515/013/0 across Sizewell link road would have very limited additional effects on receptors within receptor group 10 to those assessed for the main development site alone.

3.6.6 PRow within receptor group 16 would be diverted temporarily due to the rail extension route (temporary rail extension). Some receptors within group 16 would experience views of, and noise from, construction activity at the main development site and additional traffic on roads in combination with construction works at the rail extension route (temporary rail extension). Where in-combination effects are possible, the effects would be greater than for those identified for the main development site or rail extension route (temporary rail extension) on their own and would be expected to be major-moderate adverse and therefore **significant**.

3.6.7 Regional Cycle Route 42 would be diverted from the carriageway of the B1122 onto a new off-road bridleway parallel to the B1122 at the beginning of construction of the main development site. Users of Regional Cycle Route 42 would experience views of and noise from construction activity at the main

development site and additional traffic on roads in combination with construction works at the rail extension route (temporary rail extension). However, effects on Regional Cycle Route 42 due to the green rail route are assessed in **Volume 9 Chapter 8** of the **ES** to be negligible neutral (**not significant**) and would not add to effects assessed for the main development site in **Volume 2 Chapter 15**. The effects would be no greater than for those identified for the main development site and would be expected to be minor adverse and therefore **not significant**.

3.6.8 The combined effects of the main development site and the rail extension route would be greater than the effects of either the main development site or the rail extension route assessed on their own. In all other cases the combined effects of the main development site and the associated development sites would be no greater than the largest identified effects arising from the main development site or Sizewell link road.

ii. Diversions of PRoW and Regional Cycle Route 42, views of construction, noise, traffic, increases in numbers of people, effects on tranquillity, effects during peak year of construction.

3.6.9 Project-wide effects are anticipated to occur during the peak year of construction of the main development site and operation of the associated development sites for the following amenity and recreation receptors:

- Receptor Group 10: Eastbridge and Leiston Abbey.
- Receptor Group 16: North of Leiston.
- Long distance linear recreation route: Regional Cycle Route 42.

3.6.10 PRoW E-515/013/0 within receptor group 10 would be diverted to its new permanent alignment. Some receptors within receptor group 10 would experience views of, and noise from, construction activity at the main development site in combination with operation of the Sizewell link road including moving traffic. Additional traffic caused by the Sizewell C Project on the B1122, A12 and other roads during construction of the main development site has already been included in the assessment of effects for the main development site in **Volume 2 Chapter 15** and for the Sizewell link road in **Volume 6 Chapter 8** of the **ES**. Where in combination effects are possible, the effects would be no greater than those identified for the main development site as moderate, adverse (**significant**) for receptor group 10. The effects due to a local diversion of PRoW E-515/013/0 across Sizewell link road would have very limited additional effects on receptors within receptor group 10 to those assessed for the main development site alone.

3.6.11 PRow within receptor group 16 would be diverted temporarily due to the operation of the proposed rail extension route. Some receptors within group 16 would experience views of, and noise from, construction activity at the main development site and Sizewell C Project construction traffic in combination with operation of the rail extension route. Where in combination effects are possible, the effects would be no greater than for those identified for the main development site: moderate adverse (**significant**). Diversions of PRow due to the green rail route would affect recreational receptors but not to the extent that combined effects would increase above those assessed for the main development site alone.

3.6.12 Regional Cycle Route 42 would be diverted due to construction of the main development site. Users of Regional Cycle Route 42 would experience views of, and noise from, construction activity at the main development site and additional traffic on roads in combination with operation of the rail extension route. However, effects on Regional Cycle Route 42 due to the green rail route are assessed in **Volume 9 Chapter 8** of the **ES** to be negligible neutral (**not significant**) and would not add to effects assessed for the main development site in **Volume 2 Chapter 15**. The effects would be no greater than for those identified for the main development site: minor adverse (**not significant**).

3.6.13 In all cases the combined effects of the main development site and the associated development sites would be no greater than the largest identified effects arising from the main development site or relevant associated development site alone.

iii. Removal and reinstatement

3.6.14 It is judged that amenity and recreation effects during the removal and reinstatement of associated development sites would be no worse than set out for early years construction.

d) Project-wide effects during operation

3.6.15 During operation, there would be no in-combination project-wide cumulative effects. Effects on recreational receptors due to operation of the main development site would be confined to a smaller area with fewer significant effects than those assessed during the construction phase. Permanent PRow diversions and new footpaths would be in place or temporary closures and diversions re-opened for the main development site, Sizewell link road and rail extension route.

3.7 Terrestrial historic environment

a) Introduction

3.7.1 **Table 3.6** provides a summary of the Sizewell C Project components that have the potential to result in project-wide terrestrial historic environment impacts. The assessment of the combined impacts is presented with reference to the site-specific assessments presented in **Volume 2 Chapter 16** and **Volumes 3 to 9 Chapter 9** of the **ES**.

