A46 Newark Bypass

TR010065/APP/6.1

6.1 Environmental Statement Chapter 16 Summary

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A46 Newark Bypass

Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT

CHAPTER 16 SUMMARY

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Contents

16 Summary

16.1 Introduction

16.1.1 This Chapter summarises the residual likely significant effects reported in this Environmental Statement (ES). Topic specific impact assessment are presented in detail in Chapters 5 to Chapter 15 of this ES.

16.1.2 To assist in the understanding of the summary findings a number of assessment fundamentals are outlined below.

16.2 Significance of effects

16.2.1 The significance of environmental effects is largely defined by reference to two key factors:

- The value or sensitivity of the receptor
- The magnitude of scale of the impact

16.2.2 Chapter 4 (Environmental Assessment Methodology) of this ES describes the general approach to the environmental assessment for each topic. For most topics the significance of an effect is defined in 5 categories (Neutral, Slight, Beneficial, Large and Very Large). With the addition of the terms Adverse or Beneficial, the categories can be applied as a balanced 9-point scale (Neutral; Slight Adverse; Moderate Adverse; Large Adverse; Very Large Adverse; Slight Beneficial; Moderate Beneficial; Large Beneficial and Very Large Beneficial).

16.2.3 For the majority of environmental assessment chapters, effects that are Moderate Beneficial /Adverse or above are considered significant, with the exception of the methodology used to determine significance of effects associated with material assets (contained within Chapter 10 (Material Assets and Waste) of this ES), for which effects that are Large Beneficial / Adverse or above are considered significant.

16.2.4 Chapter 5 (Air Quality), Chapter 11 (Noise and Vibration) and Chapter 14 (Climate) of this ES do not explicitly follow this general approach to determining the significance of effects, due to the nature of the topics and their methodologies. The criteria used to determine the significance of effects are outlined in these individual chapters.

16.2.5 Where uncertainties in construction practices have been highlighted in Chapter 2 (The Scheme) of the ES, the worst-case scenario has been assessed in the individual topic chapters (Chapters 5 to 15 of this ES) where relevant.

16.3 Mitigation

16.3.1 Measures to mitigate the effects of the Scheme include both embedded and essential mitigation measures, with the essential mitigation measures outlined in Table 1.1 below. Embedded mitigation measures are detailed within Section 2.5 of Chapter 2 (The Scheme) of this ES. Essential mitigation has also then been identified and included within the topic chapters (Chapters 5 to 15 of this ES). Mitigation measures have also been included in the Register of Environmental Actions and Commitments (REAC) which forms part of the First Iteration Environmental Management Plan (EMP) **(TR010065/APP/6.5)**, to be developed into a Second Iteration EMP prior to construction commencing. The mitigation measures within the First Iteration EMP are secured and committed to through Requirement 3 of the draft Development Consent Order (DCO) **(TR010065/APP/3.1)**. Figure 2.3 (Environmental Masterplan) of the ES Figures **(TR010065/APP/6.2)** also depicts the environmental mitigation included as part of the design. Compliance with the principles of the Environmental Masterplan is secured by Requirement 12 of the draft DCO **(TR010065/APP/3.1)**.

16.4 Residual effects

16.4.1 Significant environmental effects that are identified with mitigation in place are referred to as residual effects. These are described in each topic chapter (Chapters 5 to 15 of this ES).

16.4.2 Some design features and mitigation measures may result in an environmental improvement. In these instances, the residual effect is recorded as beneficial.

16.5 Summary of residual likely significant effects

16.5.1 Table 16-1 summarises the required mitigation measures and the likely (residual) significant effects.

16.6 Summary of monitoring requirements

16.6.1 A summary of the monitoring requirements is provided with Table 16-2.

Table 16-1: Summary of mitigation and significance of residual effects after mitigation

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
Chapter 5 Air Quality							
No significant adverse or beneficial residual effects.							
Chapter 6 Cultural Heritage							
Built heritage receptors	The assets are located within the Order Limits of the Scheme. The presence of construction machinery within close proximity of each asset would give rise to potential vibration issues and could affect the structural integrity of the asset. In addition, noise, movement, dust and light pollution, would adversely impact on the setting and heritage value of each asset.	Adverse	Construction	Temporary and Permanent	Structural monitoring would be required before, during and after construction at the grade II* listed Concrete Footbridge across River Trent (MM038), grade II listed Farndon Windmill (MM139), grade II listed, and grade II listed Causeway Arches 500 meters north-west of level crossing (MM228) to ensure any vibrations from construction machinery do not affect the structural integrity of these assets. The buffer zones required for the structural monitoring would be defined by a structural engineer before works start in these areas. A structural condition survey and Level 2/3 building recording would be undertaken specifically for Causeway Arches 500m northwest of level crossing (MM228), prior to the commencement of works in order to inform a construction methodology and design specification for the rebuilt element of arches. The section of Causeway Arches 500 meters north-west of level crossing (MM228) to be demolished would be	Detailed in Reference CH1 – CH9 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR0100765/APP/3.1)**.	**Temporary Large Adverse Effect:** MM139 Farndon Windmill (Grade II Listed) MM228 Causeway Arches 500m north west of level crossing (Grade II Listed) **Temporary Moderate Adverse Effect:** MM026 Langford Hall (Grade II* Listed) MM053 Lowwood (Grade II Listed) MM063 The Church of All Saints, Winthorpe (Grade II Listed) MM141 Causeway Arches 650m north-west of level crossing. (Grade II listed) **Permanent Large Adverse Effect:** MM141 Causeway Arches 650m north west of level crossing (Grade II Listed) MM228 Causeway Arches 500m north west of level crossing (Grade II Listed)

