A46 Newark Bypass

TR010065/APP/6.1

6.1 Environmental Statement

Chapter 15 Combined and Cumulative Effects

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

A46 Newark Bypass

Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT

CHAPTER 15 COMBINED AND CUMULATIVE EFFECTS

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Contents

15 Combined and Cumulative Effects

15.1 Introduction

15.1.1 This Chapter presents the information required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) to be provided in the Environmental Statement (ES) to enable the identification and assessment of likely significant combined and cumulative environmental effects.

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 Scheme, identified as:

- Combined effects (synergistic) from a single scheme (the inter-relationship between different environmental factors)
- Cumulative effects (additive) from different schemes (with the Scheme being assessed)

15.1.3 This Chapter draws upon guidance and standards provided in the Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring[1], further outlined in Chapter 4 (Environmental Assessment Methodology) of this Environmental Statement (ES) (and the Planning Inspectorate 'Advice Note Seventeen: Cumulative Effects Assessment'[2] (AN17)).

15.1.4 This chapter has been undertaken in compliance with the Planning Inspectorate's Scoping Opinion **(TR010065/APP/6.10)** received for this Scheme. Appendix 4.3 (Scoping Opinion Schedule of Comments and Responses) of the ES Appendices **(TR010065/APP/6.3)** contains further information on how each of the matters raised in relation to combined and cumulative effects have been addressed.

15.1.5 Chapter 2 (The Scheme) of this ES contains a detailed description of the Scheme. The drawings referenced in this Chapter can be found in the ES Figures **(TR010065/APP/6.2)**, and the technical appendices referred to in this Chapter are presented in the ES Appendices **(TR010065/APP/6.3)**.

[1] National Highways (2020) Design Manual for Roads and Bridges LA104 Environmental Assessment and Monitoring, Revision 1. [online] available at: LA 104 - Environmental assessment and monitoring (standardsforhighways.co.uk) (last accessed December 2023).

[2] The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects [online] available at: Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) (Last accessed December 2023).

15.2 Competent expert evidence

15.2.1 The competent expert is a Principal Environmental and Sustainability Consultant with a masters level degree in Environmental Science who is also a Chartered Environmentalist and Full Member of the Institution of Environmental Sciences (IES). The competent expert has 8 years' experience in completing Combined and Cumulative Effects chapters for Environmental Statements to support other Nationally Significant Infrastructure Projects (NSIPs).

15.3 Assessment methodology

15.3.1 This section describes: the legislation and policy; the methodology which has been used for the assessment of construction and operation combined and cumulative effects; consultation relevant to combined and cumulative effects; any assumptions and limitations; and the study area.

Legislation and Policy

15.3.2 The principal legislative and planning context for the assessment of combined and cumulative environmental effects of the Scheme is presented below. The relevant legislation and policies listed below have been taken account of in the assessment.

15.3.3 European Directive 2011/92/EU, as amended by European Directive 2014/52/EU, requires environmental impact assessments (EIA) to identify, describe and assess significant environmental effects arising from the interaction between the following factors: population and human health; biodiversity; land; soil; water; air and climate; material assets; cultural heritage and the landscape.

15.3.4 Schedule 4 of the Infrastructure Planning (EIA) Regulations 2017 requires an EIA to identify and assess the likely significant cumulative effects of a development, either cumulatively with other existing development and/or approved development or the in-combination environmental effects on receptors. The requirement to assess the cumulative effects of development is also set out in Regulation 5(2)(e) of the 2017 Regulations. This regulation states that the EIA must identify, describe and assess in an appropriate manner the direct and indirect significant effects of the proposed development arising from the interaction between the following factors: population and human health; biodiversity; land, soil, water, air and climate; material assets, cultural heritage and the landscape.

15.3.5 The National Policy Statement for National Networks (NPSNN)[3] sets out the policy which the Scheme should comply with. It is also the basis for informing a judgement on the impacts of the Scheme, for example whether the Scheme is consistent with the requirements of the NPSNN. Compliance of the Scheme with the NPSNN is detailed within the NPSNN Accordance Tables **(TR010065/APP/7.2)**.

15.3.6 A draft NPSNN was published for consultation in March 2023. The consultation period ended in June 2023. The draft NPSNN may be subject to change following the consultation and once published in its designated form. Although this is currently in draft it may still be an important consideration for the Secretary of State when determining whether to consent the DCO for this Scheme. Accordingly the Draft NPSNN Accordance Tables **(TR010065/APP/7.3)** summarises compliance of the Scheme with the draft NPSNN.

15.3.7 The policies of relevance to combined and cumulative effects within the current NPSNN and detail on how they have been addressed in the assessment are provided below.

15.3.8 In paragraph 4.3 the existing NPSNN states "*In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account …its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts*." This text remains in the draft NPSNN.

15.3.9 Paragraphs 4.16 and 4.17 of the existing NPSNN state that "*When considering significant cumulative effects, any environmental statement should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other existing development and/or approved development (including projects for which consent has been granted, as well as those already in existence). The Examining Authority should consider how significant cumulative effects and the interrelationship between effects might as a whole affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place*."

15.3.10 Paragraph 4.11 of the draft NPSNN states that "*A key part of environmental assessment is the consideration of cumulative effects. The applicant should provide information on how the effects of the proposal would combine and interact with the effects of other existing development and/or approved development, where relevant. For most practical purposes this means that the applicant should consider the impact of other existing and committed developments within an*

[3] Department for Transport (2014). National Policy Statement for National Networks [online] available at: National policy statement for national networks - GOV.UK (www.gov.uk) (last accessed December 2023).

appropriate geographical area and assess the additional impact of their own development."

15.3.11 The above policy requirements have been addressed through the assessment of combined effects contained in Section 15.4 of this Chapter and the assessment cumulative effects, contained in Section 15.5 of this Chapter.

Combined effects methodology

15.3.12 The assessment methodology for combined effects has involved the identification of impact interactions associated with the Scheme upon separate environmental receptors, to better understand the overall environmental effect of the Scheme. For example, a residential occupant could be exposed to simultaneous noise and air quality impacts as a result of works during the construction phase.

15.3.13 Potential interactions were identified by reviewing the topic conclusions within Chapters 5 to 14 of this ES in order to establish where individual impacts would combine and result in likely significant combined effects. The following chapters are considered to have assessed combined effects relating to the above receptors, and therefore are not repeated in this Chapter:

- Chapter 6 (Cultural Heritage) and Chapter 8 (Biodiversity) of this ES consider the potential interactions of effects relating to construction and operational noise and air quality, and construction dust receptors. Chapter 6 (Cultural Heritage) of this ES also includes consideration of effects to groundwater and how this affects the in-situ preservation of archaeological remains. Chapter 8 (Biodiversity) of this ES also includes consideration of effects on the water environment and how this could affect ecological receptors.
- Chapter 12 (Population and Human Health) of this ES considers the combined residual effects from other assessment topics (noise, air quality, traffic, landscape and visual) which could affect people's enjoyment of a public right of way, community facility or public open space.
- Chapter 13 (Road Drainage and the Water Environment) of this ES considers the effects of traffic in combination with changes that would be made to the water environment.
- Chapter 14 (Climate) of this ES includes specific consideration of combined climate impacts. The assessment did not identify the potential for significant combined effects of future climate change and the Scheme on identified receptors in the surrounding environment.

15.3.14 This assessment therefore considers the combined effects on residential receptors. The types of impacts that could be experienced by these receptors and may interact are noise, air quality and visual effects; during both construction and operation.

15.3.15 In order to consider effects that are not significant, but could become significant in combination with other effects, the following effects have been considered for each topic:

- Air quality – receptors identified as sensitive locations with respect to construction dust and receptors experiencing a small magnitude or larger change in nitrogen dioxide in the Opening Year (2028)
- Visual effects – receptors experiencing a Slight Adverse effect or worse during construction or in the Opening Year (2028)
- Noise and vibration – receptors experiencing a Significant Adverse effect during construction or in the Design Year (2043)

15.3.16 The significance of combined effects upon environmental resources and receptors was determined using professional judgement, with input provided by the competent experts responsible for the production of the individual assessments, and taking into account the criteria and definitions set out in Table 15-3 of this Chapter. The methodology for the assessment of combined effects follows that detailed in the DMRB LA 104 Environmental Assessment and Monitoring.[4] For the purposes of the assessment, combined effects of Moderate Adverse or above or Moderate Beneficial or above are considered significant.

Cumulative effects methodology

15.3.17 The assessment methodology for cumulative effects has involved the identification of incremental changes likely to be caused by potential 'other existing development and/or approved development' together with the Scheme.

