CHAPTER 10: TRANSPORT

Introduction

10.1 This chapter of the Environmental Statement (ES) describes the environmental impacts that would be created by the changing transport conditions introduced by the proposed development. The development would change the pattern of traffic movements on the transport infrastructure surrounding the site, and could also alter the conditions for other users. Hence, the effects of the changes on pedestrians, cyclists and drivers are assessed.

10.2 This chapter describes the assessment methodology; the baseline conditions currently existing at the application site and surroundings; the planning policy context of the proposed development; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

10.3 The proposed development is described in Chapter 2 of this ES. A Transport Assessment (TA) report and Framework Travel Plan (TP) have been prepared by BWB Consulting Ltd to accompany the outline planning application. The TA and TP for the proposed development and are bound separately to this document. The TA includes the drawings showing the proposed access and highways works, though these are also reproduced in Figures 2.2 – 2.6 of this Statement.

10.4 The TA examines the generation, distribution and assignment of trips associated with the proposed development at the site and the effects of these trips on the surrounding transport network. The TA and TP examine the accessibility of the site by public transport, cycling and walking, and identify the likely modal split of person trips associated with the development. The TA addresses the impact of the development trips on the surrounding transport facilities and identifies improvements, which in combination with the TP, would cater for the increased travel demand.

10.5 The development would include the following transport measures and improvements:
• two site access junctions on Toton Lane/Stapleford Lane, as follows:
  o the additional of a fourth signal controlled arm to the Nottingham Express Transit (NET) Line 2 Terminus access junction on Toton Lane, to provide access to the development and a direct connection to the NET, with a Toucan crossing on the site access arm
  o a new signal controlled site access junction approximately 230 metres to the south of the NET junction, providing a second access point for the development and including a new Toucan crossing on Stapleford Lane and pedestrian crossing on the site access arm of the junction

• a safer access arrangement to the George Spencer Academy and Technology College via the site access junction
• provision of new section of 3 metres wide shared footway/cycleway on the eastern side of Toton Lane/Stapleford Lane between the northern and southern site accesses, to tie into the shared pedestrian/cyclist facilities to be provided by NET on Toton Lane between the northern site access junction and the existing Toucan crossing at the A52(T)/Toton Lane gyratory (known as Bardills Island)
• new footways and shared footways/cycleways throughout the site which would tie into the above and other existing provision surrounding the site, including the public rights of way
• improved service frequency for the Local 17 bus service for existing residents in the Woodstock Road area, which would and route through the site, stop at the NET Terminus, and provide a 20 minute frequency service to Nottingham City Centre via Stapleford, and an hourly service to Beeston Town Centre
• new bus stops with shelters within the site
• off-site highways improvements comprising:
  o amendments to Toton Lane/Stapleford Lane to accommodate the northern and southern site access junctions and to provide two lanes in the southbound direction between the two accesses
  o alterations to Bardills Island to provide additional capacity, including lengthening the right turn lane from the A52(T) eastbound approach to Toton Lane and providing three lanes on the A52(T) westbound approach and through the junction, to increase throughput on the A52(T)
  o provision of a dedicated left turn lane at the A52(T) westbound off-slip at M1 Junction 25 to increase capacity
- upgrading of the B6003 Stapleford Lane/Swiney Way/Banks Road signal controlled junction to provide nearside pedestrian detection, thereby increasing junction capacity whilst improving pedestrian safety
- contribution towards the upgrade of the junction control system at the A6005 Nottingham Road/High Road signal controlled T-junction
- provision of a ghost island right turn facility on Stapleford Lane at the Darley Avenue junction to formalise arrangements for right turners and improve safety, including the provision of a pedestrian refuge to provide increased opportunities to cross the road
- provision of a signal controlled pedestrian crossing on Stapleford Lane, just to the south of Woodstock Road to provide a safe location for pedestrians to cross, whilst also providing breaks in traffic to assist drivers exiting nearby residential roads.

- Travel Plan measures for residents and employees to encourage travel to and from the site by sustainable modes of transport.

10.6 The TA demonstrates that the existing, committed and proposed infrastructure would satisfactorily accommodate the cyclist, pedestrian and public transport movements associated with the development. The proposed highway improvements would accommodate the vehicular trips associated with the development and provide betterment at existing strategic network junctions. Much of the information gathered for the TA is used within this ES assessment.

**Methodology**

10.7 Assessment of the transport impacts of the proposed development has been undertaken using the Greater Nottingham Transport Model (GNTM), in accordance with modelling protocol agreed with the local highway authorities and the Highways Agency (HA).

10.8 A project meeting between the local highway authority, Nottinghamshire County Council’s (NCC), the neighbouring highway authorities of Nottingham City Council (NCIC) and Derbyshire County Council (DCC), the HA and BWB Consulting took place on 11 November 2011 to review the project proposals and agree the methodology for modelling the transport effects of the development within the GNTM. The TA
accords with the methodology agreed at that meeting and within the subsequence reports and correspondence. Copies of the meeting minutes and relevant reports and correspondence are given at Appendix A of the TA.

10.9 BWB Consulting Ltd also met the local bus operator, Premiere Travel, to discuss the opportunities to provide an improved bus service for the development. Further details of this are provided within the TA.