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
					rebuilt in an appropriate and sensitive manner and materials, the details of which would be subject to further consultation with stakeholders. The use of noise barriers to reduce degradation of setting and/or maintenance of access routes to a heritage asset to maintain its viability during construction. This should be provided at grade II listed Farndon Windmill (MM139), grade II listed Lowwood (MM053), grade II listed Langford Hall (MM026) and the designated Conservation Area at Winthorpe (MM432).		
Historic Landscape	The presence of construction machinery close to the Winthorpe Conservation Area would increase the level of noise and affect the ability to appreciate the agricultural setting of the asset. This would result in a temporary Moderate Adverse effect on the heritage value of the asset.	Adverse	Construction	Temporary	The impacts arising from the Scheme are somewhat diluted in that they would affect only part of the Conservation Area and its setting and not the whole. Working within the core working hours (subject to the exceptions) reduces the impacts of lights, noise, movement and dust. These mitigation measures would reduce the level of effect across the whole asset.	Detailed in References G2 (working hours), AQ1 (dust), L1 (lighting), CH3 (noise fencing) and NV1 (noise) of Table 3-2 REAC of the First Iteration EMP **(TR010065/APP/6.5)** Detailed in Reference G2 and CH3 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 and Requirement 9 of Schedule 2 of the draft DCO **(TR010065/PP/3.1)**. Specific areas requiring fencing/protection would be contained within the archaeological mitigation strategy, i.e. the AMP phase	**Temporary Moderate Adverse:** MM432 Winthorpe Conservation Area

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
						3 update. Fencing would be built in accordance with Requirement 7 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.	
Archaeological remains	The assets are located within the Order Limits of the Scheme. Below ground archaeological remains have been identified as likely to experience significant adverse effects as a result of the construction of the Scheme, following archaeological excavation and recording.	Adverse	Construction	Permanent	In accordance with paragraph 5.140 of the NPSNN the asset would be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that would be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure but does not reduce the significance of effect. The phases of archaeological investigation include: Phase 1 (preliminary archaeological surveys undertaken to inform the ES), Phase 2 (intrusive fieldwork which includes geoarchaeological coring, test pitting and trial trench evaluation) and Phase 3 (sets out the archaeological mitigation strategy required during the pre-commencement and construction stages of the Scheme). Details of the excavation would be outlined in the Phase 3 Archaeological Management Plan to be produced following the	Detailed in the Archaeological Management Plan (AMP) **(TR010065/APP/6.8)** to be implemented through the archaeological mitigation strategy, i.e. Phase 3 AMP, as outlined in Reference CH1 of the First Iteration EMP **(TR010065/APP/6.5)** and as secured by Requirement 9 of the draft DCO **(TR010065/APP/3.1)**.	**Permanent Large Adverse:** **(**MM859) Enclosures at Kelham (MM876) and (MM896) Cropmark complex and linear features south-west of Winthorpe (MM930) and (MM931) Enclosure cropmarks and possible paleochannel south-west of Winthorpe (MM932) Possible cropmark feature (MM933) Enclosure cropmark, linear features and field boundaries (MM934) Enclosure cropmarks. (MM937) Possible barrow, linear features/field boundaries (MM945) Possible enclosure site and/or relict field system (MM956) Paleochannel (MM957) Paleochannel (MM958) Paleochannel (MM959) Paleochannel (MM960) Paleochannel (MM961) Paleochannel

