

17. Summary

17.1. Introduction

- 17.1.1. This chapter forms the summary of the Environmental Statement ("ES") which addresses any likely significant environmental effects as a result of the Proposed Development at Toton West ('the Site').
- 17.1.2. This ES has been prepared on behalf of Bloor Homes Limited ('the Applicant') in support of an outline planning application for up to 420 residential dwellings and associated open space and infrastructure ('the Proposed Development').
- 17.1.3. The Site is situated within the administrative area of Broxtowe Borough Council (BBC).
- 17.1.4. The ES has been coordinated and managed by Pegasus Group. Pegasus Group is one of the founding members of the Institute of Environmental Management and Assessment ('IEMA') Quality Mark, which is a mark of excellence in EIA co-ordination and management. The consultants who have contributed to the preparation of this ES are referenced in **Appendix 1.1 'EIA Statement of Expertise'**, along with information demonstrating their *"expertise to ensure the completeness and quality of the ES"*, in accordance with *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017* ('the EIA Regulations').

Availability and Comments

- 17.1.5. This ES can be viewed online on BBC's website and at their offices (please contact BBC for details). Additional copies of the Non-Technical Summary ('NTS') (no charge), ES Volume 1 (£100 plus postage) and the Technical Appendices (£150 plus postage) are available from Pegasus Group, 4 The Courtyard Church Street, Lockington, Derbyshire, DE74 2SL. The complete ES can also be obtained in CD or Pen drive format for £10 from the same address. Comments on the planning application should be sent to BBC's Planning Department.

17.2. The Environmental Statement – Scope and Methodology

- 17.2.1. In order to determine the scope of the EIA, the EIA Regulations make provision for, but do not statutorily require, an applicant to request that the local planning authority (LPA) provide a written opinion as to the information to be provided within the ES.
- 17.2.2. The Applicant has not requested a formal Scoping Opinion in relation to the Proposed Development; however, has instead followed the scope of that agreed in relation to the larger, separate 'Toton North' scheme, which lies in close proximity to the Site. Given that the primary reason for undertaking an EIA is in relation to the potential significant cumulative effects that could occur with Toton North (and other potential schemes in the locality), this is considered to be appropriate and robust.
- 17.2.3. Each technical chapter has identified 'likely significant effects' using a pre-determined assessment criteria which often, but not always, reflects the relationship between the magnitude or severity of an effect; and the sensitivity, importance or value of the resource or receptor.
- 17.2.4. Where necessary, mitigation measures have been proposed to ameliorate effects specific to an environmental theme, many of which are purposely incorporated into the design of the

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proposals and are highlighted as 'mitigation by design'. 'Additional mitigation' measures may also be proposed, which may be subject to appropriate planning conditions or obligations.

17.2.5. Each technical assessment has considered inter-project cumulative effects for each of the identified cumulative schemes set out in Chapter 2: Assessment Scope & Methodology. In summary the other schemes considered within cumulative assessments are:

- Southfields Farm, Common Lane, Bramcote: 24/00066/FUL Construction and operation of two adjacent Battery Energy Storage Systems (BESS) facilities
- Land at Toton North: The construction of up to 880 dwellings, a link road (means of access only), local centre, country park, education provision (forest school) and associated infrastructure
- Land at Toton East: The construction of up to 155 dwellings with associated open space and infrastructure

17.3. The Application Site and Context

17.3.1. The Site extends to approximately 18.96 hectares (ha) and it located to the west of the B6003 Stapleford Lane, which leads northwards, and southwards, towards the suburbs of Stapleford, and Toton, respectively.

17.3.2. The majority of the northern extent of the Site is bound by hedgerow, beyond which are further field parcels in arable agricultural use. The north-eastern extent of the Site is bound by well-established trees and hedgerow, with an electricity transmission substation beyond. A series of electricity pylons and associated overhead lines traverse the Site in an approximate north-east to south-west direction, from the electricity transmission substation. A Public Right of Way (PRoW), Footpath Beston FP17 runs through the centre of the Site and along the northern boundary.

17.3.3. The east of Site is adjoined by the B6003 Stapleford Lane, beyond which is the Land at Toton East site for which a planning application has recently been submitted by the Applicant (in conjunction with Peveril Securities Ltd).

17.3.4. To the south, the Site is bound by sporadic hedgerow and trees, beyond which are gardens and existing residential dwellings associated with the suburb of Toton. The south-western most extent of the Site is adjoined by Toton Fields Local Nature Reserve (LNR). The west of the Site is bound by the Toton Sidings Local Wildlife Site (LWS), beyond which lies the DB Toton Cargo Railway Terminus.

17.3.5. There are no statutory designated sites for nature conservation located within the Site. No sites of international conservation importance are located within a 15km radius and no sites of national conservation importance are located within a 2km radius of the Site; Attenborough Gravel Pits SSSI is located 2.2km south of the Site. One LNR lies within 1km of the Site; Toton Fields sits directly adjacent to the southern boundary of the Site. Twelve non-statutory sites for nature conservation are located within 1km of the Site, the closest of these to the Site is Toton Sidings LWS located adjacent to the western boundary.

17.3.6. There are no heritage assets located within the Site. The closest conservation area is the Sandiacre conservation area, c.500m to the north-west of the Site. The closest Scheduled Monument is 'Lock Up and Pinfold' (National Heritage List for England (NHLE) ref: 1007042),

located c.1.6km to the north-west of the Site. There are eleven listed building within 1km of the Site, the closest is Bridge at Sandiacre Lock (HE ref: 1087974) c. 500m to the west.

- 17.3.7. The Site is located wholly within Flood Zone 1 which has the lowest chance of flooding. There are localised areas across the Site to be at risk of pluvial flooding. The largest areas are situated towards the south-east of the Site. There is a field ditch present across the Site, situated in the western half and falling east to west.
- 17.3.8. The Site is not located within an Air Quality Management Area (AQMA). The nearest AQMA is 'AQMA No.2' 3.4km to the southwest of the Site.
- 17.3.9. The majority of the Site is Grade 3b land agricultural land (89%), which is not considered to be Best and Most Versatile (BMV) land. The remainder comprises Grade 2 (4%), Grade 3a (5%) and non agricultural land (2%).

17.4. The Proposed Development and Alternatives

- 17.4.1. The Applicant seeks outline planning permission for the following description of development:

"The construction of residential development of up to 420 residential dwellings and associated open space and infrastructure"

- 17.5. 'Development Parameters' have been established and assessed within this ES. The Development Parameters detail all the limits necessary to define and fix those aspects of a development capable of having significant environmental effects. This will enable planning conditions to be drawn up and agreed to control the implementation of the Proposed Development.
- 17.6. Each principal land use for the purpose of assessment is summarised in the table below and is based on the Parameter Plan at **Figure 4.1**.

Land Use	Quantum / Description
Built Form over c. 13.23 ha	Up to 420 residential dwellings with varying heights, With the majority categorised 13m maximum height Above Finished Floor Level (AFFL) and then those dwelling proposed along the southern boundary categorised as 9.5m AFFL.
	The area for built form also includes incidental open space, drainage area, streets, lanes and private drives.
Landscape / Green Infrastructure over c. 5.72 ha.	Open space including retained vegetation, proposed landscaping, public open space, drainage features, pedestrian and cycle links and play spaces. This does not include incidental spaces within the built form parcel such as pocket park areas, and green areas at the entrance and southern boundary.
Access and Movement	Including one vehicular point of access into the Site. The PRoW crossing the Site will be retained and incorporated as part of the Proposed Development. An indicative pedestrian and cycle connection is shown.

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Consideration of Alternatives

- 17.6.1. The EIA Regulations (Schedule 4, paragraph 2) requires the following for inclusion in an ES:
- “A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.*
- 17.6.2. The main alternatives to the Proposed Development which the Applicant has considered include:
- The 'No Development' Alternative;
 - Alternative Locations for the Proposed Development;
 - Alternative Uses for the Site; and
 - Alternative designs.
- 17.6.3. The 'No Development' alternative means leaving the Site in its current use as arable agricultural land. The beneficial and adverse effects outlined in this ES would not occur. There is no indication that in the absence of the Proposed Development, the use of the Site would alter and therefore the environmental conditions of the Site would remain at its baseline level as described in Chapter 3: The Site. The Proposed Development seeks to provide up to 420 residential dwellings contributing to local housing provision. As such, the 'No Development' option was not considered by the Applicant. Further, as the Applicant can deliver the Proposed Development on the Site, and the Site is well placed for the development proposed, no alternative locations or uses were considered.
- 17.6.4. As part of the iterative EIA and design process, the design of the Proposed Development has evolved to take account of various environmental constraints and opportunities. In this respect, environmental desktop reviews, interim assessments of the emerging Proposed Development and relevant knowledge gained from environmental baseline surveys and consultation with consultees, have influenced the evolution of the proposals at an early stage in the design process. In adopting this iterative design process has enabled the early identification of mitigation measures which have then become inherent in the design.