10.10 The assessment work within this ES Chapter has been conducted in accordance with the following:

- Design Manual for Roads and Bridges, Volume 11, Environmental Assessment (DMRB)
- Guidelines for the Environmental Assessment of Road Traffic, Institute of Environment Assessment, 1993 (IEA)

10.11 The assessment also takes account of the Guidance on Transport Assessment (DfT, 2007)

10.12 To assess the environmental impact of the development and its traffic, the initial stages are: to determine the existing and opening year traffic levels and characteristics; to determine the time periods and year for assessment; and to identify the geographical boundaries of assessment (i.e. the study area). Once this information is established, the predicted impacts are assessed, along with measures to mitigate any negative impact.

**Planning Policy Context**

**National Policy**

*National Planning Policy Framework (NPPF) (2012)*

10.13 The objectives of the National Planning Policy Framework (NPPF) (March 2012) are to ensure that:
the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure

- safe and suitable access to the site can be achieved for all people, and
- improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of developments are severe.

10.14 NPPF states that:

“For larger scale residential developments in particular, planning policies should promote a mix of uses in order to provide opportunities to undertake day-to-day activities including work on site. Where practical, particularly within large-scale developments, key facilities such as primary schools and local shops should be located within walking distance of most properties.”

10.15 The proposed development has been designed in accordance with the NPPF guidelines and the TA and TP demonstrate that the objectives would be satisfied by the development proposals.

Regional Policy


10.16 Section 4.4 of the Regional Spatial Strategy for the East Midlands (RSS8) (March 2005) includes the Regional Transport Strategy (RTS). At the time of writing the Aligned Core Strategy document is being produced to replace RSS8. However, that process is not yet complete.

10.17 The relevant RTS policies, taken from the RSS8, and the measures taken to ensure that the proposed development complies with them are as follows:

- Policy 42: Core Strategy and Regional Transport Objectives
The development has taken into account the Greater Nottingham Local Transport Plan (LTP) and Local Development documents, parts of which are detailed below.

- Policy 43v): Three cities sub-area.
  - The transport-related measures associated with the development would be in keeping with the general aims of improving the quality and quantity of local public transport provision, and reducing congestion on major transport corridors.

- Policy 44: Regional Traffic Growth Reduction
  - The mixed use nature of the development and improvements to pedestrian, cycle and public transport infrastructure as well as the developments proximity to the proposed NET phase two terminus would all contribute to fulfilling this policy objective.

- Policy 45: Behavioural Change
  - The TP associated with the proposed development incorporate numerous measures to encourage behavioural change and modal shift.

- Policy 47: Regional Car Parking Strategies
  - The proposed development would comply with NCC parking standards.

- Policy 48: A Regional Approach to Developing Public Transport Accessibility criteria
  - The most recent guidance on public transport accessibility is set out in the Greater Nottingham LTP (April 2006). The development would accord with this by encouraging the use of public transport through the TP process, the improvements to the Local 17 bus service and the location of the site adjacent to the proposed NET Line 2 Terminus.

- Policy 50: Regional Priorities for Bus and Light Rail Services
  - The proposals to improve the Local 17 service would contribute to improving the quantity and quality of local public transport. The development proximity
to the proposed NET phase two terminus would further increase the attractiveness of public transport.

- **Policy 51: Regional Priorities for Integrating Public Transport**
  - The proposed development would assist with this policy by ensuring safe and convenient access to public transport within the site and would be located adjacent to, and provide access to the NET Line 2 Terminus.

- **Policy 52: Regional Trunk Road Investment Priorities**
  - The proposed highway improvements at the A52(T) Bardills Island and M1 Junction 25 (detailed within Section 7 of the TA) would contribute to effective management and reduced congestion of the trunk road network in the vicinity of the site.

**Local Policy**

**Broxtowe Local Plan (2004)**

10.18 The Broxtowe Local Plan (September 2004) covered the period 2004 to 2011. At the time of writing the Aligned Core Strategy document is being produced to replace the Local Plan. However, that process is not yet complete. Hence, the following policies from the Broxtowe Local Plan have been extracted as they are of relevance to the proposed development with regard to transport:

- **Policy T2**: Proposals will be supported which would improve the provision or operation of bus services and Policy T3: The layout of new development sites should be designed to enable easy access by buses where appropriate and should include the provision of bus shelters with information points:
  - The developments spine road has been designed to allow for use by public transport services. The Local 17 service would be extended to penetrate into the site and with an increased frequency.

- **Policy T4**: Planning permission will be granted for the provision of park and ride facilities in strategically appropriate locations where they would assist in achieving shift away from the use of the private car, subject to there being
satisfactory access arrangements; no significant detrimental effects on the local environment and satisfactory landscaping and screening.

- **Policy T6:** Proposals will be supported which would facilitate the expansion and operation of the NET system into the borough and development will not be permitted which would inhibit the extension of the system:
  o The developer is committed to working in partnership with the NET operators, and significant work was undertaken in 2010 to ensure the compatibility of the highway schemes required to facilitate the NET Phase Two scheme and the development. With regard to this, there is a legal agreement in place under which land controlled by the developer would be made available, at minimum cost, to facilitate delivery of the agreed NET highway for Toton Lane.
  o In line with the recommendations of the Tribal 'Appraisal of Sustainable Urban Extensions' report (June 2008) the development masterplan includes a safeguarded route through the site for the potential future extension of the NET line to the west of the existing terminus.