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
					programme of Trial Trenching, pursuant to Requirement 9 of the draft DCO **(TR010065/APP/3.1)**.		(MM962) Paleochannel (MM963) Organic Deposits **Permanent Moderate Adverse:** (MM849) Pit alignment at Newark. (MM869) Linear features & enclosure at Averham (MM949) Organic Deposit.
Chapter 7 Landscape							
Landscape							
LCA 1 Trent Washlands	During construction there would be a notable presence of construction activity and large scale earthworks to construct the new embankments and floodplain compensation areas. This would bring about a change in land use from farmland within the River Trent floodplain to engineering built elements, including the removal of existing vegetation.	Adverse	Construction	Temporary	Effects would be reduced by keeping a well-managed and tidy site and compounds. Ensuring materials are delivered to site on an as and when basis would avoid unnecessary stockpiles and would help to reduce construction impacts. Temporary offices and welfare facilities within site compounds would be of a recessive colour to blend in with the local surroundings. Lighting would be kept to a minimum luminosity necessary and use low energy consumption fittings. Where appropriate, lighting would be activated by motion sensors to prevent unnecessary usage. Lighting would be directional, and positioned sympathetically, to minimise light spill and	Detailed in Reference L1 and L2 of REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	Temporary Moderate Adverse
LCA 2 Winthorpe Village and Farmlands	During construction there would be a notable presence of construction activity and large scale earthworks to construct the new embankments and new A46 link. At height works associated with the construction of the A1 overbridge, earthworks and construction activity would all bring detracting elements to this high sensitivity character area during construction. Laydown areas, several satellite compounds, welfare units, haul routes and temporary soil stockpiles would also be present, bringing further detracting features to the character area.	Adverse	Construction	Temporary		Detailed in Reference L1 and L2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	Temporary Large Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
					disturbance for highly sensitive receptors. An Outline Arboricultural Method Statement contained as an appendix to Appendix 7.4 (Arboricultural Impact Assessment) of the ES Appendices **(TR010065/APP/6.3)** has been produced to prevent damage to any vegetation to be retained.		
LCA 1 Trent Washlands	During operation there would be a direct and permanent change in land use and land cover as a result of the widened carriageway of the A46. Adjacent to the new carriageway, surface drainage features including ponds, swales and ditches would be introduced as part of integrated blue-green infrastructure proposals. On establishment of the blue-green infrastructure and reinstatement planting, the magnitude of change would reduce.	Adverse – Yr 1)	Operation	Temporary (Year 1)	Establish mitigation planting so that by Year 15 post opening of the Scheme (2043) the planting would have matured to aid the integration and screening of the Scheme from the surrounding area.	Detailed in Reference L5 of REAC as set out in the First Iteration Environmental Management Plan **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	Temporary Moderate Adverse (Year 1)
LCA 2 Winthorpe Village and Farmlands	There would be direct impacts upon landscape character in Winthorpe Village and Farmlands LCA leading to significant effects in the early years of operation. This would result from the increase in highway land use and associated infrastructure in the southern extents of the character area, between the A1 and A46 at Brownhills roundabout. This would include an above grade crossing of the A1, bringing additional bridge structures, slip roads and roundabouts to the area defined as Open Break reducing the sense of openness between settlements. By Year 15 woodland planting, linear belts of trees and shrub as well as hedgerow planting would reduce the presence of new highways infrastructure on the wider landscape, although the localised alteration to field patterns and partial loss of	Adverse – Yr 1 Adverse – Yr 15	Operation	Temporary (Year 1) Permanent (Year 15)		Detailed in Reference L5 of the REAC as set out in the First Iteration Environmental Management Plan **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	Temporary Large Adverse (Year 1) Permanent Moderate Adverse (Year 15)

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	open space around Winthorpe would remain.						
Visual effects							
Visual receptors	During construction, construction infrastructure and vehicles would create significant adverse visual impacts.	Adverse	Construction	Temporary	Effects would be reduced by keeping a well-managed and tidy site and compounds. Ensuring materials are delivered to site on an as and when basis would avoid unnecessary stockpiles and would help to reduce construction impacts. Temporary offices and welfare facilities within site compounds would be of a recessive colour to blend in with the local surroundings. Lighting would be kept to a minimum luminosity necessary and use low energy consumption fittings. Where appropriate, lighting would be activated by motion sensors to prevent unnecessary usage. Lighting would be directional, and positioned sympathetically, to minimise light spill and disturbance for highly sensitive receptors. An Outline Arboricultural Method Statement contained as an appendix to Appendix 7.4 (Arboricultural Impact Assessment) of the ES Appendices **(TR010065/APP/6.3)** has been produced to prevent damage to any vegetation to be retained.	Detailed in Reference L1 and L3 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	3 receptors (24, 32, 40) would experience a Temporary Very Large Adverse effect. 4 receptors (34, 41, 43, 48) would experience a Temporary Large Adverse effect. 8 receptors (9, 10, 12, 13, 21, 23, 46, 50) would experience a Temporary Moderate Adverse effect.

