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TRANSPORT AND INFRASTRUCTURE PLANNING

Central and Country Developments Ltd
Land off Tatenhill Lane,
Branston,
Burton upon Trent,
Staffordshire

Transport Statement

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1.0 INTRODUCTION

1.1 General introduction

1.1.1 Central and Country Developments Ltd control 2.55 hectares of land off Tatenhill Lane, in Branston, Staffordshire. The land, which is vacant, is located within the settlement boundary of Burton upon Trent. The general and detailed site locations are shown in Figures 1 and 2 respectively.

1.1.2 Since 2010, there have been intentions to submit a planning application for residential development on the land, and several schemes have been presented to Staffordshire County Council (SCC) and East Staffordshire Borough Council (ESBC). An outline planning application is now being submitted (with all matters reserved except for access) for 55 dwellings and associated parking. A copy of the proposed development masterplan is contained in Appendix A.

1.1.3 The Department for Transport's (DfT) 'Guidance on Transport Assessment' (March, 2007) states that a Transport Statement must be submitted in support of a planning application for any residential development of between 50 and 80 dwellings.

1.1.4 BWB Consulting Ltd were therefore commissioned by Central and Country Developments to produce a Transport Statement to support the planning application.

1.1.5 This Transport Statement, which is based on the latest development proposals for 55 dwellings, builds upon the previously agreed position with SCC and the Highways Agency (HA), as detailed in Section 1.2.

1.1.6 This report has also been prepared following discussions with Geoff Evenson of SCC in January 2013. The latest discussions confirmed that the Transport Statement should build upon the previously agreed work, given the previously completed verification forms. Furthermore, it was noted that given that the larger proposals were previously acceptable, the 55 dwellings also ought to be acceptable.

1.1.7 However, SCC noted that an outline planning application was submitted in November 2012 for a large-scale mixed use development on land to the north of the site (Branston Locks - application reference P/2012/01467). At the time of

writing, the Branston Locks scheme has not yet been decided. Nevertheless, the proposed include for the realignment of Branston Road, and SCC therefore highlighted that, if granted planning consent, the Branston Locks scheme could change how the proposed development site is accessed.

1.1.8 At the time of writing, the Branston Locks application has been registered but has not yet been decided. As a result, SCC requested that this Transport Statement only take into account the Branston Locks proposals as part of a sensitivity assessment.

1.1.9 This report, which has been produced to support the planning application and to address SCC's requirements, is therefore structured as follows:

- Section 2 describes the site location and nearby developments, including the Branston Locks development. The Section also reviews the existing opportunities for travel to the site by foot, cycle, and public transport, and describes the existing local highway network, including the results of a road safety assessment. The proposed Branston Locks development, and associated highway works and infrastructure improvements are also detailed, because if granted planning permission, this will change the context of the proposed development.
- Section 3 describes the development proposals, including the site access junction and the parking provision. As requested by SCC, this takes into account the Branston Locks development proposals and the associated highway works.
- Section 4 details the vehicle trip generation using the previously agreed trip rates, as well as the previously agreed modal split and associated person trip generation of the proposed development. It determines whether any infrastructure improvements are required to mitigate the increased demand for trips by sustainable modes.
- Section 5 details the agreed distribution pattern and subsequent assignment of development traffic on the local highway network.
- Section 6 details the assessment year traffic flows, including the relevant committed development.
- Section 7 assesses the impact of the development traffic on the operation and safety of the local highway network.
- Section 8 provides the summary and conclusions.

1.1.10 This Transport Statement has been produced in accordance with the DfT's 'Guidance on Transport Assessment'. It also examines the transport implications

of the proposed development taking into account whether the following objectives included within the National Planning Policy Framework (NPPF) are met:

- *"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."*

1.2 Agreed position with SCC and the HA

1.2.1 In summary, SCC have previously agreed that there are no insurmountable highways issues associated with a residential development at the site, and have agreed the contents of Transport Statements prepared for a larger development (of 79 dwellings) and smaller development (of 33 dwellings) at the site. The previous Transport Statement verification forms are contained in Appendix B.

1.2.2 Similarly, the HA have also agreed that residential development at the site would be acceptable in terms of the associated impact on the A38 Strategic Road Network, by agreeing the contents of the two Transport Statements.