- **Policy T7:** Provision should be made for the needs of cyclists within new development sites and in relation to links to adjacent areas and existing cycle routes. This provision should include safe and covered cycle parking facilities in appropriate circumstances. Also Policy T9: Provision should be made for the needs of pedestrians within new developments and in relation to links to adjacent areas and other forms of transport:
  o The proposed development includes extensive facilities for pedestrians and cyclists, including new Toucan and pedestrian crossings on Toton and Stapleford Lane, extensive footway/cycleways throughout the site and links to existing infrastructure, as detailed at Sections 3 and 5 of the TA. Cycle parking would be provided in accordance with NCC’s guidance.

- **Policy T11:** Planning permission will not be granted for new development unless appropriate provision is made for vehicle parking and servicing in accordance with the latest guidelines agreed with the highway authority:
  o Vehicle parking and servicing will be provided in accordance with NCC’s standards.
10.19 Broxtowe Borough Council, Gedling Borough Council and Nottingham City Council have been jointly preparing Aligned Core Strategies which cover their combined administrative areas and which set out a spatial strategy and key planning policies for development. Policy 15 of the June 2012 publication draft sets out the transport and infrastructure priorities. It states that where new development gives rise to the need for additional transport infrastructure, it should be prioritised in accordance with delivering the Spatial Strategy in Policy 2, the principles of travel demand management in Policy 14 and the priorities of the Local Transport Plans (LTPs) covering the plan area.

10.20 As set out at Section 10.5, the proposed development would provide a package of measures to encourage travel by non private car modes, including new pedestrian and cycle facilities and enhancements to the local bus service. This infrastructure would be in place from the start of the development. Travel by non private car modes would be encouraged via the Travel Plan that has been prepared for the development. The location of the development site opposite the NET Phase Two Terminus means that there are excellent opportunities to encourage with use of the Tram and the mixed use nature of the development means that the need for external trips would be minimised.

10.21 The TA demonstrates that the proposed infrastructure improvements would ensure that the residual car trips generated by the development would not unacceptably compromise the wider transport system in terms of its effective operation.

10.22 The Greater Nottingham LTP includes numerous aims, objectives and targets relating to all modes of transport for the Nottingham area, which are largely coincident with the RSS and Broxtowe Local Plan objectives. The proposed development would connect to, and where appropriate enhance, the surrounding infrastructure as outlined above. Hence the proposed development is committed to meeting the objectives and targets set out in the Greater Nottingham LTP.
Existing Situation

10.23 The location of the site is described in Chapter 2 of this ES. The existing, committed and proposed pedestrian, cycle, public transport and highway infrastructure is described in detail at Sections 2, 3 and 5 of the TA. The TA concludes that the site is accessible to pedestrians and is well located to encourage cycle journeys instead of journeys by private car. The proposed alteration to the Local 17 bus service and the location of the site adjacent to the proposed NET Line 2 Terminus means the development would be excellently located to encourage travel by public transport.

10.24 In accordance with IEA guidelines, the environmental impact of the development should be assessed for the year of opening of the development, or the first full year of its operation. The development would be phased over a number of years. The anticipated phasing, assuming planning permission is granted in late 2012/early 2013, is as follows:

- 2013 on site infrastructure and 25 units available in latter part of year
- 2014 75 units
- 2015 135 units + 1/2 B1 + convenience store
- 2016 135 units + 1/2 B1 + pub/restaurant and hotel
- 2017 135 units
- 2018 135 units
- 2019 135 units

10.25 The timing of the primary school, the expansion of George Spencer Academy, and the day nursery would be demand driven, but likely to be phased over the 2015 to 2017 period.

10.26 The peak hour, Annual Average Daily Traffic (AADT) flows and percentage heavy goods vehicles were supplied by MVA Consultancy (who are NCC’s consultants responsible for maintaining the GNTM) for the highway links surrounding the development. The GNTM uses a 2026 assessment year and hence the flows supplied were for that year. Further details on this process and the original 2026 traffic data is given at Section 6 of the TA.

10.27 The development would be fully built out towards the end of 2019. IEA guidelines state that the greatest environmental change will generally be when the
development traffic is at the largest proportion of the total flow, which in this case has been taken to be on final completion. In order to comply with IEA guidelines the 2026 traffic flows have been factored to 2019 traffic levels using the average yearly growth factor derived from the GNTM.

10.28 The GNTM provides average traffic growth between 2008 and 2026 of 11.5%, or 0.638% per year. This factor was therefore used to convert from 2026 to 2019 traffic flows, assuming linear growth between these dates.

10.29 Nevertheless, to ensure a robustness assessment, this chapter of the ES evaluates the assessment of likely significant effects using both the 2019 and 2026 forecast traffic flows.

Figure 10.1: Highway Links

10.30 The peak hours represent the time periods when traffic flows are at their greatest and available capacity of the highway network is at its lowest. Hence these are the
assessment flows used in the TA. However the development traffic flows would also be spread throughout the day. Therefore the greatest environmental effects may occur at times other than the peak hours. This ES therefore also examines likely effects based on AADT flows.

10.31 The resulting baseline 2019 and 2026 two-way AADT traffic flows on the highway links surrounding the site are given at Table 10.1 of this ES along with the corresponding peak hour traffic flows. These are the baseline flows used in this assessment. The highway links are shown at Figure 10.1, above.

