

A47 Blofield to North Burlingham Dualling

Scheme Number: TR010040

Volume 6

6.1 Environmental Statement

Chapter 15 – Cumulative Effects Assessment

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
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**A47 Blofield to North Burlingham
Development Consent Order 202[x]**

**CHAPTER 15
CUMULATIVE EFFECTS ASSESSMENT**

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15. Cumulative Effects Assessment

15.1. Introduction

- 15.1.1. As part of the Environmental Impact Assessment (EIA) process, this Environmental Statement (ES) chapter presents the cumulative effects assessment (CEA) for the Proposed Scheme. EIAs must include cumulative effects in accordance with the requirements of the EIA Directive (85/337/EEC).
- 15.1.2. Cumulative effects result from multiple actions on receptors over time and are generally additive or interactive (synergistic) in nature. They can also be considered as effects resulting from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Scheme.
- 15.1.3. The assessment has been undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (2020) and the Planning Inspectorate 'Advice Note Seventeen: Cumulative Effects Assessment' (2019).
- 15.1.4. In line with DMRB LA 104, this CEA includes effects from:
- a single project (the Proposed Scheme), which considers numerous different effects impacting a single receptor
 - different projects, in combination with the Proposed Scheme
- 15.1.5. The study areas for each of the environmental topics, defined in the preceding chapters of this ES, inform the Zone of Influence (ZOI) of the CEA for other developments and/or approved developments and this ranges from 400m to 30km depending on the topic and potential effects.

15.2. Competent expert evidence

- 15.2.1. The technical lead for this assessment is an environmental impact assessment specialist with 8 years' experience with numerous highways projects and a relevant MSc.
- 15.2.2. Recent experience includes technical lead for the A63 Castle Street Improvement Hull (2018), another development consent order application and EIA road project.

15.3. Assessment Methodology

- 15.3.1. Since the publication of the Scoping Report and Scoping Opinion of the Proposed Scheme (2018), the DMRB guidance for cumulative effects has been updated. DMRB LA 104 Environmental Assessment and Monitoring (2020) included guidance on cumulative effects.
- 15.3.2. The approach to the assessment remains the same other than a change in terminology, changing from 'combined' and 'cumulative' to 'single project' and 'different projects' respectively. The methodology for the assessment follows the DMRB LA 104 and Planning Inspectorate Advice Note Seventeen.

15.3.3. The assessment includes the following:

- review of the preceding chapters of this ES to identify potential multiple different effects impacting a single receptor
- establish the ZOI of the project together with other projects (using a combination of the traffic model uncertainty log, consultation and desk study)
- establish a list of projects which have the potential to result in cumulative impacts (following the stages 1 and 2 set out in Planning Inspectorate Advice Note Seventeen)
- obtain further information and detail on the list of identified projects to support further assessment

Study area

Single Project

15.3.4. The study area for the assessment of single project effects, for both construction and operation, are defined by the study areas identified within the relevant environment topics set out in the preceding chapters of this ES.

Different Projects

15.3.5. The study area for different projects is a ZOI based on the study areas defined for the topic assessments in Chapters 5 to 14.

15.3.6. Where a topic has identified a study area for potential significant effects e.g. 1km from the red line boundary for landscape and visual effects, this distance is doubled for the ZOI (2km) as it assumes that sensitive receptors at the furthest extent of the Proposed Scheme study areas could be at the furthest extent of a theoretical study area for other development. For most topics the study area is 2km or less, which meant a ZOI of 4km was a suitable 'catch all' buffer to identify other developments. The biodiversity topic identified 2 key receptors at 10km and 30km from the scoping boundary. These three buffers were combined to form the search area in which to identify other development.

15.3.7. This is summarised in Table 15-1 (Study area extents) and presented in Volume 2, Figure 15.1. The table orders the environmental topics by size of ZOI for CEA.