1.2.3 The agreed position is as follows:

- In March 2010, BWB Consulting Ltd produced a Transport Statement (TS) to support the planning application for up to 73 dwellings and a new vehicular access to the Branston Water Park (which is located directly to the south of the site), to allow the existing access off the A38 to become redundant.
- The TS (document reference NTT415TS revision 2) was issued to SCC, and the HA on 24 March 2010. Comments on the TS were received from SCC via emails dated 19 April 2010 and 7 May 2010. Comments were also received from the HA in a letter dated 13 April 2010. At the same time, following discussions between the developers and ESBC, the proposed development density increased to 81 dwellings.
- A revised report (document reference NTT415TS revision 4) was therefore prepared to address the comments made by SCC and the HA, and to reflect the increased development of 81 dwellings. The revised report was issued on 18 May 2010. A response to the revised report was received from the HA in a letter dated 10 June 2010, and this confirmed that the HA found the

development proposals acceptable. In addition, SCC confirmed that the format and conclusions of the TS were acceptable, but noted that because the development included more than 80 dwellings, a Travel Plan was required to support the planning application.

- Therefore, the development proposals were reduced to 79 dwellings to negate the need for a Travel Plan. A revised TS (document reference NTT415TS revision 5) was prepared and issued to SCC and the HA on 14 June 2010. Both the HA and SCC, confirmed that the Transport Statement and development proposals were acceptable, via emails dated 17 June 2010.
- However, the development proposals were then reduced to 33 dwellings, and a revised TS was issued to the HA and SCC on 31 August 2010. Emails dated 1 September and 3 September 2010 confirmed that the HA and SCC found the Transport Statement and the development proposals for 33 dwellings to be acceptable.

1.2.4 This report, prepared to support the planning application for 55 dwellings, therefore uses the previously agreed parameters, such as the vehicle trip rates, the modal split, the distribution and assignment of development traffic, the study area and the methodology for identifying the impact of the proposed development traffic within the study area (including both quantitative and qualitative assessments).

2.0 EXISTING CONDITIONS

2.1 Site location

2.1.1 The site is located off Tatenhill Lane, at the western edge of Branston, in Staffordshire. Branston forms part of the urban area of Burton upon Trent. The general site location is shown in Figure 1.

2.1.2 The site is bound by residential development on Tatenhill Lane to the north, the A38 to the east, Branston Water Park to the south, and the Trent and Mersey Canal to the west. A detailed site location is shown in Figure 2, and an aerial photograph of the site is shown in Figure 3.

2.2 Surrounding development

2.2.1 As shown in Figure 2, there is a plot of land on the far side of the Trent and Mersey Canal, directly to the west of the site, which has planning permission for a new ground, clubhouse, facilities, and parking for Burton Rugby Football Club (reference PA/32378/003). A copy of the consented masterplan is contained in Appendix C.

2.2.2 In addition, as detailed in Section 1, an outline planning application with all matters reserved has been submitted for a large scale mixed-use development at Branston Locks to the north of the site (application reference P/2012/01467). At the time of writing, the scheme has not yet been decided.

2.2.3 The planning application webpage for the Branston Locks proposals refer to:

- up to 2,500 dwellings (Class C3)
- up to 92,900sqm (1,000,000 sqft) of employment floorspace (Classes B1, B2 and B8)
- a local centre providing up to 3,716sqm (40,000 sqft) of retail floorspace (Classes A1, A2, A3, A4 and A5), up to 929sqm (10,000 sqft) of health care and associated community uses (Class D1)
- a residential care home of up to 160 bed spaces (Classes C2 and C3),
- up to 555sqm (6,000 sqft) of pub and restaurant floorspace (Classes A3 and A4)
- a primary school with 630 places
- a hotel of up to 80 bedrooms (Class C1)

- vehicular access from Branston Road and Shobnall Road, with an internal link road connecting the two.

A copy of the Branston Locks masterplan is contained in Appendix D.

