

## SECTION 3 : CUMULATIVE EFFECTS AND ALTERNATIVES

### PART 1 : CUMULATIVE EFFECTS

#### 1.1 Introduction

1.1.1 Cumulative effects are the total effect caused by the sum of past, present and reasonably foreseeable future actions. Cumulative effects can result from incremental changes caused by the interactions between effects within a project and/or the interaction with the effects from other developments. With regard to road schemes, cumulative effects are considered in the following ways:

- *Multiple effects* from the scheme, and from different schemes of the same or similar type, upon the same resource; such as the effect on a single community of noise from several transport sources.
- *Different multiple effects* from the scheme, and from other schemes, upon the same resource; such as land take and damage due to hydrological change, affecting several sites of the same habitat.
- *Incremental effects* arising from a number of small actions, including on-going maintenance operations, having developed or developing over time.

1.1.2 Assumptions have been made within the scheme economic impact assessment and traffic growth forecasts on which developments are more than likely to occur prior to or during construction of the A453 Widening scheme (anticipated between autumn/winter 2010 and winter 2012/13) and the operation of the scheme up to the design year of 2017. The environmental impact assessment makes the same assumptions.

1.1.3 This part of Section 3 of the Environmental Statement (ES) begins by describing the different developments that have been taken into account (as outlined in Section 1 Part 1 of the ES), and the probability of likely cumulative effects resulting from the interaction with the A453 Widening scheme.

1.1.4 Consideration is then given to the interactions of effects within the A453 Widening scheme itself as described in the preceding section for each environmental topic.

#### 1.2 Other Committed Developments

1.2.1 The following developments have been taken into account as being likely to occur prior to the completion of the A453 Widening project or within the design period:

- East Midlands Parkway Station ;
- Nottingham Express Transit (NET) Park & Ride Site south of Clifton;

- East Midlands Airport Extension;
- Lark Hill Retirement Village;
- M1 Widening Contract 2;
- Clifton Service Station improvements including a Tesco Express convenience store.

### **East Midlands Parkway Station**

#### *Brief Description*

- 1.2.2 Construction began on the development of a new railway station, known as East Midlands Parkway, in January 2008. The station will be located on land immediately to the west of the Ratcliffe on Soar Power Station and the railway line which connects Derby to Loughborough, and will include a park and ride facility with 1000 spaces to be provided in two phases (700 spaces in the first phase and 300 in the second phase).
- 1.2.3 The station will be accessed via a new junction on the A453 and a new bridge over the railway. The junction with the A453 was originally intended to be a roundabout junction designed to be readily modified to take account of dualling of the A453. However a temporary traffic signalled junction is now being constructed which will be replaced by the Parkway Junction as part of the A453 Widening scheme. Figure 3.1.1 in the ES Volume 2 Figures illustrates the development.

#### *Cumulative Effects*

- 1.2.4 An Environmental Statement was submitted with the planning application for the new station. The East Midlands Parkway ES acknowledges effects of the development on the Green Belt, the New Kingstone Brook (which will be re-routed around the site), young plantation within the Power Station (which will be removed for the new junction), loss of agricultural land and temporary disturbance during construction.
- 1.2.5 East Midlands Parkway Station development will be completed and open well before construction is planned to begin on the A453 Widening scheme. There will thus be no construction effects occurring at the same time and any cumulative effects are limited to those during operation of East Midlands Parkway and construction and operation of A453 Widening.
- 1.2.6 There will be temporary direct adverse effects on traffic entering and leaving the East Midlands Parkway site during construction of the A453 Widening, in particular construction of the Parkway Junction. Traffic management measures and construction phasing will ensure effects are insignificant.

- 1.2.7 The East Midlands Parkway Station is a key development within the integrated transport strategy for the East Midlands. As well as providing both local and long distance rail transport, a network of frequent bus services will link the station, local conurbations and the East Midlands Airport. The development integrates well with the A453 Widening proposals in that they both embrace the principles of sustainable development by encouraging greater use of public transport in accordance with the recommendations of the Multi-Modal Study.
- 1.2.8 Furthermore, by encouraging a switch from car use to public transport the development supports the aims of the A453 Widening scheme to reduce congestion and air pollution. The development may also attract some non-motorised user trips although this is unlikely to be significant. During operation of both developments there will therefore be significant permanent, direct, beneficial cumulative effects on travellers.
- 1.2.9 Development of both proposals will increase permanent direct, adverse effects on the Nottingham-Derby Green Belt, but these effects will be localised and are considered insignificant on the wider Green Belt.
- 1.2.10 Proposals for East Midlands Parkway include lighting of the car park and the junction with the A453. Junction lighting will comprise 12m high columns which will extend along the A453 for approximately 300m west of the rail line. Any columns to the west of the railway will be removed under the A453 scheme and thus there will be a permanent, direct, beneficial effect of reduced night-time visual impact, albeit insignificant, on nearby receptors within Ratcliffe on Soar to the south and at properties to the north in particular North Bridge Cottage and Middle Gate Cottage.