17.7. Socioeconomics

- 17.7.1. This chapter has assessed the socio-economic impacts arising from proposals that will deliver up to 420 residential dwellings on land at Toton West.

Baseline Conditions

- 17.7.2. A review of Broxtowe's socio-economic context reveals the following:
- Between 2013 and 2023, Broxtowe's population has grown at a slower rate than that seen at a regional and national level. In this time the fastest growing age group were those aged 65+. This trend is projected to continue between 2018 and 2038.
 - Employment in Broxtowe increased at a slower rate than the local area, the East Midlands and England between 2015 and 2023.

- The claimant count rate in Broxtowe is currently below the rate seen at a regional and national level.
- Economic output in Broxtowe has increased at a slower rate than regional and national averages between 2012 and 2022.
- The local area and Broxtowe have a higher proportion of its resident working age population with a degree or equivalent when compared to the East Midlands and England.
- The Proposed Development is located across four LSOAs. Broxtowe 015A and 007A are located in the top 10% least deprived LSOAs in the country, Broxtowe 013B is located in the top 40% most deprived LSOAs in the country and Broxtowe 013E is located in the top 20% most deprived in the country.
- When looking at health indicators in Broxtowe many are better when compared to national averages.
- Levels of physical activity in Broxtowe amongst adults are higher than average when compared with the East Midlands and England. There was a higher proportion of children in Broxtowe that were active compared to the East Midlands and England.

Likely Significant Effects

Proposed Development

- 17.7.3. In respect of the construction phase, the assessment indicates that the Proposed Development will have the following temporary effects:
- An estimated 169 jobs could be supported on-site and in the wider economy per annum during the build phase.
 - Around £10.7million of gross value added per annum is estimated to be generated over the two-year build period, or £68million over the entire build phase (present value).
- 17.7.4. In EIA terms, this impact is considered to have a **significant beneficial effect**.
- 17.7.5. In respect of the operational phase, the assessment suggests that the Proposed Development will have the following permanent effects:
- An estimated 438 economically active and employed residents are estimated to live in the Proposed Development.
 - The Proposed Development could generate an additional household expenditure of £6.7million per annum once it is complete and fully occupied, of which around £2.1million would be retained within Broxtowe.
 - The dwellings could generate additional £1million per annum in Council Tax payments.
 - The dwellings could generate an estimated £2.5million in first occupation expenditure.
- 17.7.6. In EIA terms, overall these impacts are considered to have a **significant beneficial effect** in the long-term, with no adverse effects on existing community infrastructure.

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Cumulative Effects

- 17.7.7. In respect of the construction phase, the assessment indicates that the Proposed Development and cumulative schemes will have the following temporary effects:
- An estimated 291 jobs will be supported on-site and in the wider economy during the total 14-year build phase.
 - Around £18.6million of gross value added per annum is estimated to be generated over the 14-year build period, or £222million over the entire build phase (present value).
- 17.7.8. In EIA terms, this impact is considered to have a **significant beneficial effect**.
- 17.7.9. In respect of the operational phase, the assessment suggests that the Proposed Development and the cumulative schemes will have the following permanent effects:
- An estimated 1,512 economically active and employed residents are estimated to live in the Proposed Development.
 - The Proposed Development could generate an additional household expenditure of £23.3million per annum once it is complete and fully occupied, of which around £7.3 would be retained within Broxtowe.
 - The dwellings could generate an additional £3.5million per annum in Council Tax payments.
 - Delivery of 40.862 ha of open space and green infrastructure on-site at the Proposed Development and cumulative schemes.
- 17.7.10. In EIA terms, overall, these impacts are considered to have a **significant beneficial effect** in the long-term.

Mitigation and Enhancement

- 17.7.11. Given the lack of secondary school provision in the area, a financial contribution may be provided, should this be required. This will be discussed as necessary with BBC.

Conclusion

- 17.7.12. Overall, the Proposed Development is considered to provide **significant beneficial effects** during the construction phase in relation to economic contribution. Once operational, **significant beneficial effects** are expected in relation to wider economic effects and open space.

17.8. Landscape and Visual

- 17.8.1. Pegasus Group has prepared this landscape and visual impact assessment in relation to the Proposed Development of land at Toton West, Toton (referred to as 'the Site').
- 17.8.2. The approach and methodology used in this chapter has been developed in accordance with industry guidance; the 'Guidelines for Landscape and Visual Impact Assessment', published by the Landscape Institute and Institute for Environmental Management and Assessment, 2013.

Baseline Conditions

- 17.8.3. The Site is located on a south-westerly suburb of the city of Nottingham, close to the boundary between Nottinghamshire and Derbyshire. and associated rail infrastructure. Further arable land lies directly to the north.
- 17.8.4. The Site comprises two field parcels adjoining the northern settled edge of Toton and the majority of a third extending to the north-west, all in arable use. Internal features are limited to a ditch between the western and north-western field parcels, and two pylons with overhead powerlines.
- 17.8.5. The Site boundaries are defined by trees and scrub to the west between the Site and the Toton Sidings, Toton to the south (in part comprising a field hedgerow and small linear woodland block at the western end of the residential edge), the B6003 to the east, the wooded compound of an electricity substation set into the north-east corner, and a hedgerow flanked on the internal side by a ditch along much of the north. Where not defined by a tree belt, the north-western section is open to the remainder of the field parcel not occupied by the Site.
- 17.8.6. The wider landscape around the Site consists of the broader settlement areas associated with Toton, Stapleford, Long Eaton and Sandiacre with open countryside to the north of Stapleford beyond.
- 17.8.7. The topography of the wider landscape is varied, but is principally governed by the Rivers Erewash and Trent, which fall broadly to the west and south, respectively. Land within the Site slopes generally in a westerly direction. There are a number of Public Rights of Way (PRoWs) across or adjoining the Site, comprising both footpaths and bridleways.
- 17.8.8. The Site is located within Sherwood National Character Area (NCA49), the Regional LCT 10.b Sandstone Forests Landscape Character Type, and at the District Level it lies adjacent to the 'Erewash River Corridor' Draft Policy Zone (DPZ NC01). To the north-east on higher ground is 'Beeston and Stapleford Urban Fringe' (DPZ SHO60). From the detailed evaluation undertaken for this LVIA, the immediate context to the Site shares some characteristics identified in the baseline landscape character assessments and given its settlement fringe location is most closely aligned with the characteristics of the landscape described at District level. No long-term significant effects were identified upon the character of the Site directly, or indirectly upon the identified district-level landscape character areas.
- 17.8.9. In visual terms, due to its urban fringe context, vegetation and built form to the east and north-east, and the sloping nature of the landform broadly to the west into the Erewash valley, the Site is generally well contained and generally limits the extent of potential views towards the Site from beyond. Principal receptors comprise PRoW users within and approaching the Site at short distance, residents adjoining the southern Site boundaries, and road users along the B6003.

Likely Significant Effects

- 17.8.10. Given the settled edge context of the Site and the degree of influence from urbanizing elements, together with distribution of green infrastructure and open space throughout the development, the Proposed Development is not considered to result in any significant direct or indirect residual effects upon the character of the landscape.

Summary

- 17.8.11. The majority of views assessed as subject to the highest magnitudes of impact and significance of effect are from locations within the Site itself, or directly adjacent to the Site. There would therefore be significant effects upon users of the PRoW along a section of the public footpath as it passes along and through the Site, and upon receptors along the B6003 where they briefly pass the Site access. Such effects are therefore considered to be localized in nature, being limited in extent to receptors passing through and in immediate proximity to the Proposed Development.
- 17.8.12. The assessment considered potential impacts upon the Bramcote Conservation Area (CA). The Site does not lie within or in close proximity to the CA, and no intervisibility was identified, including that consistent with the CA's special characteristics. The Site is screened from the CA by tree cover, both intervening and within the south of the CA itself.
- 17.8.13. Considering cumulative impacts, in general significant effects upon either the landscape or visual resource are not predicted, with the exception of receptors along the B6003 passing both Toton East and the Site simultaneously. From along this section of the route along the road, both the Proposed Development and Toton East would be experienced, either in combination or sequentially, at short / immediate distance and altering the existing views from open farmland to enclosed residential development with replacement roadside tree planting and hedgerow.

Mitigation

- 17.8.14. The mitigation strategy for the Proposed Development focuses on integrating the Proposed Development into the surrounding landscape through a robust landscape and green infrastructure strategy. The design process has been influenced by landscape and visual constraints to ensure that the Proposed Development respects the local context, with careful attention to scale, character, and vegetation retention.
- 17.8.15. Key mitigation measures include conserving the landscape character, retaining and enhancing existing vegetation, and incorporating substantial green infrastructure such as tree planting and enhancement proposals to strengthen tree belt, reinforce existing hedgerow and improve species diversity.
- 17.8.16. Sustainable drainage strategies and compatible ecological enhancements are also integral to the design. During construction, a phased approach will minimise vegetation loss, and construction lighting will be managed to avoid intrusion. Post-construction, long-term landscape management will ensure the success of mitigation measures, with a flexible management plan focusing on enhancing biodiversity, visual quality, and environmental sustainability.
- 17.8.17. A Code of Construction Practice (CoCP) included within a CEMP will be developed prior to the commencement of construction. The content of this document will aim to promote good Site management and ensure that environmental commitments are adhered to.