Table 15-1 : Study area extents

Discipline topic	Study area from preceding topic chapters	CEA ZOI
Biodiversity	SAC designated for bats: 30km Statutory sites designated for birds: 10km Designated sites: 2km Phase 1 habitat survey: 100m Great crested newts (GCN) <i>Triturus cristatus</i> : 500m Surveys for breeding birds and wintering birds: 500m Aquatic invertebrates from within wetland sites that could be directly impacted by the Proposed Scheme: 50m Surveys for other ecological receptors, including badger <i>Meles meles</i> and reptiles: 50m	30km from Paston Great Barn SAC 10km from Breydon Water SPA 4km from the red line boundary covers the remaining receptors

Discipline topic	Study area from preceding topic chapters	CEA ZOI
	Barn owl <i>Tyto alba</i> nests that could be directly impacted or disturbed by the Proposed Scheme: 1.5km Bats – flight paths, foraging areas or roosts in trees and buildings: 50m	
Cultural heritage	Archaeological potential and history context: 1km from the red line boundary.	2km from the red line boundary
Landscape and visual effects	1km from the red line boundary	2km from the red line boundary
Geology and soils	1km from red line boundary	2km from the red line boundary
Road drainage and the water environment	1km from the red line boundary Assessment for road runoff and accidental spillages includes traffic associated with other developments and is therefore inherently cumulative. This aspect is not included in the different projects assessment to avoid double counting.	2km from the red line boundary
Noise and vibration	The vibration study area is a maximum of 100m from the construction works. The noise study area is a maximum of 600m from the red line boundary. As the construction and operational phase traffic data includes traffic associated with other developments, the noise and vibration impact assessment reported within the noise and vibration chapter is inherently cumulative. Not included in the different projects assessment to avoid double counting.	1.2km from the red line boundary
Population and human health	500m from the red line boundary	1km from the red line boundary
Air quality	200m from construction activities for dust and vehicle emissions. As the construction and operational phase traffic data includes traffic associated with other developments, the air quality impact assessment reported within the air quality chapter is inherently cumulative. Not included in the different projects assessment to avoid double counting.	400m from construction activities
Material assets and waste	The estimated materials availability and waste capacity data used in the material assets and waste chapter are based on future regional demand. Not included in the different projects assessment to avoid double counting.	Not applicable
Climate	As the construction and operational phase traffic data includes traffic associated with other developments, the emissions assessment reported within the climate chapter is inherently cumulative. Not included in the CEA to avoid double counting. The study area for climate resilience is informed by other environmental topic assessments study areas. Therefore, no additional ZOI extents are required beyond that identified within the topics included in this table.	Not applicable

15.3.8. Further information on the study areas for the technical assessments are found within each of the technical Chapters 5 to 14 in the ES (**TR010040/APP/6.1**).

Single Project

15.3.9. Single receptors / resources are identified where the combined action of a number of different environmental topic-specific activities have a residual effect. Professional judgement is used to assess temporal combination effects such as permanent construction impacts and operational phase impacts.

15.3.10. Effects that are moderate adverse/beneficial and above are considered significant. However, the CEA has considered residual effects (i.e. those that are predicted to

remain after mitigation) that are identified as minor/slight and above. These are considered further to determine whether multiple smaller effects in combination could result in a significant single project cumulative effect.

- 15.3.11. Receptors identified and considered in relation to the single project combined effects are:
- human receptors (residential and community facilities)
 - ecological receptors
 - built heritage features
 - waterbodies
 - travel routes (walkers, cyclists, horse riders, and motorised users)
- 15.3.12. Where multiple receptors have been identified in the preceding chapters as being impacted by the Proposed Scheme and are in close proximity to one another, this assessment has grouped them together to assess potential cumulative effects in that area.
- 15.3.13. Potential interactions across receptors or receptor groups were identified by reviewing the impacts identified within each environmental topic assessed in the preceding chapters of this ES and using professional judgement and experience.
- 15.3.14. To avoid duplication of information or assessment, these specific aspects are not considered further in the CEA as they have been dealt with in the relevant chapters already (**TR010040/APP/6.1**).
- Cultural Heritage (Chapter 6) and Biodiversity (Chapter 8) assessments considered the potential interactions of effects relating to construction and operational noise and air quality, and construction dust on receptors.
 - Biodiversity (Chapter 8) includes consideration of effects on the water environment in relation to ecological receptors.
 - Population and Human Health (Chapter 12), considers identified health effects from other relevant environmental topics (air quality, landscape and visual, noise and access) to assess health outcomes.
 - Climate (Chapter 14) includes specific consideration of interrelated climate impacts informed by other environmental topics (road drainage and water environment, material assets and waste).

