East Anglia
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East Anglia THREE

Appendix 23.7

Assessment of Haul Road Remaining in situ between Projects

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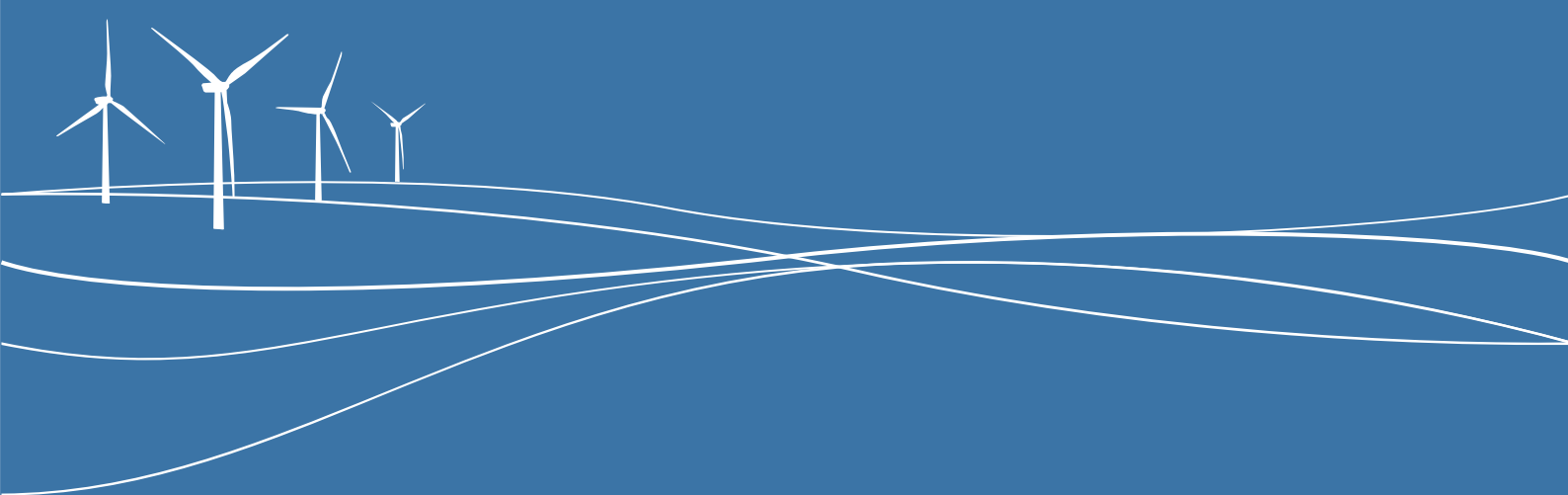

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23.7 ASSESSMENT OF HAUL ROAD REMAINING IN SITU BETWEEN PROJECTS

23.7.1 Introduction

1. The Development Consent Order (DCO) for the East Anglia ONE project states that any land which is used temporarily for construction of the connection works and not ultimately incorporated in permanent works or approved landscaping must be reinstated in accordance with such details as the relevant planning authority may approve. In terms of this report these temporary works consist of the haul road and construction consolidation sites (CCS).

2. As part of the worst case assumptions within the Environmental Statement (ES) for the proposed East Anglia THREE project, it is assumed that haul road would be required to access jointing bay locations in remote areas in order to pull cables through, and therefore the impacts of construction of a haul road and CCS are assessed.

3. East Anglia THREE Limited (EATL) are progressing an option for the haul road and CCS hard standing to remain in situ between the completion of construction of the East Anglia ONE project and commencement of construction of the proposed East Anglia THREE project, and therefore would be used by the proposed East Anglia THREE project during construction.

4. This additional assessment has therefore been undertaken to consider a provision in the East Anglia THREE DCO which would allow for the East Anglia ONE haul road and CCS hard standing to remain in situ for use by the proposed East Anglia THREE project. This assessment specifically considers effects upon terrestrial ecological receptors, as per Chapter 23 Terrestrial Ecology of the ES for the proposed East Anglia THREE project.

5. The key advantages of leaving the haul road and CCS hard standing in place between the East Anglia ONE project and the proposed East Anglia THREE project, and only removing them once all construction activities are completed, are as follows:

   - Any reduction in haul road and CCS requirement for East Anglia THREE would reduce overall material volumes and therefore vehicle movements. The materials delivered to and taken off site during construction for the creation of the haul road itself account for a majority of HGV trips.

   - This would therefore reduce impacts upon local communities both with regard to traffic and transport and associated impacts upon air quality and noise.

   - There would also be a temporal reduction in disturbance impacts (for example human presence, noise, dust) to ecological receptors as less construction activities

would take place, however there would be a long term impact of habitat removal for some receptors if haul road and CSS hard standing is left in situ for a number of years. Details of ecological impacts and how they may have changed from those originally assessed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES are discussed in section 23.7.3 below.

6. This report considers the following approach to haul road and CCS construction for East Anglia ONE and the proposed East Anglia THREE project:

- The haul road and CCS hard standing is installed during construction of the East Anglia ONE project.
- The haul road and CCS hard standing is left in situ, and remains in place for construction of the proposed East Anglia THREE project.
- Under a Single Phase approach for the proposed East Anglia THREE project, the haul road and CCS hard standing is removed at the end of the construction period and land is reinstated.
- Under a Two Phased approach to construction for the proposed East Anglia THREE project, the haul road and CCS hard standing would be left in situ between the Phase 1 and Phase 2, and would be removed following completion of Phase 2 and habitats re-instated.