**Likely Significant Effects**

**Identification of Effects**

10.32 To determine the environmental effects of the change in traffic flows, a study area must be defined. In accordance with IEA guidelines there are two broad rules-of-thumb that should be used as a screening process to limit the scale and extent of the assessment:

- Rule one - include highway links where traffic flows will increase by more than 30%.
- Rule two - include any other specifically sensitive areas where traffic flows have increased by more than 10%, or similar changes in HGV movements.

10.33 Given the location of the site, which is adjacent to the A52(T), the area surrounding the site is not considered sensitive. The development would generate infrequent HGV movements, limited to those associated with service and delivery vehicles. Therefore the 30% threshold given in rule one should apply.

10.34 Section 4 of the TA presents the person and vehicular traffic generation for the proposed development.

10.35 The total traffic flows in 2019 and 2026 with the development in place are given at Table 10.2 of this ES. The development traffic (as flow difference), which would be the same in 2019 and 2026, as the development would be completed in 2019, is
given at Table 10.3 of this ES. In order to calculate the percentage change in the traffic flows on the highway network due to the development traffic, the baseline traffic flows given at Table 10.1 were compared to their corresponding development traffic flows given at Table 10.3. The resulting impact in both 2019 and 2026, as a percentage, is given at Table 10.4.

10.36 Based on Rule one above, junctions and links subject to a 30% or greater increase in two-way traffic flow as a result of the proposed development were extracted and form the study area for this chapter of the ES.

10.37 Based on this assessment the study area is confined to internal development roads and the section of Toton Lane between the northern site access and Bardills Island.

10.38 The number of off-site pedestrian, cyclist and public transport users that would be generated by the proposed development are given at Section 4 of the TA. The proposed development would generate the number of two-way person trips on the local transport infrastructure during the busiest peak hour as shown in Table 10.5:

Table 10.5: Number of two-way person trips on local transport infrastructure during busiest peak hour

<table>
<thead>
<tr>
<th>Mode</th>
<th>Busiest peak hour (am)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians</td>
<td>374</td>
</tr>
<tr>
<td>Cyclists</td>
<td>128</td>
</tr>
<tr>
<td>Public transport users</td>
<td>109</td>
</tr>
</tbody>
</table>

10.39 Pedestrians and cyclists would access the proposed development via the proposed site access junctions on Toton Lane or via the pedestrian and cycle links with the surrounding infrastructure. Beyond the site, the desire lines would initially be immediately north and south of the site, towards Stapleford and Toton. However within these areas pedestrians and cyclists would have a number of origins and destinations and would disperse on the local routes available to them. Therefore, it is not possible to forecast the numbers of pedestrian or cyclists at any one location.

10.40 The study area for this chapter of the ES is therefore confined to the section of Toton Lane between the northern site access junction and Bardills Island. Beyond the study area, the environmental conditions would not be materially changed.
Prediction of Effect Magnitude

10.41 The potential environmental effects associated with the transport implications of the development fall under three general headings:

a) disruption due to construction
b) impacts on pedestrians, cyclists, equestrians and the community (termed pedestrians and others):
   - journey length and local travel patterns
   - amenity
   - severance
c) impacts on vehicle travellers
   - view from the road
   - driver stress

Assessment of Effect Significance

10.42 Table 10.6 details the assessment criteria used in this report, which may be short, medium or long term, reversible or irreversible, and either beneficial, neutral or adverse.

Table 10.6 Scale of impact significance used in assessment

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>Major significance</td>
<td>Effects of the development greater than local scale</td>
</tr>
<tr>
<td>Moderate significance</td>
<td>Effects of the development that may be judged to be important at a local scale</td>
</tr>
<tr>
<td>Slight significance</td>
<td>Results in a minor impact on attribute</td>
</tr>
<tr>
<td>Neutral</td>
<td>Results in an impact on attribute, but not in sufficient magnitude to be material to decision making</td>
</tr>
</tbody>
</table>

Impact of Development

Construction Phase

10.43 For the construction process, the following assumptions have been made:
• building construction from 2013 onwards as detailed under the phasing strategy
• a five day, 10 hour working week would be followed.

10.44 The site is green field and should not require significant remediation works. Traffic movements associated with any remediation hot spots would be small in number and largely contained on-site. Hence the effects associated with this phase of construction would be negligible.

10.45 It is assumed that the need for the external transfer or import of material associated with earthworks for the development would be avoided and that a cut and fill balance could be achievable on-site. For the construction of the residential dwellings and other mixed use elements it is assumed that it takes two HGVs for each 10sqm of typical new build construction, with five light vehicles associated with workers and other delivers during the construction, for each HGV. The average area of each house is estimated to be 100sqm.

10.46 The phasing of the development is set out in Section 10.28. Based on this, 2016 would be the most traffic intensive construction year with 135 dwellings (13,500sqm GFA), 3,450sqm pub/restaurant/hotel and 1,400sqm of B1 being constructed. For robustness it has been assumed that the day nursery, primary school and expansion of the George Spencer Academy, totalling approximately 3,525sqm, would also be developed in 2016. This could generate up to a total of ~4,375 HGVs and ~21,875 light vehicles, i.e. ~8,750 HGV movements and ~43,750 light vehicle movements. This is equal to up to 34 HGV movements daily, with up to 170 light vehicle movements.