15.3.18 The assessment of cumulative effects has followed the Planning Inspectorate's AN17[5] with the four stages of assessment:

- Stage 1: Establish the NSIP's Zones of Influence (ZOI) and identify a long list of 'other existing development and/or approved development' (proposed developments in the vicinity of the Scheme)
- Stage 2: Identify shortlist of 'other existing development and/or approved development'
- Stage 3: Information gathering
- Stage 4: Assessment

15.3.19 In accordance with DMRB LA 104, this assessment of cumulative effects reports on:

[4] National Highways (2020) Design Manual for Roads and BridgesLA104 Environmental Assessment and Monitoring, Revision 1. [online] available at: LA 104 - Environmental assessment and monitoring (standardsforhighways.co.uk) (last accessed December 2023).

[5] The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects [online] available at: Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) (Last accessed December 2023).

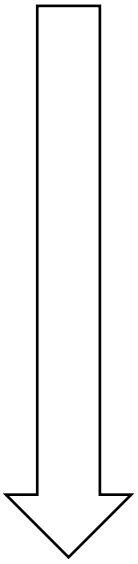
- Road projects which have been confirmed for delivery over a similar timeframe
- Other development projects with valid planning permissions or consent orders, and for which EIA is a requirement
- Proposals in adopted development plans with a clear identified programme for delivery

15.3.20 As recommended by the Planning Inspectorate's AN17, it is important to note that certain proposed developments have also been considered in this assessment. These include proposed developments:

- That are close to the threshold limits but have characteristics likely to give rise to significant cumulative effects, which could give rise to a cumulative effect by virtue of its proximity to the Scheme
- Have been included following consultation with the local planning authorities

15.3.21 The other existing developments and/or approved 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 15-1 below. Other existing development and/or approved development falling into Tier 3 is least certain and most likely to have limited publicly available information to inform assessments.

Table 15-1: Likely degree of certainty assigned to each tier

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	• Schemes on the Planning Inspectorate's '*Programme of Projects'* where a Scoping Report has been submitted.	
Tier 3	• Schemes 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 they move closer to adoption) recognising that there will be limited information available on the relevant proposals. • 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.	

*Where other Schemes are expected to be completed before construction of the Scheme and the effects of those schemes 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.

Source: The Planning Inspectorate (2015) Advice Note Seventeen: *Cumulative Effects Assessment relevant to nationally significant infrastructure projects.*

15.3.22 In addition to the tier system outlined in Table 15-1 above, the traffic model includes scoping criteria, in line with the Department for Transport's Transport Analysis Guidance (TAG) Unit M4. This criteria is applied to decide which developments should be included within the traffic model, based on the certainty of outcome, shown in Table 15-2 below. The traffic model only includes those developments that are considered as being Near Certain and More Than Likely. In addition to this, a search for Tier 3 developments has been conducted to align with the Planning Inspectorate's AN17 as per Table 15-1 above.

Table 15-2: Certainty of outcome and development status

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. • Schemes under construction.
More than likely: The outcome is likely to happen but some uncertainty.	• Development application within the consent process and in accordance with development plan.
Reasonably foreseeable: The outcome may happen but significant uncertainty.	• Identified within a development plan and, although not directly associated with the Scheme, may occur if the Scheme 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: Department for Transport (2023) TAG Unit M4 Forecasting and Uncertainty Table A2 Classification of Future Impacts [online] available here: TAG Unit M4 forecasting and uncertainty (publishing.service.gov.uk)

15.3.23 The methodology for the assessment of cumulative effects concentrates on significant effects, and aims to differentiate between permanent, temporary, direct, indirect and secondary effects, positive or negative. However, the potential for non-significant effects to give rise to significant effects when considered cumulatively with other proposed development has also been considered.

15.3.24 Where significant cumulative effects are identified, additional mitigation measures are required to be developed to avoid significant effects as far as reasonably possible.

15.3.25 The significance of cumulative effects upon each environmental resource has been determined based on the balance of scores and using professional judgement. An on-balance approach has been taken when identifying the overall cumulative effect for the Scheme in conjunction with the other existing developments and/or approved developments. The on-balance cumulative effect reported for each receptor represents the additional cumulative effect as a result of the

combination of effects from the other development and the Scheme. For example, a Neutral effect on a receptor as a result of the other development and a Large Adverse effect on the same receptor as a result of the Scheme, would result in a not significant adverse effect cumulatively, based on an on-balance approach and using professional judgement.

Significance Criteria

15.3.26 The assessment of significance of the combined and cumulative effects has been determined in accordance with requirements in DMRB LA 104.

15.3.27 For the purposes of the cumulative effects assessment, the value of a resource and magnitude of impact has been determined according to the criteria set within Chapters 5 to 15 of this ES. The significance of effect has then been carried forward from preceding chapters to enable an on-balance assessment of combined significance upon environmental receptors, as well as to identify the significance of cumulative effects with other existing development and/or approved development. Typical descriptors of cumulative significance are included within Table 15-3, which reflects this on balance approach. Overall significance has been determined with mitigation included, as shown in Table 4-4 contained in Chapter 4 (Environmental Assessment Methodology) of this ES.

15.3.28 Significance descriptors have also been aligned with the considerations included within AN17. Accordingly, where impacts are likely to be temporary, the overall significance of effect is considered to be reduced compared to a permanent impact on a receptor of the same value. Equally, localised and infrequent impacts are likely to be of lower magnitude than those that cover a greater geographical scale and/or regularly occur, resulting in a reduced significance of effect. Effects can be additive (such as the loss of two pieces of woodland of 1 hectare, resulting in 2 hectares cumulative woodland loss) or synergistic (two discharges combining to have an effect on a species not affected by discharges in isolation).

15.3.29 Where an effect is Moderate or above (Adverse or Beneficial), it is deemed to be significant (see Table 15-3).

Table 15-3: Combined and cumulative significance criteria

Significance	Definition
Very Large (Adverse or Beneficial)	Where the combined effects of the Scheme or cumulative effects of the 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 highly significant. Effects would be: • Permanent and widespread for receptors of very high value
Large	Where the combined effects of the Scheme or cumulative effects of the

Significance	Definition
(Adverse or Beneficial)	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. Effects would be: • Permanent and widespread for receptors of high value • Localised for a receptor of very high value • Temporary for a receptor of very high value
Moderate (Adverse or Beneficial)	Where the combined effects of the Scheme or cumulative effects of the Scheme in association with other existing or more than likely/near certain major development upon an individual or collection of environmental receptors would be significant. Effects would be: • Permanent and widespread for receptors of medium value • Localised for receptors of high value • Temporary for a receptor of high value
Slight (Adverse or Beneficial)	Where the combined effects of the Scheme or cumulative effects of the Scheme in association with other existing or more than likely/near certain future major developments upon an individual or collection of environmental receptors would be noteworthy but not significant. Effects would be: • Permanent and widespread for receptors of low value • Localised for receptors of medium value • Temporary for a receptor of medium value
Neutral	Where the combined effects of the Scheme or the cumulative effects of the Scheme in association with other existing or more than likely/near certain future major developments would not be discernible.

The above table draws upon the content of Design Manual for Roads and Bridges (2020) LA 104 Environmental assessment and monitoring (Revision 1) [online] available here: LA 104 - Environmental assessment and monitoring (standardsforhighways.co.uk)

Consultation

15.3.30 The Planning Team at Newark & Sherwood District Council and North Kesteven District Council were consulted to review the long list of proposed developments and to provide any additional developments or further details to aid the assessment. The long list was discussed, amended and agreed with the above local planning authorities in March 2023. The email correspondence confirming this consultation and agreement is contained within Appendix 15.1 (Email correspondence with the local planning authorities) of the ES Appendices (**TR010065/APP/6.3)**.

15.3.31 Additional information on developments was also provided as part of the Newark & Sherwood District Council's Scoping Opinion response which aided the assessment and is provided within Appendix 4.3 (Scoping Opinion Schedule of Comments and Responses) of the ES Appendices **(TR010065/APP/6.3)**.

15.3.32 In Table 1-1 Section 3.10 of Appendix 4.1 (Scoping Opinion Schedule of Comments and Responses) of the ES Appendices **(TR010065/APP/6.3)**, the Planning Inspectorate requested that a

justification should be provided as to why the ZOI for the noise and vibration cumulative effects assessment follows a different methodology. Since this response, a specific study area for cumulative effects from noise and vibration during construction is now provided. The operational cumulative effects have been assessed in Chapter 5 Air Quality and Chapter 11 Noise and Vibration of this ES. This is because air quality and noise operational assessments have used the traffic model which includes all the relevant proposed developments, and therefore cumulative effects have inherently already been considered within the operational assessment for both Noise and Air Quality.