### **Nottingham Express Transit (NET) Park & Ride Site**

#### *Brief Description*

- 1.2.11 Nottingham City Council and the Nottinghamshire County Council have applied to the Secretary of State for Transport under Section 6 of the Transport and Works Act 1992 for an Order to authorise the construction and operation of two extensions to the existing Nottingham Express Transit system (known as NET Line One). One of the two new tram lines, known jointly as NET Phase Two, would run from Nottingham City Centre to Clifton via Wilford and would terminate at a park and ride site to the south of Clifton, located on the Rushcliffe Borough Council side of the boundary with Nottingham City. Figure 3.1.2 in the ES Volume 2 Figures shows the location of the proposed development.
- 1.2.12 A public local inquiry into the proposals was heard before an independent inspector in November 2007. This was re-opened and heard in late 2008. The Inspector's report is anticipated in early 2009 to enable the Transport and Works Act Order to be made later in the year. If this is the case construction could begin in late 2010 and tram services could begin three years later.

1.2.13 Trams would access the NET Park & Ride Site at Clifton via Farnborough Road / Summerwood Lane / Southchurch Drive, crossing Nottingham Road into the site. Vehicles would access the car park from Nottingham Road and from a link to the A453. Two options for an A453 link were proposed at the public inquiry, one off a new link road from the Mill Hill Roundabout which was part of the A453 Widening scheme proposals at that time (see below) and the other option providing a new link road from the park and ride site directly to the existing A453 via a signalised junction at Brands Hill.

#### *Cumulative Effects*

1.2.14 An environmental statement was submitted with the Transport and Works Act Order application. This acknowledges effects of the development of the park and ride site on the Green Belt, landscape/visual impacts, loss of agricultural land and temporary disturbance during construction. Detailed ground modelling and planting proposals are designed to reduce the prominence of the site on the shoulder of the ridge at Mill Hill.

1.2.15 According to current programmes, if both the NET Park & Ride Site and A453 Widening scheme are approved they will be constructed during the same period beginning in 2010. During this period nearby sensitive receptors, in particular residents on the edge of Clifton will suffer direct adverse cumulative effects of increased noise, reduced air quality (dust and fumes) and visual impact. Close cooperation between the two projects will be essential to reduce impacts on the travelling public.

1.2.16 As with the East Midlands Parkway Station development described above, the NET Phase Two extension to Clifton is a key development within the integrated transport strategy for the East Midlands. The development integrates well with the A453 Widening proposals in that they both embrace the principles of sustainable development by encouraging greater use of public transport in accordance with the recommendations of the Multi-Modal Study. By encouraging a switch from car use to public transport the development supports the aims of the A453 Widening scheme to reduce congestion and air pollution. The development may also attract some non-motorised user trips although this is unlikely to be significant. During operation of both developments there will therefore be significant permanent, direct, beneficial cumulative effects on travellers.

1.2.17 Development of both proposals will occur within the Nottingham-Derby Green Belt. Any effects will be permanent direct effects but localised, and are considered insignificant on the wider Green Belt. A separate report into the impacts of the A453 Widening scheme on the Green Belt (ref. A021959-REP-E-ES-195, April 2008) concluded that the openness of the Green Belt will not be compromised and that the road scheme is essential infrastructure which is appropriate development within the Green Belt. Assessment of the impact of the NET Phase Two proposals reached the same conclusion on the effects of that scheme. Together both

schemes will clearly affect more Green Belt land than individually, but the cumulative effects are considered insignificant also.