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	During operation, the introduction of a new dual carriageway would result in significant adverse visual impacts.	Adverse	Operation	Year 1	Landscape works undertaken should be maintained to ensure successful establishment of the environmental design. Maintenance should be undertaken in accordance with the Series 3000 Landscape and Ecology specification appendices and LEMP (to be produced) to ensure the establishment and continued growth of new plant stock to ensure mitigation planting meets its objectives as presented in Figure 2.3 (Environmental Masterplan) of the ES Figures **(TR010065/APP/6.2)**. Where reasonably possible to provide screening planting and mitigate visual impacts at the earliest possible opportunity.	Detailed in Reference L5 and L7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	**Year 1:** 3 receptors (24, 40, 41) would experience a Permanent Large Adverse effect. 4 receptors (9, 11, 21, 23) would experience a Permanent Moderate Adverse effect.
	During operation, the introduction of a new dual carriageway would result in significant adverse visual impacts.	Adverse	Operation	Year 15		Detailed in Reference L5 and L7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP, pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**.	**Year 15:** 1 receptor (24) would experience a Permanent Large Adverse effect. 1 receptor (40) would experience a Permanent Moderate Adverse effect.
Chapter 8 Biodiversity							
Great North Road Grasslands LWS	The direct permanent loss of 56% and temporary long-term loss of 17% of the Great North Road Grasslands LWS would result in a less viable LWS, reducing its conservation value and impacting the integrity of the site.	Moderate Adverse	Construction	Temporary	Where possible, areas of LWS identified as being in poor condition and habitats of low ecological value adjoining impacted LWS would be enhanced to compensate for the loss of LWS. The loss of habitats for which a site has been designated or which supports protected species for which the site has been designated, would be planted to make sure a minimum of like-for-like replacement is achieved.	Detailed in Reference B15 of the First Iteration Environmental Management Plan **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP pursuant to Requirement 12 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.	Temporary Moderate Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
					Loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement or enhanced where possible (detailed in Figure 2.3 (Environmental Masterplan) and Figure 8.4 (Compensation Planting for Loss of Local Wildlife Site Habitats) of the ES Figures **(TR010065/APP/6.2)**.		
Chapter 9 Geology and Soils							
Agricultural Land Classification (ALC) grade 2 land	Temporary loss of 5.9ha ALC grade 2 Best Most Versitle (BMV) land in the Kelham and Averham FCA.	Moderate Adverse	Construction	Temporary	Best practice measures would be followed including pre-construction planning, adequate soil handling, choosing appropriate weather and ground conditions, soil stripping, stockpiling, reinstatement and reuse, and placement, and adequate aftercare and monitoring. The hierarchical system of avoidance, reduction and remediation would be followed when handling agricultural land and soil resources.	Outline Soil Management Plan (SMP) (which has been tailored to the results of ALC) (see Appendix B.3 of the First Iteration EMP **(TR010065/APP/6.5)**) to minimise loss of soil function as a resource. Protection of site soil quality with respect to plant and working methods as detailed in REAC commitment GS1 of the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP pursuant to Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.	Temporary Moderate Adverse
ALC grade 3a land	Permanent loss of 14.7ha of grade 3a land in the main Scheme alignment.	Moderate Adverse	Construction	Permanent		Scheme designed to minimise area of land lost. Outline SMP (Appendix B.3 of the First Iteration EMP, **(TR010065/APP/6.5)**) to minimise loss of soil function as a resource. Protection of site soil quality with respect to plant and working methods as detailed in REAC commitment GS1	Permanent Moderate Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
						of the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP pursuant to Requirement 3 of the draft DCO **(TR010065/APP/3.1).**	
ALC grade 3b land	Permanent loss of 66.5ha grade 3b land (30.6ha in the main Scheme alignment, 12.9ha in the Farndon East FCA and 23.0 ha in the Farndon West FCA).	Large Adverse	Construction	Permanent		Scheme designed to minimise area of land lost. Outline SMP (Appendix B.3 of the First Iteration EMP, **(TR010065/APP/6.5)**) to minimise loss of soil function as a resource. Protection of site soil quality with respect to plant and working methods as detailed in REAC commitment GS1 of the First Iteration EMP **(TR010065/APP/6.5)**. to be implemented through the Second Iteration EMP pursuant to Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.	Permanent Large Adverse
Chapter 10 Material Assets and Waste							
No significant adverse or beneficial effects.							
Chapter 11 Noise and Vibration							
Noise							
No significant adverse or beneficial effects.							
Vibration							
No significant adverse or beneficial effects.							
Chapter 12 Population and Human Health							
Agricultural land holdings							
Farm 01	**Land take**- Permanent land take affecting 34% of the farm's land within the LIA due to the widening of the A46 and the creation of a proposed Farndon East FCA and attenuation basins.	Adverse	Construction	Permanent	N/A	N/A	Permanent Large Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	High sensitivity - This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.						
Farm 02	**Land take**- Permanent land take affecting 14% of the farm's land within the LIA due to construction of Brownhills junction, embankments, attenuation basins and a new shared WCH route. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Moderate Adverse
Farm 03	**Land take**- Permanent land take requiring 8% of the farm's land within the LIA due to the Brownhills Borrow Pit. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Moderate Adverse
Farm 07	**Land take -** Permanent land take requiring 15% of the farms land within the LIA for 10 months due to the Kelham and Averham Floodplain Compensation Area and would be reinstated following the construction period. **Medium sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is partially dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Moderate Adverse
Farm 09	**Land take** - Permanent land take requiring 60% of the farm's land within the LIA. This is due to the upgrade of Cattle Market Junction and the creation of attenuation basins and access and maintenance tracks. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Large Adverse
Farm 10	**Land take** - Permanent land take requiring 30% of the farms land within the LIA. This is due to the upgrade of Cattle Market Junction and access and maintenance tracks for construction vehicles.	Adverse	Construction	Permanent	N/A	N/A	Permanent Large Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	High sensitivity - This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.						
Farm 12	**Land take** - Permanent land take requiring 18% of the farms land within the LIA. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Temporary	N/A	N/A	Permanent Moderate Adverse
Farm 14	**Land take** - Temporary land take requiring 15% of the farm's land within the LIA for approximately 36 months. This is due to the creation of the new access route to Langford Hall. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Temporary	N/A	N/A	Temporary Moderate Adverse
	Land take - Permanent land take requiring 15% of the farms land within the LIA. This is due to the creation of the new access route to Langford Hall. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Moderate Adverse
Farm 15	**Land take** - Temporary land take requiring 24% of the farm's land within the LIA. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Temporary	N/A	N/A	Temporary Large Adverse
Farm 16	**Land take** - Permanent land take requiring 17% of the farm's land within the LIA. **High sensitivity -** This land is key agricultural infrastructure (arable land) on which the farm enterprise is dependent.	Adverse	Construction	Permanent	N/A	N/A	Permanent Moderate Adverse
Walkers, cyclists and horse-riders							
Newark BW2	Construction of Windmill Viaduct would result in the temporary closure and diversion of Newark Bridle Way 2 for 24 months.	Adverse	Construction	Temporary	Development of a Construction Communications	Detailed in the Construction Communications Management Plan prepared	Temporary Moderate Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	Major - The proposed diversions, via Crees Lane and the Newark FP3, would increase WCH distances by up to 700 metres. **Medium sensitivity -** The location of the Bridle Way 2 suggests the route is primarily used for recreational purposes and therefore, any severance is not likely to affect users of community resources. The route is well used, with 312 users observed during the 2-day March 2023 survey.				Management plan would form an accompanying document to the Second Iteration EMP, to engage with local people and businesses about how construction may impact them, for example through WCH diversions, as outlined in Reference PHH2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**.	as part of the Second Iteration EMP, which is further explained in Reference PHH2 of the REAC as set out in the First Iteration Environmental Management Plan **(TR010065/APP/6.5)**. The Second Iteration EMP is secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.	
Newark FP48#1	Construction of the Sewage Treatment Works underpass extension and the earthworks operations associated with the embankment widening would result in the temporary closure and diversion of Newark FP48#1 for a period of 24 months. **Major -** The proposed diversions would increase walking distances by up to two kilometres for a period of 24 months. **Medium sensitivity -** The location of the footpath suggests the route is primarily used for recreational purposes. 60 users were observed over the 2 day March 2023 survey.	Adverse	Construction	Temporary			Temporary Moderate Adverse
National Cycle Network 64 and Trent Valley Way along Winthorpe Road	New Brownhills junction would lead to 120 metre permanent realignment. However, it would be on an upgraded and segregated WCH route. The new alignment would require users to cross the A46 slip road at grade. This crossing would be signalised to further slow the traffic coming off the 50 mile per hour A46. As vehicles would already be slowing down for the Brownhills Junction roundabout, the inclusion of a signalised crossing point at the site would further improve safety for WCH users. **Minor -** There would be an increase in journey length of 120 metres. **Very high sensitivity -** The paths are national routes and likely to be used daily for recreation and commuting.	Adverse	Operation	Permanent	N/A	N/A	Permanent Moderate Adverse