10.47 Given the location of the site, adjacent to the trunk road network, HGVs would be able to access the site without the need to route through nearby residential areas. Construction staff would arrive from multiple locations, but again a bias towards the A52(T) would be likely. No phase of the development would generate more construction traffic than the level of overall development traffic assessed within the TA. Based on the assessments included within the TA it is concluded that the modest amount of daily construction traffic could be satisfactorily accommodated on the local highway network.
10.48 It is concluded that the construction phase would have a **short term, reversible, adverse** impact of **slight significance** on the surrounding highway network.

**Impacts on pedestrians, cyclists, equestrians and the community**

**Journey length and local travel patterns**

10.49 Journey length includes both the distance travelled, and time taken, for pedestrians and others. The time taken is a combination of moving time, whether walking or riding, and time spent waiting, for example to cross a road.

10.50 Section 2 of the TA identifies the existing opportunities for pedestrian and cyclist movements associated with the site. Section 3 of the TA details the proposed site access junctions on Toton Lane and Stapleford Lane. The northern access would provide Toucan crossings on Toton Lane and across the site access arm. A 3 metres wide shared footway/cycleway will be available on each side of Toton Lane, between the northern site access and Bardills Island and on the eastern side of Toton Lane/Stapleford Lane between the two site accesses. Links to the existing public rights of way and Bessell Lane would be provided. Combined, these elements would assist pedestrians and cyclists to access the development and provide safe and convenient routes between the site and surrounding areas. These routes would be available for both developer uses and those already using Toton Lane/Stapleford Lane, such as school children and staff accessing the George Spencer Academy. The latter would be provided with a new route through the development using off-road routes, and the quieter internal development roads, away from the busier traffic flows on Toton Lane/Stapleford Lane.

10.51 Internally, the proposed development would be constructed so as to encourage interconnectivity of pedestrian and cycle links, maintain key desire lines and ensure that the spine road provides a reliable connection for use by the enhanced Local 17 bus service. The development would feature new bus stops within 400 metres walking distance of all residential dwellings. All of these elements would contribute to keeping journey times short and encouraging sustainable travel patterns.
10.52 A significant influence in journey lengths is where increased traffic causes pedestrians and others difficulty in crossing the road. Within the study area, pedestrians and others would be able to cross the northernmost site access road and Toton Lane using the Toucan crossings and therefore journey lengths would be unaffected by traffic levels on these links.

10.53 At the southern access, pedestrians using Stapleford Lane would be able to cross the site access road using the new signal controlled pedestrian crossing and there would be new opportunities for pedestrians and cyclist to cross Stapleford Lane using the Toucan crossing. Hence journey lengths would also be unaffected by traffic levels on the access road.

10.54 It is concluded that journey lengths within the study area would therefore be unaffected and opportunities to cross Toton Lane would be improved.

10.55 It is concluded that overall the proposed development would have a long term irreversible beneficial impact of slight significance on journey length and local travel patterns.

Amenity

10.56 Amenity is defined in the DMRB as the relative pleasantness of a journey for pedestrians and others. This is mainly influenced by the volume and types of traffic on an adjacent link. Other key contributory factors are the standard and width of footways/cycleways, the street furniture provided, planting and landscape.

10.57 Toton Lane currently provides a good level of amenity, with footways available on each side of the road, street lighting present, and a signal controlled pedestrian crossing. Once the NET Phase Two scheme is in place, 3 metres wide footway/cycleways will be provided on each side of the road between the northern site access and Bardills Island, and the pedestrian crossing will be replaced with a Toucan crossing. The 2019 and 2026 baseline traffic flows on Toton Lane between the northern site access and Bardills Island are high, although with the NET Phase Two scheme in place, Toton Lane will be dual carriageway in both directions. The general landscape can be described as urban. The George Spencer Academy will
remain as accessed via a priority controlled junction off Toton Lane in the baseline scenario.

10.58 The development would lead to traffic increases on Toton Lane between the northernmost site access and Bardills Island. The proposals will see the closure of the priority controlled access to the George Spencer Academy, which will be accessed internally within the site. Pedestrians and other will be able to access the school using off-road routes, and quieter internal development roads rather than traveling adjacent to the Toton Lane.

10.59 Taking the above on balance, the proposed development would have a long term, irreversible impact of neutral significance on amenity on Toton Lane between the northern site access and Bardills Island.

Severance

10.60 Severance is defined as the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows. Severance can be described as slight, moderate or severe.

10.61 Where there is slight severance, in general, the current journey pattern is likely to be maintained. Where there is moderate severance, some residents, particularly children and elderly people, are likely to be dissuaded from making trips. Where there is severe severance people are likely to be deterred from making trips to an extent sufficient to induce a re-organisation of their habits.

10.62 In accordance with the DMRB an AADT flow of 8,000 vehicles is the threshold between slight and moderate severance. The threshold between moderate and severe severance is an AADT flow of 16,000 vehicles.

10.63 Comparing the 2019 and 2026 AADT flows given in Table 10.1 for Toton Lane north of the site access with the corresponding 2019 and 2026 AADT flow given in Table 10.2 (with the development in place), demonstrates that there would be no material change in the existing severe severance on this section of Toton Lane. Despite the
existing severe severance, journeys would be unaffected due to the signal controlled crossing facilities that would be available on Toton.

10.64 In summary, the proposed development would have a long term, irreversible impact of neutral significance on severance at Toton Lane.