1.2.18 There is currently considerable local/regional debate with regard to the detailed boundaries of the Green Belt south of Nottingham following the Panel's report of the Examination in Public into the draft East Midlands Regional Plan. The panel recommended that local planning authorities should decide on the detailed boundary of the Green Belt in this area. This issue is of relevance to the wider development potential of the land south of Nottingham where several development proposals have been made, but which are currently un-committed (however see paragraphs below on the Lark Hill Retirement Village). These have not been taken into account in the design of the A453 Widening scheme, and clearly any development proposals would have to satisfy planning, environmental, highway and other requirements on a case by case basis. Cumulative effects of any future development proposals would need to be addressed at that time, including impact on the Green Belt, but it is considered that the A453 Widening proposals would not facilitate any further development in the area.

1.2.19 Further local concern in the area south of Clifton is the perceived impact on the flat, open pre-enclosure historic landscape of the Clifton Pastures and Barton Moor area to the east. Environmental assessment of the A453 Widening scheme acknowledges that there will be landscape/visual implications of the offline route, but that adverse impacts are mitigated by detailed design. A similar conclusion was reached in the assessment of the impacts of the NET Phase Two proposals, and it is considered that detailed design of both proposals will ensure that there will not be any permanent, direct, adverse significant cumulative impacts on this area.

### **East Midlands Airport Extension**

#### *Brief Description*

1.2.20 Current East Midlands Airport (EMA) forecasts predict a growth in passenger numbers from 4.5m to 9.2m by 2016, and to between 12m and 14m by 2030. Current plans, up to 2016, include building a small extension to the existing runway, investment to improve existing terminal facilities, an increase in car parking spaces as well as promotion of more sustainable transport modes.

#### *Cumulative Effects*

1.2.21 Development at EMA is considered within the integrated transport strategy for the East Midlands. The development integrates well with the A453 Widening proposals, the East Midlands Parkway Station development and the NET Park & Ride proposals, in that they all embrace the principles of sustainable development by encouraging greater use of public transport in accordance with the recommendations of the Multi-Modal Study. In particular a shuttle bus facility between East Midlands Parkway Station and EMA will encourage a switch from car

use to public transport in support of the aims of the A453 Widening scheme to reduce congestion and air pollution.

1.2.22 EMA is a strong supporter of a continuous cycle route along the A453 between the airport and Nottingham, and suggest it could be an important commuter route for its employees.

1.2.23 It is therefore considered that there will be significant permanent, direct, beneficial cumulative effects on travellers.

### **Lark Hill Retirement Village**

#### *Brief Description*

1.2.24 Planning permission was granted in February 2007 for the erection of an elderly care village comprising 327 residential units and communal facilities on land to the east of the A453 and west of Nottingham Road / Clifton Lane, south of Clifton, located on the Nottingham City side of the boundary with Rushcliffe Borough Council. Previously in October 2006 planning permission had been granted for the laying out of informal parkland and open space in association with the proposed elderly person's village. A re-application for the amendment of the approved parkland proposals was made in November 2008 but at the time of writing no decision had been made. Figure 3.1.3 in the ES Volume 2 Figures illustrates the development.

1.2.25 Construction began in 2008 and completion is anticipated in early 2009. The residential units will cover a little over 5.6 hectares of previously agricultural land, with the informal open space to the west covering approximately 4 hectares. Proposals for landscaping, planting and external materials are intended to minimise the impact of the development on its surroundings. Details include the location of buildings away from the highest parts of the site, and noise mounding and fencing up to 5 metres tall along the A453 frontage. Vehicular access will be from Nottingham Road / Clifton Lane, with no access onto the A453.

1.2.26 The A453 Widening scheme impacts on the permitted development in that construction of the Mill Hill Roundabout junction will require land from the south-western corner of the parkland open space. Discussions have been held with the developers and mitigation measures are included in the design of the A453 scheme comprising noise mounding, fencing and planting alongside the Mill Hill Roundabout and A453 frontage, to tie into the noise mitigation being constructed as part of the development. The noise barrier would be erected at the start of road construction to minimise impacts on the residents of the Lark Hill Retirement Village during construction.

#### *Cumulative Effects*

1.2.27 The Lark Hill Retirement Village development will be completed and open well before construction is planned to begin on the A453 Widening scheme in 2010.

There will thus be no construction effects occurring at the same time and any cumulative effects are limited to those following the opening of the development and construction and operation of A453 Widening.