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
Chapter 13 Road Drainage and The Water Environment							
No significant adverse or beneficial effects.							
Chapter 14 Climate							
No significant adverse or beneficial effects.							
Chapter 15 Combined and Cumulative Effects							
Receptors identified during combined assessment	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. The receptors that are likely to experience Moderate Adverse combined effects are located at Sandhills Close (landscape receptor 24, construction noise receptor 96732), Quibells Lane (landscape receptor R33, construction noise receptor 125789) and Lincoln Road (landscape receptor R51, construction noise receptor 126728). The significant adverse effects are as a result of the combined visual, noise, vibration and air quality effects on the receptors are due to the visual receptors predicted to experience a Slight Adverse effect, anticipated to experience unavoidable Moderate Adverse effects due to vibration from bridge construction works, road works and earthworks in the vicinity. These are notable effects on receptors of high value.	Adverse	Construction	Temporary	No additional mitigation measures above those presented within the First Iteration EMP **(TR010065/APP/6.5)**, relevant assessment chapters and those described in Section 15.3 of Chapter 15 Combined and Cumulative Effects of this ES, are considered applicable or proportionate for short-term temporary combined effects. On that basis, no monitoring of significant effects is proposed.	N/A	Temporary Moderate Adverse – 3 receptors
Receptors identified during cumulative assessment	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). ○ Temporary Moderate Adverse cumulative geology	Adverse	Construction	Temporary	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 of Chapter 15 (Combined and Cumulative Effects) of the ES chapters are considered applicable or proportionate for short-term	N/A	Temporary Moderate Adverse – 8 receptors Temporary Large Adverse – 10 receptors

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	and soils effect on receptors ALC Grade 3 and 3a land. • NUA/E/3 Telford Drive: ○ Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands. ○ Temporary Large Adverse cumulative landscape and visual effect on visual receptors R32 and R40 ○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R32 and R40. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land. • 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. ○ Temporary Large Adverse cumulative landscape and visual effect on visual receptors R32 and R40. ○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptor R34. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land. • NUA/MU/1 – Land North of the A17, Newark: ○ Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA				temporary combined effects. On that basis, no monitoring of significant effects is proposed.		

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	2 Winthorpe Village and Farmlands. ○ Temporary Large Adverse cumulative landscape and visual effect on visual receptor R40. ○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R41, R43 and R48. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptor ALC Grade 3a land. • NUA/E/2 Stephenson Way: ○ Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands. ○ Temporary Large Adverse cumulative landscape and visual effect on visual receptor R40 ○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R41 and R43. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land. • 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. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land. • 21/02408/FULM BGO Ark PropCo Limited: ○ Temporary Moderate Adverse cumulative						

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands. ○ Temporary Moderate Adverse cumulative geology and soils effect on receptors ALC Grade 3a land.						
Receptors identified during cumulative assessment	The following developments are predicted to cause significant cumulative effects with the Scheme: • NUA/E/3 Telford Drive: ○ 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 landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation. • 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 Year 1 of operation. ○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptor R40 during Year 1 of operation. • 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 Year 1 of operation.	Adverse	Operation (Year 1)	Temporary	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 of Chapter 15 Combined and Cumulative Effects of this E, are considered applicable or proportionate for short-term operational cumulative effects which would reduce to Not Significant by Year 15. On that basis, no monitoring of significant effects is proposed.	N/A	Temporary Moderate Adverse – 3 receptors.

Receptor	Description of effects	Adverse / beneficial	Construction / operation	Temporary / Permanent	Mitigation requirements	Mitigation delivery mechanism	Significance of effect(s) after mitigation
	○ Temporary Moderate Adverse cumulative landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation. • NUA/E/2 Stephenson Way: ○ 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 landscape and visual effect on visual receptors R40 and R41 during Year 1 of operation. • NUA/MU/3 NSK Factory Northern Road Newark (Retail) (and residual site NUA/MU/3): ○ Temporary Moderate Adverse cumulative landscape and visual effect on landscape receptor LCA 2 Winthorpe Village and Farmlands during Year 1 of operation. • 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 Year 1 of operation.						