15.3.33 The operational stages of Chapter 9 Geology and Soils and Chapter 10 Material Assets and Waste of this ES were scoped out of the environmental impact assessment during the Scoping stage, and therefore these areas have not been assessed as part of this cumulative effects assessment.

15.3.34 The final short list of schemes was sent to the planning teams at Newark & Sherwood District Council and North Kesteven District Council in August 2023 for agreement. The councils asked to review the cumulative effects assessment once ready. A meeting was subsequently held with the councils to agree the short list of other developments used to inform the cumulative effects assessment that supports the ES and to provide an overview of the outcomes of the assessment. The meeting concluded with the local planning authorities confirming that they are content with the short list and in agreement with the assessment outcomes.

15.3.35 Scheme-wide consultation details are provided in Section 4.6 of Chapter 4 (Environmental Assessment Methodology) of this ES and the associated Appendix 4.3 (Record of Environmental Engagement) of the ES Appendices **(TR010065/APP/6.3)**.

Assessment assumptions and limitations

15.3.36 The combined and cumulative effects assessment has been based on the scheme description and construction strategy presented in Chapter 2 (The Scheme) of this ES, and has taken into account the lateral limits of deviation illustrated on the Works Plans **(TR010065/APP/2.3)** and vertical limits of deviation secured under Article 10 of the draft DCO **(TR010065/APP/3.1)** to establish a realistic worst case assessment scenario.

15.3.37 In some instances where the receptors for air quality, noise and landscape were not in exactly the same location for the combined assessment, receptors within a similar locality (such as street name or postcode) were chosen as being representative and still likely to experience combined effects.

15.3.38 This assessment has been carried out using professional judgement and is based on currently available information. It is likely that some of the environmental effects of other existing development and/or approved development outlined within this Chapter will be superseded as detailed design for the other existing development and/or approved development continues. However, where limited information was available a worst-case approach has been taken to identify the likely environmental effects of the other existing development and/or approved development, and therefore the overall conclusions are unlikely to change (specifically worsen) if further detailed assessment is undertaken for the developments.

15.3.39 The long list of other existing development and/or approved development has been identified through analysis of the planning portal, and confirmed through consultation with Newark & Sherwood District Council[6] and North Kesteven District Council. The Newark & Sherwood Local Development Framework Plan[7] was reviewed to check if any of the proposed developments would meet the screening criteria, and none were identified. For the purpose of this assessment, the cut-off date for including any additional developments was 31 May 2023 to ensure there was suitable time to complete the assessment before the submission of the development consent application. However, the Applicant became aware of the Great North Road Solar Park which is a Nationally Significant Infrastructure Project that is currently at the pre-application stage and which sought a Scoping Opinion from the Planning Inspectorate in December 2023. Given the scale and proximity of this development to the Scheme the Applicant has decided to include this development in the cumulative effects assessment. Information that has been used to inform the assessment of cumulative effects for each development, including anticipated effects and mitigation, is detailed within Appendix 15.2 (Assessment of Cumulative Effects for Construction and Operation) of the ES Appendices **(TR010065/APP/6.3)**.

15.3.40 The cumulative effects assessment relies on environmental information submitted as part of the other existing development and/or approved development planning applications. Therefore, where an assessment has not been undertaken for an environmental topic, it has been assumed that the environmental topic has been scoped out, and as such, no effects are anticipated. It should also be noted that the assessment of likely significant environmental effects will differ slightly across the proposed developments as assessments have been undertaken by multiple parties with variations in professional opinion. In addition, some assessments may have taken a balanced

[6] Newark & Sherwood District Council (2023). Planning Portal [online] available at: Simple Search (newark-sherwooddc.gov.uk) (last accessed December 2023).

[7] Newark & Sherwood District Council (2019). Local development framework [online] available at: Local development framework | Newark & Sherwood District Council (newark-sherwooddc.gov.uk) (last accessed December 2023).

approach to the assessment of effects, whilst other assessments may take a worst-case approach.

15.3.41 The Scheme's main construction works would commence in August 2025, with works being completed and the Scheme being open for traffic in November 2028. The construction start and finish dates for other existing development and/or approved development have been confirmed during consultation with Newark & Sherwood District Council and Nottinghamshire County Council. However, the timings have been provided by the year rather than by the month. In these instances, it has been assumed that either part or all of the construction phase would fall within the construction phase of the Scheme, reflecting a worst-case scenario approach.

Study area

Combined effects

15.3.42 The study area for the assessment of combined effects of the Scheme, for both construction and operation, is defined by the study area identified within the relevant environment chapters of this ES, ranging from 200 metres (for Air Quality) to 30 kilometres (for Biodiversity).

Cumulative effects

15.3.43 The potential for cumulative effects is where the Zone of Influence (ZOIs) for the Scheme overlaps with the ZOIs for other existing development and/or approved development. This ZOI will vary from topic to topic and is reflective of the study areas used to inform both construction and operation stage assessments. In relation to the ZOI for biodiversity, while a 30 kilometre ZOI is used specifically for sites within the national site network designated for bat populations within the HRA **(TR010065/APP/6.6)**, as there are no such sites within 30 kilometres of the Scheme, a 2 kilometre ZOI has been used.

15.3.44 The study area for the identification of 'other existing development and/or approved development' for inclusion in the assessment of cumulative effects has been determined by the ZOIs for each environmental aspect considered within this ES. Each of the ZOIs are outlined in Table 15-4 below. The largest ZOI extent is 2 kilometres reflective of the ZOI for Biodiversity, and this therefore reflects the extent of the study area for the identification of 'other existing development and/or approved development'.

15.3.45 Table 15-4 below includes both the construction and operational stage study area for all topic areas, including air quality and noise and vibration. The operational cumulative effects for these topics have been assessed in Chapter 5 (Air Quality) and Chapter 11 (Noise and

Vibration) of this ES. This is because air quality and noise operational assessments have used the traffic model which includes all the relevant proposed developments, and by default cumulative effects are included in their operational assessments, although not explicitly mentioned within Chapter 5 (Air Quality) and Chapter 11 (Noise and Vibration) of this ES. The air quality and noise and vibration assessments have calculated and assessed the traffic emissions and traffic noise from the Scheme together with the other existing development and/or approved development upon receptors. Therefore, the operational cumulative assessment has already been undertaken within the air quality and noise chapters.

15.3.46 During the consultation of the long list of proposed developments with stakeholders, there were two proposed developments (20/01452/OUTM and 22/02427/RMAM Tritax Acquisition 39 Limited, and 21/02408/FULM BGO Ark PropCo Limited) requested to be included in the long list by Newark & Sherwood District Council that did not feature in the traffic model. The proposed development 20/01452/OUTM and 22/02427/RMAM Tritax Acquisition 39 Limited did not progress to the short list and so a cumulative effects assessment was not required for this development. The proposed development 21/02408/FULM BGO Ark PropCo Limited did proceed to the short list; a qualitative cumulative effects assessment for noise and air quality has therefore been undertaken for this development, considering the relevant receptors in the ZoIs, for these topics. In addition, the Great North Roads Solar Park has been included in this cumulative effects assessment but did not feature in the traffic model, because the trip generation associated with it in its operational phase is expected to be marginal. Therefore, a qualitative cumulative effects assessment for noise and air quality has been undertaken for this development, considering the relevant receptors in the ZoIs, for these topics.

15.3.47 Figure 15.1 (Zones of Influence) in the ES Figures **(TR010065/APP/6.2)** shows the ZOIs for each topic in relation to the Scheme extent.

15.3.48 As the construction and operational phase traffic data includes traffic associated with other existing developments and/or approved developments, the emissions assessment report within Chapter 14 (Climate) of this ES is also inherently cumulative. The study area for climate resilience is informed by other environmental topic assessments' search buffers. Therefore, no additional ZOI extents are required beyond those identified within the topics as included in Table 15-4 below.