Table 3.6: Summary of potential terrestrial historic environment project-wide effects

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Disturbance of archaeological remains within the site resulting in a loss of archaeological significance of the archaeological resource.	All sites (early years of construction)	Archaeological heritage assets
Impact to the heritage significance of assets as a result of visual and audible change to setting.	Main development site Proposed rail extension route	Leiston Abbey, second site (Scheduled Monument), St Mary's Abbey (Listed Building (LB) Guesten Hall (LB), Barn at Leiston Abbey (LB), Retreat House (LB)
Loss of historic landscape elements.	All sites	Historic Landscape Character

b) Assessment methodology

3.7.2 The methodology for the assessment of potential project-wide terrestrial historic environment impacts is based upon that described in **Appendix 6L** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

3.7.3 The project-wide assessment considers impacts on terrestrial historic environment assets including the archaeological resource, designated heritage assets and historic landscape character.

c) Project-wide effects during construction

i. Disturbance of archaeological remains within the site

3.7.4 Any project-wide effects on archaeological heritage assets would be experienced as effects on the archaeological resource of the parts of East

Suffolk in which the main development site and associated development sites are located. Individual archaeological heritage assets are not sufficiently extensive that they would be affected by different elements of the Sizewell C Project, and, in this sense, no significant project-wide effects would arise on these archaeological heritage assets.

- 3.7.5 The archaeological landscape of East Suffolk has historically not been well-understood outside specific areas of interest, primarily around historic villages and towns or assets such as the Leiston Abbey first and second sites. This is exemplified by the limited desk-based information available for the associated development sites at Yoxford, Sizewell link road and the two village bypass. This absence of information reflects the limited extent of archaeological survey data within this area, primarily deriving from the limited extent of previous development.
- 3.7.6 Design has sought to avoid the areas of the highest interest, meaning that in general, archaeological remains that would be affected by the proposed scheme are of low to medium heritage significance for archaeological interest.
- 3.7.7 While the loss of archaeological interest represents a clear loss of heritage significance, this loss would be mitigated to a degree by the investigation and recording of these remains, allowing latent archaeological interest to be realised.
- 3.7.8 When considered in the context of the wider archaeological landscape, it is clear that information derived from archaeological work undertaken to date, and which is proposed to be carried out as mitigation prior to construction, will allow a refined understanding of the historical development of the rural landscape. In turn, this will provide information that enhances understanding of the presence, interpretation and survival of heritage assets beyond the areas directly affected by the Sizewell C Project, informing management of and engagement with this resource.
- 3.7.9 Following mitigation in the form of a Written Scheme of Investigation (WSI) for the Sizewell C Project (**Appendix 16H of Volume 2**), the residual impact on the archaeological resource of the area in which the proposed development would be delivered would be of low magnitude. This would be a minor adverse effect that would be **not significant**.
- 3.7.10 Given that excavation and recording of archaeological assets would have taken place in the early years of construction, there would be no disturbance of archaeological heritage assets during the peak year of construction and no further project-wide effects are anticipated.

ii. Visual and audible change to setting of heritage assets

- 3.7.11 During the early years of construction, the combined impacts of views of the main development site and proposed rail extension development and construction noise would result in increased impact to the heritage significance of the Grade I listed St Mary's Abbey (LB 1215753) and the Scheduled Leiston Abbey (second site) and moated site (SM 1014520) over that caused by either alone, although any harm to significance would remain less than substantial. A medium magnitude impact would occur, resulting in a major adverse effect that would be **significant**.
- 3.7.12 As no significant noise and visual effects are predicted to arise from the construction of the rail extension route, there would be no increased magnitude of impact to the Guesten Hall (LB 1268290), Barn at Leiston Abbey (LB 1216380) and the Retreat House (LB 1215754), and no project-wide effect would arise.
- 3.7.13 The magnitude of effect during the peak year of construction on the Grade I listed St Mary's Abbey (LB 1215753) and the Scheduled Leiston Abbey (second site) and moated site (SM 1014520) will remain the same as in the early years although the source of impact will change from construction work on the rail extension route to rail movements. This effect is assessed as major adverse (**significant**).
- 3.7.14 A project-wide effect would arise on Guesten Hall (LB 1268290), Barn at Leiston Abbey (LB 1216380) and the Retreat House (LB 1215754) as a result of the perceptual presence of rail operations in addition to the main development site construction. These effects are assessed as being minor adverse (**not significant**).
- 3.7.15 The Section 106 agreement would provide mitigation to help secure the historic interest of the assets comprising Leiston Abbey (second site). This would mitigate against the harm arising from both the project-wide effects of main development site and the rail extension route.
- 3.7.16 The Section 106 agreement would provide for works that would partially address the loss of historic interest of the assets, the magnitude of impact would reduce to moderate adverse, a **significant** adverse effect.

iii. Change to historic landscape character

- 3.7.17 The Sizewell C Project has the potential to alter the historic landscape character over a wide area throughout the construction phase, through the loss of historic land divisions and routes, and through perceptual change to land use. The separation of these elements and their presence in differing historic landscape contexts means that no new or different project-wide effect

on historic landscape character would arise. The project-wide effect would result in a minor adverse effect which would be **not significant**.

d) **Removal and reinstatement**

3.7.18 There will be no project-wide effects, over and above those for the construction phase as a whole, on any terrestrial heritage environment receptors due to the limited magnitude and duration, and gradual reduction of impact during the removal and reinstatement.