Table 16.2: Summary of monitoring requirements

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
General			
General	Construction	Core construction working hours would be between 07.00 and 18.00 on weekdays and from 07.00 to 13.00 on Saturdays. The PC would adhere to these core working hours as far as is reasonably practicable and regularly monitor this. There are various exceptions to these core working hours including night-time work for online sections of the Scheme to facilitate traffic management and removal, and the installation of bridge beams to the new bridge structures. Further exceptions are listed in Reference G2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**.	Reference G2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 5 Air Quality			
No monitoring required for dust deposition or ambient dust is required. However, visual inspections would be undertaken daily for dust deposition on and off site during construction.			
Chapter 6 Cultural Heritage			
Buried archaeology	Construction	• The recording of the grade II Causeway Arches 500m north west of level crossing (MM228). This would include the monitoring of construction activities by a qualified archaeologist and monitoring visits from Stakeholders Nottinghamshire County Council Senior Practitioner Archaeology and Newark & Sherwood District Council Historic Environment Advisor and an Archaeological Clerk of Works (ACoW). • Structural monitoring required at the locations set out in this commitment before, during and after works. The PC would be responsible for ensuring a Monitoring Plan is prepared and appended to the Phase 3 AMP. • Barrier to be regularly inspected by the PC Environmental Manager to ensure mitigation working as intended throughout construction. • Fencing and hoarding to be regularly inspected by the PC Environmental Manager to ensure mitigation working as intended, throughout construction. • Archaeological works to be undertaken and monitored as set out in a Written Scheme of Investigation (WSI) secured in Reference CH6 of the REAC **(TR010065/APP/6.5)**.	Reference CH1 to CH4 and CH6 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** and as secured by Requirement 9 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Listed buildings		• To minimise adverse effects on archaeological assets during construction, a recording of the Causeway Arches 500m north west of level crossing (MM228) would be included. • Structural monitoring of vulnerable assets is required. • Fencing and hoarding to be regularly inspected by the environmental manager to ensure mitigation working as intended throughout construction. This is to minimise the adverse effects on setting of heritage assets.	Reference CH1 to CH4 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP as secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Listed buildings	Operation	• Long term monitoring requirements would be required to review the success and establishment of planting.	Reference CH5 and CH9 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirements 6 and 9 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Historic landscape			Reference CH9 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 9 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 7 Landscape and Visual Effects			
Landscape character	Construction		Reference G2, L1, L2, L3 and L6 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**, to be implemented by the