Different Projects

- 15.3.15. The assessment methodology for cumulative effects involves identification of incremental changes likely to be caused by potential 'other developments' together with the Proposed Scheme.
- 15.3.16. The assessment of cumulative effects follows Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment with the four stages of assessment:
- Stage 1: Establish the ZOI and identify a long list of 'other developments'. This is available in Volume 3, Appendix 16.1 (Long list)

- Stage 2: Identify shortlist of 'other developments' for the cumulative effects assessment. This is available in Volume 3, Appendix 16.2 (Short list)
- Stage 3: Information gathering
- Stage 4: Assessment

- 15.3.17. The ZOI is based on the study areas of the environmental topics detailed in the preceding chapters of this ES and summarised in Table 15-1 (Study area extents). Volume 2, Figure 15.1 shows the developments from the short list and study area.
- 15.3.18. Following consultation with Norfolk County Council and Broadland District Council, additional projects were added to the scope including the Third River Crossing project, which has been included in the assessment. Four windfarm projects were also recommended for consideration however, these are all located beyond the study area.
- 15.3.19. A search for 'Tier 2' projects was also completed on Suffolk County Council's planning portal and no further projects with potential effects were identified within the study area.
- 15.3.20. Other projects occurring along the A47 were initially considered following scoping opinion feedback. However, none are within the ZOI and therefore not progressed further in this assessment.

Environmental topics

- 15.3.21. Some environmental topics in the preceding chapters of this ES, have relied wholly, or in part, on the forecasts derived from the traffic model. As the traffic model includes future other developments, the assessments of the Proposed Scheme's effects within these topics have included cumulative impacts by default and therefore the effects are already reported within their assessments.
- 15.3.22. The topics and the intrinsically cumulative aspect of the operational assessment, noted in Table 15-1, are included in the following chapters:
- Chapter 5 (Air Quality) (**TR010040/APP/6.1**)
 - Chapter 11 (Noise and Vibration) (**TR010040/APP/6.1**)
 - Chapter 13 (Road Drainage and the Water Environment) (**TR010040/APP/6.1**) for road runoff and accidental spillages
- 15.3.23. In line with the DMRB LA 104 good practice principles, these are not included in the scope of operational effects for the CEA to avoid duplication of information and/or assessment of effect.

Other developments

- 15.3.24. As part of the transport forecasting, a list of potential developments, with varying degree of certainty that the development will occur, informs the future traffic scenarios. This list is referred to as an uncertainty log. The forecast for developments is up to 2036. Only those developments that are considered as being 'Near Certain' and 'More Than Likely' are used in the traffic model (Table 15-2 (Certainty of developments)). This list was used to inform the cumulative effects in combination with consultation, publicly available information and professional judgement.


Table 15-2 : Certainty of developments

Certainty of outcome	Development Status
Near Certain: The outcome will happen or there is a high probability of it occurring.	Intent announced by proponent to regulatory agencies. Approved development proposals. Projects under construction.
More Than Likely: The outcome is likely to happen but some uncertainty.	Development application within the consent process and in accordance with the development plan.
Reasonably Foreseeable: The outcome may happen but significant uncertainty.	Identified within a development plan and, although not directly associated with the project, may occur if the project is implemented.
Hypothetical: There is considerable uncertainty whether the outcome would ever happen.	Conjecture based upon currently available information. Discussed on a conceptual basis. One of a number of possible inputs in an initial consultation process.