- 1.2.28 The informal parkland and open space lies within the Nottingham-Derby Green Belt. Previous discussion above has considered the cumulative effects of development within the Green Belt. Whilst individually the development of the A453 improvements, NET Park & Ride Site and the Lark Hill Retirement Village would be insignificant within the wider Green Belt, the cumulative effects on this part of the Green Belt south of Nottingham will be significant. However, this must be considered in light of the current debate and likely review of the Green Belt boundary. As discussed above, cumulative effects of any future development proposals would need to be addressed at that time, including impact on the Green Belt, but it is considered that the A453 Widening proposals would not facilitate any further development in the area.
- 1.2.29 Discussion above on local concerns at the impact of development on the pre-enclosure historic landscape of the Clifton Pastures and Barton Moor area to the east is also of some relevance for the Lark Hill Retirement Village development due to its prominent location. However it is considered that detailed design of both the retirement village proposals and A453 Widening scheme will ensure that there will not be any permanent, direct, adverse significant cumulative impacts on this area.
- 1.2.30 Mitigation measures have been included in the A453 Widening scheme to ensure impacts on sensitive receptors, in particular nearby residents within Clifton, are insignificant. It is considered that cumulative effects will be insignificant.

## **M1 Widening Contract 2**

### *Brief Description*

- 1.2.31 In 2002 the Highways Agency appointed Arup to carry out a preliminary audit and assessment of highway improvements recommended in the East Midlands Multi-Modal Study to alleviate congestion on the M1 motorway between Leicestershire and South Yorkshire. The project will upgrade and improve approximately 80 kilometres (50 miles) of carriageway and junctions between Junction 21 and Junction 30, including the provision of a bypass for Kegworth.
- 1.2.32 In August 2007 a decision was made to proceed with the widening of the M1 between J25 and J28, known as Contract 1. Construction began in October 2007.
- 1.2.33 Work on Contract 2 of the project, between J21 and J30 to include motorway widening, junction improvements (including J24 with the A453) and Kegworth Bypass, is planned to commence in 2012. In the meantime consideration is being given to the use of active traffic management (speed control similar to that being utilised on the M42 South of Birmingham).

### *Cumulative Effects*

- 1.2.34 Construction of the A453 Widening scheme is likely to be on-going when work on Contract 2 is planned to commence in 2012. Coordination of both projects will be essential to minimise disruption, but for a number of months cumulative effects of both projects on road users could be significant.
- 1.2.35 A453 Widening scheme proposals include replacing the existing shared use footway / cycle track at-grade crossing of the A453 at M1 Junction 24 by a grade-separated crossing. A ramp will be provided down the M1/A453 embankment to the existing Cattle Creep underbridge, which will be extended, and existing accommodation tracks will be dedicated as a cycletrack. This will provide a segregated link between the existing shared use footway / cycle track on the A6 to the existing provision at M1 Junction 24.
- 1.2.36 There will thus be temporary, direct, adverse cumulative effects on non-motorised users (NMUs) during construction. Following completion of the Works effects are considered to be permanent, direct beneficial effects for NMUs using both M1 J24 and the A453.

### **Clifton Service Station Improvements Including a Tesco Express Convenience Store**

#### *Brief Description*

- 1.2.37 Planning permission was granted in November 2007 to Esso Petroleum Co. Ltd. for the erection of a new service station including sales building (a Tesco Express convenience store), forecourt canopy and underground storage tanks following demolition of the existing Clifton Service Station and Nottingham Car Centre, on Clifton Lane (the A453). The planning application is a re-submission of a previous application, re-designed to take account of comments received from Nottingham City Council with regard to impact on the Clifton Conservation Area and properties on Dalehead Road. The development was completed in 2008 and is illustrated in Figure 3.1.4 in the ES Volume 2 Figures.
- 1.2.38 Existing access on the A453 is retained, with pedestrian access at the rear off Dalehead Road. The development modernises the previous 24 hour service station and shop to provide enhanced facilities to motorists and the local community whilst at the same time removing current problems with queuing on to the A453.

#### *Cumulative Effects*

- 1.2.39 Construction of the development was completed in 2008, thus there will be no cumulative effects during construction of the A453 Widening scheme.
- 1.2.40 The service station is the only petrol filling station between the outer edges of the City centre and the motorway, and its use to motorists, pedestrians and those using other modes of transport is likely to increase following improvements to the A453.

Design co-ordination between the two projects will reduce current problems of queuing on to the A453 and provide improved facilities which will bring significant permanent, direct beneficial cumulative effects.