7. This report looks at each impact which has been originally identified as part of the East Anglia THREE Terrestrial Ecology assessment within Chapter 23, and considers the effects of leaving the haul road and CCS hard standing in place between projects and phases, compared with twice removing the haul road and re-instating habitats during this time. Full details of assessment methodology and baselines are detailed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES and are not repeated in this Appendix document.

23.7.2 Assumptions

8. For the purposes of this report, the following assumptions have been made in reviewing the impacts assessed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES:

- As a worst case, all haul road left in situ from construction of East Anglia ONE to the end of construction of East Anglia THREE.[1]

[1] Leaving haul road in situ will need to be agreed with landowners and the local authorities on a case by case basis, therefore in practice some sections may be left and others removed. However, as it is not possible to know exact locations, the assumption is therefore that all haul road is left.

- All water crossings would be left in situ from construction of the East Anglia ONE project to the end of construction of the proposed East Anglia THREE project.
- All jointing bay hard standing would be removed between construction of the East Anglia ONE project and the proposed East Anglia THREE project as the location of these may be different for each project.
- At CCS all hard standing would be left in place but any fencing, portacabins or other infrastructure would be removed, leaving flat ground.
- In the time between the East Anglia ONE project and the proposed East Anglia THREE project, and Phases 1 and Phase 2 of the proposed East Anglia THREE project, hedgerows would be reinstated up to the agreed gap left for haul roads (approximately 5.5m).
- At the earliest, construction of the East Anglia ONE would be finished in 2018, and therefore the worst case scenario would be the haul road and CCS hard standing remaining unused in situ from then until the start of construction of the proposed East Anglia THREE project (due to start between 2020 and 2022); i.e. four years.
- The two phases of the proposed East Anglia THREE project would be separated by 18 months from the start of Phase 1 onshore to the start of the Phase 2 onshore.
- Use of haul road left in situ between projects and phases would be restricted to the landowner, or for the general public where PRoW cross the haul road.
- This report looks only at impacts along the onshore cable route. Impacts at landfall and the substation(s) locations are not re-considered.
- Construction, use and removal of the haul road and CCS and reinstatement of land are considered to be construction activities and therefore this report does not re assess operation and maintenance or decommissioning impacts from Chapter 23 Terrestrial Ecology of the East Anglia THREE ES.
- This assessment takes account of embedded mitigation detailed in the Outline Landscape and Ecological Management Strategy.

23.7.3 Summary of potential construction impacts identified for ecological receptors

9. *Table 23.7.1* below identifies the potential terrestrial ecology receptors and summarises the impacts as assessed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES.

Table 23.7.1 Summary of potential impacts identified for ecological receptors along onshore cable route in Chapter 23 Terrestrial Ecology of East Anglia THREE ES

Potential Construction Impact	Value / Sensitivity	Magnitude[2]	Significance[3]	Mitigation	Residual Impact
Impact to statutory designated sites	International / National / County	Negligible	Minor adverse	No further mitigation needed	N / A
Impact to non-statutory designated sites	County	Low	Minor adverse	No further mitigation needed	N / A
Impacts to arable land	County	Low	Minor adverse	No further mitigation needed	N / A
Impacts to woodland , scrub and trees	County	Low	Minor adverse	Embedded mitigation (23.3.3). This would include: Initial routeing and site selection to avoid Millers Wood Ancient Woodland. (This was undertaken by East Anglia ONE). Routeing of the cable to avoid areas of woodland and key features highlighted within the Suffolk landscape including trees, mature hedge trees and orchards. Careful routeing of the onshore cable route to avoid key areas of sensitivity e.g. near Howes Farm, meadows near Martlesham Hall, Fynn Valley. (This was undertaken by East Anglia ONE). Jointing bays would be located close to field boundaries and, where possible, away from sensitive features such as sensitive hedgerows and trees, if kiosks are used, these would, where possible, be sited close to field boundaries and hedgerows for visual screening, avoiding root zone. (This was undertaken by East Anglia ONE). Early installation of protective fencing would be utilised in order to minimise impacts to trees and their roots.	Minor adverse

[2] Relevant to both a Single Phase and Two Phased approach, unless otherwise stated.
[3] Relevant to both a Single Phase and Two Phased approach, unless otherwise stated.

Potential Construction Impact	Value / Sensitivity	Magnitude[2]	Significance[3]	Mitigation	Residual Impact
Impacts to hedgerows	County / Local	Low	Minor adverse	Embedded mitigation (section 23.3.3). This would include: Routeing of the cable to avoid areas mature hedge trees. Jointing bays would be located close to field boundaries and, where possible, away from sensitive features such as sensitive hedgerows and trees, if kiosks are used, these would, where possible, be sited close to field boundaries and hedgerows for visual screening, avoiding root zone. (This was undertaken by East Anglia ONE). An Arboricultural Method Statement and replanting scheme for each hedgerow crossing must be agreed with Mid Suffolk District Council and Suffolk Coastal District Council as applicable, via the ACoW, prior to commencement of work at each hedgerow crossing. Refer to the OLEMS for full details of the mitigation put in place with respect to hedgerows. This would include: Early installation of protective fencing would be utilised in order to minimise impacts to trees and their roots. Reinstatement following cable installation to include: • Retain and relay vegetation to ditch sides; • Reinstatement of affected field boundaries and hedges in the same style or with the same species mix of the original and / or to match adjacent boundaries for up to 5 years. Suitable maintenance (typically 5 years) of any newly planted sections of hedgerow, shelterbelts and woodlands following construction.	Minor adverse (To occur during recovery period for reinstatement of these features)
Impacts to grassland	Local / County / Site	Low	Negligible - Minor adverse	No further mitigation needed	N / A