3.7.19 The loss of historic interests of historic landscape elements would be mitigated primarily by the sensitive restoration of features such as hedgerows and paths during reinstatement.

e) **Operation**

3.7.20 Any disturbance of archaeological heritage assets would have occurred during the construction phase and no further effects are anticipated during the operation of the main development site.

3.7.21 The loss of historic interests of historic landscape elements would be largely mitigated following restoration and reinstatement of temporary development areas at the end of the construction phase. However, some limited effects would persist as a result of the retention of the various road schemes and permanent elements of the main development site. The separation of these elements and their presence in differing historic landscape contexts means that no project-wide effect on historic landscape character would arise.

3.7.22 Project-wide effects on the significance of heritage assets resulting from changes to setting would arise only from the combination of the main development site and the rail extension route during the construction period. Any project-wide effect during construction would be reversed in the operation phase by the removal and reinstatement of the rail extension route and the effect would remain as described in the main development site assessment, provided in **Volume 2, Chapter 16** of the **ES**.

3.8 **Soils and agriculture**

a) **Introduction**

3.8.1 **Table 3.7** provides a summary of the Sizewell C Project components that have the potential to result in project-wide soils and agriculture impacts. The assessment of the combined impacts is presented with reference to the site-specific assessments presented in **Volume 2 Chapter 17** and **Volumes 3 to 9 Chapter 10** of the **ES**.

Table 3.7: Summary of potential soils and agriculture project-wide effects

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Temporary loss of best and most versatile (BMV) land.	All sites, excluding Yoxford and other highways improvements (as no BMV land present within this site)	BMV land – temporarily lost
Permanent loss of BMV land.	Main development site Two village bypass Sizewell link road	BMV land – permanent loss
Temporary loss of land for land holdings.	All sites	Agricultural holdings – temporary loss
Spread of invasive species.	All sites (peak year of construction)	Agricultural land
Permanent loss of land from land holdings.	Main development site Two village bypass Sizewell link road Yoxford and other highways improvements	Agricultural holdings – permanent loss

b) Assessment methodology

3.8.2 The methodology for the assessment of potential cumulative soils and agriculture impacts is based upon that described in **Appendix 6M** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

3.8.3 The project-wide assessment considers impacts on soils and agriculture receptors for the construction and operation phases.

c) Project-wide effects during construction

i. Temporary loss of BMV land

3.8.4 During the early years of construction, the maximum extent of agricultural land will be required. A total of 143.3ha of BMV land would be required during this phase. BMV land is a receptor of high sensitivity, and overall this would be considered an impact of high magnitude resulting in a major adverse residual effect, which would be **significant**.

3.8.5 **Table 3.8** below summarises the extent of BMV lost during the early years of construction from each component and the individual effect in relation to that component.

Table 3.8: Summary of potential temporary project-wide impacts on BMV

Sizewell C Component	Area of BMV Land Temporarily Lost	Residual Effect
Main development site	22.2ha	Major adverse (significant)
Northern park and ride	21.8ha	Major adverse (significant)
Southern park and ride	5.4ha	Minor adverse (not significant)
Two village bypass	27.1ha	Major adverse (significant)
Sizewell link road	50.6ha	Major adverse (significant)
Yoxford and other highway improvements	0ha	n/a
Freight management facility	7.6ha	Minor adverse (not significant)
Rail developments	8.6ha	Minor adverse (not significant)

3.8.6 The project-wide impact is therefore greater than for some components on their own (southern park and ride, freight management facility and rail developments).

3.8.7 No additional mitigation is available beyond that set out for each individual component.

3.8.8 During the peak year of construction there would be no additional temporary effects on BMV land.

3.8.9 Where this land is required on a temporary basis, this would be reinstated to existing use by the end of the removal and reinstatement phase. However, some land would be required permanently; this is dealt with in the section below.

ii. **Permanent loss of BMV land**

3.8.10 There would be a permanent loss of BMV land associated with the main development site, two village bypass and the Sizewell link road following the reinstatement of the land required on a temporary basis.