Source: A47 Blofield to North Burlingham Transport Forecasting Package Report 2018

- 15.3.25. The developments are grouped into tiers, reflecting the likely degree of certainty attached to each development, with Tier 1 being the most certain as shown in Table 15-3 (Assigning certainty to ‘other existing development and/or approved development’), from a table in the Planning Inspectorate Advice Note Seventeen. Tier 3 developments are least certain, and most likely to have limited publicly available information to inform assessments.
- 15.3.26. Rather than reporting every interaction, the assessment of cumulative effects focuses on the main significant effects and aims to differentiate between permanent or temporary, positive or negative and other existing or more than likely / near certain major developments.

Table 15-3 : Assigning certainty to ‘other existing development and/or approved development’

Tier	Likely degree of certainty	
Tier 1	Under construction* Permitted Application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented. Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined.	Decreasing level of detail likely to be available 
Tier 2	Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report has been submitted.	
Tier 3	Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report has not been submitted. Identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as the move closer to adoption) recognising that much information on any relevant proposals will be limited. Identified in other plans and programmes (as appropriate) which set the framework for future development consents / approvals, where such development is reasonably likely to come forward.	

Source: Planning Inspectorate: Advice note seventeen.

* where other projects are expected to be completed before construction of the proposed Nationally Significant Infrastructure Project and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline and may be considered as part of both the construction and operational assessment.

15.3.27. Where significant cumulative effects have been identified beyond those identified as residual effects from the Proposed Scheme in isolation additional mitigation would be recommended.

Significance criteria

15.3.28. The assessment of significance of the cumulative effects has been determined in accordance with the significance criteria contained in DMRB LA 104. Typically, the greater the environmental sensitivity or value of the receptor or resource, and the greater the magnitude of impact, the greater the effect. Consequently, a highly valued resource suffering a major detrimental impact would result in a very large adverse effect.

15.3.29. For the purpose of the cumulative effects assessment, the value of a resource and magnitude of impact is determined according to the criteria set within the preceding chapters of the ES.

15.3.30. The significance of effect is then carried forward from preceding environmental chapters to enable an assessment of combined significance, as well as to identify the significance of cumulative effects with other developments. Typical descriptors of cumulative significance are included in Table 15-4 (Significance criteria) which reflects the approach. The overall significance is determined with mitigation included. Where an effect is moderate or above (adverse or beneficial), it is deemed to be significant.

Table 15-4 : Significance criteria

Significance category	Typical descriptors of effect
Very large (adverse or beneficial)	Where the balance of the effects of the Proposed Scheme or combined effects of the Proposed Scheme in association with other existing or more than likely / near certain future major development upon an individual or collection of environmental receptors would be very highly significant (positive or negative). Effects would be permanent and far reaching for receptors of very high value.
Large (adverse or beneficial)	Where the balance of the effects of the Proposed Scheme or combined effects of the Proposed Scheme in association with other existing or more than likely / near certain major future developments upon an individual or collection of environmental receptors would be highly significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent and far reaching for receptors of high value. • Localised for a receptor of very high value. • Temporary for receptor of very high value.
Moderate (adverse or beneficial)	Where the balance of the effects of the Proposed Scheme or combined effects of the Proposed Scheme in association with other existing or more than likely / near certain major future developments upon an individual or collection of environmental receptors would be significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent and far reaching for receptors of medium value. • Localised for receptors of high value. • Temporary for a receptor of high value.
Slight (adverse or beneficial)	Where the balance of the effects of the Proposed Scheme or combined effects of the Proposed Scheme in association with other existing or more than likely / near certain major development upon an individual or collection of environmental receptors would be noteworthy but not significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent and far reaching for receptors of low value. • Localised for receptors of medium value. • Temporary for a receptor of medium value.

Significance category	Typical descriptors of effect
Neutral	Where the positive or negative effects of the Proposed Scheme or the combined effects of the Proposed Scheme in association with other existing or more than likely / near certain future major developments would balance.