**Impacts on vehicle travellers**

**View from the road**

10.65 View from the road is defined as the extent to which travellers, including drivers, are exposed to the different types of scenery through which a route passes.

10.66 The development would provide a landscaped area adjacent to Toton Lane between the northernmost site access and the edge of the application boundary, which would be planted with semi-mature lime trees and would help to screen the development from the road. The view from the road along this section of Toton Lane would remain largely uncharged.

10.67 The proposed development would have a long term, irreversible impact of neutral significance on the view from the road from the section of Toton Lane between the northern site access and Bardills Island.

**Driver stress**

10.68 Driver stress is defined as the adverse mental and physiological effects experienced by a driver traversing through a road network. Factors influencing the level of stress include: road layout and geometry; surface riding characteristics; junction frequency; and the speed and flow per lane. There are three main components of driver stress: frustration; fear of potential accidents; and uncertainty of the route being followed. Driver stress is categorised as low, moderate, or high.

10.69 Frustration is caused by a driver’s inability to drive at a speed consistent with his or her own wishes in relation to the general standard of the road. The internal site
roads would be subject to a design speed limit of 20mph. Traffic would be free flowing and hence is unlikely to lead to driver frustration.

10.70 To the north of the northernmost site access Toton Lane is subject to a 40mph. The TA identifies that the proposed highway scheme would off-set the additional traffic from the development and therefore conditions would be similar in the baseline and with development scenarios. The development would not materially alter conditions with respect to driver frustration.

10.71 With regard to driver fear, this is typically caused by speeds in excess of that they feel comfortable with, and by the presence of large number of HGVs. Vehicle speeds within the site would be limited by appropriate design. Vehicle flows would also be low with HGVs accounting for a very small proportion of the traffic within the site. The fear factor for drivers within the site would be low.

10.72 On Toton Lane, drivers would travel at typical urban speeds, with HGVs making up approximately 4% of the traffic. The development would not materially alter conditions with respect to driver fear.

10.73 The majority of vehicle movements to and from the site would be associated with residents and employees and therefore route uncertainty is likely to be low.

10.74 In accordance with DMRB (Volume 11, Chapter 4, Part 9, Table 2) drivers on Toton Lane would suffer from high levels of stress in the 2019 and 2026 baseline conditions. The addition of the development and associated highway works on Toton Lane would not material alter the level of driver stress, which in accordance with DMRB (Volume 11, Chapter 4, Part 9, Tables 3) would remain high.

10.75 It is concluded that the proposed development would have a long term, irreversible impact of neutral significance on driver stress on the section of Toton Lane between the northern site access and Bardills Island.
Mitigation Measures

10.76 As demonstrated above, construction traffic would not exceed the traffic that would be generated by the completed development and assessed within the TA. Given the location of the site, adjacent to the trunk road network, HGVs would be able to access the site without the need to route through nearby residential areas. Construction staff would arrive from multiple locations, but again a bias towards the A52(T) would be likely. No phase of the development would generate more construction traffic than the level of overall development traffic assessed within the TA. Based on the assessments included within the TA it is concluded that the modest amount of daily construction traffic could be satisfactorily accommodated on the local highway network.

10.77 During construction appropriate mitigation measures would be put in place to limit any secondary effects on transportation. This would include the following measures:

- limiting HGV hours such that, wherever possible, no movements take place within the vicinity of the development between 2200 and 0700 hours,
- ensuring that wheel-washing of construction vehicles and other appropriate cleaning is carried out prior to departing site, and that all loads are properly secured,
- ensuring that where works impact on the ‘live’ public highway appropriate temporary works and diversions for vehicular and non-vehicular traffic are put in place.

10.78 To mitigate the impact of the development it would provide the following package of measures and improvements:

- two site access junctions on Toton Lane, as follows:
  - the additional of a fourth signal controlled arm to the Nottingham Express Transit (NET) Line 2 Terminus access junction on Toton Lane, to provide access to the development and a direct connection to the NET, with a Toucan crossing on the site access arm
  - a new signal controlled site access junction approximately 230 metres to the south of the NET junction, providing a second access point for the
development and including a new Toucan crossing on Toton Lane and pedestrian crossing on the site access arm of the junction

- a safer access arrangement to the George Spencer Academy and Technology College via the site access junction
- provision of new section of 3 metres wide shared footway/cycleway on the eastern side of Toton Lane/Stapleford Lane between the northern and southern site accesses, to tie into the shared pedestrian/cyclist facilities to be provided by NET on Toton Lane between the northern site access junction and the existing Toucan crossing at the A52(T)/Toton Lane gyratory (known as Bardills Island)
- new footways and shared footways/cycleways throughout the site which would tie into the above and other existing provision surrounding the site, including the public rights of way
- improved service frequency for the Local 17 bus service for existing residents in the Woodstock Road area, which would and route through the site, stop at the NET Terminus, and provide a 20 minute frequency service to Nottingham City Centre via Stapleford, and an hourly service to Beeston Town Centre
- new bus stops with shelters within the site
- off-site highways improvements comprising:
  - amendments to Toton Lane/Stapleford Lane to accommodate the northern and southern site access junctions and to provide two lanes in the southbound direction between the two accesses
  - alterations to Bardills Island to provide additional capacity, including lengthening the right turn lane from the A52(T) eastbound approach to Toton Lane and providing three lanes on the A52(T) westbound approach and through the junction, to increase throughput on the A52(T)
  - provision of a dedicated left turn lane at the A52(T) westbound off-slip at M1 Junction 25 to increase capacity
  - upgrading of the B6003 Stapleford Lane/Swiney Way/Banks Road signal controlled junction to provide nearside pedestrian detection, thereby increasing junction capacity whilst improving pedestrian safety
  - contribution towards the upgrade of the junction control system at the A6005 Nottingham Road/High Road signal controlled T-junction
  - provision of a ghost island right turn facility on Stapleford Lane at the Darley Avenue junction to formalise arrangements for right turners and improve
safety, including the provision of a pedestrian refuge to provide increased opportunities to cross the road
   o provision of a signal controlled pedestrian crossing on Stapleford Lane, just to the south of Woodstock Road to provide a safe location for pedestrians to cross, whilst also providing breaks in traffic to assist drivers exiting nearby residential roads.