3.8.11 In total, 67.6ha of BMV land would be required permanently. BMV land is considered to be a receptor of high sensitivity, and overall this would be considered an impact of high magnitude resulting in a major adverse residual effect, which would be **significant**.

3.8.12 **Table 3.9** below summarises the extent of BMV land lost permanently from each of the components where there is permanent loss of BMV land.

Table 3.9: Summary of potential permanent project-wide effects on BMV land

Sizewell C Component	Area of BMV Land Permanently Lost	Residual Effect
Main development site	5.6ha	Minor adverse (not significant)
Two village bypass	20.7ha	Major adverse (significant)
Sizewell link road	42.0ha	Major adverse (significant)

3.8.13 The combined project-wide impact in relation to the permanent loss of BMV land is therefore greater than that for the main development site on its own. The project-wide effects would be major adverse (**significant**).

3.8.14 No additional mitigation is available beyond that set out for each individual component.

iii. **Temporary loss of land under agricultural production**

3.8.15 During the early years of construction, the maximum extent of agricultural land would be required. Land lost from productive agriculture would have an impact on the associated farm businesses.

3.8.16 A total of approximately 583.28ha of land would be taken out of primary agricultural production at this point. The majority of this land is under arable production, which is considered to be a receptor of low sensitivity. More limited areas under pasture or irrigated arable production would be affected; these land uses are considered to be of high sensitivity.

3.8.17 The total area within land holdings affected by the Sizewell C Project is 4,998.90ha. The total proportion of land required temporarily is therefore approximately 11.7% of the total land holdings area and would be assessed as being an impact of medium magnitude, resulting in a minor (not significant) to major (significant) adverse effect, depending on the sensitivity of the land use.

3.8.18 Given the predominance of arable agriculture across the components of the Sizewell C Project it is considered that the cumulative effect is moderate adverse and **significant**.

3.8.19 **Table 3.10** below summarises the temporary effects on land holdings as a result of land being required (where a range of residual effects is noted this refers to effects on different land holdings). The project-wide effect is greater than that identified for the southern park and ride and the freight management facility sites on their own.

Table 3.10: Summary of potential project-wide cumulative effects – loss of agricultural land during the early years of construction

Sizewell C Component	Area of Agricultural Land Temporarily Lost	Total Area of Agricultural Land in Landholding(s)	Residual Effect
Main development site	358.32ha	1,240.72ha (excludes land associated with Sizewell B in these ownerships)	Negligible (not significant) to major adverse (significant)
Northern park and ride	26.30ha	230.00ha	Moderate adverse (significant)
Southern park and ride	17.70ha	380.00ha	Minor adverse (not significant)
Two village bypass	51.60ha	528.31ha	Minor adverse (not significant) to major adverse (significant)
Sizewell link road	96.26	1,261.77ha	Negligible (not significant) to major adverse (significant)
Yoxford and other highway improvements	1.90ha	5.21ha	Moderate adverse (significant)
Freight management facility	9.40ha	1,170.00ha	Minor adverse (not significant)
Rail developments	21.80ha	182.89ha	Minor adverse (not significant) to moderate adverse (significant)

3.8.20 There are a number of landholdings which are affected by temporary loss of land across multiple components of the Sizewell C Project. These are set out in **Table 3.11** below.

Table 3.11: Summary of potential project-wide cumulative effects – temporary loss of agricultural land across multiple components for individual land holdings

Landholding	Components which Impact Landholding	Total Area of Agricultural Land Affected Across Multiple Components	Total Area of Agricultural Land in Landholding	Cumulative Residual Effect
Old Abbey Farm (high sensitivity)	Main development site Sizewell link road	26.91ha (27.71%)	97.11ha	Major adverse

Landholding	Components which Impact Landholding	Total Area of Agricultural Land Affected Across Multiple Components	Total Area of Agricultural Land in Landholding	Cumulative Residual Effect
Theberton House Estate (low sensitivity)	Main development site Sizewell link road	23.14ha (13.73%)	168.48ha	Minor adverse
Moat Farm (low sensitivity)	Main development site Sizewell link road	5.08ha (16.20%)	31.35ha	Minor adverse

3.8.21 Although the total area of land lost temporarily is greater at the project-wide level, the overall effect on Old Abbey Farm is not different to that for each component (major adverse). For Theberton House Estate and Moat Farm the cumulative effect is greater (minor adverse) compared to negligible for the individual effect of Sizewell link road.

3.8.22 No additional mitigation is available beyond that set out for each individual component.

3.8.23 During the peak year of construction there would be no additional temporary effects on agricultural holdings.

3.8.24 Land required temporarily would then be reinstated by the end of the removal and reinstatement phase resulting in a negligible residual effect. However, some land would be required permanently; this is dealt with in the section below.

iv. Permanent loss of land under agricultural production

3.8.25 There would be permanent loss of land under agricultural production associated with the main development site, two village bypass, Sizewell link road and Yoxford and other highways improvements.