Potential Construction Impact	Value / Sensitivity	Magnitude[2]	Significance[3]	Mitigation	Residual Impact
Impacts to coastal habitats	National / District / County	No change	No impact	No further mitigation needed	N / A
Impacts to watercourses and ponds	International / Local	No change	No impact	Embedded mitigation (23.3.3). This would include: Pollution prevention measures would be implemented in accordance to Environment Agency Pollution Prevention Guidance (PPG) series, in particular Working at construction and demolition sites: PPG6; and Works and maintenance near water: PPG5 Water vole mitigation in the form of dissuasion and / or capture and release.	No impact
Impacts to notable plant species	Local / County	Low	Minor adverse	Mitigation outlined in section 23.6.1.9: • A pre-construction survey would be undertaken between April and September to obtain up-to-date information on the status of non-native invasive species within the footprint of the onshore electrical transmission works; • A detailed method statement/ protocol for dealing with invasive species (including common invasive species not identified during ecological surveys) would be prepared, focusing on preventing their spread. This would be agreed with the Environment Agency and Natural England and include a plan showing the location of identified invasive plant species; • Best practice measures with respect to invasive species adhered to; • If alien or invasive species were found on site the ECoW would be informed. The area would be demarcated and appropriate signage installed until the appropriate action can be taken;	Minor adverse

Potential Construction Impact	Value / Sensitivity	Magnitude[2]	Significance[3]	Mitigation	Residual Impact
				• A toolbox talk for contractors prior to construction on the known locations of and the identification of non-native invasive species, including the measures outlined above, would be undertaken; • Post construction monitoring would take place in areas where invasive species have been treated / removed.	
Spread of non-invasive species	National	High	Negligible	Embedded mitigation (section 23.3.3). This would include: A detailed method statement / protocol for dealing with invasive species would be prepared, focusing on preventing their spread. This would be agreed with the Environment Agency and Natural England and include a plan showing the location of identified invasive plant species. This protocol would be used if further stands were found during construction activities.	Negligible
Badgers	Local	Low	Minor adverse	No further mitigation needed	N / A
Bats	International	Negligible	Minor adverse	Mitigation *Table 23.16* 'additional mitigation to bats and lighting' Flood lighting would be directed away from woods likely to be used as commuting routes; • The light should be as low as guidelines permit. If lighting is not needed, do not light; • The type of lamp is important and impacts to bats can be minimised by using low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics; • Light spill should be reduced by directing the light to where it is needed. The design of the luminaire and use of accessories such as hoods, cowls, louvres can achieve this; • The height of any lighting columns generally should be	Minor adverse

Potential Construction Impact	Value / Sensitivity	Magnitude[2]	Significance[3]	Mitigation	Residual Impact
				as short as is possible as light at a low level reduces the ecological impact. Where taller columns are required, light should be directed at more acute angles to minimise light spill; • As worst case it is assumed that the bats use the woodlands adjacent to the substation(s) location to commute to the SSSI, lighting of these woods would be avoided. • Periods of 24 hour lighting at the substation(s) would be minimised where possible during construction; and • Where health and safety requirements allow, roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10m in length either side of commuting route.	
Great crested newts	District	Low	Minor adverse	Embedded mitigation (section 23.3.3). This would include: Provision of great crested newt mitigation under licence from Natural England.	Minor adverse
Otter	County	Low - negligible	Negligible	Embedded mitigation (section 23.3.3)	Negligible
Water voles	Local	Low - negligible	Minor adverse	Embedded mitigation (section 23.3.3)	Minor adverse
Reptiles	Local	Low	Minor adverse	Embedded mitigation (section 23.3.3)	Minor adverse
Terrestrial invertebrates	Up to National	Low	Negligible	Embedded mitigation (section 23.3.3)	Minor adverse / minor beneficial
Aquatic invertebrates	Site	No change	No impact	Embedded mitigation (section 23.3.3)	Minor adverse
Fish	Site	No change	No impact	Embedded mitigation (section 23.3.3)	Minor adverse

23.7.4 Comparison of impacts

23.7.1.1 Impact 1: Impacts to Statutory Designated Sites

10. Due to avoidance of designated / supporting habitats at the Deben Estuary Ramsar, Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) there would be **no impact** from the extended presence of the haul road and CSS. If the haul road is left in situ, there would be a reduction in associated construction activity from maximum six events down to two events and therefore the potential for disturbance impacts on bird species from noise and general human / machinery presence would be greatly reduced.

11. Within the Suffolk Coast and Heath AONB there would be no impacts to saltmarsh, mudflat and wetland habitat. Woodland habitat has been avoided through routeing and therefore there would be **no impact**. Mature tree and hedgerow removal would have already taken place during construction of the East Anglia ONE project. Replanting and reinstatement would take place following construction of the East Anglia ONE project leaving a 5.5m gap in hedgerows. This gap would be present for a number of years should the haul road be left in situ between projects and phases, but would be reinstated upon completion of the proposed East Anglia THREE project Phase 2. It is considered that leaving this gap is of no greater adverse impact than the impact of construction and decommissioning between projects and phases, which would involve disturbance of a wider footprint each time, and the hedgerows would just be getting re-established when they would be removed again. As the AONB is of national importance, the impact is considered to remain **minor adverse**.

23.7.1.1 Impact 2: Impacts to Non-Statutory designated Sites

12. As detailed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES, six non-statutory designated sites are avoided through routeing and two would cross beneath by use of pre-installed ducting, therefore haul road would not be required or left in situ on these sites. Any noise disturbance associated with activity associated with construction and decommissioning of haul road near to these sites would have been reduced from a maximum six events of activity down to two. As noise disturbance is still temporary and short term in relation to a medium sensitivity receptor, these impacts are considered to remain of **minor adverse** significance.