Conclusion

- 17.8.18. There would be an inherent degree of landscape and visual impact for any largely undeveloped settlement edge site seeking to deliver new residential development of this nature, although given the extent of influence from the settled edge and urbanising elements in the landscape, such impacts would be less than those relating to a site that has no existing urban influences.

- 17.8.19. The mitigation measures delivered as part of the design of the Proposed Development and described within this report have sought to address the likely effects in order to avoid, reduce or offset adverse impacts wherever possible.
- 17.8.20. The Proposed Development would give rise to some significant residual visual effects, however, these would be localized and principally focused within and adjoining the Site upon receptors of higher sensitivity. This is often the case with any proposed development on greenfield land.

17.9. Ecology and Biodiversity

- 17.9.1. This chapter presents an assessment of the likely significant effects of the Proposed Development on Ecology and Biodiversity during construction and operation. Baseline information was gathered from desk-based resources and field surveys.

Baseline Conditions

- 17.9.2. No sites of international conservation importance are located within a 15km radius of the Site. No sites of national conservation importance are located within a 2km radius of the Site but Attenborough Gravel Pits SSSI is located 2.2km south of the Site. Toton Fields LNR Site and Toton Sidings LWS lie adjacent to the Site. Eleven other non-statutory designated LWS lie within 1km, though all are beyond 300m from the Site.
- 17.9.3. The Site is predominantly arable with hedgerows with trees at the boundaries of the existing field compartments which represent features of greater ecological value within the Site which were recognized as Local significance. A small area of other neutral grassland, a dry ditch, a very small area of woodland, some scrub and a cluster of young trees also occur within the Site, which were recognized as less than local significance. The trees do however offer intrinsic conservation value as they represent mature structural vegetation and potential value to fauna.
- 17.9.4. Bat and bird assemblages within the Site were considered to be typical of the habitats present; intensively managed arable, urban edge land. No bat roosts or features suitable to support roosting bats were identified. Five species of bat were recorded using the Site for commuting and foraging. Due to their greater level of protection, the bat assemblage was considered to be of local level significance. Overall, the bird assemblage was considered less than local significance. The Site supports moderate numbers of foraging woodpigeon, though these are an adaptable species. Limited opportunities for badger, hedgehog and reptile were present on Site and no evidence of presence of these species within the Site was confirmed but they are recognised as being locally present in the surrounding area and therefore they were considered less than local significance to the Proposed Development.

Likely Significant Effects

- 17.9.5. The Proposed Development has the potential to remove or damage locally important habitat features, kill or disturb breeding birds, disrupt and reduce foraging resources for fauna and impose pollutants, light spill and other anthropomorphic impacts such as littering and trampling on the flora and fauna of the Site. These would have minor adverse effects at a Local level prior to mitigation. Where this has potential to impact on offsite habitats on the adjacent Toton Fields LNR, this would have a moderate adverse effect at a County level and a moderate adverse effect at a Local level on the Toton Sidings LWS. The creation of gardens and other green infrastructure through the Site would change the resources available to local fauna, offering greater diversity of microclimates than the current homogeneous arable crop.

Summary

- 17.9.6. The cumulative effects of Southfields Farm BESS, Toton North and Toton East schemes have also been considered. Given the nature of the effects and the mitigation proposed on all of the identified sites in isolation no in combination effects are identified. With the exception of Toton North and Toton East for which there is the potential for a cumulative minor adverse in combination effect on specialist farmland birds, which is not considered significant.

Mitigation and Enhancement

- 17.9.7. The majority of the footprint of the Proposed Development is designed to sit within the existing arable land, which is of significantly lower ecological value as a habitat and maximise retention of hedgerow, tree and woodland assets of higher value. Control measures to deliver overall beneficial effects on the local habitat network and faunal assemblages will be secured through design detail and the delivery of a robust CEMP and Landscape Ecological Management Plan (LEMP). Detailed drainage and landscaping will ensure introduction of additional habitat not currently present such as wetland and species rich grassland. The design involves the creation of green space to expand on the retained features and to buffer and complement offsite designated habitats within the LNR and LWS. Habitat creation will include meadow grassland, wetland and areas of structural woody planting. A range of new bat roost and bird nesting features will be secured and features such as hedgehog holes in fences to deliver further enhancements. These measures will result in an overall **Negligible – Minor Beneficial** impact upon the habitats and faunal assemblages in the long-term.

Conclusion

- 17.9.8. Through a combination of maximising retention of existing habitats of value and creation of green space, the provision of habitats including medium or greater distinctiveness habitat that will improve upon the existing network of habitats to support and improve connectivity for local fauna having a minor beneficial effect on many receptors. No significant effects on Ecology and Biodiversity are predicted as a result of the Proposed Development.

17.10. Cultural Heritage

- 17.10.1. This Chapter has considered potential effects upon the significance of archaeological and built heritage receptors. Specifically, it considers potential direct and indirect effects of the Proposed Development on the potential archaeological resource of the Site and relevant built heritage assets within its environs.

Baseline Conditions

- 17.10.2. While there are no records of Prehistoric to Romano-British date within the Site, the Geophysical Survey recorded a number of anomalies adjacent to the southern boundary that have been interpreted as forming a possible partially truncated Iron Age to Romano-British enclosure system. The potential for identification of remains of dating to the Prehistoric to Romano-British periods within this section of the Site is therefore considered to be moderate to high.
- 17.10.3. On the basis of spatial proximity, the theoretical potential for undiscovered remains dating to the Prehistoric to Romano-British periods within the wider Site is moderate to high. However, no further anomalies possibly dating to this period were recorded during the Geophysical Survey. Meanwhile, as is the case with the identified possible Prehistoric to Romano-British features, any additional features would to be anticipated to have been at least partially truncated by agricultural activities from the Medieval period onwards. Taken

together, the residual archaeological potential for undiscovered Prehistoric to Romano-British remains within the wider Site is considered to be low to moderate.

- 17.10.4. On the basis of available evidence, the potential for remains of Early Medieval date is considered to be low.
- 17.10.5. The Site appears to have comprised part of the agricultural hinterland associated with the settlements of Toton and Stapleford from the Medieval period onwards and thus has some potential for artefacts and deposits associated with agricultural activities from the Medieval to Modern periods.
- 17.10.6. While records are focused within the settlement centres, the surrounding landscape is characterised by various records of agricultural field systems, including ridge and furrow earthworks, former field boundaries and drainage systems. While no such records are recorded within the Site, the Geophysical Survey identified possible buried remains of ridge and furrow cultivation across several fields. The features have, however, been truncated by later field boundary reconfigurations and ploughing activities. The Geophysical Survey also recorded below-ground evidence of former field boundaries recorded on historic Ordnance Survey Maps.
- 17.10.7. Desk-based research has also identified potential evidence of post-Medieval mining activities within the southern section of the Site, which takes the form of five small, slightly raised features interpreted as possible capped shaft-heads. The HER notes that the features may also be of agricultural origin. Due to the presence of mature crops at the time of the site walkover, it was not possible to determine the presence of such remains, while the Geophysical Survey did not identify any possible below-ground remains associated with these features. However, as the land has subsequently been used for arable agricultural cultivation, including the use of modern farming machinery, it is likely that any such remains would have been disturbed or truncated.
- 17.10.8. There are no designated heritage assets located within the Site, while eleven Grade II Listed Buildings and one Conservation Area are located within the 1km study area.
- 17.10.9. By virtue of spatial and visual separation, including large-scale infrastructure associated with the intervening railway, intervisibility between the Proposed Development and all assets within the 1km study area would be wholly screened. Taken alongside the lack of any known historic or functional relationship with the Site, beyond forming part of the wider agricultural landscape to the east, it is considered that the Proposed Development would not alter any aspect of the setting of any of the assets that contribute towards their overall significance. No harm would therefore be anticipated to result via a change in setting. All designated heritage assets within the 1km study area have therefore been excluded from any detailed assessment within this ES Chapter.
- 17.10.10. No designated heritage assets beyond the 1km study area were identified as potentially sensitive to the Proposed Development.

Likely Significant Effects

- 17.10.11. Two potentially significant effects have been identified as resulting from the Proposed Development, if considered in isolation and unmitigated. This comprises the removal of buried remains associated with the possible Iron Age to Romano-British enclosure system and other previously undiscovered Pre-historic to Romano-British remains which have the potential to be of up to Moderate Value in EIA terms.