Source: DMRB LA104

15.3.31. Significance descriptors have also been aligned with the considerations included within Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment. Consideration is given to the following:

- The duration of effect, i.e. will it be temporary or permanent
- The extent of effect, e.g. the geographical area of an effect
- The type of effect, e.g. whether additive (loss of 2 pieces of woodland of 1ha, resulting in 2ha cumulative woodland loss) or synergistic (2 discharges combine to have an effect on a species not affected by discharges in isolation)
- The frequency of the effect
- The value and resilience of the receptor affected
- The likely success of mitigation

Consultation

- 15.3.32. The proposed assessment methodology for cumulative effects was described in Chapter 15 of the EIA Blofield to North Burlingham Scoping Report issued to the Planning Inspectorate in March 2018.
- 15.3.33. The scope of this assessment reflects comments received within the Scoping Opinion for the Proposed Scheme (2018).
- 15.3.34. Consultation was undertaken with Norfolk County Council in 2018 and it was agreed that the uncertainty log developed for the traffic model was suitable for the environmental assessment. A meeting was also held with Norfolk County Council and Broadland District Council in July 2020 to confirm the approach of the CEA and to incorporate any further inputs. All parties agreed the methodology adopted for the assessment was appropriate.
- 15.3.35. Norfolk County Council recommended five additional projects to be considered. This included four windfarms outside of the study area and the Third River Crossing project, which has been carried forward into the short list.

Limitations and assumptions

- 15.3.36. Limitations to the assessment and uncertainty are in relation to the diminishing certainty of future developments and for the developments where only limited information is publicly available. This limitation has been addressed as far as possible through professional judgement and adopting a worst case approach i.e. when the construction start and finish dates are not available for the other developments, it has been assumed

that either part or all of the construction phase will fall within the same period as the Proposed Scheme construction activities, reflecting a worst case scenario approach.

- 15.3.37. For developments with ‘more than likely’ uncertainty or above are absent from the local planning authority and the Planning Inspectorate portal (i.e. Tier 3 defined in Planning Inspectorate Advice Note Seventeen) it is assumed that the development(s) are not likely to have significant effects on the environment, therefore Neutral effects have been assigned for these projects.

15.4. Assessment of single project effects

- 15.4.1. The predicted environmental effects for both construction and operational phases of the Proposed Scheme are taken into consideration with the inclusion of any proposed mitigation from the preceding chapters of the ES.

- 15.4.2. A summary of the reported construction effects are described in Table 15-5

Table 15-5 : Single project effects

Receptors	Residual effect	Temporal link	Significance	Environmental Topic
Residential properties on Yarmouth Road	Temporary land take for 111, 115A, 117 and 1198 Yarmouth Road properties.	Construction	Moderate adverse	Population and human health
	Vegetation loss within the residential gardens for 111, 115A, 117 and 119 Yarmouth Road. Loss of the mature trees in the vicinity of the allotments, which would impact views from 111, 115A, 117 and 119 Yarmouth Road.	Construction Year 1* Year 15*	Large adverse Moderate adverse Slight adverse	Landscape and visual
	Traffic noise effects are predicted at 37 dwellings in the vicinity of Yarmouth Road (A47 to the Danesbower Lane junction).	Operation	Significant adverse	Noise and Vibration
	New lighting columns along Yarmouth Road.	Operation	Not significant	Landscape and Visual
<i>Summary</i>	For the properties at Yarmouth Road, during the construction phase, there are effects within two environmental topics, both of which are potentially significant (moderate or above). There are also further potentially significant effects in the operational phase. These multiple effects may give rise to wider adverse cumulative effects on these properties. Mitigation and enhancement measures have been presented in Table 15-6 (CEA design, mitigation and enhancement measures).			