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
Visual effects		Daily site audits would be undertaken by the Environmental Manager throughout construction to ensure the actions (as outlined in Reference L1 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)),** are implemented to limit landscape and visual effects during construction. Monitoring to ensure the Series 3000 Landscape and Ecology specification appendices and Landscape and Ecological Management Plan (LEMP) are implemented: • Landscape works undertaken should be maintained to ensure successful establishment of the environmental design. Maintenance should be undertaken in accordance with the Series 3000 appendices and LEMP to ensure the establishment and continued growth of new plant stock to ensure proposed mitigation planting meets its objectives as presented in Figure2.3 (Environmental Masterplan) of the ES Figures **(TR010065/APP/6.2)**. The Environmental Manager would ensure commitments L1-L5 in the REAC as part of the First Iteration EMP **(TR010065/APP/6.5)** are complied with. Notably in construction including: • Ensuring tree protection barriers and ground protection are installed correctly • Angle and direction of night time lighting is not directly focused on residential receptors • Soil is stored correctly with stockpiling in accordance with the Outline SMP (see Appendix B.3 of the First Iteration EMP **(TR010065/APP/6.5)** • Limits to core construction working hours which would be adhered to as far as reasonably practicable. Exceptions are listed in Reference G2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**.	Second Iteration EMP pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**. and LEMP, pursuant to Requirement 6 of the draft DCO **(TR010065/APP/3.1)**.
Landscape character Visual effects	Operation	In operation, monitoring to review the success and establishment of planting would be undertaken in the scope set out in the Series 3000 and LEMP.	Reference L4, L5 and L7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**,to be implemented by the Second Iteration EMP pursuant to Requirement 3 of the draft DCO **(TR010065/PP/3.1)**. and LEMP, pursuant to Requirement 6 of the draft DCO (TR010065/APP/3.1).
Chapter 8 Biodiversity			
Protection of habitats and protected species during construction	Construction	An Ecological Clerk of Works (EcoW) would oversee works where necessary: • An (EcoW) would be employed by the Principal Contractor to provide advice and monitor the works adherence to the Second Iteration EMP (to be developed prior to construction commencing) and construction mitigation measures • A pre-construction search by the ECoW prior to vegetation clearance/brash removal to check for notable faunal species such as hedgehog and toad resting places • Pre-construction search by ECoW during staged grass cutting and directional clearance	Reference B1 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 10 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Protection of bats		A suitably qualified ecologist would need to inspect features in one building (F004) prior to demolition. Annual monitoring of bat boxes during year 2 and year 3 of construction. Monitoring includes maintenance (cleaning, repair and replacement).	Reference B2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of otter		Ongoing monitoring by the PC during construction to report any observations of otter within the Order Limits.	Reference B3 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of aquatic habitats		Ongoing monitoring by the PC during construction to ensure adherence of the INNS Management Plan and Biosecurity Risk Assessment.	Reference B4 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
			Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of water vole		Pre-construction monitoring surveys would confirm whether water vole are still absent, prior to vegetation removal.	Reference B5 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of badger		Prior to construction commencing, large mammal burrows that could support badgers, located within 30 metres of works that have potential to damage, destroy or obstruct a burrow or have the potential to disturb a badger within a sett would need monitoring for 21 consecutive days to confirm it is not in use. Any active setts would be monitored for 21 days following the installation of a one-way gate (after obtaining a licence from Natural England to do so).	Reference B6 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of barn owls		Barn owl stage 3 surveys of barn owl PNS within 175 metres of the Order Limits would be undertaken one year prior to closure of confirmed nesting sites, prior to construction. Annual monitoring surveys of barn owl nestboxes would be undertaken for a minimum of 3 years post-construction, ideally in the winter months. Maintenance (cleaning / repair / replacement) as required during this time. Post this period, continued monitoring could be undertaken by voluntary groups, should the site be entered into a national monitoring scheme (e.g. British Trust Ornithology (BTO) Nest Record). Habitat manipulation of the isolated Type 2 habitat (sub-optimal) would commence during the construction works and continue through operation and would include habitat management under supervision of an ECoW. This would occur south of the new flyover between Brownhills roundabout and the A1 carriageway would further reduce the risk of vehicle collision with barn owl at this potential new Traffic Accident Blackspots (TAB). Such mitigation would commence during the construction works and would include habitat management such as intensive mowing to render habitat further unsuitable for foraging barn owls.	Reference B7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of breeding birds		Any clearance and topsoil removal during the nesting bird season or during night-time hours would require a nesting bird survey / pre-construction check within 48 hours of clearance. ECoW to advise on requirements following survey. Annual monitoring of barn owl and kestrel boxes during construction in September / October to coincide with box maintenance. Maintenance (cleaning / repair / replacement) as required during this time.	Reference B8 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of fish		ECoW to supervise this work at the locations identified in this commitment.	Reference B9 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of veteran trees		Two layers of permeable Cellweb matting to sufficiently distribute the load of heavy construction plant would ensure the success of habitats replanted, mitigation planting areas would be maintained for a period of five years from completion of the Scheme.	Reference B17 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of reptiles		The phased and directional vegetation clearance would be monitored on site under EcOW supervision in areas where surveys have identified reptiles are present. Monitoring would be undertaken in year 1, 3 and year 5 and would comprise of a habitat assessment of habitat created for reptiles and presence / likely absence surveys for reptiles. Post this period, continued monitoring could be undertaken by voluntary groups, should the site be entered into a national monitoring Scheme e.g. National Reptile Survey (part of the National Amphibian and Reptile Monitoring Programme).	Reference B14 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of barn owls	Operation	If barn owl boxes are required to be installed, annual monitoring surveys of barn owl nestboxes would be undertaken for a Minimum of 3 years post-construction. Maintenance (cleaning / repair / replacement) as required during this time. Post this period, continued monitoring could be undertaken by voluntary groups, should the site be entered into a national monitoring Scheme (e.g. British Trust	Reference B7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
		Ornithology (BTO) Nest Record).	Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of breeding birds		Annual monitoring of barn owl and kestrel boxes a minimum of 3 years post-construction in September / October to coincide with box maintenance. Maintenance (cleaning / repair / replacement) as required during this time. Post this period, continued monitoring could be undertaken by voluntary groups, should the site be entered into a national monitoring scheme (e.g. British Trust Ornithology (BTO) Nest Record).	Reference B8 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of bats		Annual monitoring of bat boxes during year 2 and year 3 of construction and annually for 5 years post-construction. Monitoring includes maintenance (cleaning, repair and replacement),	Reference B2 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Preventing the spread of INNS		Measures defined in the INNS Management Plan and Biosecurity Risk Assessment would be monitored on site by the Environmental Manager for the Scheme during construction and at least 3 years post-construction.	Reference B10 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1).**