Summary

- 17.10.12. Consideration has also been given to the potential cumulative impacts with Southfield BESS scheme, Toton North and Toton East proposed schemes. There is no evidence to suggest that significant buried remains exist within these sites, with neither sites nor the Proposed Development anticipated to result in Significant Effects with respect to archaeology. While it is acknowledged that previously undiscovered buried remains may extend beyond the requisite application boundaries, it is reasonable to assume that, if planning permission were to be approved, appropriate mitigation measures would be carried out in line with national and local planning policy requirements, including evaluation and recording (as required). The individual effects of each scheme would not therefore result in additional impacts to the buried archaeological resource when considered in combination. With regard to direct and indirect effects during the construction and operational stages, no built heritage receptors have been identified as being sensitive to the Proposed Development. As such, no cumulative effects would be anticipated in combination with any of the identified cumulative developments.

Mitigation and Enhancement

- 17.10.13. Further archaeological investigations will be required to establish the presence, extent, character, significance and level of development impact of the potential buried archaeological resource within the Site and to formulate specific mitigation strategies, as appropriate.

Conclusion

- 17.10.14. This Chapter has identified **No Significant Effects in EIA terms** with respect to Cultural Heritage.

17.11. Transport and Access

- 17.11.1. This chapter assesses the effects of the Site with regards to traffic and transportation.

Baseline Conditions

- 17.11.2. The Site is located to the west of the B6003 Stapleford Lane. The Site is crossed by an existing public footpath and has links to existing foot/cycle routes to the north, south, east and west of the Site. The Site is accessible by bus and tram utilising nearby bus stops, and tram stops, including the Toton Lane tram based Park and Ride site.

Likely Significant Effects

- 17.11.3. During construction it is expected that all construction traffic would be routed via the B6003 and A52 and as such the addition of construction traffic along these routes would result in less than a 10% increase, which is considered a negligible impact. Once the Proposed Development is completed none of the links experience an impact greater than the 10% threshold. The impact on severance, driver delay, pedestrian amenity and delay, fear and intimidation and accidents and safety is therefore considered to be negligible and below the threshold which requires further assessment.
- 17.11.4. The cumulative impact of committed developments and wider strategic growth at Toton & Chetwynd has been taken into account within the model used in the assessment and no cumulative issues have been identified. All committed developments are contained within the model and as such, the cumulative assessment is inherent in the above conclusions.

Cumulative effects as a result of the construction and operation phases are negligible and not significant.

Mitigation and Enhancement

17.11.5. The Proposed Development will provide a set of mitigation measures which are:

- Provision of a new highway route and access junction to the B6003 Stapleford Lane;
- Diversion of, and improvements to, an existing PROW route that runs along the northern and western boundaries of the Site; and
- Travel Plan.

Conclusion

17.11.6. This chapter has identified **no significant effects** in EIA terms with respect to Transport and Access/

17.12. Air Quality

17.12.1. This assessment has considered the impacts of the Proposed Development on local air quality in terms of dust and particulate matter emissions during construction and emissions from road traffic generated by the operational phase.

Baseline Conditions

17.12.2. The Site is not located within an AQMA and is approximately 3.4km southwest from the nearest AQMA, named 'AQMA No.2', which is located in the neighbouring Nottingham City Council's (NCC's) administrative area

17.12.3. Monitored concentrations in the vicinity of the Proposed Development show pollutant concentrations have been below the AQOs in 2023, the most recently available year of monitoring data.

Likely Significant Effects

Construction Phase

17.12.4. It has been predicted that the construction traffic flows will fall below the EPUK/IAQM screening criteria. It is to note that all construction phase traffic movements are to be controlled via the Construction Traffic Management Plan (CTMP) for the Proposed Development. As such, the residual effect for construction traffic emissions can be considered **Negligible** and therefore, **Not Significant**.

17.12.5. A qualitative assessment of the potential dust soiling and PM₁₀ effects to human health and ecological receptors as a result of the construction activities during the construction phase has been carried out. The unmitigated risk was determined to be high risk, in line with the IAQM guidance. With the implementation of suitable mitigation measures included within the CEMP, to be secured by condition, and good site practice, the impacts from construction dust can be controlled and the residual effect for construction activities can be considered **Negligible** and therefore, **Not Significant**.

Summary

Operational Phase

- 17.12.6. The assessment has also demonstrated that pollutant concentrations will be well below the objectives at all existing receptors in 2030, which serves as a worst-case assumption of the Proposed Development opening year in 2041. The results from the detailed assessment of operational transport emissions (the percentage change in pollutant concentrations predicted at existing sensitive human receptors in the DS and IC-DS scenarios compared to the DM scenario), show that the impact on all existing sensitive receptors is anticipated to be **Negligible** for all pollutants, and therefore **Not Significant**.

Cumulative and In-Combination Effects

- 17.12.7. There are not expected to be any significant cumulative and in combination effects from the construction or operational phases when considering the cumulative schemes of 'Land at Toton East', 'Land at Toton North' (operational and construction phase) and the Southfields Farm BESS facility (construction phase only; the operational phase hasn't been assessed due to the nature of the Southfields Farm BESS scheme).

Mitigation and Enhancement

- 17.12.8. Construction phase emissions to air will be controlled by a CEMP and CTMP, to be secured by condition.

Conclusion

- 17.12.9. The overall construction and operational air quality effects of the Proposed Development are judged to be '**Not Significant**'. It is concluded that the proposed package of mitigation will ensure that the Proposed Development is acceptable and that there will be no adverse significant effects to air quality.

17.13. Noise and Vibration

- 17.13.1. An assessment of the likely significant noise and vibration effects upon sensitive receptors within and in the vicinity of the Site, during the construction and operation phase has been undertaken. An acoustic survey has been carried out to quantify the existing baseline sound climate. Traffic data has been used to predict the change in noise levels from the existing road network on existing receptors.

Baseline Conditions

- 17.13.2. The prevalent noise source on the Site is road traffic on the nearby roads with localised noise along the western Site boundary from train pass-bys, trains idling, and occasional train horns associated with the railway sidings to the west. There was no audible noise from either the park and ride, nor the electrical sub-station, nor the Water Treatment Works at any time during the attended portions of the Site survey.

Likely Significant Effects

- 17.13.3. Noise and vibration generated during the construction phase of the Proposed Development at the nearest sensitive receptors identified above in the baseline conditions have been considered based upon a range of construction activities deemed possible to occur at the Site. Although the noise from the majority of activities are calculated to exceed the criteria set in accordance with BS 5228-1, these activities are likely to only occur for short periods and as such, this is considered to equate to a Medium magnitude of impact on high sensitivity

receptors, corresponding with a Moderate Adverse temporary effect when activities are taking place in close proximity to these receptors. For the remainder of the time when activities occur at greater distances from the high sensitive receptors, lower levels would be anticipated. Vibration levels at the closest noise-sensitive receptors are predicted to equate to a Medium magnitude of impact on high sensitivity receptors which corresponds with a Moderate Adverse temporary Effect. Where there is no piling undertaken at the Site, there are no other sources of vibration anticipated, corresponding within a **Negligible** effect, which is **not significant**.

- 17.13.4. The increase in traffic at the nearest sensitive receptors identified above in the baseline conditions has been considered during both the construction and operational phases based upon predicted traffic flow levels as provided by the Applicant and by their Transport Consultant. When looking at traffic increases cumulatively, and allowing for general growth, increases in road traffic noise levels are, at worst, a negligible magnitude of impact on high sensitivity receptors, corresponding to a **negligible** effect, which is **not significant**.
- 17.13.5. With the implementation of appropriate mitigation as described in the following section such as adequately selected glazing installed and a suitable ventilation strategy internal noise and external noise levels will comply with the requirements of the relevant British Standard and would result in a **minor to moderate adverse effect (not significant)**.
- 17.13.6. The Proposed Development has been assessed cumulatively with the Southfields Farm BESS scheme, Toton North and Toton East. The assessment of construction and operational phase road traffic noise concluded cumulative effects with the identified schemes would be **negligible** and **not significant**. Site suitability in terms of noise and vibration when considered cumulatively would remain a **minor to moderate adverse** effect which is **not considered significant**.

Mitigation and Residual Effects

- 17.13.7. Prior to construction, a CEMP will be implemented on the Site which will detail the implementation of measures therein to address construction effects relating to noise and vibration, on the environment, existing surrounding communities, businesses, and residents of the area.
- 17.13.8. In order to reduce the level of noise and vibration on the nearest sensitive dwellings during the construction phase of the Proposed Development, a series of measures are to be implemented which will form part of the CEMP (to be secured via condition) which will include measures such as restricted working hours, use of fencing or hording, use of electrically powered plant rather than diesel, and shutting down machines when not in use. These measures are to be provided to reduce the adverse effects as far as practical.
- 17.13.9. Façade acoustic performances can be designed to comply with the relevant British Standard desirable internal noise levels through standard products such as standard thermal double glazed windows which will be specified at the more detailed stages. This would correspond to, at a worst, a low magnitude of impact. Noise levels in external areas are expected to have a **negligible impact**. There is potential for external areas to be acoustically positive environments that facilitate wellbeing, particularly if suitable greenery is incorporated into the design. Therefore, Site suitability is, at worst, a low magnitude of impact on high sensitivity receptors, corresponding to a permanent **Minor to Moderate adverse effect (not significant)**. The Site suitability assessment has been carried out based on the future sound climate, allowing for traffic increases associated with other developments. Therefore, cumulative considerations are already accounted for to an appropriate extent.