Receptors	Residual effect	Temporal link	Significance	Environmental Topic
Poplar Farm	Visual effects on residential receptors from the Proposed Scheme at Lingwood Road.	Year 1* Year 15*	Large adverse Slight adverse	Landscape and visual
	Short term severance of local road during the construction of the gas main line diversion.	Construction	Slight adverse	Population and human health
	For both construction and operation, Lingwood Road will be stopped up where proposed new highway boundary for the A47 dual carriageway intersects. Direct access to the A47 from Lingwood Road will no longer be available.	Construction and operation	Moderate adverse	Population and human health
	The proposed carriageway will be 60m closer, increasing the effect of noise and lighting from the road and traffic. Landscape screening planting on the verge may soften the urbanising effect of the lighting, but a significant effect is predicted from vehicle noise.	Operational	Moderate adverse	Cultural Heritage
<i>Summary</i>	For the Poplar Farm, the assessments within the preceding chapters have identified multiple potentially significant adverse effects in this area. Mitigation and enhancement measures have been considered in Table 15-6 (CEA design, mitigation and enhancement measures).			
Lingwood Road (excluding Poplar Farm – for this receptor see above)	Visual effects on residential receptors from the Proposed Scheme at Lingwood Road.	Year 1* Year 15*	Large adverse Slight adverse	Landscape and visual
	Dwellings are predicted to experience road traffic noise level increase associated with the Proposed Development. Dwellings are predicted to experience road traffic noise levels that are below the SOAEL.	Upon opening	Moderate adverse	Noise and vibration
	Short term severance of local road during the construction of the gas main line diversion.	Construction	Slight adverse	Population and human health
	For both construction and operation, Lingwood Road will be stopped up where proposed new highway boundary for the A47 dual carriageway intersects. Direct access to the A47 from Lingwood Road will no longer be available.	Construction and operation	Moderate adverse	Population and human health
<i>Summary</i>	For properties on Lingwood Road, the assessments within the preceding chapters have identified multiple potentially significant adverse effects in this area. Mitigation and enhancement measures have been considered in Table 15-6 (CEA design, mitigation and enhancement measures).			

Receptors	Residual effect	Temporal link	Significance	Environmental Topic
Lingwood Community Woodland	Access and increased severance from existing A47. Lingwood Road permanently stopped up for trips travelling from the north.	Construction and operation	Moderate adverse	Population and human health
	Temporary change in severance due to gas pipeline diversion for trips travelling from the south.	Construction	Slight adverse	Population and human health
	Tree removal of part of Lingwood Wood County Wildlife Site. Although a greater amount of woodland planting is to be undertaken to remediate the loss, this will take a long time to reach its former maturity.	Construction and operation	Slight adverse	Biodiversity
<i>Summary</i>	For properties at Lingwood Community Woodland, the assessments within the preceding chapters have identified multiple potentially significant adverse effects in this area. Mitigation and enhancement measures have been considered in Table 15-6 (CEA design, mitigation and enhancement measures).			
Lingwood Lane	Visual effects on residential receptors from the Proposed Scheme at Lingwood Lane.	Year 1* Year 15*	Slight adverse Slight adverse	Landscape and visual
	Short term severance of local road during the construction of the gas main line diversion.	Construction	Slight adverse	Population and human health
	For both construction, Lingwood Lane will be stopped up where the red line boundary intersects. For operation, Lingwood Lane will be stopped up where proposed new highway boundary for the A47 dual carriageway intersects. Direct access to the A47 from Lingwood Lane will no longer be available.	Construction and operation	Moderate adverse	Population and human health
<i>Summary</i>	For the receptors on Lingwood Lane, the assessments within the preceding chapters have identified multiple potentially significant adverse effects in this area. Mitigation and enhancement measures have been considered in Table 15-6 (CEA design, mitigation and enhancement measures).			
North Burlingham	Visual effects on residential receptors from the Proposed Scheme at Main Road (North Burlingham)	Year 1* Year 15*	Slight adverse Slight positive	Landscape and visual
	The traffic on the new carriageway will be further away to the south than the current A47 alignment, and landscape planting will be designed to be in keeping with the current screening, this is considered a positive effect overall.	Operational	Moderate beneficial	Cultural heritage