Table 15-4: ZOI for environmental factors and associated DMRB topics

Environmental factor	Zone of Influence (ZOI)
Air Quality	Construction: The ZOI will be 200 metres from construction activities for construction dust and emissions. A ZOI for construction traffic has been determined based on a review of other existing development and/or approved development proposals and their construction programmes. Operation: As the operational phase traffic data includes traffic associated with other existing development and/or approved development, the air quality impact assessment to be included in the ES will inherently be a cumulative impact assessment. See Chapter 5 (Air Quality) of this ES for further information on the assessment study areas.
Cultural heritage	Construction and Operation: A 1 kilometre buffer around the Scheme extent for designated heritage assets and a 500 metre buffer around the Scheme extent for non-designated heritage assets. See Chapter 6 (Cultural Heritage) of this ES for further information on the assessment study areas.
Landscape and visual[8]	Construction and Operation: 1 kilometre ZOI for landscape and visual impacts. The ZOI was informed by a range of computer-generated Zone of Theoretical Visibility (ZTV) which had been prepared in accordance with Guidelines for Landscape and Visual Impact Assessment. See Chapter 7 Landscape and Visual Effects of this ES for further information on the assessment study areas.
Biodiversity	Construction and Operation: A 2 kilometre ZOI for all internationally and nationally designated nature conservation sites. See Chapter 8 (Biodiversity) of this ES for further information on the assessment study areas.
Geology and Soils	Construction: All locations where physical works and ground disturbance would take place, plus a 500 metre buffer. See Chapter 9 (Geology and Soils) of this ES for further information on the assessment study areas.
Material assets and waste	Construction: ZOI has been defined by the influence of the Scheme, rather than through a set geographical location. Feasible sources of construction materials will focus primarily on the Order Limits and the region within which waste management facilities are located and from where construction materials may be sourced. This area focuses on Nottinghamshire County Council and, where required, the East Midlands region. Operation: the use of materials and waste management during operation has been scoped out of the assessment. See Chapter 10 (Material Assets and Waste) of this ES for further information on the assessment study areas.

[8] The methodology adopted for the LVIA requires that any impacts associated with the presence of new infrastructure are taken into account during the operational stage assessment, and therefore differs from the approach used for other topic assessments. The cumulative effects assessment therefore considers a 'worst case' scenario in respect of landscape and visual impacts.

Environmental factor	Zone of Influence (ZOI)
Noise and Vibration	Construction: The construction noise and vibration ZOI is defined by proximity of the closest identified receptors to the Scheme construction works, following which an appropriate buffer was established around receptors. The specific location of construction work areas is 300 metres from the closest construction work area as it is normally sufficient to encompass noise sensitive receptors. Operation: The operational noise and vibration ZOI is defined by other cumulative developments which have been included in the traffic model that accompanies the application. As the operational phase traffic data includes traffic associated with other existing development and/or approved development, the noise and vibration impact assessment included in the ES is inherently a cumulative impact assessment. See Chapter 11 (Noise and Vibration) of this ES for further information on the assessment study areas.
Population and human health	Construction and Operation: When assessing impacts on land-use and accessibility, the study area includes the Order Limits including compounds and temporary land take, as well as a 500 metre area surrounding the Order Limits. Where effects are either identified outside of the 500 metre area or are unlikely to occur within the 500 metre area, the study area has been amended accordingly. The human health baseline study area has been determined by the local authorities and wards which are either directly or indirectly affected by the Scheme. The local authority of Newark & Sherwood District Council makes up the study area for the human health baseline assessment. See Chapter 12 (Population and Human Health) of this ES for further information on the assessment study areas.
Road drainage and the water environment	Construction and Operation: 1 kilometre ZOI for waterbodies. This is extended where there are sensitive features downstream of the works. For groundwater bodies, the ZOI is the potential zone of impact. See Chapter 13 (Road Drainage and the Water Environment) of this ES for further information on the assessment study areas.
Climate	N/A - the climate assessment methodology will test whether the Scheme hinders the UK's ability to meet its national climate change targets by 2050. The assessment can be regarded as a cumulative assessment as the national projected Greenhouse Gases (GHG) emissions take into account trends such as future development, technology and population changes. The receptor for the climate change topic is the global atmosphere, and its relative carrying capacity for GHG emissions is large, therefore the scope for cumulative effects has the potential to be unlimited. Therefore, a separate cumulative effects assessment on GHG emissions will not be undertaken. See Chapter 14 (Climate) of this ES for further information on the assessment study areas.

Existing baseline

Combined effects

15.3.49 The baseline for each environmental factor is described in detail for air quality, cultural heritage, landscape and visual effects, biodiversity, geology and soils, material assets and waste, noise and vibration, population and human health, road drainage and water environment, and climate, all contained in the preceding chapters (Chapters 5 and 14) of this ES.

Cumulative effects

15.3.50 As part of Stage 1 of the cumulative effects assessment (see paragraph 15.3.12 for a description of the stages of assessment) a long list of other existing development and/or approved development has been identified from those developments included in the traffic uncertainty log included within the Transport Assessment **(TR010065/APP/6.5)** and the Planning Inspectorate's *'Programme of Projects*'. The list of developments has been confirmed through consultation with the Planning Teams at Newark & Sherwood District Council and North Kesteven District Council. These developments are identified in Table 15-5 below and represent the long list of 'other existing development and/or approved development.

Table 15-5: Long list - identification of other existing development and/or approved development for the cumulative effects assessment

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
1	NAP4 - Newark Southern Link Road (Phase 3) Nottinghamshire County Council Newark & Sherwood District Council	Nottinghamshire County Council and Newark & Sherwood District Council • New road linking the A46 at Farndon to the A1 at Balderton	0 metres	Newark & Sherwood Core Strategy DPD (2019) Site Allocation	Tier 1	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate	Yes	The first phase of the SLR has been completed. This has enabled the delivery of the first 600 new homes (still under construction). The commencement of the second phase is imminent (currently awaiting technical approval from Notts CC and National Highways). It is anticipated that the final phase will be completed by Spring 2024 at the latest.	The site has been assessed through the Sustainability Appraisal of the Local Plan making process. Environmental Statements have also been produced for the following planning consents associated with the Scheme: 10/01586/OUTM, 14/01978/OUTM. 22/SCR/00009 - Request for environmental impact assessment screening opinion for A46/Newark Southern Link Road junction A46T Roundabout Hawton Lane Farndon - EIA not needed.	Traffic associated with the development has already been considered in the Scheme traffic modelling outputs and thus already incorporated into the noise, air quality and climate assessments.	No
2	NAP2A - Land south of Newark (10/01586/OUTM and 14/01978/OUTM)	Catesby Estates Ltd • Proposal includes the construction of up to 3,150 dwellings, two local centres, a 60-bed care home, a primary school and a commercial estate of up to 50 hectares comprising employment uses and amenity space.	1.7 km west	Part of the Newark & Sherwood Core Strategy DPD Site Allocation submitted in 2019. Outline planning permission was granted in 2011 (10/01586/OUTM) with a further S73 variation granted in 2015 (14/01978/OUTM).	Tier 1	• Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate	Yes	Opening year - 2023 Phase 1 of the Southern Link Road (SLR) between Bowbridge Road and Staple Lane Balderton is now open. A total of four reserved matters are under construction with 416 units delivered so far. Year 100% finished - 2025 Phase 2 of the SLR is due to commence development in the summer of 2023 with completion by the end of 2024/spring 2025. The completion of the SLR will unlock the development of the whole site (residual: 2821 dwellings).	Yes: ES submitted with 10/01586/OUTM	N/A	Yes

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
3	NUA/E/3 - Telford Drive	Sunbelt Rentals • Employment Site 3 Telford Drive (1.4ha)	120 metres south	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate	Yes	Opening year - 2023	Yes: The sites have been assessed through the Sustainability Appraisal of the Local Plan making process.	N/A	Yes
4	NUA/Ho/5 Land North of Beacon Hill Road and the A1 Coddington Slip Road	• 200 dwellings	1.68 km	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Biodiversity • Material assets and waste • Climate	Yes	Unknown	No: Currently no planning application has been submitted.	N/A	No
5	NUA/Ho/4 18/02279/OUTM 22/00426/S73 Lincoln Road (Yorke Dr and Lincoln Rd Playing Field)	Newark & Sherwood District Council • Selective demolition and redevelopment of parts of the existing Yorke Drive Estate and the erection of new mixed tenure housing, community and recreational facilities on the adjoining Lincoln Road Playing Field site,	480 metres	Outline planning permission was granted in 2019 (18/02279/OUTM).	Tier 1	Yes: • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Climate	Yes	Opening year - 2027	Yes: The site has been assessed through the Sustainability Appraisal of the Local Plan making process.	N/A	Yes

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
		• Development of up to 320 homes									
6	NUA/MU/1 – 3.91 hectares of the development left	Lindum Group • Land North of the A17 (10.88ha), current planning application on part of the site. • Part of land has already been constructed as distribution unit • Linden development - Overfield owns land - likely to be constructed before A46 construction period • Lorry Park potentially moving to different location next to Newark Showground - existing lorry park potential for Newark Town Fund Project.	0 metres east	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate	Yes	Opening year - 2023 Year 100% finished - 2028	Yes: The site has been assessed through the Sustainability Appraisal of the Local Plan making process.	Developments which have been completed on the land include: 20/01219/FULM - John Deere 20/00217/FUL - Starbucks 16/01796/FULM - Wirtgen	Yes
7	NUA/E/2 - Stephenson Way	• Employment Site 2 Stephenson Way (12.24ha). • Planning Permission granted for hatchery on central element of the site in June 2016 and is currently under construction. • Residual 9.56ha element of the site to continue to be allocated.	0 metres east	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health	Yes	Opening year - 2019 Year 100% finished - 2028	Yes: The site has been assessed through the Sustainability Appraisal of the Local Plan.	Planning applications coming forward in parcels with different applicants	Yes