23.7.1.1 Impact 3: Impacts to Arable Land

13. Although arable land is the dominant habitat across the onshore cable route, the areas impacted are species poor and heavily affected by agricultural inputs and therefore do not qualify as UK Biodiversity Action Plan (BAP) or Suffolk Local BAP

priority habitat. Loss of small areas of low value and quickly recovering field margins are still assessed as **negligible** significance.

14. Leaving the haul road in situ between projects and phases would remove a narrow strip of land from arable use for the duration, a reversible but long term impact on low sensitivity habitat. Landowners would be able to use the haul road to traverse their land, which is likely to improve their ability to access fields and cross water courses. The CCS areas would remove a larger area of mainly arable habitat for the duration of East Anglia ONE through to the end of construction of the proposed East Anglia THREE project. Overall, effects to arable land are considered to be of low magnitude and at worst the impact is considered to remain **minor adverse**.

15. Top soil may be stored, then used to infill the working width once the haul road is in place. Consideration of any additional top soil removed from the footprint of the haul road and CCS hard standing will be included in the Site Waste Management Plan within the Code of Construction Practice (CoCP). On reinstatement of the land following removal of this infrastructure, top soil would need to be purchased to infill the channel, and be of the same quality as that which was removed.

23.7.1.1 Impact 4: Impacts to Woodland, Scrub and Trees

16. There would be no change to the low magnitude **minor adverse** impacts at Millers Wood (a designated ancient woodland of county importance), as access here was using an existing farm track and so construction and removal of haul road is not due to take place here. Impacts include increased noise, dust and human presence temporarily during cable installation methods.

17. The onshore cable route passes through nine areas of broadleaved and plantain woodland. Micro siting of duct installation during the East Anglia ONE project would avoid the loss of trees at these locations; however pruning may be required during construction activities to enable access and the impact is considered to remain **negligible**.

18. A maximum total direct loss of 1.98ha of scrub was estimated along the onshore cable route. Although scrub is a common habitat, the impact of this would be long term though reversible upon completion of the proposed East Anglia THREE project Phase 2. Top soil would be replaced when the haul road and CCS are removed, and scrub habitat is considered to re-establish easily. The impact is considered to remain **minor adverse**.

19. Removal of any mature trees within the onshore cable route would have already been undertaken during the East Anglia ONE project prior to construction. Impacts upon mature trees are identified as being **negligible**.

20. The significance of impact is at a site level and the magnitude is predicted to be low, therefore and a **minor adverse** impact is predicted overall.

23.7.1.1 Impact 5: Impacts to Hedgerows

21. Hedgerows are important landscape features, habitats and wildlife corridors in the generally intensively farmed land crossed by the onshore cable route. The majority of the hedgerows are moderately species-rich in terms of shrub and field-layer species, but they typically support additional features such as standard trees and an adjacent ditch that increase their ecological value. In total, 230 hedges were identified within the onshore electrical transmission works during the 2011/2012 and 2015 surveys, of which 174 also qualified as 'Important' based on criteria specified in the Hedgerow Regulations 1997. The UK BAP and Suffolk LBAP for Hedgerows are primarily concerned with ancient and species-rich hedges such as these.

22. Hedgerows within the path of the haul road would be removed during construction of the East Anglia ONE project. Upon completion of construction for East Anglia ONE, there would be partial reinstatement. Any breaches in hedgerows would be limited to a maximum of a 5.5m swathe required for vehicle passage along the haul road. It should be possible to micro-site jointing bays and laydown areas during construction of the proposed East Anglia THREE project to avoid further impact to hedgerows. The worst case impact upon hedgerows would therefore require a gap in all hedgerows crossing the onshore cable route, which would result in a loss of 957m of important hedgerow, and 308m of other hedgerow, in 5.5m sections. This loss would occur from construction of East Anglia ONE through to completion of Phase 2 of the proposed East Anglia THREE project. There would be no replanting occurring in the interim period. If the haul road was not left in situ, the gaps in the hedgerows would be replanted following construction of the East Anglia ONE project, but then removed again during the construction of the proposed East Anglia THREE project Phase 1 and it is anticipated that limited re-establishment would occur in that time before the hedgerows are disturbed again. In the context the available hedgerow resource within the onshore cable route (15.97km), the magnitude of the effect on hedgerows is low, however the effect would be long term (i.e. for the duration of the works) with reinstatement upon completion of the proposed East Anglia THREE project Phase 2.

23. Given this magnitude, there is potential for **minor adverse** impacts to occur during the recovery period for the reinstatement of the important hedgerows and **minor adverse** for other hedgerows.

23.7.1.1 Impact 6: Impacts to Grassland

24. Construction works would represent a direct, temporary, adverse impact on grassland from habitat loss during vegetation removal and topsoil stripping of the working width and long term habitat loss in the footprint of the haul road and CCS. In the worst case 18.36ha of improved grassland would be lost for the duration of the works.

25. Top soil may be stored, then used to infill the working width once the haul road is in place. Consideration of any additional top soil removed from the footprint of the haul road and CCS hard standing will be included in the Site Waste Management Plan within the CoCP. On reinstatement of the land following removal of this haul road and CCS, additional top soil would need to be purchased to infill the channel left from the haul road, and be of the same quality as that which was removed. Areas would be left to recover naturally however supplementary reseeding would be required in the footprint of the replaced top soil and would be undertaken at the discretion of the landowner.