Summary

Conclusion

- 17.14. The Site is considered suitable for development and is not considered to result in significant effects during the operation phase in relation to noise and vibration. Adverse effects could occur in relation to the construction phase at very close receptors to the Site, however these effects would be temporary and transient in nature and highly dependent on the construction activities and location of these at the time. A CEMP will reduce these effects as far as possible.

17.15. Flood Risk and Drainage

- 17.15.1. This chapter considers the effects of the Proposed Development on water resources, flood risk and drainage during both the construction and operation phases.
- 17.15.2. This chapter assesses the baseline conditions of the Site as a basis for the quality and quantity of existing aquatic features, and then considers the impact of the Proposed Development on these features and proposes sufficient mitigation measures to reduce the overall impact.
- 17.15.3. The potential for flood risk is also examined in accordance with national guidance and the requirements of the Environment Agency (EA). More technical aspects of the drainage strategy for the Proposed Development are covered in the FRA included as **Appendix 12.1** to this ES.

Baseline Conditions

- 17.15.4. The Site is currently agricultural greenfield, with a field ditch present across the Site. This field ditch follows the natural topography of the Site and conveys surface water flows westwards to a Severn Trent Water sewer, which culverts beneath the Toton Sidings to the west.
- 17.15.5. The topography of the Site falls generally towards Toton Sidings, which is located to the west of the site. The highest point of the Site is located along the eastern boundary at 64.12mAOD and falls to 40.58mAOD.
- 17.15.6. From BGS Borehole logs, there is shown to be no groundwater within 3m of the ground surface level. The bedrock of the Site is also stated to contain "high productivity aquifers."
- 17.15.7. The Site is not within a Source Protection Zone, which are designated for the purposes of safeguarding drinking water quality.
- 17.15.8. There are no recorded instances of sewer, fluvial, pluvial or groundwater flooding on Site. There are also no records of pollution incidents present on the Site.
- 17.15.9. There are no public foul sewers located within the Site boundary.

Likely Significant Effects

- 17.15.10. During construction, without mitigation, onsite flood risk could be increased. There would be an increase in vehicles present which could lead to soil compaction and thus an increase in runoff due to a decrease in infiltration potential of the ground. This would be anticipated to result in a **major** (for the culverted watercourse) or **moderate** (for the field ditch) adverse effect **prior to mitigation**, which is **significant**.
- 17.15.11. During construction, onsite water quality could be negatively impacted. The increase of vehicular use and abundance of pollutant materials used in construction may result in an

increase of pollution reaching the on-site field ditch and culverted watercourses, subsequently altering the water quality. **Prior to mitigation**, this would be anticipated to result in a **major** adverse effect on the culverted watercourse, and a **moderate** adverse effect on the field drain. Both adverse effects are of a level that is considered **significant**.

- 17.15.12. During construction, pluvial flow routes could be negatively impacted, therefore creating a higher level of pluvial flooding risk. The increased number of vehicles on site could compact the ground and cause a decrease in infiltration potential, thus increasing the level of pluvial flooding. Additionally, regrading of the Site could cause the existing flow routes to change, which could result in adjacent land flooding. This would be anticipated to result in a **moderate** adverse effect **prior to mitigation**, which is **significant**.
- 17.15.13. During construction, existing foul water sewers could be negatively impacted due to the temporary local increase in foul flows within the existing system. Exceeding the capacity of the existing sewer systems with additional foul flows could cause sewer flooding in connected properties. The presence of construction workers and welfare facilities would generate additional foul flows on top of what is already present. This would be anticipated to result in a **major** adverse effect prior to mitigation, which is **significant**.
- 17.15.14. During operation, the onsite field ditch could be subjected to an increased flood risk as a result of the Proposed Development. Developing the Site would increase the impervious areas, which prior to mitigation would likely overwhelm the existing ditch as they would not have sufficient capacity to attenuate the additional runoff. Additionally, **prior to mitigation**, silt and sediment build-up could occur at a higher rate than current, which if left unmoderated would reduce the capacity of the ditch and increase the risk of flooding across the Site. This would be anticipated to result in a **moderate** adverse effect **prior to mitigation**, which is **significant**.
- 17.15.15. During operation, the onsite field ditch could also be subjected to an increase of pollutants present. The increase of impervious surfaces and the usage of road vehicles would increase the number of pollutants present on-site, which would be discharged into the field ditch with the surface water runoff. **Prior to mitigation**, this would be anticipated to result in a **minor** adverse effect, which is **not significant**.
- 17.15.16. During operation, the culverted watercourse adjacent the Site could be subjected to an increased flood risk. The additional runoff generated from the Site would be discharged into this sewer which may not have sufficient capacity to convey the higher amounts of runoff. This would be anticipated to result in a **major** adverse effect **prior to mitigation**, which is **significant**.
- 17.15.17. Similarly, during operation, this culverted watercourse would be negatively impacted by the higher rates of pollutants present in the water discharged into them from the Site. The culverted watercourse outfalls to another culverted watercourse, which potentially discharges into the River Erewash. This would be anticipated to result in a **major** adverse effect **prior to mitigation**, which is **significant**.
- 17.15.18. During operation, pluvial flow routes could be affected as the existing Site conditions would likely change as a result of the Proposed Development. If existing areas at risk of pluvial flooding are surfaced with impervious materials, it is possible that flooding could occur elsewhere outside of the Site boundary. The natural Site topography is also likely to be regraded with the Proposed Development, which would further change the natural drainage patterns of the Site. This would be anticipated to result in a **moderate** adverse effect **prior to mitigation**, which is **significant**.

Summary

- 17.15.19. During operation, existing foul water sewers could be negatively impacted due to the increased flows within the existing system. Exceeding sewer capacity with additional foul flows could cause sewer flooding in connected properties. This would be anticipated to result in a **major** adverse effect **prior to mitigation**, which is **significant**.
- 17.15.20. The cumulative assessment has considered the Southfields Farm BESS scheme, Toton North and Toton East. In regard to Toton North and Toton East similar mitigation measures are proposed for these schemes result in a negligible impact on the existing surface water systems, therefore no cumulative effects have been identified. With regard to Southfield BESS the proposed drainage would not discharge any surface water runoff into the surrounding drainage system. Therefore, would not provide a cumulative impact on the surrounding water receptors with the Proposed Development.

Mitigation and Enhancement

- 17.15.21. A suitable CEMP/Construction Surface Water Management Plan (CSWMP) would be prepared to document the environmental management procedures during construction and can be secured through an appropriately worded condition. The CEMP/CSWMP would ensure that any impact from construction would be minimized to a **low or negligible level (not significant)**, as any spillages or similar that would affect the local receptors would be contained to a local level and have a minimal impact on widespread conditions.
- 17.15.22. Pollution mitigation can be achieved by including specific features in the drainage strategy that can remove pollutants and sediment from runoff, which in turn would protect the water quality of the field ditch and culverted watercourse, resulting in either **negligible or minor beneficial effects (not significant)**.
- 17.15.23. SuDS are proposed to be sized to be able to hold runoff sufficiently during large rainfall events, resulting in **negligible effects (not significant)**. These features would discharge attenuated water at a rate that is agreeable with the Lead Local Flood Authority (LLFA), or the EA.
- 17.15.24. The topography of the Proposed Development would be regraded to convey flows naturally towards the drainage attenuation basin, and features such as gullies would be positioned to ensure surface water runoff is retained within the Site and does not pool in any location, resulting in **minor beneficial effects (not significant)**.
- 17.15.25. Seven Trent Water (STW) have confirmed that would look to upgrade the existing public foul water sewers to accommodate the Proposed Development. The Proposed Development would also be constructed with a sufficient foul water sewer system in order to provide the required capacity from flows generated by the Proposed Development, resulting in **negligible effects (not significant)**.

Conclusion

- 17.15.26. Following the implementation of suitable mitigation measures, the Proposed Development would **not result in any significant effects** on water receptors and is anticipated to provide either **negligible or minor beneficial effects (not significant)**.
- 17.15.27. Aspects of the Proposed Development would provide betterment in comparison to the existing Site conditions.

17.16. Contaminated Land and Ground Conditions

17.16.1. The scope of the works for the Contaminated Land and Ground Conditions chapter considers the following:

- Establishing the baseline conditions at the Site;
- Identification of potential sources of contamination within the ground and groundwater at the Site and potential migration pathways beneath the Site to develop a Conceptual Site Model (CSM) with respect to the Proposed Development;
- Identification of potential ground stability issues which may affect the Proposed Development; and
- Assessment of the likely significant effects on sensitive receptors during the construction and operation phases of the development.