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
						• Road drainage and the water environment • Climate					
8	Nottinghamshire County Council Kelham Bypass	• New bridge and Bypass at Kelham along the A617. • Midlands Connect has funded Nottinghamshire County Council approx. £50,000 toward the bypass Scheme.	0m south	Nottinghamshire County Council Third Local Transport Plan Safeguarded Scheme	Tier 1	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate	Yes	N/A	No: Currently no planning application has been submitted.	N/A	No
9	Lincolnshire County Council North Hykeham relief road	• North Hykeham relief road (linking Lincoln Eastern Bypass with Lincoln Western Relief Road and the A46 Strategic Network)	12km east This development was requested to be included in the assessment by the Planning Inspectorate in the Scoping Opinion **(TR010065/APP/6.10).**	Scoping Report decision issued in 2022 (22/1426/EIASCO).	Tier 3	• No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
10	20/01452/OUTM and 22/02427/RMAM Tritax Acquisition 39 Limited	• Development of site for distribution uses, including ancillary offices	0m west	Outline planning permission was refused in 2020, however following appeal the application	Tier 1	Yes: • Air quality • Cultural heritage	Yes	Construction completed. Development assessed as part of baseline.	N/A	This development was added to the assessment list by Newark and	No

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
		and associated works including vehicular and pedestrian access, car parking and landscaping. 16.56 ha		was granted and the Reserved Matters application was permitted in December 2022.		• Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Road drainage and the water environment • Climate				Sherwood District Council.	
11	21/02408/FULM BGO Ark PropCo Limited	BGO Ark PropCo Limited • Erection of 2no. buildings for use within Class B8 (storage and distribution) along with access and servicing arrangements, car parking, landscaping, attenuation pond, and associated works. 15.5ha	900m south	Permission granted in June 2022	Tier 1	Yes: • Cultural heritage • Landscape and visual • Biodiversity • Road drainage and the water environment	Yes	Opening year - 2025	N/A	This development was added to the assessment list by Newark & Sherwood District Council.	Yes
12	21/02484/FULM Former Newark Livestock Market, Unit 1, Great North Road, Newark On Trent	• Proposed erection of a new further educational establishment for the training of young adults within the aviation and space industries along with associated infrastructure including use of	0 metres south	Commenced	Tier 1	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration	Yes	The construction periods of the development and the Scheme do not overlap.	Yes – EIA.	This development was added to the assessment list by Newark and Sherwood District Council.	No

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
		an existing car park, access, refuse area, substation and landscaping. • Education facility with changes to local infrastructure. Sited close to the A46/A617/A616 Cattle Market roundabout.				• Population and human health • Road drainage and the water environment • Climate					
13	22/01249/FULM A46T Roundabout Hawton Lane Farndon	• Proposed new roundabout on the A46 Farndon Bypass to provide a link with the Newark SLR. • Revised roundabout just south of the Farndon A46 roundabout on the existing route, to serve the SLR between the A46 and the A1 (at Balderton/Fernwood).	555 metres south	Consented	Tier 1	Yes: • Cultural heritage • Landscape and visual • Geology and soils • Material assets and waste • Noise and vibration • Population and human health • Climate	Yes	It is anticipated that the final phase will be completed by Spring 2024 at the latest.	A46T Roundabout Hawton Lane Farndon - EIA not needed.	This development was added to the assessment list by Newark and Sherwood District Council. Traffic associated with the development has already been considered in the Scheme traffic modelling outputs and thus already incorporated into the noise, air quality and climate assessments.	No
14	NUA/E/4 - Former Highways Depot	• Employment site 4 Former NCC Depot Great North Road (2.07ha). • The site was previously subject to an application for a Supermarket which was refused in 2016. • The allocation is flexible and allows for a	0 metres south	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Air quality • Cultural heritage • Landscape and visual • Biodiversity • Geology and soils • Material assets and waste • Noise and vibration	Yes	N/A	The site has been assessed through the Sustainability Appraisal of the Local Plan making process	No planning permission Site overlaps with the Order Limits for the Scheme . Therefore, assumed no development in this unit until after the Scheme is constructed/operational.	No

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
		range of uses on site: subject to compliance with other policies in the plan.				• Population and human health • Road drainage and the water environment • Climate					
15	NUA/MU3 NSK Factory Northern Road Newark (Retail) (and residual site NUA/MU/3)	• Land at NSK factory • Current planning application on part of the site. • 150 dwellings	950 metres east	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	Yes: • Cultural heritage • Landscape and visual • Biodiversity • Material assets and waste • Noise and vibration • Road drainage and the water environment • Climate	Yes	Opening year - 2030	The site has been assessed through the Sustainability Appraisal of the Local Plan making process		Yes
16	EN010162 (case reference) Great North Road Solar Park	Elements Green Trent Ltd • Proposal includes installation of solar photovoltaic (PV) panels, on-site energy storage facility, and infrastructure required to connect the scheme into the national grid at Staythorpe substation. • Across 2800 hectares of land northwest of Newark.	250m east	Pre-application	Tier 2	Yes: • Air Quality • Cultural heritage • Landscape and visual • Biodiversity • Material assets and waste • Noise and vibration • Road drainage and the water environment • Population and human health • Climate	Yes	Anticipated start of construction - 2027	Yes – EIA required		Yes

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
17	NAP2C - Great North Road (Fernwood Meadows South) NAP2C - Land around Fernwood (Employment)	Barratt And David Wilson Homes • 3,200 dwellings, • Employment development (15 hectares) including provision of a high quality, landscaped B1 Business Park for individual regional and national HQ and high tech businesses (15 hectares); • A local centre, comprising retail, service, employment and community uses; • Associated green, transport and other infrastructure.	4.6 km west 5.2 km east	Newark & Sherwood Core Strategy DPD (2019) Site Allocation Reserved matter was granted for 350 dwellings in 2020 (19/01053/RMAM) and is under construction. An outline application is pending for 1800 dwellings to the south by Persimmon Homes.	Tier 1	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
18	NAP2B Land east of Newark (Residential)	William Davis Ltd • 1000 dwellings and a local centre, comprising retail, service, employment and community uses; • Associated green, transport and other infrastructure.	2.6 km east	Newark & Sherwood Core Strategy DPD (2019) Site Allocation	Tier 3	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
19	NUA/Ho/10 Land North of Lowfield Lane	• 120 dwellings	3.4 km east	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
20	NUA/Ho/8 - 20/00580/FULM Land at Bowbridge Road	Nottingham Community Housing Association • 87 dwellings	2.2 km east	Full planning permission was granted in 2021 (20/00580/FULM).	Tier 1	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A

Other existing development and/or approved development details				Stage 1				Stage 2			
ID	**Application name and reference**	**Applicant for other existing development and/or approved development and brief description**	**Distance from Scheme**	**Status**	**Tier**	**Within ZOI**	**Progress to Stage 2**	**Overlap in temporal scale?**	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3 / 4?**
21	14/00465/OUTM and 18/00526/RMAM Land north and east of existing Fernwood Development	Barratt Homes • 1050 dwellings • Public open space • Sports provision • Allotments • Associated infrastructure	4.8 km east	Outline planning permission was granted in 2017 (14/00465/OUTM) with reserved matters approved in 2018 (18/00526/RMAM).	Tier 1	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
22	20/00275/FULM	Jackson Design Associates • 87 dwellings and associated works	2.2 km east	Full planning permission was granted in 2020 (20/00275/FULM).	Tier 1	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
23	NUA/Ho/9 Land at Bowbridge Road (Newark Storage)	• Residential development allocated • 150 dwellings	2.2 km east	Newark & Sherwood Allocations and Development Management DPD (2013) Site Allocation	Tier 3	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A
24	19/00854/OUTM - Flowserve	C B Collier NK Limited Harris Lamb Limited • 322-unit residential development on land at Flowserve premises	2.8 km east	Outline planning permission was refused in 2020, however following appeal the application was granted in 2021.	Tier 1	No - none of the ZOIs overlap.	No	N/A	N/A	N/A	N/A

15.3.51 As part of Stage 2 of the cumulative effects assessment, the Long List of other existing development and/or development identified in Stage 1 has been reduced to a Short List using the inclusion/exclusion criteria described above in paragraphs 15.3.19 to 15.3.21.