- Travel Plan measures for residents and employees to encourage travel to and from the site by sustainable modes of transport.

10.79 With the provision of the above package of improvement measures there would be no material irreversible adverse environmental transport impacts as a result of the proposed development.

**Monitoring Programme**

10.80 There would be no secondary transports impacts associated with the development and accordingly a monitoring programme is not required.

**Alternative Scenarios**

10.81 The TA also examines, as a sensitivity test, the impact on the site access junctions and Bardills Island, should additional housing at Toton Sidings need to be accessed via the site. This has been undertaken by considering the effects of an additional 225 houses being accessed via the site (i.e. 1000 houses in total). The TA demonstrates that the proposed site access junctions and proposed mitigation measures at Bardills Island would continue to satisfactorily accommodate the additional housing numbers. The proposed works would not therefore prejudice potential future access to Toton Sidings via the site.

**Robustness of Analysis**

10.82 No problems were encountered during the production of this chapter of the ES.
Summary

10.83 Table 10.7 contains a summary of the likely significant effects of the proposed development.

10.84 The construction of the proposed development would be undertaken between 2013 and 2019 and would have a slight adverse effect on the surrounding area during the construction process.

10.85 Once completed the proposed development would have a neutral effect on amenity, severance, driver stress and the view from the road, and a slight beneficial impact on journey length and travel time.

10.86 With the provision of the improvement measures identified within the TA and TP there would be no material irreversible adverse environmental transport impacts as a result of the proposed development. There would be no secondary transports impacts associated with the development and accordingly a monitoring programme is not required.
Table 10.1: 2019 and 2026 Baseline traffic flows

<table>
<thead>
<tr>
<th>#</th>
<th>Link</th>
<th>Speed Limited</th>
<th>2019 morning peak hour</th>
<th>2019 evening peak hour</th>
<th>2019 AADT</th>
<th>2026 morning peak hour</th>
<th>2026 evening peak hour</th>
<th>2026 AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
</tr>
<tr>
<td>1</td>
<td>A52 West</td>
<td>70</td>
<td></td>
<td>3,934</td>
<td>282</td>
<td>4,110</td>
<td>297</td>
<td>37,203</td>
</tr>
<tr>
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<td>30</td>
<td>978</td>
<td>66</td>
<td>1,028</td>
<td>69</td>
<td>10,824</td>
<td>731</td>
</tr>
<tr>
<td>3</td>
<td>A52 East</td>
<td>70</td>
<td>3,242</td>
<td>228</td>
<td>3,467</td>
<td>257</td>
<td>32,626</td>
<td>2,298</td>
</tr>
<tr>
<td>4</td>
<td>Toton Lane south of Bardills</td>
<td>30</td>
<td>1,735</td>
<td>69</td>
<td>1,982</td>
<td>79</td>
<td>19,817</td>
<td>792</td>
</tr>
<tr>
<td>5</td>
<td>Site Access</td>
<td>30</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>NET Access</td>
<td>30</td>
<td>219</td>
<td>0</td>
<td>150</td>
<td>0</td>
<td>1,955</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Toton Lane south of Site Access</td>
<td>30</td>
<td>1,684</td>
<td>71</td>
<td>1,909</td>
<td>80</td>
<td>18,841</td>
<td>791</td>
</tr>
<tr>
<td>8</td>
<td>Stapleford Lane</td>
<td>30</td>
<td>1,443</td>
<td>48</td>
<td>1,704</td>
<td>57</td>
<td>15,376</td>
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Table 10.2: 2019 and 2026 Total traffic flows

<table>
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<tr>
<th>#</th>
<th>Link</th>
<th>Speed Limit</th>
<th>2019 morning peak hour</th>
<th>2019 evening peak hour</th>
<th>2019 AADT</th>
<th>2026 morning peak hour</th>
<th>2026 evening peak hour</th>
<th>2026 AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
</tr>
<tr>
<td>1</td>
<td>A52 West</td>
<td>70</td>
<td></td>
<td>4,131</td>
<td>278</td>
<td>4,286</td>
<td>293</td>
<td>39,350</td>
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<td>2</td>
<td>Toton Lane north of Bardills</td>
<td>30</td>
<td>1,052</td>
<td>67</td>
<td>1,076</td>
<td>69</td>
<td>11,536</td>
<td>735</td>
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<tr>
<td>3</td>
<td>A52 East</td>
<td>70</td>
<td>3,395</td>
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<tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>26,627</td>
<td>815</td>
</tr>
<tr>
<td>5</td>
<td>Site Access</td>
<td>30</td>
<td>978</td>
<td>0</td>
<td>697</td>
<td>0</td>
<td>8,359</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>NET Access</td>
<td>30</td>
<td>222</td>
<td>0</td>
<td>152</td>
<td>0</td>
<td>1,970</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Toton Lane south of Site Access</td>
<td>30</td>
<td>1,852</td>
<td>73</td>
<td>1,999</td>
<td>79</td>
<td>20,256</td>
<td>802</td>
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<tr>
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<td>Stapleford Lane</td>
<td>30</td>
<td>1,599</td>
<td>50</td>
<td>1,789</td>
<td>56</td>
<td>16,687</td>
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Table 10.3: Development traffic flow difference (Total traffic – Baseline traffic)