17.16.2. This assessment has been carried out taking account of contaminated land legislation and guidance following a risk-based approach; taking account of the CSM developed within the Phase I Desk Study Report which considers plausible source (contaminant)–pathway–receptor linkages. The creation of a CSM is an iterative process and the CSM should be revised (as appropriate) following completion of a comprehensive programme of Phase II Exploratory Investigation works.

Baseline Conditions

17.16.3. The following summary of the baseline conditions at the Site is based on a site walkover and review of published geological mapping, historical mapping and site-specific Landmark Envirocheck Report.

17.16.4. The Site currently comprises a large portion of an agricultural field. A former structure was present in the northeastern area of the Site; this has been removed; however, the hard standing associated with the structure remains on the Site. A drainage ditch passes through the northwestern area of the site. Two electricity pylons and a series of wooden electricity poles are present on site; these are connected by overhead cables which cross the Site. A public footpath passes through the Site.

17.16.5. The reviewed geological information does not indicate the presence of superficial deposits beneath the Site; however, deposits of Alluvium are indicated to the west of the Site, these may encroach the western area of the Site. The geological information indicates the majority of the Site to be underlain by bedrock comprising the Tarporley Siltstone Formation (Mercia Mudstone Group) and the Radcliffe Formation (also Mercia Mudstone Group) beneath the southwestern tip of the Site. The bedrock beneath the Site is classified as Secondary A or B Aquifer.

17.16.6. No man-made deposits are indicated to be present at the Site, however, an area of Made Ground is indicated to the immediate west and northwest of the Site; this incorporates an area of Infilled Land associated with a former section of river channel. Potential sources of contamination may be present at the Site associated with any localised Made Ground; the former on-Site building and the agricultural use of the Site. In addition, off-site potential sources of contamination which may affect the Site have been identified; these include the electricity sub-station to the sites northwest and the railway sidings to the west of the Site.

Summary

- 17.16.7. Potential sources of potentially hazardous ground gases (i.e. methane and carbon dioxide) have been identified within influencing distance of the Site, associated with the Made Ground and Infilled Land to the west of the Site.
- 17.16.8. Potential sensitive receptors have been identified at the Site, these comprise human health (including construction personnel, future residents, visitors and occupants of neighbouring properties), Controlled Waters (i.e. surface watercourses and the underlying aquifer) and proposed structures.
- 17.16.9. Contamination is only considered to be a potential risk to receptors if there is a plausible Source–Pathway–Receptor linkage. In developing the CSM, consideration has been given to potential pathways including direct contact with, or ingestion of, contaminated soils; inhalation of dust, vapours and hazardous ground gases, lateral / vertical migration or leaching of soil contamination into Controlled Waters. Potential risks also exist from aggressive ground or stability issues.

Likely Significant Effects

- 17.16.10. During the construction phase, significant effects to human health (i.e. construction personnel and occupants of neighbouring properties) include direct contact and ingestion of contamination within soils together with inhalation of dust / vapours / particulates and hazardous ground gases.
- 17.16.11. Construction phase effects to Controlled Waters include the migration of any hydrocarbons from accidental spillage or leakage from plant machinery, into groundwater or surface waters.
- 17.16.12. During the operation phase, significant effects to human health (i.e. residents and visitors) include direct contact, ingestion of residual contamination within the soils together with inhalation of dust / vapours / particulates and hazardous ground ground gases.
- 17.16.13. Significant effects to the proposed structures include risks to buried concrete from aggressive ground conditions. There is also the potential for permeation of residual contamination within the ground into water supply pipes and the ingress of hazardous ground gases into the structures.
- 17.16.14. With regards to cumulative impacts, implementation of necessary mitigation measures should also be carried out at each site to reflect conditions on that site; this is anticipated to be a requirement of the Planning Conditions for each development. Therefore, the interproject effects with regards to ground conditions and contamination are considered to be negligible, following the implementation of any required mitigation measures.

Mitigation and Enhancement

- 17.16.15. A comprehensive programme of intrusive works should be carried out at the Site to establish the ground conditions and the presence and extent of any contamination. The findings of the intrusive works should be incorporated into a Phase II Exploratory Investigation Report which should include a generic qualitative risk assessment to quantify the risks of any on-site contamination to human health and Controlled Waters, taking into account the proposals. The scope of the intrusive works should also include a programme of ground gas monitoring to establish the ground gas regime at the Site. Recommendations for any necessary mitigation / remediation measures should also be provided, together with any requirements for supplementary exploratory works and validation of mitigation / remediation measures.

17.16.16. The Phase II Exploratory Investigation should also include a detailed geotechnical assessment of the ground to inform foundation and infrastructure designs regarding any necessary measures to mitigate against ground stability issues, aggressive ground conditions and ground gases (where applicable).

17.16.17. Prior to commencement of construction works, an Unexploded Ordnance (UXO) Desk Study should be obtained from a specialist to ascertain any risks at the Site. Any recommended mitigation should be appropriately implemented.

Conclusion

17.16.18. The residual effects with respect to ground conditions and contamination are considered **negligible** as a result of the Proposed Development, following implementation of any required mitigation measures.

17.17. Soils and Agricultural Land

17.17.1. This Chapter assesses the potential impacts of the Proposed Development to two sensitive receptors: soil resources and BMV agricultural land.

Baseline Conditions

17.17.2. The Site is made up of a mixture of permeable loams and slowly permeable soils. They give BMV land of Grade 2 (0.8 ha), Subgrade 3a (0.9 ha) and Subgrade 3b (16.8 ha) quality. The remainder of the Site comprises non-agricultural land.

Likely Significant Effects

17.17.3. The Proposed Development has the potential to cause the loss of all topsoil within the development area and compaction of the subsoil within landscaping areas of the Site – a potential **major adverse** impact prior to the implementation of mitigation measures.

17.17.4. The Proposed Development is estimated to result in the negligible magnitude loss of BMV Grade 2 (0.8 ha) and Subgrade 3a (0.9 ha) agricultural land – overall a permanent **minor adverse** impact that is not significant.

17.17.5. Soil and agricultural land loss from an individual site should be considered on a site-by-site basis (against the benefits of the scheme being assessed) and therefore it is not considered there are any relevant cumulative effects to the Proposed Development.

Mitigation and Enhancement

17.17.6. The soil resources can be protected through adherence to a Site-specific Soil Management Plan (SMP) that can form part of a wider CEMP (secured via planning condition). This will reduce the potential effect of the Proposed Development to **negligible**. There is no possible mitigation for the permanent loss of agricultural land, however given the limited amount that will be lost is considered **minor adverse**.

Conclusion

17.17.7. The Proposed Development will have a **negligible** effect to soil resources and a **minor adverse** effect to agricultural land quality. There are no significant effects of the Proposed Development

Summary

17.18. Climate Change

17.18.1. Over recent decades, climate change has become a more important environmental, social and economic policy concern.

17.18.2. This chapter assesses the effects that may arise as a result of climate change on the Proposed Development and the effects of GHG emissions associated with the Proposed Development in accordance with the EIA Regulations. This chapter also considers the cumulative effects of the Proposed Development.

Baseline Conditions

17.18.3. For the Climate Change Resilience (CCR) Assessment, a baseline survey has been undertaken to include the regional climatic conditions for the Midlands, covering temperature, precipitation, sunshine and snowfall. Local climatic conditions and historical weather data were also considered, along with recent weather data.

17.18.4. For the GHG Emissions Assessment, local, regional and national emissions have been compared for relevant sectors, including vehicular emissions from road.

17.18.5. A Future Baseline / 'Do Nothing' Scenario was considered whereby for the CCR Assessment, future climatic conditions for the Site location were found considering a worse case 4°C rise in global average temperatures. For the GHG emissions assessment, data from the Transport Consultant was used to predict the future baseline for vehicular GHG emissions.

Likely Significant Effects

Resilience of the Proposed Development to Climate Change

Construction

17.18.6. **No significant effects** due to climate change are expected during the construction phase. Furthermore, mitigation measures would be incorporated into a detailed CEMPs for each phase of the Proposed Development, which would greatly reduce potential impacts.

Operation

17.18.7. The Resilience Assessment determined that there would be **no significant effects** during the operational phase of the Proposed Development. Additional mitigation measures have been recommended to bolster resilience.

Influence of the Proposed Development on Climate Change

17.18.8. Although it is accepted that all GHG emissions contribute to climate change, IEMA has set out how to determine whether GHG emissions associated with individual developments are significant in EIA terms.

Construction

17.18.9. An indicative quantitative assessment of embodied carbon was undertaken for the construction phase. The total amount of GHG emissions anticipated to be emitted during the construction phase is 21.23 ktCO₂e, which is considered to be a **permanent, moderate adverse** effect. However, the implementation of mitigation measures such as selective material selection and a more stringent embodied carbon target are expected to reduce this

to a **permanent, minor adverse** effect, which is **not considered to be significant** in EIA terms. This would align with the LETI Design 2030 Target and would also not inhibit the UK Government's trajectory to reach net zero by 2050.