26. Where grassland is agriculturally improved and species-poor it has negligible nature conservation value and would very quickly recover post-construction. As mitigation, as discussed in Chapter 23 Terrestrial Ecology of the ES, reinstatement of improved grassland areas may be supplemented by seeding at the discretion of the landowner. Impacts are considered to be of **negligible** significance.

27. TN 23, 337 and TNX44 are the only areas of species-rich neutral grassland identified during survey, but are not within the onshore cable route and are therefore unaffected.

28. The remaining areas of grassland within the onshore cable route are rough and dominated by coarse grass species and ruderal herbs. In the worst case 27.67ha of semi-improved grassland would be lost for the duration of the works. As the removed habitat would be a narrow strip for the footprint of the haul road, it is still considered that direct habitat loss would be a long term **minor adverse** impact in the footprint of the haul road and CCS for the duration of the works.

29. Calcifugous and acid grassland at TN 187a, 373, 374 379 (*Figures 23.3a-l*) would be directly affected whilst areas at TN 187b, 194, 372 and 374a have been avoided through cable route design. In the worst case 5.36ha of calcifugous and acid grassland would be lost for the duration of the works in the footprint of the haul road and CCS. There would be a long term **minor adverse** impact on grassland from habitat loss in the footprint of the haul road and the CCS.

30. Swamp dominated by common reed is typical of the banks of Martlesham Creek and in the valley of the River Mill. It would be avoided as part of crossing the watercourses using pre-installed ducting.

31. Marshy grassland and swamp vegetation is present within the onshore cable route at TN 344 and TN 375. In the worst case 2.72ha of marsh grassland and swamp would be lost for the duration of the works. The works would have a long term **minor adverse** impact through habitat loss in the footprint of the haul road and CCS.

32. Tall herb vegetation is ubiquitous and of low ecological value, and it is anticipated that there would be a **minor adverse** impact from habitat loss in the footprint of the haul road and CCS (in the worst case 5.24ha of tall herb vegetation would be lost for the duration of the works).

23.7.1.1 Impact 7: Impacts to Coastal Habitats

33. The only coastal habitat identified within the onshore cable route is saltmarsh at the River Deben. As the River Deben would be crossed using pre-installed ducts there would be no haul road or CCS at this location and therefore **no impact** upon saltmarsh.

23.7.1.1 Impact 8: Impacts to Watercourses and Ponds

34. Cables would be installed below watercourses using pre-installed ducts. However, new access routes required for the proposed East Anglia THREE project may require the upgrade of existing watercourse crossing points (e.g. small bridges and culverts) across minor water courses / field ditches and this would be determined during detailed design. Leaving the haul road in situ from the East Anglia ONE project until the end of construction of the proposed East Anglia THREE project would reduce the need to repeat works close to the field ditches in between the projects and phases from maximum six events of work to two, reducing the potential for a pollution incident. The exact methodology used to upgrade the crossings would be decided by the main works contractor in conjunction with the statutory authority. Method statements would be agreed with the statutory authority prior to any watercourse crossings taking place. Relevant measures from the Pollution Prevention Guidance 5 (works and maintenance in or near water) would be included as part of the general measures section of the CoCP and Landscape and Ecology Mitigation Strategy (LEMS). There is therefore considered to be negligible magnitude impacts on low value field ditches, of **negligible** significance.

35. There are several ponds within 50m of the onshore cable route. Relevant measures from the Pollution Prevention Guidance 5 (works and maintenance in or near water) would be included as part of the general measures section of the CoCP and LEMS.

Following the implementation of these measures, **no impacts** are predicted to ponds.

23.7.1.1 Impact 9: Impacts to Notable Plant Species

36. Mossy stonecrop, common cudweed and hoary cinquefoil (Red List species) are all species of disturbed sandy soils and are present at a number of locations within the onshore cable route. The maximum available suitable habitat for these species within the onshore cable route is approximately 5.36ha. A long term loss of these species would occur over some of this area although an exact footprint of haul road and jointing bays is not possible to estimate prior to detailed design. Given the size of the jointing bay compounds (0.37ha) and the size of the areas of habitat where these species have been identified, there is no single location where the full habitat area is at risk of being disturbed in its entirety. Suffocated clover is present in one location within the cable route (TN191), the area of which is 0.1ha and is at risk of being disturbed twice during construction if the haul road was not to be left in situ. Historical records indicate that this species is locally prevalent and as such the potential loss of this species within the cable route is not considered to result in damage to the viability of the wider local population.

37. Although the haul road would remain in situ for several years, it would constitute a small strip of habitat removal for notable plant species. It is likely that populations would quickly recover (and may even benefit from the disturbance due to their proclivity for disturbed soils) upon re-instatement of the habitat in the working width up to the footprint of the haul road. These impacts would be long term, of low magnitude and of local value. The overall significance is assessed to remain as **minor adverse**.

38. Perennial glasswort occurs in both areas of saltmarsh along the River Deben. Since cables would be installed in pre-installed ducts there would be **no impact** on this species.

23.7.1.1 Impact 10: Spread of Non- native invasive Species

39. Himalayan balsam, Canadian waterweed and Japanese rose were all located in the surveyed buffer of the onshore cable route. Interaction with Canadian waterweed would be avoided by the use of pre-installed ducting. Similarly, interaction with Himalayan balsam would also be avoided by utilising pre-installed ducting. No Japanese rose was recorded within the onshore cable route; the nearest locations are approximately 95m from the closest point to the onshore electrical transmission works. Should the haul road be left in situ, there would be less construction activity associated with the haul road on the site (a reduction from maximum six events to

two), and the chance of spread of non-native invasive species during construction would be reduced.