15.3.52 Table 15-6 below identifies the eight 'other existing development and/or approved development' included in the Short List. Figures 15.2 to 15.9 of the ES Figures **(TR010065/APP/6.2)** show the locations of the other existing development and/or approved development in relation to the Scheme, and the relevant ZOIs and any overlaps of the ZOIs for both the Scheme and each of the other existing development and/or approved development.

Table 15-6: Short list of other existing development and/or approved development

List of other existing development and/or approved development identified at Stage 2	
ID	**Other existing development and/or approved development name and reference**
2	NAP2A - Land south of Newark (10/01586/OUTM and 14/01978/OUTM)
3	NUA/E/3 - Telford Drive
5	NUA/Ho/4 - 18/02279/OUTM, 22/00426/S73 Lincoln Road (Yorke Dr and Lincoln Rd Playing Field)
6	NUA/MU/1 – Land North of the A17, Newark
7	NUA/E/2 - Stephenson Way
11	21/02408/FULM BGO Ark PropCo Limited
15	NUA/MU3 - NSK Factory Northern Road Newark (Retail) (and residual site NUA/MU/3)
16	EN010162 (case reference) – Great North Road Solar Park

Potential impacts

15.3.53 The following potential impacts from the Scheme have been identified for both the construction and operational stages.

Combined impacts

15.3.54 During construction and operation, there is the potential for combined effects on all receptors including those in relation to geology and soils, landscape, cultural heritage, communities, vehicle travellers, ecology, and material resources, due to potential effects reported in Chapters 5 to 14 of this ES.

15.3.55 These effects would potentially include the culmination of disturbance from construction dust, noise, vibration, and lighting or other visual intrusions on sensitive wildlife, human and visual receptors in addition to construction traffic and disruption to journeys. However, during construction, these potential impacts and associated effects would be

temporary in nature and best practice mitigation measures included within the First Iteration Environmental Management Plan (EMP) **(TR010065/APP/6.5)** detailed in Table 3-2 Register of Environmental Actions and Commitments (REAC) would ensure that combined effects are reduced as far as possible. In accordance with Requirement 3 of the draft DCO **(TR010065/APP/3.1)**, the First Iteration EMP will be developed into the Second Iteration EMP which will be implemented during construction and will include full management plans covering various aspects of the construction and will reflect the mitigation measures detailed in Table 3-2 REAC **(TR010065/APP/6.5)**.

15.3.56 During operation, potential effects would include adverse effects on the landscape, air quality and noise and vibration receptors due to the combination of impacts on single sensitive receptors including viewpoints, landscape character areas, human health air quality receptors and residential noise and vibration receptors. Combined effects during operation, although permanent, would be reduced as far as possible through best practice mitigation and compensation measures would be employed to compensate residual effects.

Cumulative effects

15.3.57 During construction, there would be the potential for cumulative effects on all receptors, as a result of the Scheme cumulatively with any of the other existing development and/or approved development, for which the construction stages overlap. These effects could include (but are not limited to) a culmination of disturbance from construction dust, noise, vibration, and lighting or other visual intrusions on sensitive wildlife, human and visual receptors in addition to construction traffic and disruption to journeys through the impact of overlapping construction periods. However, effects would be temporary in nature and it is assumed that best practice measures would be included in the First Iteration EMP **(TR010065/APP/6.5)** for each of the other existing development and/or approved development, reducing the likelihood of significant cumulative effects.

15.3.58 Once operational, there would be the potential for cumulative effects on receptors, including (but not limited to) habitats, protected species, agricultural land, noise and air quality. These impacts could include adverse effects on the landscape due to a change in the landscape character area culminating from the synergistic change in landscape or the synergistic interaction from impacts on biodiversity. However, it is assumed that mitigation would be provided by the other existing development and/or approved development to offset any significant environmental effects brought about as a result of the development, and monitoring of significant effects would also be in place for those other existing development and/or approved development that have gone through the statutory EIA process, which would reduce the likelihood of significant cumulative effects during operation.

Design, mitigation and enhancement measures

15.3.59 Chapter 2 (The Scheme) of this ES describes embedded mitigation, and Chapters 5 to 14 of this ES describe the essential mitigation required during construction and operation. No additional mitigation measures are required for combined effects.

15.3.60 There are no specific mitigation measures required to manage cumulative effects. However, it is anticipated that construction activities for each of the other existing development and/or approved development would be undertaken in accordance with best practice measures to be implemented through the First Iteration EMP **(TR010065/APP/6.5)**, ensuring that any adverse effects on the environment are avoided or reduced wherever possible. This would be in accordance with the developers' and their contractors' environmental management systems (EMS) and adhere to national programmes and industry bodies such as the Considerate Constructors Scheme[9] and CIRIA's guidance.[10]

15.3.61 In addition, it is anticipated that plans including a Traffic Management Plan (TMP), Site Waste Management Plan (SWMP), Materials Management Plan (MMP) and Soils Management Plan (SMP) would be implemented for the other existing development and/or approved development during their construction to avoid or reduce adverse effects on road users and the local community, and material resources and waste arisings. As part of this development consent application, a First Iteration EMP **(TR010065/APP/6.5)** has been produced, which contains an Outline SWMP (Appendix B.1 to the First Iteration EMP), an Outline MMP (Appendix B.2 to the First Iteration EMP) and an Outline SMP (Appendix B.3 to the First Iteration EMP). The First Iteration EMP and its appendices will be developed into a Second Iteration EMP prior to the Scheme commencing construction in accordance with Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.

15.3.62 No enhancement measures have been identified for combined and cumulative effects.

15.4 Assessment of Combined Effects

15.4.1 This section provides a summary of the potential combined effects that have been identified as part of the assessments reported within Chapters 5 – 14 of this ES and which are considered likely to affect a single receptor. For the assessment of combined construction effects,

[9] Considerate Constructors (2018) [online] available at: [redacted] (last accessed December 2023).

[10] CIRIA (2018) Environmental Good Practice on Site [online] available at: [redacted] (last accessed December 2023).

visual, noise, vibration and air quality effects have been considered. For the assessment of combined operational effects, visual, noise and air quality effects have been considered. There are no significant adverse vibration effects anticipated to occur during operation of the Scheme.

15.4.2 Receptors considered are shown on the following plans:

- Air quality:
    - Figure (5.1 Air Quality Receptors) of the ES Figures **(TR010065/APP/6.2)**
- Landscape and Visual Effects:
    - Figure 7.5 (Visual Effects Plan) of the ES Figures **(TR010065/APP/6.2)**
- Noise and Vibration:
    - Figure 11.1 (Construction Noise and Vibration Assessment) of the ES Figures **(TR010065/APP/6.2)**

15.4.3 Account has been taken of the effectiveness of environmental mitigation measures presented in the following:

- Chapter 2 (The Scheme) of this ES describes the embedded mitigation measures incorporated into the design of the Scheme to avoid, prevent or reduce the adverse environmental effects.
- Chapters 5 – 14 of this ES summarise the essential mitigation measures that would be delivered, these comprising measures and techniques identified to reduce and, where possible, offset the likely adverse effects of the Scheme, the full details of which are presented in the First Iteration EMP **(TR010065/APP/6.5)**.

15.4.4 Given the nature of the identified combined effects, where a range of activities would affect identified receptors in differing ways (such as visual and noise effects), no additional in-combination mitigation measures are considered appropriate over and above the mitigation contained within the First Iteration EMP **(TR010065/APP/6.5)** to alleviate the temporary construction related combined effects.

15.4.5 Table 15-7 and Table 15-8 provide a summary of potential combined construction and operation effects upon single environmental receptors, respectively.