Operation

- 17.18.10. Quantitative assessment of vehicular emissions and energy production were undertaken for the operational phase. The total yearly amount of GHG emissions anticipated to be emitted during the operation phase is 1.29 ktCO₂e, which is considered to be a **permanent, moderate adverse** effect. However, the implementation of mitigation measures such as: the provision of sustainable transport measures within the Travel Plan; and Solar Photovoltaic Collectors and ASHPs is expected to reduce this to a **permanent, minor adverse** effect, which is **not considered to be significant** in EIA terms and would not cause the UK Government to fail in reaching their net zero trajectory by 2050.

Cumulative Assessment

- 17.18.11. No significant cumulative effects are anticipated as it is expected that any committed developments which gain planning approval would need to demonstrate that national and local policies related to flood risk and drainage, including accounting for climate change, are met prior to planning permission being granted.

Mitigation and Enhancement

- 17.18.12. Mitigation measures have been embedded into the Proposed Development, and additional measures have been proposed to increase resilience to climate change and reduce the influence on climate change. Within the design, a large number of trees and hedgerows will be retained, helping with flood alleviation and the drainage basin has been designed to account for climate change. Sustainable transport options such as walking and cycling have also been incorporated to reduce GHG emissions. The Proposed Development's energy demand has also been reduced by a 'fabric first' approach.
- 17.18.13. Additional mitigations including a CEMP, CTMP, selective procurement of materials to reduce embodied carbon and use of the LETI Design 2030 Target for embodied carbon have been proposed for construction, with a SWMP, Travel Plan, Operational Waste Management Plan and the implementation of low carbon technologies proposed for operation.
- 17.18.14. The 'fabric first' approach to the design of dwellings will provide a 81.60% carbon savings under the Building Regulations, which represents a 74.18% energy demand reduction.

Conclusion

- 17.18.15. In the CCR Assessment, potential effects of climate change during construction have not been considered due to the construction phase lasting just 7 years, however mitigation measures to bolster resilience during the construction phase have been provided. When considering the embedded mitigation measures described in this chapter and effects explored in other chapters, **no significant effects** are expected to occur on any on the identified sensitive receptors during the operational phase.

17.19. Lighting

- 17.19.1. This assessment has been completed to assess the potential effects of the artificial lighting for the Proposed Development on the identified receptors.

Summary

Baseline Conditions

- 17.19.2. The area surrounding the Site is a broad mixture of commercial uses and suburban settlement interspersed with agricultural land.
- 17.19.3. There is a large amount of existing artificial lighting in the area for commercial, residential and highway network purposes. This existing lighting is visible across the landscape and is affecting the district brightness of the surrounding area.
- 17.19.4. Due to the above, the Site and the surrounding area has been assessed as an E3 environmental zone
- 17.19.5. Artificial lighting is prominent in the landscape. However, the direct effects of this lighting are concentrated close to the lit areas.
- 17.19.6. Although there is a large presence of existing lighting surrounding the Site, there are large areas of relative darkness also within the Site.
- 17.19.7. This indicates that although several of the receptors to lighting identified in this chapter have direct views of existing lighting, they will not be experiencing significant existing direct effects of lighting. There are likely to be minor direct effects on these receptors by the existing lighting directly adjacent to them, but the further the distance from the existing lighting, the lower the lighting effect will be.

Likely Significant Effects

- 17.19.8. The Proposed Development is unlikely to result in significant effect on the identified receptors, both in isolation and cumulative with the relevant identified sites.
- 17.19.9. It should be noted that there may be isolated instances where the illuminance levels on the retained hedge rows exceed 0.4 Lux. This will only be where they are directly adjacent to roadways and the vast majority of these areas will be maintained in darkness.
- 17.19.10. The potential for the environmental zone to change as a result from the Proposed Development and the cumulative sites has been assessed.
- 17.19.11. The area surrounding the Site is already a suburban location with sky quality typically of such a location, and the introduction of the Proposed Development and the cumulative sites will not change this.
- 17.19.12. As such, the environmental zone will remain E3.
- 17.19.13. Consideration has also been given to potential cumulative effects alongside Toton North and Toton East, with reference to direct effects (light spill and light intrusion) and indirect effects (upward light and sky glow) on the identified sensitive receptors. It is accepted that there will be an increase in the volume of lighting within and surrounding the Application Site due to the Proposed Development and the cumulative sites. These are not likely to cause significant effects of lighting (or statutory nuisance) onto the identified receptors. This increase in lighting is also not going to result in a change in the environmental zone of the area which will remain E3. No significant cumulative effects are anticipated in combination with either of the Toton North or Toton East schemes.

Mitigation and Enhancement

- 17.19.14. Both embedded mitigation and additional mitigation measures are proposed. All of which can be secured through planning conditions. These include measures such as no upward facing light, with area to be lit using the lowest practicable lighting levels as defined in the relevant British Standard.

Conclusion

- 17.19.15. In conclusion, the Proposed Development will result in an increase in the visibility of lighting within the Application Site but there will not be significant effects of lighting on the identified receptors.
- 17.19.16. The identified receptors will not experience any statutory nuisance from the proposed lighting.
- 17.19.17. There will also be no change in the environmental zone of the area once the Proposed Development is in operation.

17.20. Cumulative and In-Combination Effects

- 17.20.1. The ES responds to the requirement in the EIA Regulations to assess the cumulative effects of the Proposed Development. Within EIA, cumulative effects are generally considered to arise from inter-project cumulative effects (the combined effects of development schemes which may, on an individual basis be insignificant, but cumulatively, have significant effects); and intra-project cumulative effects (the combined effect of individual effects on a single receptor where deemed potentially significant).
- 17.20.2. Each technical assessment has considered inter-project cumulative effects for each of the identified cumulative schemes set out in Chapter 2: Assessment Scope & Methodology. In summary the other schemes considered within cumulative assessment are:
- Southfields Farm, Common Lane, Bramcote: 24/00066/FUL Construction and operation of two adjacent Battery Energy Storage Systems (BESS) facilities
 - Land at Toton North: The construction of up to 880 dwellings, a link road (means of access only), local centre, country park, education provision (forest school) and associated infrastructure
 - Land at Toton East: The construction of up to 155 dwellings with associated open space and infrastructure
- 17.20.3. Reference has been made to any cumulative effects with these other schemes within each separate summary section above.
- 17.20.4. The second category, intra-project cumulative effects, is concerned with the combination of some or all of the effects predicted by the EIA affecting a particular receptor which may collectively cause a change of greater significance than may be the case individually. These are referred to as synergistic effects and have been assessed by professional opinion. An example of a synergistic effect could be construction related visual intrusion, dust, noise and vibration combining to generate a significant adverse effect affecting a sensitive receptor.

Summary

- 17.20.5. The EIA has taken into consideration synergistic effects on identified receptors as a consequence of collective actions (refer to **Chapters 5-16**). Constraints and identified sensitive receptors have been considered in detail throughout the proposed development's design evolution, including the consideration of proposed site preparation and construction techniques. The aim of this process has been to address the potential for significant adverse effects and ultimately to address significant residual effects in isolation or in-combination (i.e. synergistic effects). The measures identified to address the potential for significant effects have, for the most part, been designed-in to the Proposed Development and can be subject to further detailed design and/ planning conditions. Any measure that is not specifically designed-in feature of the Proposed Development is described as an additional mitigation measure in the relevant technical chapter and set out below in **Table 17.1**. These are also of relevance when considering synergistic effects.
- 17.20.6. On review of the identified receptors set out within each technical discipline, it is not considered there would be any additional level of effect than those effects set out individually.

17.21. Conclusions

- 17.21.1. This Environmental Statement (ES) has been submitted as part of an outline planning application seeking to obtain outline planning permission for a residential development of up to 420 residential dwellings and associated open space and infrastructure on the Site ('the Proposed Development').
- 17.22. The aim of the ES has been to assess the 'likely significant effects' of the Proposed Development in accordance with *The Town and Country Planning Environmental Impact Assessment Regulations 2017*. Detailed assessments with respect to pertinent environmental topics have therefore been undertaken in accordance with definitive standards and legislation where available. The ES forms part of the planning application documentation submitted to BBC and will inform their decision-making process.
- 17.23. As set out in this ES, the design process has been informed by the detailed environmental assessments so to ensure that key design measures are integral to the Proposed Development (and its construction), so to limit any significant adverse effects. As a result of this process, there is a relatively small number of potential residual adverse significant effects, particularly when considering the scale of the Proposed Development and its location. These are limited to visual effects from within or adjoining the Site, which is often the case with any development on greenfield land. These would be localised and principally focused within and adjoining the Site upon receptors of high sensitivity. Significant beneficial effects are identified for socio-economic effects in relation to increased housing provision, and economic benefits during both the construction and operation of the Proposed Development. All other effects with the inclusion of relevant mitigation identified within the ES are considered not significant as a result of the Proposed Development.
- 17.23.1. In conclusion, the ES demonstrates that the design of the Proposed Development and its construction has taken into account the potential environmental effects and where necessary mitigation measures form an integral part of the Proposed Development so to ensure that the environment is suitably protected and any impacts from the Proposed Development are minimised

Summary

17.24. Summary of Mitigation Measures

17.24.1. The below table outlines the mitigation and enhancement measures identified within each of the environmental disciplines included within this ES, many of which are an integral part of the design of the Proposed Development.