40. The implementation of the mitigation measures outlined in Chapter 23 Terrestrial Ecology would ensure that the magnitude of this effect is reduced to negligible. As such if the haul road and CCS hard standing are left in situ, a **negligible** impact is still predicted for invasive, non-native species.

23.7.1.1 Impact 11: Impacts to Badgers

41. It is likely that badgers along the onshore cable route might experience disturbance (as defined by Natural England) during construction. There is the potential for disturbance if construction activity occurs within 30m of an active sett. All active setts within the onshore cable route would have been closed (and badgers excluded) during the installation of ducts as part of the East Anglia ONE construction.

42. The haul road may constitute a temporary barrier to movement during construction under the East Anglia ONE project due to noise, dust and human presence; however its presence outwith times of construction should not prevent badger movement or reduce foraging potential. Reduction of the number of events for haul road construction and decommissioning from maximum six down to two would reduce the potential impacts to badgers in the vicinity of the onshore cable route, with just cable installation and re-instatement activities taking place.

43. Badgers are considered to be of local value, and given the extent of potential territory in the wider area, with temporary loss of such a small proportion, the impact is considered to be of low magnitude and **minor adverse.**

23.7.1.1 Impact 12: Impacts to Bats

44. No tree roosts were recorded along the onshore cable route and no further tree removal would be required (any trees having been removed under prior duct installation works by the East Anglia ONE project) and so **no impacts** to known roosts are anticipated.

45. There are potential impacts to commuting and foraging bats as a result of vegetation clearance and construction along the onshore cable route. The brown long-eared bat is known to forage over a small area (between 500m - 1km) of their roosts (Entwistle et al. 1997) and so the reduction in available foraging habitat may be a concern for this species. In order to facilitate construction of the haul roads and jointing bays along the onshore cable route, sections of hedgerow may be removed and areas of grassland may be soil-stripped. The removal of vegetation would reduce the insect biomass of the area and therefore would reduce the foraging habitat available to bats within the working width for the amount of time the haul

road is in place, which is considered to be a long term impact. The area of grassland and length of hedgerow (as a worst case, 27.67ha and 851m respectively) is small in the context of the available resource. In addition, if the haul road is left in situ between the East Anglia ONE project and proposed East Anglia THREE project the number of disturbance activities associated with the haul road would be reduced from six events to two across the two projects. Overall it is anticipated there would be a long term **minor adverse** impact to bats.

46. With regard to hedgerows the impacts would vary depending on how regularly used and important a hedgerow is to bats. For example, the reduction in foraging habitat caused by the hedgerow section removals may have a greater impact on regularly used hedgerows where a high level of bat activity was recorded (i.e. at locations 27, 55, 64 / 65 and 119 / 120, see *Figures 23.14a - g*, where 200 bat passes were recorded at each), compared to hedgerows where lower bat activity was recorded. Hedgerows which have been recorded as having a high level of bat activity (usage) are considered to be 'important' for bats. In addition, due to the rarity of the bat species, any hedgerow with at least one barbastelle pass should be considered as an 'important' hedgerow. The survey results indicate that survey locations 4, 23, 28, 63, 95, 124 and 146/147 recorded at least one barbastelle pass.

47. Bats are known to use hedgerows to commute along in order to navigate around the landscape and some species are potentially sensitive to gaps in hedgerows such as species in the genera *Myotis* and *Plecotus* due to the nature of their flight pattern. Species from the genera *Nyctalus* and *Eptesicus*, and Nathusius' pipistrelle bats are known to fly high and in open habitats and therefore are unlikely to be impacted by hedgerow severance. Common pipistrelle and soprano pipistrelle bats are generalist species and would tolerate gaps in hedgerows. There is very limited research regarding whether gaps actually negatively affect *Myotis* / *Plecotus* species. The gaps in hedgerows also have the potential to increase the risk of predation of bats. Bats would be more visible to potential predators while they fly across the gaps as they would have no cover. It is probable that without mitigation the hedgerow severance at 'important bat hedgerows' (see *Figures 23.14a - g* of the East Anglia THREE ES for locations) would have a long term, **minor adverse** impact on bats for the duration that the gaps are present for, which is considered significant at district level during this time. To reduce the magnitude of the impact to bat navigation, infilling of the hedge gaps through use of fencing and gates is proposed as mitigation between projects and phases. Details of infill design and materials would be agreed with Suffolk County Council (SCC), Natural England and landowners prior to construction. The gaps should be filled as soon as practicable upon completion of construction at that location. This mitigation would reduce the impact on navigation

from long term to short term **minor adverse.** This would still be significant at a district level, but the impact would only occur during construction activities.

48. If the proposed construction works are undertaken during the night, lighting would be required, which has the potential to impact on bats. The temporary impact of lighting has the potential to have a **minor adverse** impact on bats at a local level. Lighting is not required outwith periods of construction and all lighting equipment will be removed from site.

49. Following the best practice mitigation measures identified in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES, the impact of lighting on bats would remain **minor adverse**.

23.7.1.1 Impact 13: Impacts to Great Crested Newts

50. As discussed in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES, no great crested newt breeding ponds would be lost as a result of the construction work along the onshore cable route and therefore newts would only be at risk in their terrestrial phase. Direct impacts could include individual newts being affected by machinery, either directly or as a result of vibration. Also, the works may affect dispersal routes as haul routes are used during construction across suitable habitat near the seven confirmed breeding ponds. Reducing the number of times the haul road is constructed and decommissioned would reduce the risk of direct impact to great crested newts.

51. No permanent loss of great crested newt terrestrial habitat would occur; however it is probable there would be a long term **minor adverse** impact of low magnitude through habitat loss and temporary **minor adverse** impact through dispersal routes during construction activities. The presence of the haul road behind projects is not anticipated to hinder the movement of great crested newts.