<table>
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<th>Speed Limit</th>
<th>morning peak hour</th>
<th>evening peak hour</th>
<th>AADT</th>
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<tbody>
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<td></td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
</tr>
<tr>
<td>1</td>
<td>A52 West</td>
<td>70</td>
<td>189</td>
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<td>168</td>
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<tr>
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<td>76</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>3</td>
<td>A52 East</td>
<td>70</td>
<td>147</td>
<td>0</td>
<td>147</td>
</tr>
<tr>
<td>4</td>
<td>Toton Lane south of Bardills</td>
<td>30</td>
<td>873</td>
<td>0</td>
<td>574</td>
</tr>
<tr>
<td>5</td>
<td>Site Access</td>
<td>30</td>
<td>978</td>
<td>0</td>
<td>697</td>
</tr>
<tr>
<td>6</td>
<td>NET Access</td>
<td>30</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Toton Lane south of Site Access</td>
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<td>8</td>
<td>Stapleford Lane</td>
<td>30</td>
<td>160</td>
<td>0</td>
<td>83</td>
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</table>

Table 10.4: 2019 and 2026 Development traffic impact

<table>
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<tr>
<th>#</th>
<th>Link</th>
<th>2019 morning peak hour</th>
<th>2019 evening peak hour</th>
<th>2019 AADT</th>
<th>2026 morning peak hour</th>
<th>2026 evening peak hour</th>
<th>2026 AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
<td>Light</td>
<td>Heavy</td>
</tr>
<tr>
<td>1</td>
<td>A52 West</td>
<td>4.8%</td>
<td>0.0%</td>
<td>4.1%</td>
<td>0.0%</td>
<td>5.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2</td>
<td>Toton Lane north of Bardills</td>
<td>7.8%</td>
<td>0.0%</td>
<td>4.7%</td>
<td>0.0%</td>
<td>6.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>3</td>
<td>A52 East</td>
<td>4.5%</td>
<td>0.0%</td>
<td>4.0%</td>
<td>0.0%</td>
<td>5.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>4</td>
<td>Toton Lane south of Bardills</td>
<td>50.3%</td>
<td>0.0%</td>
<td>29.0%</td>
<td>0.0%</td>
<td>34.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>5</td>
<td>Site Access</td>
<td>100.0%</td>
<td>0.0%</td>
<td>100.0%</td>
<td>0.0%</td>
<td>100.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>6</td>
<td>NET Access</td>
<td>1.4%</td>
<td>0.0%</td>
<td>1.3%</td>
<td>0.0%</td>
<td>0.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>7</td>
<td>Toton Lane south of Site Access</td>
<td>10.2%</td>
<td>0.0%</td>
<td>4.6%</td>
<td>0.0%</td>
<td>7.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>8</td>
<td>Stapleford Lane</td>
<td>11.1%</td>
<td>0.0%</td>
<td>4.9%</td>
<td>0.0%</td>
<td>8.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Nature of Effect</td>
<td>Significance</td>
<td>Mitigation / Enhancement Measures</td>
<td>Geographical Importance</td>
<td>Residual Effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------</td>
<td>-----------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Traffic</td>
<td>Short term Reversible</td>
<td>Slight adverse</td>
<td></td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Traffic</td>
<td>Short term Reversible</td>
<td>Slight adverse</td>
<td>• limiting HGV hours such that wherever possible no movements occur between 0000 and 0600 hours • wheel-washing of construction vehicles and other appropriate cleaning carried out prior to departing site, all loads are properly secured, • where works impact on the ‘live’ public highway appropriate temporary works for vehicular and non-vehicular traffic are to be put in place.</td>
<td>I N R C L</td>
<td>Slight beneficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed Development</td>
<td>Long term Irreversible</td>
<td>Slight beneficial</td>
<td>• new pedestrian and cycle facilities including shared footway/cycleway and Toucan crossings on Toton Lane and the site access</td>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed Development</td>
<td>Long term Irreversible</td>
<td>Neutral</td>
<td>• increased traffic on Toton Lane, but provision of new routes away from road</td>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed Development</td>
<td>Long term Irreversible</td>
<td>Neutral</td>
<td>• provision of crossing facility on Toton Lane</td>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed Development</td>
<td>Long term Irreversible</td>
<td>Neutral</td>
<td>• landscaping and planting to screen development</td>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed Development</td>
<td>Long term Irreversible</td>
<td>Neutral</td>
<td>• capacity improvements on Toton Lane and at Bardills Island</td>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10.7: Table of significance – Transport

Key: I = International, N = National, R = Regional, C = County, L = Local