- 1.2.41 The Clifton Service Station lies close to the Clifton Conservation Area (CA), which the A453 passes through. Detailed design of both developments will ensure that impact on the CA is similar to existing, with no significant adverse cumulative effects.

### 1.3 Cumulative Effects from the A453 Widening Scheme

- 1.3.1 Cumulative effects arise where environmental topics combine. The matrix in Table 3.1.1 below shows potential interactions between environmental issues within the A453 Widening Scheme, following the assessment of environmental impacts in Section 2 of the ES.

- 1.3.2 The Disruption due to Construction topic is not included in the matrix since this has interactions with all other topics with a range of temporary effects on people and the natural environment, as described in Section 2 Part 3. Potential impacts during construction are noise, vibration and air quality impacts (dust), impacts on wildlife, areas of archaeological value, water courses (pollution) and disruption to walkers, cyclists, equestrians and road users.

**Table 3.1.1 : Interactions Between A453 Environmental Topics**

	Air Quality	Cultural Heritage	Ecology	Landscape Effects	Land Use	Noise and Vibration	Pedestrians etc. (NMUs)	Vehicle Travellers	Drainage and Water	Geology	Soils
Air Quality		✓				✓	✓				
Cultural Heritage	✓		✓	✓		✓	✓		✓		✓
Ecology		✓		✓	✓		✓		✓		
Landscape Effects		✓	✓		✓	✓	✓	✓	✓		✓
Land Use			✓	✓			✓				✓
Noise and Vibration	✓	✓		✓			✓				
Pedestrians etc. (NMUs)	✓	✓	✓	✓	✓	✓		✓	✓		
Vehicle Travellers				✓			✓				
Drainage and Water		✓	✓	✓				✓			
Geology											
Soils		✓		✓	✓						

- 1.3.3 Interactions between cultural heritage issues and air quality, ecology mitigation, landscape mitigation, noise & vibration, drainage proposals and soils topics could

- be significant where these impacts affect the setting and thus historic value of listed buildings and other heritage features. There will be slight adverse effects on historic buildings in Ratcliffe on Soar, Thrumpton and Clifton, and on Winking Hill Farm, and on historic landscapes. Cumulative effects are not anticipated to make impacts worse.
- 1.3.4 Significant interactions will occur between ecology, landscape, drainage and water, and land use. A key objective of the landscape mitigation proposals is to provide enhanced value for wildlife, and land is included within the compulsory purchase principally for this purpose. The highway drainage design includes ditches and balancing ponds which will be sensitively designed in-keeping with the landscape and to enhance nature conservation by providing wetland habitats and species diversity.
- 1.3.5 Pedestrians and other NMUs could be affected by the cumulative effects of reduced air quality, noise impacts and interaction with vehicle traffic, especially during construction where diverted routes may be aligned closer to impact sources, albeit temporarily. Operational effects on NMUs once the road is open will include the permanent loss of land for the reasons given in paragraph 1.3.4 above. Conversely, diverted routes have the potential to affect areas of landscape, heritage or ecological value. Overall cumulative effects involving NMUs are anticipated to be beneficial.
- 1.3.6 Combined effects are most likely to occur close to the road, and can be adverse (negative) or beneficial (positive). The most sensitive receptors are people who live close to the road and users of outdoor recreational facilities including public rights of way. Table 3.1.2 below identifies significant cumulative effects on the most sensitive receptors, comparing the 'do-minimum' situation (without the scheme) with the 'do-something' situation (with the scheme) in the opening year (2012). Where impacts would change in 2027 a note is given in the 'comments' column.
- 1.3.7 The most significant cumulative negative effects would occur at properties in Glapton Lane and Farnborough Road with adverse air quality, visual and noise impacts. Dowell's Barn, Hillside Cottage and Glebe Farm would experience significant adverse visual and noise impacts but a negligible worsening in air quality. Properties in Todd Close, Krebs Close and Richardson Close would experience significant visual impact and a slight adverse worsening in air quality, but neutral to slight increase in noise levels.
- 1.3.8 Some properties close to the road, in particular Cedar Isle and properties in Ratcliffe on Soar, would see an increase in noise levels in 2027 as traffic flows on the bridge over the river increased. Substantial adverse visual impacts in 2012 would reduce to most properties in 2027 as planting on the embankment matured, but some properties would continue to experience the cumulative negative effects of adverse noise and visual impacts.