52. Mitigation outlined in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES includes for amphibian proof fencing would be placed around the working width, including sections of the haul road, during construction activities. The fencing is not considered to be required to remain in place between projects and phases.

23.7.1.1 Impact 14: Impacts to Otter

53. Evidence of otter was recorded at 12 locations during the otter survey. Impacts on otters arising from construction may include temporary disruption to movement or foraging along watercourses and possible disturbance at resting or breeding places such as couches and holts.

54. If the haul road and CCS hard standing were left in situ from construction of East Anglia ONE, the number of construction and removal activities required for the haul road would be reduced from maximum six down to two events, leaving works associated with cable installation as the main source of impact through increased noise, lighting and human presence. This is likely to produce an effect of low to negligible magnitude depending on the proximity of the ducting locations to the watercourse, since the impact would be temporary, short-term, and localised. Following mitigation outlined in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES, the impact is considered to remain **negligible**.

55. The presence of the haul road for a number of years is not anticipated to provide a barrier to the movement of otters in the vicinity of the onshore cable route.

23.7.1.1 Impact 15: Impacts to Water Voles

56. If the haul road remains in situ from construction of the East Anglia ONE project, there would not be the need to repeat those crossing installations for haul road during construction of the proposed East Anglia THREE project, and this would remove the potential loss of water vole escape holes. This would therefore avoid the potential for this impact to occur during the installation of the East Anglia THREE cables.

57. Potential impacts to water vole may arise from the use of the installation of cables through pre-installed ducts are likely to come from disturbance of increased noise, lighting and human presence. There would be no change to these impacts if the haul road were to be left in situ.

58. The presence of the haul road for a number of years is not anticipated to provide a barrier to the movement of water voles in the vicinity of the onshore cable route.

23.7.1.1 Impact 16: Impact to Reptiles

59. Impacts on reptiles could be both direct and indirect. Direct impacts are associated with potential injury or harm to individuals which could occur during vegetation clearance of the working width along the entire route including strimming of areas of rough grassland, patches of scrub, and removal of discrete sections of hedgerow.

60. Indirect impacts are associated with the loss of habitat as a result of vegetation clearance, which could restrict the breeding success of localised populations of reptile until the vegetation has time to re-establish.

61. Chapter 23 Terrestrial Ecology of the East Anglia THREE ES identifies areas with moderate populations of reptiles which have been avoided through route selection or use of pre-installed ducting, or for where a precautionary method of working

(PMoW) is proposed. If the haul road and CSS were left in situ, construction and removal activities for these features would be reduced from six events to two, however works would still be required for jointing bays and cable installation for the proposed East Anglia THREE project. Following the embedded mitigation in the PMoW and given the reduced amount of activity required along the onshore cable route if the haul road is left in situ, injury of individual reptiles is considered extremely unlikely.

62. Indirect impacts through habitat loss, typically at narrow habitats at boundaries, are considered to be long term for the duration the haul road and CCS remain in situ , but because the footprint of this remains small and no barrier effects are anticipated, the impact is assessed to remain as **minor adverse** at a local level.

23.7.1.1 Impact 17: Impacts to Terrestrial Invertebrates

63. The impacts of the works to invertebrates along the onshore cable route would include long term habitat loss and fragmentation, and disturbance from increased noise, dust and human presence during construction activities.

64. If the haul road is left in situ between the proposed projects and phases the potential for disturbance is reduced from six events to two, reducing the potential for disturbance impacts to occur. Over the entire onshore cable route, habitat for invertebrates is generally of low value, since the majority is arable fields. The magnitude of the impact is considered low and a **negligible** impact is predicted.

65. Although the footprint of the haul road would remove habitat for several years, it constitutes a narrow strip and it not considered to create a barrier to movement. Chapter 23 Terrestrial Ecology of the East Anglia THREE ES identifies mitigation measures for if jointing bays or haul roads are located within key invertebrate sites where a diverse invertebrate assemblage has been identified. Following implementation of the mitigation proposed, the magnitude of the impact is predicted as low resulting in long term **minor adverse** (in relation to Area A – River Gripping and surrounding grasslands) and **minor beneficial** (in the case of Area G and H).

66. No impacts are anticipated on key invertebrate species. Other terrestrial invertebrate species would be impacted through temporary habitat loss of low magnitude. As most habitats are considered to be of low value to invertebrates, the impact is considered to be **minor adverse**.

23.7.1.1 Impact 18: Impacts to Aquatic Invertebrates

67. Cables would be pulled through pre-installed ducts under the River Deben, Mill River, Martlesham Creek and River Gipping. Therefore **no impacts** to aquatic invertebrates (including white-clawed crayfish in Mill River) are predicted.

23.7.1.1 Impact 19: Impacts to Fish

68. Cables would be pulled through pre-installed ducts under the River Deben, Mill River, Martlesham Creek and River Gipping. Therefore **no impacts** to fish are predicted.

23.7.5 Summary

69. *Table 23.7.2* below summarises the assessment of retaining the haul road and CCS hard standing in situ from construction of the East Anglia ONE project until the construction of the proposed East Anglia THREE project. None of the impacts assessed would change in significance from those stated in Chapter 23 Terrestrial Ecology of the East Anglia THREE ES. The key points from the assessment undertaken in this appendix and differences from the original assessment are summarised in the following bullets:

- There would be no additional impacts to designated sites, and the number of disturbance impacts would be reduced if the haul road is left in situ, as reduced construction activity would be undertaken.