	The Proposed Scheme will include a new combined footway/cycleway along the de-trunked A47 connecting Yarmouth Road at Blofield to existing footway at the Dell Corner Lane junction via the Blofield Overbridge, this is considered a positive effect.	Operational	Slight beneficial	Population and Human Health
	A47 traffic is moving further from North Burlingham receptors.	Operational	Minor beneficial in the short term.	Noise and vibration
<i>Summary</i>	For the area at North Burlingham, multiple environmental topics have identified beneficial effects. Three Minor/Slight effects and one potentially significant (Moderate) effect for cultural heritage. These multiple effects are likely to result in a wider positive cumulative effect on the community. No additional design, mitigation or enhancement measures are required as a result of the CEA.			

*denotes years from opening of the Proposed Scheme

Table 15-6 : Residual effects and design, mitigation and enhancement measures

Receptor	Design, mitigation and enhancement measures	
Residential properties on Yarmouth Road	Temporary land take	The proximity of the exiting A47 to the residential gardens restricts available land to make the improvements planned as part of the Proposed Scheme. Design decisions have been made to minimise land take including utility diversions in the vicinity and a retaining wall has been incorporated in the design to reduce land take so that the land take of residential property is temporary only for construction.
	Vegetation loss	A planting design to mitigate impacts of vegetation loss was identified in the preceding topic chapters and is presented in the Masterplan (TR010040/APP/6.8).
	Noise impacts from works	A noise barrier was identified as required mitigation in the preceding topic chapters and has been included in the design to mitigate identified potential noise impacts.
	New lighting columns	The design includes fitting lighting columns with back plates to reduce spill into the residential properties as part of the assessment the preceding topic chapters.
<i>Summary</i>	The multiple identified significant construction effects are likely to have a significantly temporary adverse cumulative effect. Liaison with the owners and occupiers of the properties to provide updates on programme of works would help those impacted to understand the likely implications and plan accordingly. Best standard practice construction approaches in combination with additional liaison would likely help to mitigate the cumulative impact of the effects. This is included in the Environmental Management Plan (TR010040/APP/7.7). The operational residual effects are not considered cumulatively significant. No mitigation for cumulative is proposed in addition to the design and mitigation prescribed	
Poplar Farm	Visual effects	A planting design to mitigate visual impacts by screening the property views was identified in the preceding topic chapters and is presented in the Masterplan (TR010040/APP/6.8).
	Operational noise	A noise barrier was identified as required mitigation in the preceding topic chapters and has been included in the design to mitigate identified potential noise impacts.
	Severance from gas main diversion	Temporary access diversions will be managed by the utilities contractor.

	Severance from closing Lingwood Road north of farm.	Footpath diversions have been included in the design as part of the assessment the preceding topic chapters. An agricultural access track has been provided to facilitate continued access to the adjacent fields.
	Effects on heritage asset	The proposed carriageway will be 60m closer than currently, removing a large part of the agricultural setting of the asset and adding an urbanising element. The change in access from Lingwood Road removes an historic transport link from the setting. Landscape screening planting on the verge will soften the urbanising effect of the road structures.
<i>Summary</i>	The multiple identified significant construction effects are likely to have a significantly temporary adverse cumulative effect. Liaison with the owners and occupiers of the properties to provide updates on programme of works would help those impacted to understand the likely implications and plan accordingly. Best standard practice construction approaches in combination with additional liaison would likely help to mitigate the cumulative impact of the effects. The operational residual effects are not considered cumulatively significant. No further mitigation is proposed for cumulative.	
Lingwood Road, Lingwood Community Woodland and Lingwood Lane.	Visual effects and vegetation loss	A planting design to mitigate visual impacts by screening the property views was identified in the preceding topic chapters and is presented in the Masterplan (TR010040/APP/6.8). This includes biodiversity input to mitigate vegetation and habitat loss.
	Severance from gas main diversion	Temporary access diversions will be managed by the principal contractor.
	Severance from closing Lingwood Road north of farm.	Footpath diversions have been included in the design as part of the assessment the preceding topic chapters.
<i>Summary</i>	The residual adverse effects are not considered cumulatively significant. No further mitigation is proposed for cumulative.	
North Burlingham	Beneficial effects	Design has benefitted this location as a result of moving the carriageway further away from North Burlingham receptors, considered planting and the new combined footway/cycleway via the Blofield Overbridge. No further mitigation or enhancement is considered practical above the measures outlined in the preceding chapters.
<i>Summary</i>	No significant residual effects anticipated. No mitigation is proposed for cumulative.	