3.8.26 **Table 3.12** below summarises the areas of land required permanently for these components.

Table 3.12: Summary of potential project-wide cumulative effects – permanent loss of agricultural land

Sizewell C Component	Area of Agricultural Land Permanently Lost	Total Area of Agricultural Land in Landholding(s)	Residual Effect
Main development site	30.00ha (2.42%)	1,240.72ha	Negligible (not significant) to minor adverse (not significant)
Two village bypass	39.97ha (7.56%)	528.31ha	Minor adverse (not significant) to moderate adverse (significant)
Sizewell link road	79.73ha (6.31%)	1,261.77ha	Negligible (not significant) to major adverse (significant)
Yoxford and other highway improvements	1.56ha (29.94%)	5.21ha	Moderate adverse (significant)

3.8.27 In total 151.26ha of land would be permanently lost from agricultural production. This would be 4.98% of the total land holdings area and would be assessed as being an impact of very low magnitude, resulting in a negligible (**not significant**) to major adverse (**significant**) effect, depending on the sensitivity of the land.

3.8.28 Given the predominance of arable agriculture across the components of Sizewell C Project it is considered that the cumulative effect is minor adverse and **not significant**.

3.8.29 The project-wide impact is therefore less than for the individual components.

3.8.30 In relation to the permanent loss of agricultural land only one land holding is affected across multiple components of the Sizewell C Project. This is detailed in **Table 3.13** below.

Table 3.13: Summary of potential project-wide cumulative effects – permanent loss of agricultural land across multiple components for individual land holdings

Landholding	Components which Impact Landholding	Total Area of Agricultural Land Lost Permanently Across Multiple Components	Total Area of Agricultural Land in Landholding	Cumulative Residual Effect
Theberton House Estate (low sensitivity)	Main development site Sizewell link road	15.92ha (9.45 %)	168.48ha	Minor adverse

3.8.31 The project-wide effects are no different from the effect of the main development site alone (minor adverse). However, the project-wide effect is greater than that assessed in the individual assessment for the Sizewell link road (assessed on its own as negligible). No additional mitigation is available beyond that set out for each individual component.

v. Spread of invasive species

3.8.32 There is the potential for invasive species to spread during the peak year of construction. Measures outlined in the **CoCP** (Doc Ref. 8.11) would result in this being a negligible effect for each site. As such, and as each site is discrete, it is considered that the project-wide effects will be negligible.

vi. Removal and reinstatement

3.8.33 There would be no additional effects on BMV land or agricultural holdings during this phase in relation to the baseline.

d) Operation

3.8.34 There is the potential for invasive species to spread during the operational phase. An appropriate management regime would be adopted to ensure a negligible effect for each site. As such, and as each site is discrete, it is considered that cumulative project-wide effects will be negligible.

3.8.35 There would be no additional effects on BMV land or agricultural holdings during this phase in relation to the baseline.

3.9 Geology and land quality

a) Introduction

3.9.1 **Table 3.14** provides a summary of the Sizewell C Project components that have the potential to result in project-wide geology and land quality impacts. The assessment of the combined impacts are presented with reference to the site-specific assessments provided in **Volume 2 Chapter 18** and **Volumes 3 to 9 Chapter 11** of the **ES**.

Table 3.14: Summary of potential project-wide cumulative effects – Geology and Land Quality

Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis	Receptors with the Potential to Experience Project-Wide Effects
Soil erosion	<ul style="list-style-type: none"> All sites 	Geology

Soil compaction	<ul style="list-style-type: none"> Main development site Two village bypass Sizewell link roadRail developments 	
Ground instability		
Loss, damage or serialisation	<ul style="list-style-type: none"> All sites 	Mineral resources
Contamination from on-site sources	<ul style="list-style-type: none"> All sites 	Human Health
		Controlled waters (groundwater)
		Controlled waters (surface water)
		Property (existing and future structures and services)
	Property (crops and livestock)	
	<ul style="list-style-type: none"> Main development site Northern park and ride Rail developments Two village bypass 	Ecologically designated areas
Impacts from soil-reuse and waste soils generated during construction works	<ul style="list-style-type: none"> All sites 	Soils / waste

b) Assessment methodology

3.9.2 The methodology for the assessment of potential project-wide geology and land quality impacts is based upon that described in **Appendix 6N** in **Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

3.9.3 The project-wide assessment considers impacts on geological, human health, controlled waters (groundwater and surface water), property (services, structures, crops and livestock) and ecological receptors during the construction and operational phases. These impacts have been discussed below by either physical impacts on geology, contamination

impacts, or impacts from soils reuse and waste soils to align with the assessments completed in the individual chapters.

c) **Project-wide effects during construction**

i. **Soil erosion, soil compaction and ground instability (physical effects)**

3.9.4 Potential project-wide impacts that may arise impacting on geology during the early years and peak year of construction include an increase in soil erosion, soil compaction and ground instability issues and the amount of dust and surface water runoff generated through a larger construction area affecting geological receptors, controlled waters (groundwater and surface water), human health, property (crops and livestock) and ecological receptors.