Table 17.1 Summary of mitigation and enhancement measures

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
Socioeconomics and Health	Potential financial contribution to secondary school provision where considered necessary		X	
Landscape and Visual Amenity	Appropriate spread and height of the development envelope within the Site as demonstrated on the Parameter Plan.	X		X
	Retention of existing structural vegetation including hedgerows and trees along the Site boundaries wherever possible as demonstrated on the Parameter Plan.	X		X
	Introduction of a new areas of green infrastructure (including new structural planting) as demonstrated on the Parameter Plan.	X		X
	Additional structural planting where possible including the introduction of individual tree planting, native shrub areas and ecological grassland areas as demonstrated on the Illustrative Landscape Masterplan.	X		X
	Areas of drainage attenuation areas set within open space.	X		X
	High quality landscape scheme and detailed design.			X
	Appropriate maintenance and management for existing, retained, and proposed green infrastructure to secure high quality environmental framework in the long term.		X	X
	Code of Construction Practice (CoCP) included within a Construction Environmental Management Plan (CEMP)			X

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
Ecology and Biodiversity	GI layout of site including buffering of retained habitats and offsite designated sites and new areas of semi-natural habitat suitable for range of wildlife.	X		
	Provision of CEMP document and associated best practice.			X
	Provision of Biodiversity Protection Zones (BPZ) around ecologically sensitive features (Detail provided within the CEMP).			X
	Removal of woody vegetation outside bird nesting season			X
	Provision of bat and bird boxes within new scheme			X
	Provision of LEMP document and associated best practice and management.			X
	Good practice lighting scheme to prevent light spill (for bats, and range of fauna)			X
Cultural Heritage	All works carried out during the construction phase would be undertaken in accordance with Best Practice Means. A full explanation of measures to control direct and indirect effects will also be incorporated into a Construction Environmental Management Plan (CEMP) to be secured via an appropriate planning condition and/or Section 106 Agreement.		X	
	Retention of an area of undeveloped green open space to the western section of the Site.	X		
	The existing field pattern (with this incorporating aspects of the historic field pattern) has been incorporated into the Parameters Plan, thus helping to preserve appreciation of the historic landscape form.	X		
	Retention of field boundary hedgerows and, where present, tree planting to the site boundaries.	X		

Summary

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
	Archaeological evaluation and mitigation to confirm the presence and significance of buried archaeological remains within the Site.			X
Transport and Access	Provision of new highway route and access junction to the B6003	X		X
	Construction Environmental Management Plan (CEMP)	X		X
	Construction Traffic Management Plan (CTMP)	X		X
	Diversion of public footpath and improvements to route			X
	Travel Plan		X	
	Provision of new highway route and access junction to the B6003	X		X
Air Quality	Dust measures within a Dust Management Plan (potentially part of CEMP, to be secured by condition)	X		X
	Travel Plan		X	X
Noise and Vibration	Construction phase Construction Noise will be controlled through a suitably worded CEMP			X
Flood Risk and Drainage	Installation of sufficiently sized attenuation features	X		
	Limiting discharge rates to public sewers and watercourses	X		
	Clearing of existing field ditch	X		
	Pollution mitigation features utilised in drainage strategy	X		
	Strategically placed drainage gullies to prevent pluvial flooding	X		
	Implementation of a foul sewer system that has sufficient capacity to support the Proposed Development	X		

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
	CEMP			X
	Construction Surface Water Management Plan			X
Contaminated Land and Ground Conditions	Carry out detailed Phase II Exploratory Investigation to establish the ground conditions inclusive of a contamination assessment of the soils and to refine the CSM.			X
	The Phase II Exploratory Investigation should include a ground gas assessment. Where appropriate, ground gas protection measures should be designed and installed within the proposed dwellings.			X
	Remediation / Mitigation Strategy and subsequent Validation Works to demonstrate the Strategy has been appropriately implemented.			X
	Management of all environmental impacts throughout construction phase by provision of a CEMP.			X
	Soil Management Strategy / Material Management Plan (MMP)			X
	Site Waste Management Plan (SWMP)			X
Soil and Agricultural Land	CEMP / Soil Management Plan (SMP)			X
Climate Change	Substructure / Infrastructure / Built Structures: - Stormwater management system, including water tanks to store water for drought events, to reduce risk of flooding and subsidence; - Vegetation planting to improve slope stability; - Appropriate storage of construction materials when not in use to prevent drying out; - Good design and earthwork failure monitoring; - Establish a fire safety manual; - Provision of lightning rods on built structures; and - Appropriate ventilation to reduce humidity.			X

Summary

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
	Roads / Footpaths: • Ensure construction activities do not increase flood risk on travel infrastructure; and • Erect temporary fencing where appropriate to protect pedestrians and cyclists from heavy winds.			X
	Landscaping / Habitats: • Provision of guidance on ecological best practice methods to be followed in order to mitigate potential ecological effects during construction; • Ensure potential on-site flood risk does not occur near sensitive ecological receptors; and • Ensure pollutants do not migrate to sensitive areas during heavy rainfall events.			X
	Ancillary Equipment: • Stormwater management system to stop drain blockage and water accumulation during heavy rainfall; • Provide shading for equipment during heatwaves; • Provide buffers to block heavy winds at wind-sensitive receptors; and • Ensure power supply and other linked infrastructure is appropriately located to avoid damage/disruption.			X
	Construction Employees: The Principal Contractor will ensure that: • Adequate breaks are taken during hot weather; • Drinking water is readily available; and • Provision for areas to shelter during extreme rainfall events.			X
Lighting	The use of solid hoarding during the construction phase.			X

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
	Detailed obtrusive light calculations will be completed for the identified receptors along with an Isolux Contour plan. This will be required as part of planning conditions.			X
Enhancements				
Landscape and Visual Amenity	Enhancements can be achieved through the adoption of a landscape management plan for the Proposed Development which sets out a series of appropriate aims and objectives. As enhancement measures these would need to address those retained elements and feature of the landscape and ensure these are improved in terms of extent and condition, and with reference to guidelines set out in landscape character documents. Together these will improve the quality of the landscape in terms of its development (both visually and physically), its content (wildlife and habitat creation) and its diversity (opportunities for creation of additional landscape elements, such as ditches, water bodies, or new tree groups). The duration of the management plan may vary covering 5, 10 or 15 years, and the management approaches would vary dependent upon the aims and objectives.			

Summary

Environmental discipline	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measures would be secured		
		By Design	By S.106	By Condition
Ecology and Biodiversity	The proposed green infrastructure shall retain the existing hedgerow network, tree-lines and dry ditch in green corridors that will be managed appropriately. By removing the agricultural practice from the hedge / base and ditch bank top and replacing that with permanent grassland will improve the condition of these features. Hedges along the southern boundary shall be enhanced with supplementary native species rich planting. The ditch will be extended creating c.50m more ditch than existing. Proposals will provide additional grassland, wetland and structural planting (predominantly in the west of the site) as well as street trees, verges and garden habitat, maintaining and creating a variety of microclimates, enhancing foraging, commuting and sheltering opportunities to a range of wildlife over and above the existing landscape that currently provides relatively homogeneous arable habitat. Complementary habitat creation ensures that the Proposed Development is in line with National and Local environmental and biodiversity policies and following the principles of the Broxtowe Green Infrastructure Strategy. The availability of potential bird nesting features within the Site will also be significantly enhanced, not only through the planting additional structural planting (mixed native scrub and trees) but also through the provision of a selection of nest boxes integrated into buildings and mounted to retained mature trees to provide nesting opportunities. Currently no potential bat roost features occur onsite therefore provision of a range of new bat roost features will include integrated boxes within buildings to offer enhanced roost provision across the Site. It is recommended that on plot fencing contains hedgehog holes (13 x 13cm holes in closed board fencing) to enable hedgehog to move through gardens to ensure the entire Site remains permeable to hedgehog.			
Flood Risk and Drainage	The attenuation basin would be graded to provide aquatic planting shelves and planted with suitable vegetation to provide biodiverse aquatic habitats and assist in delivering BNG on the Site.			
Climate Change	The Energy Statement states that the 'fabric first' approach to the design of dwellings will provide a 81.60% carbon savings under the Building Regulations, which represents a 74.18% energy demand reduction.			