Table 15-7: Summary of potential combined construction effects upon single environmental receptors

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Fosse Road Type of receptor: residential Landscape receptor: 2, 4 Construction noise receptor: 94254	High	Visual Slight Adverse Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Crees Lane Type of receptor: residential Landscape receptor: 3 Construction noise receptor: 95702 (nearest)	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Farndon Road Type of receptor:	High	Visual Slight Adverse	Temporary	Local	None considered practical above the	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
residential Landscape receptor: 7 Construction noise receptor: 92784 (nearest)		Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.			measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	
Farndon Roundabout to A616 A617 Roundabout Type of receptor: residential Landscape receptor: 8 Construction noise receptor: 92784	High	Visual Moderate Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Crees Lane Type of receptor: residential Landscape receptor: 9 Construction noise receptor: 95702	High	Visual Moderate Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
The Osiers Type of receptor: residential Landscape receptor: 10 Construction noise receptor: 94806	High	Visual Moderate Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		would be mitigated.				
Tolney Lane Type of receptor: residential Landscape receptor: 14 Construction noise receptor: 92827, 99217	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Cullen Close Type of receptor: residential Landscape receptor: 21 Construction noise receptor: 96732 (nearest)	High	Visual Moderate Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		affected by construction dust but these effects would be mitigated.				
Sandhills Close Type of receptor: residential Landscape receptor: 24 Construction noise receptor: 96732	High	Visual Large Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Moderate Adverse
Trent Lane Type of receptor: residential Landscape receptor: 31 Construction noise receptor: 127825	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.				
Quibells Lane Type of receptor: residential Landscape receptor: 33 Construction noise receptor: 125789	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration During the bridge construction works, the receptor is likely to be subject to Moderate Adverse impacts. However, these are temporary in nature. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Moderate Adverse
Robert Dukeson Avenue Type of receptor: residential Landscape receptor: 35 Construction noise receptor: 127213	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.				
Pine Close Type of receptor: residential Landscape receptor: 37 Construction noise receptor:126829 (nearest)	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Neutral
Lincoln Road Type of receptor: commercial Landscape receptor: 38 Construction noise receptor: 126728	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		with mitigation in place. Vibration During the road works and earthworks, the receptor is likely to be subject to Moderate Adverse impacts. However, these are temporary in nature. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.				
Winthorpe Road Type of receptor: residential Landscape receptor: 41 Construction noise receptor: 127039 (nearest)	High	Visual Large adverse Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
The Spinney Type of receptor: residential Landscape receptor: 42 Construction noise receptor: 126809, 126858	High	Visual Slight adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.				
Fosse Road Type of receptor: residential Landscape receptor: 44 Construction noise receptor: 125965	High	Visual Slight Adverse Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Fosse Road Type of receptor: residential Landscape receptor: 46 Construction noise receptor: 125965	High	Visual Moderate Adverse Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Hargon Lane Type of receptor: residential Landscape receptor: 47 Construction noise receptor: 126813, 127460	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Hargon Lane Type of receptor: residential Landscape receptor: 48 Construction noise receptor:127460 (nearest)	High	Visual Large Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		would be mitigated.				
Lincoln Road Type of receptor: residential Landscape receptor: 51 Construction noise receptor: 126728	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration During the road works and earthworks, the receptor is likely to be subject to Moderate Adverse impacts. However, these are temporary in nature. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Moderate Adverse
Gainsborough Road Type of receptor: residential Landscape receptor: 52 Construction noise receptor: 126649, 127039	High	Visual Neutral Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Gainsborough Road Type of receptor: residential Landscape receptor: 53 Construction noise receptor: 126649, 127039	High	Visual Slight Adverse Noise No Significant Adverse effects are anticipated. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Ayrshire Way Type of receptor: residential Landscape receptor: 61 Construction noise receptor: 95185	High	Visual Slight Adverse Noise Works resulting in Moderate or Major Adverse impacts will be limited in duration or temporary acoustic barriers used to avoid significant effects. No Significant Adverse effects due to construction noise or vibration are anticipated with mitigation in place. Vibration No Significant Adverse effects are anticipated. Air quality Receptor would potentially be adversely affected by construction dust but these effects would be mitigated.	Temporary	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Slight Adverse
Note: The value/sensitivity of noise receptors is not defined during the assessment of noise and vibration. All potentially sensitive receptors are considered to be of equal value/sensitivity. The highest value/sensitivity rating attributed by the relevant environmental topic assessments has therefore been adopted.						

Table 15-8: Summary of potential combined operational effects upon single environmental receptors

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Fosse Road Type of receptor: residential Landscape receptor: 2, 4 Air quality receptor: R94, R95	High	Visual Year 1: Slight adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Marsh Lane Type of receptor: residential Landscape receptor: 3 Air quality receptor: R94	High	Visual Year 1: Slight Adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Riverside Road Type of receptor: residential Landscape receptor: 5 Air quality receptor: R95 (nearest)	High	Visual Year 1: Slight Adverse, Year 15: Slight Adverse Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		quality objective and therefore the effects are Not Significant.				
Cotham Lane Type of receptor: residential Landscape receptor: 6 Air quality receptor: PR2 (nearest)	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Farndon Road Type of receptor: residential Landscape receptor: 7 Air quality receptor: R93	High	Visual Year 1: Slight Adverse, Year 15: Slight Adverse Noise Significant Adverse effects are not anticipated. Air quality Predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse
Farndon Roundabout to A616 A617 Roundabout Type of receptor: commercial Landscape receptor: 8 Air quality receptor: R91	Low	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Crees Lane Type of receptor: residential Landscape receptor: 9 Air quality receptor: R93	High	Visual Year 1: Moderate Adverse, Year 15: Slight Adverse Noise Significant Adverse effects are not anticipated. Air quality Predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse
The Osiers Type of receptor: residential Landscape receptor: 10 Air quality receptor: R91	High	Visual Year 1: Slight Adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Tolney Lane Type of receptor: residential Landscape receptor: 14 Air quality receptor: R91	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
		not significant.				
Coppers Yard Type of receptor: residential Landscape receptor: 16 Air quality receptor: R60	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Small improvement of the NO_2 annual mean concentration experienced at these properties.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Cullen Close Type of receptor: residential Landscape receptor: 21 Air quality receptor: R50	High	Visual Year 1: Moderate Adverse, Year 15: Slight Adverse Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse
Sandhills Close Type of receptor: residential Landscape receptor: 24 Air quality receptor: R50	High	Visual Year 1: Large Adverse, Year 15: Moderate Adverse Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse
Great North Road Type of receptor: commercial Landscape receptor: 26	Low	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Air quality receptor: R27		Air quality Imperceptible change				
Kelham Lane Type of receptor: residential Landscape receptor: 27 Air quality receptor: R27	Low	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Cow Lane Type of receptor: residential Landscape receptor: 29 Air quality receptor: R39	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Trent Lane Type of receptor: residential Landscape receptor: 31 Air quality receptor: R45	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Quibell's Lane Type of receptor:	High	Visual Year 1: Neutral, Year 15: Neutral	Permanent	Local	None considered practical above the	Yr 1: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
residential Landscape receptor: 33 Air quality receptor: R46		Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change			measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 15: Neutral
Robert Dukeson Avenue Type of receptor: residential Landscape receptor: 35 Air quality receptor: R34	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Pine Close Type of receptor: residential Landscape receptor: 37 Air quality receptor: R36	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Small improvement of the NO_2 annual mean concentration experienced at these properties.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Lincoln Road Type of receptor: commercial Landscape receptor: 38 Air quality receptor: R36	Medium	Visual Year 1: Slight Adverse, Year 15: Slight Adverse Noise Significant Adverse effects are not anticipated. Air quality Small improvement of the NO_2 annual mean concentration experienced at these properties.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Winthorpe Road Type of receptor: residential Landscape receptor: 41 Air quality receptor: R30	Medium	Visual Year 1: Large adverse, Year 15: Slight adverse Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Slight Adverse
The Spinney Type of receptor: residential Landscape receptor: 42 Air quality receptor: R32	High	Visual Year 1: Slight Adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Fosse Road Type of receptor: commercial Landscape receptor: 44, 46 Air quality receptor: R38	Low	Visual Year 1: Slight Adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Small improvement of the NO_2 annual mean concentration experienced at these properties.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Hargon Lane Type of receptor: residential Landscape	High	Visual Year 1: Slight Adverse, Year 15: Neutral Noise	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP	Yr 1: Slight Adverse Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
receptor: 47, 48 Air quality receptor: R29		Significant Adverse effects are not anticipated. Air quality Imperceptible change			**(TR010065/APP/6.5)**.	
Lincoln Road Type of receptor: residential Landscape receptor: 51 Air quality receptor: R28	Moderate	Visual Year 1: Slight Adverse, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Slight Adverse Yr 15: Neutral
Gainsborough Road Type of receptor: residential Landscape receptor: 52, 53 Air quality receptor: R29	Moderate	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Main Street Type of receptor: residential Landscape receptor: 56 Air quality receptor: R19	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral

Receptor	Sensitivity	Likely significant effects for each receptor	Duration	Scale	Mitigation	Combined effect
Home Farm Close Type of receptor: residential Landscape receptor: 57 Air quality receptor: R25	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Worsening of the NO_2 annual mean concentration experienced at this property, but predicted concentrations remain below the air quality objective and therefore the effects are Not Significant.	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Ayrshire Way Type of receptor: residential Landscape receptor: 61 Air quality receptor: R23	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Micklebarrow Hill Type of receptor: residential Landscape receptor: 62 Air quality receptor: R20	High	Visual Year 1: Neutral, Year 15: Neutral Noise Significant Adverse effects are not anticipated. Air quality Imperceptible change	Permanent	Local	None considered practical above the measures outlined within the First Iteration EMP **(TR010065/APP/6.5)**.	Yr 1: Neutral Yr 15: Neutral
Note: The value/sensitivity of noise receptors is not defined during the assessment of noise and vibration. All potentially sensitive receptors are considered to be of equal value/sensitivity. The highest value/sensitivity rating attributed by the relevant environmental topic assessments has therefore been adopted.						