3.9.5 For the larger and/or interconnecting schemes including the rail extension, two village bypass, main development site and Sizewell link road there may also be the destabilisation of ground causing ground stability issues to geology and property (services and structures) receptors.

3.9.6 The detailed design for the main development site and associated developments will take into consideration impacts associated with destabilising the ground due to construction activities. In addition, the primary and tertiary mitigation identified for each individual site, including the **CoCP** (Doc Ref. 8.11), will reduce the overall impact. Therefore, it is not expected that the combined impact of these project-wide effects would be greater than those effects predicted for the individual Sizewell C elements. These effects are expected to be minor adverse (**not significant**). No additional mitigation is anticipated.

ii. **Impacts on mineral resources**

3.9.7 Project-wide impacts from all sites during the early years and peak year of construction have the potential to combine with regards to the sterilisation of larger areas of land from future mineral extraction. However, the development sites are not within mineral safeguarding areas and there is limited viability for mineral extraction. Therefore, it is expected that the project-wide effects would be negligible (**not significant**). No additional mitigation is anticipated.

iii. **Effects associated with ground contamination**

3.9.8 Project-wide impacts during the early years and peak year of construction include an increase in the mobilisation of contaminants in the air, ground and groundwater through the disturbance of a larger area of potentially contaminated ground mobilising contaminants causing the exposure of

human health, controlled waters (groundwater and surface water), property (services and structures and crops and livestock) and ecological receptors, where relevant, to potential contaminants.

3.9.9 Specific to the peak year of construction, there is the potential for an increase in the amount of dust from increased traffic movements which may affect human health. Additionally, during peak year of construction there is the potential for the introduction of new sources of contamination which may impact human health, controlled waters (groundwater and surface water), property (services and structures and crops and livestock) and ecological receptors.

3.9.10 Mitigation measures will be adopted during the construction of the Sizewell C Project through the **CoCP** (Doc Ref. 8.11) to reduce impacts to the environment including dust generation, soil compaction and potential mobilisation of contaminants. During construction of the main development site, the associated developments will be operated in accordance with granted consents and the relevant regulations and best practice guidance in applying Best Available Techniques (BAT) and pollution prevention.

3.9.11 Therefore, it is expected that the combined impact of these project-wide effects would be negligible to minor beneficial, which are classified as **not significant**. No additional mitigation is anticipated.

iv. Effects associated with soil reuse and waste soils

3.9.12 Project-wide impacts during the early years and peak year of construction phases include an increase in the generation of waste soils through the disturbance of a larger area of potentially unsuitable and/or contaminated ground.

3.9.13 Primary and tertiary mitigation will, as far as is reasonably practicable, seek to reuse and recycle soils within the scheme. Mitigation measures will also be adopted during the construction of the Sizewell C Project through the **CoCP** (Doc Ref. 8.11) to reduce impacts. Therefore, it is expected that the combined impact of these project-wide effects would not be greater than those effects predicted for individual Sizewell C elements. These effects are expected to be minor adverse (**not significant**). No additional mitigation is anticipated.

v. Removal and reinstatement

Soil erosion, soil compaction and ground stability (physical effects), impacts on mineral resources and effects associated with ground contamination, soil reuse and waste soils

3.9.14 Project-wide effects during the removal and reinstatement of the associated development sites would be the same as those anticipated during the early years of construction.

3.9.15 Mitigation measures will be adopted during the removal and reinstatement works via the primary and tertiary mitigation and through the **CoCP** (Doc Ref. 8.11) to reduce impacts to the environment including dust generation, soil compaction and potential mobilisation of contaminants. The detailed design for the associated developments will also take into consideration any impacts associated with destabilising the ground due to removal and reinstatement activities.

3.9.16 Therefore, it is expected that the combined impact of these project-wide effects would not be greater than those effects predicted for geology and soils for each individual project component. Only minor adverse to minor beneficial project-wide effects are anticipated, which are classified as **not significant**. No additional mitigation is anticipated.

d) Operation

i. Soil erosion, soil compaction and ground stability (physical effects), impacts on mineral resources and effects associated with ground contamination, soil reuse and waste soils

3.9.17 Project-wide impacts during the operational phase would be no worse than those anticipated during the early years of construction. The Sizewell C Project will be operated in accordance with granted consents and the relevant regulations and best practice guidance in applying BAT and pollution prevention. Minor adverse to minor beneficial project-wide effects are anticipated, which are classified as **not significant**. No additional mitigation is anticipated.