2.2.4 As part of the Branston Locks planning application, a Transport Assessment was produced by David Tucker Associates (DTA), dated 6 November 2012. Based on a review of the Transport Assessment, it is understood that the Branston Locks development will be completed in four phases. Table 11 of the Transport Assessment states that Phase One will be fully occupied in 2017, Phase Two in 2021, Phase Three in 2025 and Phase Four in 2029. A copy of the phasing plan is contained in Appendix D, whilst the development schedule from Table 11 is replicated below:

	Full Development	Phase 1	Phase 2	Phase 3	Phase 4	
Likely Year of completion	2029	2017	2021	2025	2029	
Housing	2,500	600	582	545	773	
B1	27,870	5,115	11,378	11,378	0	sqm
B2	37,160	6,819	15,170	15,170	0	sqm
B8	27,870	5,115	11,378	11,378	0	sqm
Primary School	630	210	210	210		pupils
Local Centre	3,716		3,716			sqm
Hotel	80		80			beds
Extra Care / Nursing	160		160			beds
Medical Centre	929		929			sqm
Public House	555		555			sqm

Table 1: Branston Locks development schedule

2.2.5 Therefore, the permitted Rugby and Football facilities will increase the leisure facilities close to the proposed development site. Furthermore, if granted planning consent, the Branston Locks development will increase the employment, education and retail facilities close to the proposed development site.

2.3 Highway network

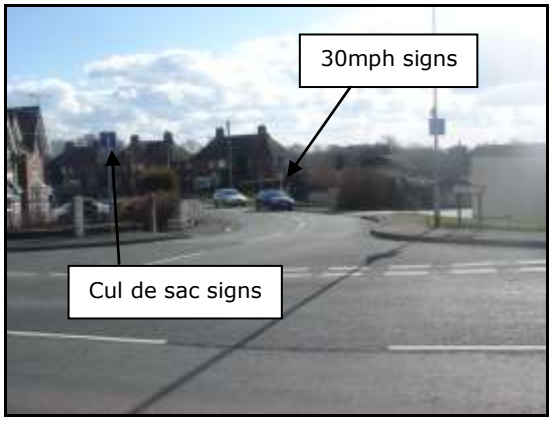
2.3.1 The site is currently accessed via a narrow gated farm track from Tatenhill Lane, as shown in Photograph One below. Tatenhill Lane is a cul de sac, and serves 50 residential dwellings, a vacant unit, and a public house. Tatenhill Lane has a 30mph speed limit. There are no parking restrictions and some on-street parking occurs, as shown in Photograph Two below.

Photograph One: Existing site access

Photograph Two: Tatenhill Lane (looking eastbound towards terminus of road)

2.3.2 To the northwest of the site, Tatenhill Lane joins Branston Road at a priority controlled T-junction, as shown in Photograph Three. Branston Road runs from the rural areas to the west of Burton towards the A38 Branston Interchange. Branston Road measures 7.2 metres in width (as measured on site), and is subject to the national speed limit. There are no parking restrictions, but Branston Road has a 17T weight restriction on the bridge over the canal.

2.3.3 The Branston Road/Tatenhill Lane junction is subject to the national speed limit. Visibility at the junction from Tatenhill Lane along Branston Road is restricted to the left due to the vertical alignment of the carriageway over the canal bridge, as shown in Photograph Four. This will therefore need to be addressed as part of the development proposals, and this is detailed further in Sections 2.3.7 and 7.3.



Photograph Three: Branston Road/Tatenhill Lane junction

Photograph Four: Visibility to the left from Tatenhill Lane along Branston Road from 2.4 metres set back distance

2.3.4 To the east, Branston Road joins the A5121 via a grade-separated roundabout junction over the A38, known as the Branston Interchange. The A5121 provides access towards Burton upon Trent. The A38 forms part of the trunk road network

and is maintained by the HA. The A38 provides connections to the M6 to the south, and the A50, A52 and M1 to the north. The site is therefore well located for access to the strategic road network, and the local highway network heading towards Burton upon Trent.

2.3.5 However, it is understood that as part of the Branston Locks development proposals, Branston Road and the Branston Interchange will be altered. The 2012 DTA Transport Assessment states that the southern part of Phase One will be accessed via two new priority-controlled T-junctions on Branston Road (with a separate access for the residential and employment development respectively). However, as part of the construction of Phase Two, the existing Branston Road carriageway will be realigned to run through the Branston Locks site. Given that the application is outline only, with all matters reserved, the highway proposals are not clear in the Transport Assessment. However, an illustration of the potential highway works is contained in the Branston Locks Design and Access Statement, and a copy is shown in Appendix E. This potential alignment is also shown in Figure 3.