15.4.6 The assessment has identified a number of receptors where combined effects are predicted, particularly those arising from construction activities where works would be in close proximity to receptors such as residential properties. Due to the nature of the works, there are limited opportunities for additional mitigation measures to reduce these potentially significant adverse effects during construction beyond what is included already in the First Iteration EMP **(TR010065/APP/6.5)**.

Construction in-combination effects

15.4.7 As reported in Table 15-7, the construction of the Scheme is likely to result in significant adverse combined effects for 3 receptors, all of which are expected to experience Moderate Adverse effects. All are residential receptors located in Newark-on-Trent.

15.4.8 The receptors that are likely to experience Moderate Adverse combined effects are located at Sandhills Close (landscape receptor 24, construction noise receptor 96732), Quibell's Lane (landscape receptor R33, construction noise receptor 125789) and Lincoln Road (landscape receptor R51, construction noise receptor 126728) (as shown on Figure 7.5 (Visual Effects) of the ES Figures **(TR010065/APP/6.2)**). The significant adverse effects are as a result of the combined visual, noise, vibration and air quality effects on the receptors. These are notable effects on receptors of high value. However, effects would be temporary in nature and so no additional mitigation is considered necessary beyond what is included already in the First Iteration EMP **(TR010065/APP/6.5)**.

Operation in-combination effects

15.4.9 As reported in Table 15-8, the operation of the Scheme is not likely to result in any significant adverse combined effects at the receptors assessed.

15.5 Assessment of Cumulative Effects

15.5.1 The assessment of cumulative effects for both construction and operation can be found in Appendix 15.2 (Assessment of Cumulative Effects for Construction and Operation) of the ES Appendices **(TR010065/APP/6.3)**.

15.5.2 Only those developments that have been included in the Short List (Table 15-6) have been brought through to the assessment of cumulative effects, which represents Stages 3 and 4 of the methodology outlined in the Planning Inspectorate's AN17 (see paragraph 15.3.10 for a description of the stages of the assessment).

15.5.3 The assessment has been divided by environmental topic, and the effects of the other existing development and/or approved development have been assessed where the ZOIs for each environmental topic overlaps. The following figures which show the location of the other existing development and/or approved development contained within the Short List and the overlapping ZOIs around the Scheme:

- Figure 15.2 (Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.3 (NAP 2A Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.3 (NUA/E/3 Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.4 (NUA/Ho/4 Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.5 (NUA/MU/1 Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.6 (NUA/E/2 Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.7 (NUA/MU/3 Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.8 (21/02408/FULM Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**
- Figure 15.9 (Great North Road Solar Park Proposed Development and Proposed Scheme with Relevant Zones of Influence) of the ES Figures **(TR010065/APP/6.2)**

15.5.4 Appendix 15.2 (Assessment of Cumulative Effects for Construction and Operation) of the ES Appendices **(TR010065/APP/6.3)** outlines the full assessment of cumulative effects for construction and operation, including reporting the non-significant and significant cumulative effects.

15.5.5 The following developments are predicted to cause significant cumulative effects with the Scheme:

- NAP2A Land south of Newark (10/01586/OUTM and 14/01978/OUTM):
    - Temporary Moderate Adverse cumulative cultural heritage effect on the built heritage receptor Grade II* Listed Building Farndon Windmill (MM139) during construction.
    - Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3 and 3a land during construction.
- NUA/E/3 Telford Drive:
    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during construction.

    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation.
    - Temporary Large Adverse cumulative landscape and visual effect on visual receptors R32 and R40 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R32 and R40 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation.
    - Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land during construction.
- NUA/Ho/4 (18/02279/OUTM, 22/00426/S73) - Lincoln Road (Yorke Dr and Lincoln Rd Playing Field):
    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation.
    - Temporary Large Adverse cumulative landscape and visual effect on visual receptors R32 and R40 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptor R34 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptor R40 during Year 1 of operation.
    - Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land during construction.
- NUA/MU/1 – Land North of the A17, Newark:
    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation.
    - Temporary Large Adverse cumulative landscape and visual effect on visual receptor R40 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R41, R43 and R48 during construction.
    - Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation.
    - Temporary Moderate Adverse cumulative geology and soils effect on receptor ALC Grade 3a land during construction.
- NUA/E/2 Stephenson Way:

- Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during construction.
- Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation.
- Temporary Large Adverse cumulative landscape and visual effect on visual receptor R40 during construction.
- Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R41 and R43 during construction.
- Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation.
- Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land during construction.

- NUA/MU/3 NSK Factory Northern Road Newark (Retail) (and residual site NUA/MU/3):
  - Temporary Large Adverse cumulative landscape and visual effect on visual receptor R32 during construction.
  - Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land during construction.
- 21/02408/FULM BGO Ark PropCo Limited:
  - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during construction.
  - Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation.
  - Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land during construction.

15.5.6 The above significant effects are due to the possible but unlikely overlap of unavoidable construction activities as well as temporary operational effects which will reduce to Not Significant by Year 15 between the above developments and the Scheme. Therefore, due to the temporary duration of these Significant effects, no additional mitigation is required beyond what is included already in the First Iteration EMP **(TR010065/APP/6.5)**. This effect would only occur in the unlikely worst-case scenario that the construction activities coincided and while planting is maturing during the operation of the Scheme. For landscape receptors the effects would reduce to a Not Significant effect by Year 15 of operation.

15.6 Conclusion

15.6.1 The assessment for combined effects has involved the identification of impact interactions associated with the Scheme upon separate environmental receptors. The methodology for the assessment of combined effects followed DMRB LA 104 – Environmental Assessment and Monitoring.

15.6.2 In summary, the residual combined effect during construction for the Scheme is anticipated to result in significant adverse combined effects for 3 receptors. These are significant but temporary in nature. For construction-related combined effects, no additional mitigation measures above those presented with the First Iteration EMP **(TR010065/APP/6.5)**, relevant assessment chapters and described in Section 15.3 are considered applicable or proportionate for short-term temporary combined effects. On that basis, no monitoring of significant effects is proposed.

15.6.3 No additional mitigation beyond what is included already in the First Iteration EMP **(TR010065/APP/6.5)** is considered necessary, as no Significant Adverse combined effects are predicted during operation.

15.6.4 The assessment for cumulative effects has involved the identification of incremental changes likely to be caused by other existing development and/or approved development together with the Scheme. Seven developments were identified which met the criteria for inclusion in this assessment. This assessment has followed the methodology outlined in the Planning Inspectorate's AN17.

15.6.5 Several of these Significant Adverse cumulative effects are temporary and/or are not materially worse that the effects predicted as a result of the Scheme, reducing to Not Significant by Year 15 of operation. Because of this, no additional measures above those presented in the First Iteration EMP **(TR010065/APP/6.5)** are considered applicable or proportionate for short-term temporary cumulative effects in respect of identified cumulative impact pathways.

15.6.6 No additional mitigation on top of the individual mitigation specified in this ES is considered necessary, as no Permanent Significant Adverse cumulative effects are predicted.

15.7 References

[1] National Highways (2020) Design Manual for Roads and Bridges LA104 Environmental Assessment and Monitoring, Revision 1. [online] available at: LA 104 - Environmental assessment and monitoring (standardsforhighways.co.uk) (last accessed December 2023).

[2] The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects [online] available at: Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) (Last accessed December 2023).

[3] Department for Transport (2014). National Policy Statement for National Networks [online] available at: National policy statement for national networks - GOV.UK (www.gov.uk) (last accessed December 2023).

[4] National Highways (2020) Design Manual for Roads and BridgesLA104 Environmental Assessment and Monitoring, Revision 1. [online] available at: LA 104 - Environmental assessment and monitoring (standardsforhighways.co.uk) (last accessed December 2023).

[5] The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects [online] available at: Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) (Last accessed December 2023).

[6] Newark & Sherwood District Council (2023). Planning Portal [online] available at: Simple Search (newark-sherwooddc.gov.uk) (last accessed December 2023).

[7] Newark & Sherwood District Council (2019). Local development framework [online] available at: Local development framework | Newark & Sherwood District Council (newark-sherwooddc.gov.uk) (last accessed December 2023).

[8] [Clarification note]

[9] Considerate Constructors (2018) [online] available at: [redacted] (last accessed December 2023).

[10] CIRIA (2018) Environmental Good Practice on Site [online] available at: [redacted] last accessed December 2023).