3.10 Groundwater and Surface Water

a) Introduction

3.10.1 **Table 3.15** provides a summary of the Sizewell C Project components that have the potential to result in project-wide groundwater and surface water impacts. The assessment of the combined impacts is presented with

reference to the site-specific assessments presented in **Volume 2 Chapter 19** and **Volumes 3 to 9 Chapter 12** of the **ES**.

3.10.2 Where an effect is not expected to occur during the early years or peak year of construction for a specific component, the effect applies for the construction phase as a whole.

Table 3.15: Summary of potential project-wide cumulative effects – groundwater and surface water

Receptors with the Potential to Experience Project-Wide Effects	Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis
Groundwater receptors including Principal Aquifers and SPZs	Alteration of groundwater flow regime	All sites
	Contamination from on-site and introduced sources	
Surface water receptors including rivers, drainage networks, floodplains and ponds	Alteration of surface water flow regime	Northern park and ride Southern park and ride Two village bypass Sizewell link road Yoxford roundabout Main development site
Existing buildings	Groundwater control measures attributing to subsidence risk	All sites (early years construction) Main development site (peak year of construction) Sizewell link road (peak year of construction)
Groundwater abstractions	Alteration of groundwater flow regime	Main development site (peak year of construction) Northern park and ride Southern park and ride Two village bypass Sizewell link road Yoxford roundabout Rail developments Freight management facility

Receptors with the Potential to Experience Project-Wide Effects	Potential Impact	Sizewell C Components with Potential to Interact on a Project-Wide Basis
	Contamination from on-site and introduced sources	All sites
Surface water abstractions	Alteration of surface water flow regime	Southern park and ride Rail developments Two village bypass Yoxford roundabout
	Contamination from on-site and introduced sources	Southern park and ride Northern park and ride Rail developments Two village bypass Yoxford roundabout
Water dependent historic and ecological environmental sites	Habitat loss from lowering of groundwater table	Main development site Freight management facility (early years construction)
	Damage to ecology from contamination of groundwater	Main development site Freight management facility (early years construction)
	Contamination of the surface waters	Main development site Sizewell link road Freight management facility
Flood risk to surrounding areas	Loss of functional floodplain storage or displacement of sea or river water	All sites

b) Assessment methodology

3.10.3 The methodology for the assessment of potential project-wide groundwater and surface water impacts is based upon that described in **Appendix 60 Volume 1** of the **ES** as applied to the site-specific assessments. In addition, professional judgement has been used to determine potential significant effects of the Sizewell C Project.

3.10.4 The project-wide assessment considers impacts on ground and surface water bodies, abstractions, property (existing buildings), water dependant ecological sites and flood risk for the construction, operation, and removal and reinstatement (where applicable) for the Sizewell C Project, as provided in **Section 3.1** of this chapter. These impacts have been discussed below by either physical and quality impacts on groundwater and surface water receptors to align with the assessments completed in the individual chapters.

c) Project-wide effects during construction

i. Groundwater level and flow regime (physical effects)

3.10.5 Project-wide effects during construction may arise on groundwater receptors through the alteration of groundwater level and flow regimes. These may change the rate or volume of water discharging to ground or be due to the requirement for groundwater control dewatering measures. These effects are anticipated to be negligible to minor adverse (**not significant**). It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect. The project-wide effect is therefore anticipated to be negligible to minor adverse (**not significant**).

ii. Alteration of surface water flow regime (physical effects)

3.10.6 Project-wide effects during construction may arise on surface water receptors through the alteration of surface water flow regime. This may be through increases in the extent of bare and compacted ground for a prolonged period or hardened/impermeable surfaces. These land use changes have the potential to increase surface run-off and increase in flood peaks in the nearest receptors. It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect. The project-wide effect is therefore anticipated to be no effect to minor adverse (**not significant**).

iii. Contamination of groundwater and surface water (quality effects)

3.10.7 Contamination of groundwater and surface water receptors may occur through the lateral movement or disturbance of existing contaminants and/or the introduction of new sources/contaminants during the construction and operational phases of all the sites. These effects are anticipated to be minor beneficial (**not significant**) for groundwater receptors and for surface water receptors minor beneficial to minor adverse (**not significant**). It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

iv. Existing buildings (physical effects)

3.10.8 Project-wide effects during construction relate to changes in groundwater levels, which have the potential to affect the foundations of existing buildings or monuments. The effect is anticipated to be no effect (**not significant**) to negligible (**not significant**). It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

v. Groundwater and surface water abstractions (physical and quality effects)

3.10.9 Project-wide effects during construction may arise on groundwater and surface water receptors. These effects may come through the alteration of level and flow regimes and the lateral movement or disturbance of existing contaminants and/or the introduction of new sources/contaminants. These effects have the potential to effect groundwater and surface water abstractions. These effects are anticipated to be no effect to minor adverse (**not significant**) and minor beneficial (**not significant**) for the groundwater abstractions. For the surface water abstractions, these effects are anticipated to be no effect to negligible (**not significant**) and minor beneficial (**not significant**). It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

vi. Historic and environmentally sensitive sites (physical and quality effects)