- 1.3.9 On the positive side, significant cumulative effects would occur at Top Farm Cottage with beneficial air quality and noise impacts. Keeper's Cottage and Barton Lodge would experience similar positive impacts, although there would be adverse visual impacts to all three properties until mitigation planting matures.

**Table 3.1.2: Cumulative Effects on Sensitive Receptors (opening year 2012)**

<b>Receptor</b>	<b>Air Quality Impact</b>	<b>Visual Impact</b>	<b>Noise Impact</b>	<b>Comments</b>
Dowell's Barn	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Moderate Adverse in 2027. There would be a slight increase in noise in 2027 but still Moderate Negative
Cedar Isle	NO <sub>2</sub> : 4% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 but still Moderate Negative impact.
Manor Cottage	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative impact.
Riverside Farm	NO <sub>2</sub> : 4% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Slight Negative	Air quality levels are well below objective level of 40

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				<p><math>\mu\text{g}/\text{m}^3</math> for both <math>\text{NO}_2</math> &amp; <math>\text{PM}_{10}</math>                      Visual Impact will remain Substantial Adverse in 2027.                      There would be a slight increase in noise in 2027 but Neutral impact.</p>
Old School House	<p><math>\text{NO}_2</math>: 2% increase = Negligible  <math>\text{PM}_{10}</math>: &lt;1% increase = Negligible</p>	Substantial Adverse	Neutral	<p>Air quality levels are well below objective level of <math>40 \mu\text{g}/\text{m}^3</math> for both <math>\text{NO}_2</math> &amp; <math>\text{PM}_{10}</math>                      Mitigation planting will reduce visual impact in 2027 to Slight Adverse.                      There would be a slight increase in noise in 2027 with a Slight Negative impact.</p>
Chestnut Barn	<p><math>\text{NO}_2</math>: 2% increase = Negligible  <math>\text{PM}_{10}</math>: &lt;1% increase = Negligible</p>	Substantial Adverse	Slight Negative	<p>Air quality levels are well below objective level of <math>40 \mu\text{g}/\text{m}^3</math> for both <math>\text{NO}_2</math> &amp; <math>\text{PM}_{10}</math>                      Mitigation planting will reduce visual impact in 2027 to Slight Adverse.                      There would be a slight increase in noise in 2027 with a Moderate Negative impact.</p>
Little Oak Barn	<p><math>\text{NO}_2</math>: 2% increase = Negligible  <math>\text{PM}_{10}</math>: &lt;1% increase = Negligible</p>	Substantial Adverse	Slight Negative	<p>Air quality levels are well below objective level of <math>40 \mu\text{g}/\text{m}^3</math> for both <math>\text{NO}_2</math> &amp; <math>\text{PM}_{10}</math>                      Mitigation planting will reduce visual impact in 2027 to Slight Adverse.</p>

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				There would be a slight increase in noise in 2027 with a Moderate Negative impact.
Winking Hill Farm	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual Impact will remain Moderate Adverse in 2027. There would be a slight increase in noise in 2027 but still Moderate Negative
Hillside Cottage	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
Manor Farm Cottage	NO <sub>2</sub> : 7% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Slight Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Negligible. There would be a slight increase in noise in 2027 but still Slight Negative
Glebe Farm	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				$\mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
Keeper's Cottage	$\text{NO}_2$ : 3% <b>decrease</b> = Negligible $\text{PM}_{10}$ : <1% <b>decrease</b> = Negligible	Moderate Adverse	Neutral	Air quality levels are well below objective level of $40 \mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Neutral impact.
Barton Lodge	$\text{NO}_2$ : 3% <b>decrease</b> = Negligible $\text{PM}_{10}$ : <1% <b>decrease</b> = Negligible	Moderate Adverse	Slight Positive	Air quality levels are well below objective level of $40 \mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Slight Positive
Top Farm Cottage	$\text{NO}_2$ : 2% <b>decrease</b> = Negligible $\text{PM}_{10}$ : No change = Neutral	Substantial Adverse	Large Positive	Air quality levels are well below objective level of $40 \mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				but still Large Positive
No.s 1-2 Todd Close (Nobel Road Estate)	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 but still Neutral impact.
No.s 3-13 Todd Close (Nobel Road Estate)	NO <sub>2</sub> : 7% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 but still Neutral impact.
No.s 1-12 Porter Close (Nobel Road Estate)	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 but still Neutral impact.
No.s 1-11 Hodgkin Close (Nobel Road Estate)	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				2027. There would be a slight increase in noise in 2027 but still Neutral impact.
No.s 1-3 Krebs Close (Nobel Road Estate)	NO <sub>2</sub> : 5% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 but still Neutral impact.
No.s 18-35 Raleigh Close (Nobel Road Estate)	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Neutral	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Substantial Adverse in 2027. There would be a slight increase in noise in 2027 with a Slight Negative impact.
No.s 24-46 Wilkins Gardens (Nobel Road Estate)	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Slight Negative
No.s 14-25 Haworth Court	NO <sub>2</sub> : 2% increase = Negligible	Substantial Adverse	Slight Negative	Air quality levels are well