2.3.6 Based on this illustration, it is understood that the proposals are to re-route through-traffic travelling on Branston Road to/from the Branston Interchange via new roads over a new canal bridge within the Branston Locks site. The new roads will reconnect to Branston Road further to the west, and thus the existing carriageway and existing canal bridge will remain open for non-vehicular traffic and vehicular access to Tatenhill Lane only. Based on the phasing plan, it is understood that this will be completed sometime between 2017 (when Phase One will be fully complete) and 2021 (when Phase Two will be fully complete).

2.3.7 Therefore, people driving between Tatenhill Lane and the Branston Interchange will need to route westbound along the existing Branston Road carriageway over the existing canal bridge, before turning right at a new T-junction with the newly realigned Branston Road. They will then have to turn right again at the new link road/new Branston Road T-junction to travel via a new bridge over the canal and towards the Branston Interchange. The same route will be required for the return journey. Therefore, if planning consent is granted for the Branston Locks scheme, these proposals will affect the access proposals into the proposed development on land off Tatenhill Lane. In addition, if the existing Branston Road carriageway at the Branston Road/Tatenhill Lane T-junction is closed to vehicular through-traffic, this will have implications on the mitigation measures required to address the

visibility issue over the canal bridge that was detailed in Section 2.3.3. This is detailed further in Section 7.3.

2.3.8 With regards to the Branston Interchange, it is understood that the HA have aspirations to fully signalise the roundabout. The DTA 2012 Transport Assessment therefore states that *"It is expected that development at Branston Locks will make an appropriate contribution towards this scheme".* It also states that *"at present two other developments are also expected to make significant contributions",* and refers to the consented Drakelow Park, and the proposed residential development of 342 dwellings on Land South of Branston. The Transport Assessment also includes a drawing suggesting the mitigation measures that will be provided as part of the contribution from the Branston Locks scheme. The drawing is contained in Appendix R of the DTA Transport Assessment, and a copy of is contained in Appendix F.

2.4 Traffic flows

2.4.1 In order to determine the existing traffic flows on both Branston Road and Tatenhill Lane, a traffic count was undertaken at the Branston Road/Tatenhill Lane junction on Thursday 4 March 2010. All vehicles turning at or travelling through the junction were recorded in 15 minute intervals from 0730 to 0930 hours, and 1630 to 1830 hours. The traffic survey results are contained in Appendix G. The morning and evening peak hours were found to be 0815 to 0915 hours and 1700 to 1800 hours respectively. The observed peak hour traffic flows are summarised in Figure 4. SCC have previously confirmed that the use of the one day traffic count is acceptable.

2.4.2 Traffic flows for the A38 Branston Interchange were obtained from a traffic count undertaken at the junction on Tuesday 21 April 2009. The 2009 morning and evening peak hour traffic flows, were obtained from a Transport Assessment Addendum prepared by DTA in support of the mixed use development at Drakelow Park to the east of the site, and were also reused in the 2012 DTA Transport Assessment for the Branston Locks scheme. Whilst the traffic count results are older than three years, their use within the Branston Locks Transport Assessment suggests that they remain suitable to use. The 2009 traffic flows are shown in Figure 5.

2.5 Personal injury accident (PIA) record

2.5.1 A road safety assessment was undertaken as part of the 2012 Transport Assessment prepared by DTA for the Branston Locks development. This included an analysis of all recorded PIAs on Branston Road (from the Branston Road/Main Street/Dunstall Road crossroads to the west of the site up to and including the A38/A5121 Branston Interchange to the east), between 1 January 2007 and 31 December 2011.

2.5.2 The Transport Assessment concluded that, whilst there were a number of PIAs on the A38 and the A38 slip roads[1], there are no trends in the recorded PIAs on Branston Road. Only one PIA was recorded at the Branston Road/Tatenhill Lane T-junction. The PIA occurred on Thursday 9 October 2008 at 1712 hours, and involved a car turning right from Tatenhill Lane onto Branston Road, across the path of an oncoming westbound vehicle on Branston Road. The PIA cannot therefore be attributed to the restricted visibility towards eastbound vehicles, and is instead assumed to be due to driver error, with the driver failing to look properly/judge the speed of the oncoming vehicle. No PIAs were recorded on Tatenhill Lane or at the Branston Road canal bridge.