Protection of habitats during operation		Monitoring throughout the aftercare period would be required to review the success and establishment of planting and inform any remedial action.	Reference B11 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of habitats during operation to achieve expected Biodiversity Net Gain (BNG) score		BNG Management and Monitoring Plan to set out specific requirements – but routine monitoring would be required for 30 years post construction. Monitoring also needed during construction to ensure habitats retained and in the aftercare period for the establishment and aftercare of new and reinstated habitats.	Reference B12 of the REAC as set in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Review the delivery of the habitat creation and determine whether BNG has occurred.		An audit survey is required at the end of construction and at the end of the 5 year aftercare period	Reference B13 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Protection of reptiles		Monitoring would be undertaken in year 1, year 3 and year 5 and would comprise of a habitat assessment of habitat created for reptiles and presence / likely absence surveys for reptiles. Post this period, continued monitoring could be undertaken by voluntary groups, should the site be entered into a national monitoring scheme e.g. National Reptile Survey (part of the National Amphibian and Reptile Monitoring Programme).	Reference B14 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO (TR010065/APP/3.1).
Compensatory requirements for local wildlife sites (LWS) and losses of habitats of principle importance (HPI), and contributing		Long term monitoring requirements (30 years post-construction) would be required to review the success and establishment of planting.	Reference B15 and B16 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
to compensation for loss of non-priority habitats			
Protection of veteran trees		Annual inspections needed of the three veteran trees during the aftercare period.	Reference B18 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 9 Geology and Soils			
Soils	Construction	• Monitoring of reinstated soils would be required by an appropriately qualified soil scientist (appointed by the PC) as outlined in the Outline Soils Management Plan (OSMP). In particular, soil should be monitored by the PC and reported on annually via auger bores or small trial pits at representative locations for a period of five years post-construction.	Reference GS1 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** and Appendix B.1 OSMP to be implemented through the Second Iteration EMP secured by Requirement 3 of the draft DCO **(TR010065/APP/3.1)**.
Controlled water, soil, groundwater and contamination	Construction	• Works would be monitored sitewide by the PC Environmental Manager to ensure the protection of human health and controlled waters for the duration of the works.	Reference GS3, GS4, GS5, and GS7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** and Appendix B.1 OSMP to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 10 Material Assets and Waste			
Waste reduction	Construction	• The Site Waste Management Plan (SWMP) would be used by the Environmental Manager throughout construction to measure and monitor the types and quantities of waste reused on site and taken off-site for recovery or recycling, and for disposal.	Reference M3 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** and Appendix B.1 OSWMP to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 11 Noise and Vibration			
Noise emissions	Construction	Noise monitoring would be undertaken by the PC Environmental Manager for the following activities: • Integration of noise control measures into the preparation of all method statements for the works. • Details and locations of all site hoardings, screens or bunds that would provide acoustic screening during construction. • Procedures for the installation of noise insulation (if deemed to be required) or provision of temporary re-housing (if deemed required) and to ensure such measures are in place as early as reasonably practicable. • Noise and vibration monitoring protocols including monitoring locations, stages during construction at which monitoring would be undertaken, and methods of publishing the results. • Details of inspection and maintenance schedules to be undertaken. Processes to ensure ongoing compliance with all controls and consent for the works. • Process for implementing corrective actions that may be required to avoid or address a potential non-compliance.	Reference NV1 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
		Noise monitoring would be undertaken by the PC Environmental Manager for the activities as set out in the action and commitment column.	Reference NV2 to NV6 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirements 3 and 16 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
Vibration levels	Construction	Vibration monitoring would be undertaken by the PC Environmental Manager to manage vibration levels during construction.	Reference NV7 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 12 Population and Human Health			
Socio-economic benefits	Construction	Monitoring of socio-economic benefits would be undertaken throughout construction: • Ongoing regular monitoring to record numbers of employees, apprenticeships and training opportunities throughout construction and recording of monetary value of contracts, all for Newark and Sherwood Districts. This is to capture and maximise socio-economic benefits of the scheme locally and understand the overall economic benefits of the scheme for local communities within Newark and Sherwood District. • Regular engagement should be undertaken with the Newark Showground and other recreational activities to ensure construction activities are planned around key events.	Reference PHH4 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 13 Road Drainage and the Water Environment			
Surface water and groundwater	Construction	Surface water, and groundwater monitoring would be undertaken before, during and after construction as outlined within the Chapter 13, Road Drainage and the Water Environment of this ES: • Daily site audits • Preparation of Pollution Prevention Plan as part of the Second Iteration EMP to be developed prior to construction commencing • Preparation of Erosion Prevention and Sediment Management Plan as part of the Second Iteration EMP • Preparation of Emergency Response Plan for Flood Events as part of the Second Iteration EMP • Site drainage, including for site compounds and material storage areas, would be designed to connect existing road/mains drainage network and would not directly discharge into environment. • Surface water monitoring to be carried out before, during, and after construction to ensure no adverse impact on water quality. • Groundwater monitoring to be undertaken preconstruction for at least 12 months, during construction and post construction. • Necessary environmental permits to be sought from the relevant authorities (Environment Agency and/or local authorities), where disapplication has not been granted, prior to construction. Further detail is contained within the Consents and Permits Position Statement **(TR010065/APP/3.3)**.	Reference RDWE1, RDWE2, RDWE3, RWDE5, RDWE7. RDWE13 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
INNS and Contamination	Construction	Monitoring requirements would be set out in the Invasive Non-Native Species Management Plan and Biosecurity Risk Assessment as part of the Second Iteration EMP and managed by the Environmental Manager.	Reference RDWE8 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Riparian vegetation	Operation	Successfully implement Figure 2.3 (Environmental Masterplan) of the ES Figures **(TR010065/APP/6.2)** design in line with LEMP.	Reference RDWE16 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)**.
Chapter 14 Climate			
Carbon	Construction	Monitoring of construction data and activities on site to understand actual GHG emissions.	Reference C4 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** implemented through the Second Iteration

Receptor	Construction / operation	Description of monitoring requirements	Monitoring delivery requirements
			EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Climate resilience	Operation	Monitoring of the operation of the Scheme including asset data and preparation of detailed monitoring plan.	Reference C3 of the REAC as set out in the First Iteration EMP **(TR010065/APP/6.5)** to be implemented through the Second Iteration EMP secured by Requirement 3 of Schedule 2 of the draft DCO **(TR010065/APP/3.1)**.
Chapter 15 Combined and Cumulative Effects			
During construction, significant combined effects are anticipated for 3 receptors but they are considered short-term and temporary. During operation, no significant cumulative effects are anticipated. During construction and operation (Year 1), significant cumulative effects are anticipated but they are considered short-term and temporary. By Year 15 of operation, no significant cumulative effects are anticipated due to the maturing of planting. No additional monitoring requirements on top of the individual mitigation specified in the First Iteration EMP **(TR010065/APP/6.5)** during construction and operation is required.			