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
(Nobel Road Estate)	PM <sub>10</sub> : <1% increase = Negligible			below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Slight Negative
No.s 1-20 Richardson Close (Nobel Road Estate)	NO <sub>2</sub> : 5% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative impact.
Crusader Public House	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to slight adverse. There would be a slight increase in noise in 2027 but still Slight Negative
No.s 11-14 Morgan Mews	NO <sub>2</sub> : 2% <b>decrease</b> = Negligible PM <sub>10</sub> : <1% <b>decrease</b> = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Moderate Adverse in 2027.

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				There would be a slight increase in noise in 2027 but still Slight Negative
No.s 7-10 Cavell Close	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Moderate Adverse in 2027. There would be a slight increase in noise in 2027 but still Slight Negative
Clifton Village Hall	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight decrease in noise in 2027 to Slight Negative impact.
No.s 1-3 Dalehead Road	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Moderate Adverse in 2027. There would be a slight increase in noise in 2027 but still Moderate Negative
No.s 5-11 Dalehead Road	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub>

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				Visual impact will remain Moderate Adverse in 2027. Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
The Forge	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Slight Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Negligible. There would be a slight increase in noise in 2027 with a Large Negative impact.
No.s 1-7 Glapton Lane	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Moderate Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
No.s 9-23 Glapton Lane	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
No.s 1-8 Grasby Walk	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Substantial Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Moderate Adverse. There would be a slight decrease in noise in 2027 with a Slight Negative impact.
Four Winds Rest Home	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Visual impact will remain Moderate Adverse in 2027. There would be a slight decrease in noise in 2027 with a Slight Negative impact.
Baird House Residential Home	NO <sub>2</sub> : 2% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				decrease in noise in 2027 with a Slight Negative impact.
No.s 1-24 Kinsale Walk	NO <sub>2</sub> : <1% increase = Negligible PM <sub>10</sub> : <1% <b>decrease</b> = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> . Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Slight Negative
No.s 1-15 Meden Close	NO <sub>2</sub> : 3% increase = Negligible PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> . Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 with a Moderate Negative impact.
No.s 1 & 3 Farnborough Road	NO <sub>2</sub> : 7% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Slight Negative	Air quality levels are well below objective level of 40 µg/m <sup>3</sup> for both NO <sub>2</sub> &PM <sub>10</sub> . Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Slight Negative
No.s 2 & 4 Farnborough Road	NO <sub>2</sub> : 3% increase = Slight Adverse PM <sub>10</sub> : <1% increase = Negligible	Moderate Adverse	Moderate Negative	Air quality levels are well below objective level of 40

Receptor	Air Quality Impact	Visual Impact	Noise Impact	Comments
				$\mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still Moderate Negative
No.s 69 & 71 Sturgeon Avenue	$\text{NO}_2$ : 2% increase = Negligible $\text{PM}_{10}$ : <1% increase = Negligible	Moderate Adverse	Neutral	Air quality levels are well below objective level of $40 \mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Mitigation planting will reduce visual impact in 2027 to Slight Adverse. There would be a slight increase in noise in 2027 but still a Neutral impact.
Lark Hill Retirement Village	$\text{NO}_2$ : 2% increase = Negligible $\text{PM}_{10}$ : <1% increase = Negligible	Moderate Adverse	Neutral – Slight Negative in garden	Air quality levels are well below objective level of $40 \mu\text{g}/\text{m}^3$ for both $\text{NO}_2$ & $\text{PM}_{10}$ Visual impact will remain Moderate Adverse in 2027. There would be a slight increase in noise in 2027 but still Neutral – Slight Negative in garden

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