- There would be long term habitat loss of mainly arable land and low value grassland in the footprint of the haul road and the CCS. There would also be long term loss of scrub habitat. The haul road would constitute a narrow strip of habitat removal. This is considered to recover once the infrastructure is removed and reinstatement occurs. Field margins are expected to recover quickly. Top soil may be stored, then used to infill the working width once the haul road is in place. Consideration of any additional top soil removed from the footprint of the haul road and CCS hard standing will be included in the Site Waste Management Plan within the CoCP. Upon reinstatement, where soil compaction has occurred or top soil has been removed, top soil would need to be replaced in the footprint of the haul road and CCS of the same quality of that removed. There may be requirement for re-seeding of grasslands to occur where long term habitat loss occurs, at the discretion of the landowner. This impact is considered to be of **minor adverse** significance.

- It is assumed that in addition to retaining the haul road, access points would also be retained, removing the need to repeat work undertaken by East Anglia ONE within or in the vicinity of water crossings and therefore reducing the risk of any pollution

incidents. Following agreed mitigation the impact is considered to remain of **negligible** significance.

- There would be **no impact** on coastal habitats.
- With the retention of infrastructure installed by East Anglia ONE, the avoidance of repeating these activities for the proposed East Anglia THREE project reduces opportunities for the spread of non-native invasive species.
- As the installation and removal of the haul road and CCS hard standing would be reduced from six events to two, disturbance effects (e.g. noise, dust, human presence) would be reduced for all faunal species assessed within the East Anglia THREE ES.
- The long term presence of the haul road is not anticipated to cause a barrier to movement for any mobile species. Some foraging habitat would be lost for the duration of the works for terrestrial invertebrates and reptiles.
- There would be a reduction in potential loss of water vole escape holes if the number of construction activity events is reduced from six to two should the haul road be left in situ.
- The worst case impact upon hedgerows would require a gap in all hedgerows crossing the onshore cable route, which would result in a loss of 957m of important hedgerow, and 308m of other hedgerow, in 5.5m sections for the duration for which the haul road is left in situ. This constitutes a long term **minor adverse** impact. Replanting of hedgerow species following completion of the construction works for East Anglia THREE is anticipated to re-establish quickly.
- The long term severance of important bat hedgerows where the haul road intersects would constitute a long term **minor adverse** impact on *Myotis / Plecotus* species bat foraging and navigation activity. Whilst not significant in Environmental Impact Assessment (EIA) terms,, this impact may be significant at a district level for the duration of time the gaps are present. Additional mitigation is proposed in the form of fence or gate infill, installed as soon as is practicable, to allow bats to navigate a continuous line. This would reduce the impact to short term but still **minor adverse** impact, which would only occur during the actual periods of construction.
- There would be **no impacts** to aquatic invertebrates or fish.

Table 23.7.2 summary of changes to impact assessment should the haul road remain situ between the East Anglia ONE project and the proposed East Anglia THREE project

Potential Construction Impact	Value / Sensitivity	Magnitude	Significance	Residual Impact	Change to Impact Assessment
Impact 1: Impact to statutory designated sites	International / National / County	Negligible	Minor adverse	N / A	No change, however reduction in noise and activity disturbance
Impact 2: Impact to non-statutory designated sites	County	Low	Minor adverse	N / A	No change, however reduction in noise and activity disturbance
Impact 3: Impacts to arable land	County	Low	Minor adverse	N / A	No change however habitat removal would be long term in footprint of haul road and CCS
Impact 4: Impacts to woodland , scrub and trees	County	Low	Minor adverse	Minor adverse	No change
Impact 5: Impacts to hedgerows	County / Local	Low	Minor adverse	Minor adverse (to occur during recovery period for reinstatement of these features)	No change
Impact 6: Impacts to grassland	Local / County / Site	Low	Negligible - Minor adverse	N / A	No change however habitat removal would be long term in footprint of haul road and CCS. Topsoil would need to be replaced in the footprint of the haul road and CCS.
Impact 7: Impacts to coastal habitats	National / District / County	No change	No impact	N / A	No change
Impact 8: Impacts to watercourses and ponds	International / Local	Negligible	Negligible	Negligible	No change

Potential Construction Impact	Value / Sensitivity	Magnitude	Significance	Residual Impact	Change to Impact Assessment
Impact 9: Impacts to notable plant species	Local / County	Low	Minor adverse	Minor adverse	No change
Impact 10: Spread of non-invasive species	National	High	Negligible	Negligible	No change
Impact 11: Badgers	Local	Low	Minor adverse	N / A	No change, however reduction in noise and activity disturbance
Impact 12: Bats	International	Negligible	Minor adverse	Minor adverse	No change, however additional mitigation is proposed to close gaps in hedgerows with fencing and gates to allow bats to navigate along a continuous feature. The impact remains significant for bats at district level
Impact 13: Great crested newts	District	Low	Minor adverse	Minor adverse	No change, however reduction in noise and activity disturbance
Impact 14: Otter	County	Low - negligible	Negligible	Negligible	No change, however reduction in noise and activity disturbance
Impact 15: Water voles	Local	Low - negligible	Minor adverse	Minor adverse	No change, however reduction in noise and activity disturbance
Impact 16: Reptiles	Local	Low	Minor adverse	Minor adverse	No change, however reduction in noise and activity disturbance
Impact 17: Terrestrial invertebrates	Up to National	Low	Negligible	Minor adverse / minor beneficial	No change
Impact 18: Aquatic invertebrates	Site	No change	No impact	Minor adverse	No change
Impact 19: Fish	Site	No change	No impact	Minor adverse	No change

23.7 References

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Appendix 23.7 Ends Here