15.4.3. Following the measures presented in Table 15-6 (residual effects design, mitigation and enhancement measures), there is potential significant cumulative effects as a result of the Proposed Scheme as a single project for some residential properties on Yarmouth Road and at Poplar Farm.

15.5. Assessment of different project effects

15.5.1. Only those developments that have been included in the shortlist have been brought through to the assessment of different project effects. Consultation was undertaken with Broadland District Council and Norfolk County Council to identify any additional projects to be considered in the CEA. This included four wind farm projects that located outside of the ZOI and the Third River Crossing project that has been included in the assessment.

15.5.2. The Third River Crossing project in Great Yarmouth falls within the ecology ZOI surrounding Breydon Water SPA, Ramsar and SSSI. The ES for the Third River Crossing Project confirmed that the project is anticipated to have Neutral effect on Unit 10 of the Breydon Water SPA, Ramsar and SSSI site. The biodiversity assessment for the Proposed Scheme determined that impacts to Breydon Waters SPA and Ramsar

were unlikely. Therefore, there no cumulative effects are expected as a result of the Proposed Development and the Third River Crossing project.

- 15.5.3. The remainder of the shortlist developments are Tier 3. Tier 3 developments are defined as least certain to be developed, and most likely to have limited publicly available information to inform assessments. A search was undertaken for scoping reports for the shortlisted developments and none were identified. Therefore, a 'very high level' assessment is appropriate as per the Stage 4 of the methodology outlined by Planning Inspectorate Advice Note Seventeen.
- 15.5.4. For the other developments, all are absent from the local planning authority and National Infrastructure Planning website. It is therefore reasonable to assume that these developments are unlikely to have significant effects on the environment.

15.6. Conclusion

- 15.6.1. The assessment for combined effects involved the identification of impact interactions associated with the Proposed Scheme upon separate receptors / resources. The methodology for the assessment of combined effects followed DMRB LA 104.
- 15.6.2. In summary, as a result of the residual effects during the construction phase of the Proposed Scheme, as a single project there is potential significant cumulative effects for some residential properties on Yarmouth Road and at Poplar Farm. Additional liaison is prescribed in the Environmental Management Plan (TR010040/APP/7.7) to mitigate the adverse impacts.
- 15.6.3. Best standard practice construction approaches in combination with community liaison would likely help to mitigate the cumulative impact of the effects. A planting design to mitigate visual impacts by screening the property views is presented in the Masterplan (TR010040/APP/6.8).
- 15.6.4. The assessment for cumulative effects has involved the identification of incremental changes likely to be caused by a shortlist of other developments and the Proposed Scheme itself. This assessment has followed the methodology Advice Note Seventeen.
- 15.6.5. The residual cumulative effects during the construction and operational phases of the Proposed Scheme with of all of the other developments are not anticipated to contribute beyond that of the effects identified in the preceding environmental chapters. The Proposed Scheme has localised adverse effects for receptors of medium value, therefore the overall cumulative effect is moderate.

15.7. References

Highways England (2020) Design Manual for Roads and Bridges DMRB LA 104 - Environmental assessment and monitoring. Available online at:
<https://www.standardsforhighways.co.uk/dmrb/search/78a69059-3177-43dc-94bd-465992cfda82>

The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative Effects Assessment Version 2. Available online at:

<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf>

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Department for Transport (2014) National Policy Statement for National Networks: Presented to Parliament pursuant to Section 9 (8). Available online at <https://www.gov.uk/government/publications/national-policy-statement-for-national-networks>

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