3.10.10 Project-wide effects during construction may arise that have the potential to affect water dependent historic and ecological environmental sites. These effects may arise from the alteration of ground and surface water flow regimes and the contamination of groundwater and surface water receptors. These impacts could lead to the destruction of habitat and damage to local ecology. These effects are anticipated to be negligible to minor adverse (**not significant**). It is expected that the predicted impacts of the individual components of the Sizewell C Project would not combine to represent a greater project-wide effect.

vii. Flood risk (physical effects)

3.10.11 Project-wide effects to flood risk through the loss of functional floodplain and displacement of sea or river water will occur during the early years and peak year of construction phases. These effects are assessed as having no effect (**not significant**). It is expected that the combined impact of these project-wide effects would not be greater than those effects predicted for the individual site-specific assessments.

viii. Mitigation and overall project-wide effects for the construction phase

- 3.10.12 Tailored mitigation packages have been specified for all phases Sizewell C Project components. These mitigation packages include primary and secondary measures as well as the tertiary measures outline in the **CoCP** (Doc Ref. 8.11). The mitigation packages relating to groundwater and surface water for each Sizewell C Project component are presented in **Volume 2 Chapter 19** and **Volumes 3 to 9 Chapter 12** of the **ES**.
- 3.10.13 Mitigation measures will be adopted during the construction of the associated developments and main development site through the **CoCP** (Doc Ref. 8.11) to reduce impacts to the environment including groundwater and surface water flow regimes, disruption of fluvial process and the potential mobilisation and introduction of contaminants. The detailed design for the main development site and associated developments will also take into consideration any impacts associated with destabilising the ground due to construction activities for the early years of construction. During the peak year of construction the associated developments will be operated in accordance with granted consents and the relevant regulations and best practice guidance in applying BAT and pollution prevention.
- 3.10.14 Therefore, it is expected that the combined impact of these project-wide effects would not be greater than those effects predicted for individual Sizewell C components. Minor adverse to minor beneficial project-wide effects are anticipated, which are classified as **not significant**. No additional mitigation is anticipated.

ix. Removal and reinstatement

- 3.10.15 Project-wide effects during the removal and reinstatement of the associated development sites would be the same as those anticipated during the early years of construction.
- 3.10.16 Mitigation measures will be adopted during the removal and reinstatement works via the primary and tertiary mitigation and through the **CoCP** (Doc Ref. 8.11) to reduce impacts to the groundwater and surface water receptors. The anticipated effects of the removal of the temporary associated developments and the reinstatement of the sites would be the same as the construction phase.
- 3.10.17 Therefore, it is expected that the combined impact of these project-wide effects would not be greater than those effects predicted for groundwater and surface water for each individual project component. Only minor adverse to minor beneficial project-wide effects are anticipated, which are classified as **not significant**.

d) Operation

3.10.18 The anticipated effects of the operation of the main development site and the permanent associated developments would be no worse than the construction phase. The Sizewell C Project will be operated in accordance with granted consents and the relevant regulations and best practice guidance in applying BAT and pollution prevention. A minor adverse to minor beneficial project-wide effects are anticipated, which are classified as **not significant**.

3.11 Summary of project-wide effects

3.11.1 In summary, several effects are assessed to have greater in-combination project-wide effects than they would for the individual project components. The assessment has identified no change in the magnitude of effects for the following topics: air quality; landscape and visual; geology and lands quality; and groundwater and surface water.

3.11.2 The following effects have been assessed to be greater at the project-wide scale compared with the effects from the individual project components:

- Effects from noise and vibration at Leiston Abbey including Pro Corda from construction, depending on the timing of the works relative to the activities at Leiston Abbey - moderate adverse or major adverse, **significant**.
- Loss and fragmentation of woodland and hedgerow habitats during the early years of construction – moderate adverse, **significant**.
- Effects from views of construction, temporary PRow closure, noise and traffic on the amenity and recreational receptor group 16 during the early years of construction – major / moderate adverse, **significant**.
- Effects on the setting and heritage significance of the Grade I listed St Mary's Abbey and the Scheduled Leiston Abbey (second site) during the early and peak year of construction – moderate adverse, **significant**.
- Effects on the historical landscape character of the wider area during the early and peak year of construction – minor adverse, **not significant**.
- Temporary loss of BMV land during the early years of construction – major adverse, **significant**.

- Permanent loss of BMV land during the early years of construction – major adverse, **significant**.
- Temporary loss of agricultural land production during the early years of construction – moderate adverse, **significant**.
- Permanent loss of agricultural land production during the early years of construction – moderate adverse, **significant**.