2.5.3 Therefore, it is concluded that Branston Road, Tatenhill Lane, and the Branston Road/Tatenhill Lane junction are not a PIA hazard.

2.6 Accessibility for pedestrians

2.6.1 The Institution of Highways and Transportation (IHT) publication 'Guidelines for Providing for Journeys on Foot' [2000] describe acceptable walking distances for pedestrians without mobility impairment. They suggest that, for commuting and school, up to 500 metres is the desirable walking distance, up to 1,000 metres is an acceptable walking distance, and 2,000 metres is the preferred maximum walking distance.

2.6.2 Figure 6 shows the pedestrian catchment area based on 2,000 metres walking distance from the site access, along the local highway network and traffic-free public footpaths. As shown, the pedestrian catchment area includes most of

[1] The DTA Transport Assessment states that 11 PIAs were recorded at the Branston Interchange, including:
- four rear end shunts on the approach to the roundabout
- two PIAs involving vehicles entering the roundabout and colliding with circulating vehicles,
- three PIAs involving vehicles changing lanes on the roundabout
- one PIA skidding and losing control due to excessive speed
- and one PIA losing control and colliding with another vehicle due to excessive speed.

Branston, and the associated employment, education, and retail facilities, as well as the leisure facilities at the Branston Water Park, along the Trent and Mersey Canal, and the public house in Tatenhill.

2.6.3 There are street lit footways on both sides of Tatenhill Lane. At the terminus of Tatenhill Lane, there is a subway underneath the A38 that provides access to Court Farm Lane and thus the wider pedestrian infrastructure leading to and from Branston. The subway is well lit, wide, clean and is well used.

2.6.4 There are also a number of traffic free public footpaths in the vicinity of the site, both along the canal, and through the surrounding fields.

2.6.5 There are no designated footways on Branston Road. However, given that pedestrians can route along the desire line between the site and Branston via the subway, pedestrians will not need to walk along Branston Road to access the site.

2.6.6 Overall, given the areas contained within acceptable walking distance of the site, and the existing pedestrian infrastructure provided along the desire lines, there are good opportunities for pedestrian travel.

2.6.7 In addition, the opportunities for pedestrian travel will further increase as the Branston Locks development is built out, because there will be additional retail, employment and education facilities within walking distance of the site. The Branston Locks development will therefore create new pedestrian desire lines between the site and the north.

2.6.8 Furthermore, it is understood that as part of the Branston Locks development, significant pedestrian and cycle infrastructure will be provided throughout the development. It is also understood that the existing underpass under the A38 will be upgraded and improved (although this is not considered necessary given the good existing provision), and that the existing Branston Road carriageway and canal bridge will be available for non-vehicular traffic. Therefore, the opportunities for pedestrian travel will further improve as the Branston Locks development is constructed and occupied.

2.7 Accessibility for cyclists

2.7.1 Guidance suggests that cyclists are typically prepared to cycle up to 5km for non-leisure journeys (such as those to work). A 5km cycle catchment area, shown

centred on the site in Figure 7, includes the whole of Branston, Burton upon Trent, and Barton under Needwood, as well as several smaller villages.

2.7.2 As shown in Figure 8, there are no designated cycle facilities on Tatenhill Lane and Branston Road in the vicinity of the site. However, given the nature of these routes, cyclists could cycle on the carriageways. As detailed in Section 2.4, there are no recorded PIAs involving cyclists on the local highway network.

2.7.3 Alternatively, cyclists can route between Tatenhill Lane and Branston via the subway, but they are expected to dismount through the subway, and guard railing is provided to encourage this.

2.7.4 To the north-west of the site, the traffic-free Sustrans Millennium Cycle Route (Route 54) connects Branston Road to Shobnall Road to the north.

2.7.5 Overall, given the good highway links contained within the cycle catchment area, and the route via the subway on the desire line towards Branston and Burton upon Trent, there are good opportunities for cycle travel between the site and the surrounding areas.

2.7.6 As detailed above, opportunities for cycle travel will further increase as the Branston Locks development is built out, because there will be additional retail, employment and education facilities within cycling distance of the site.

2.7.7 Furthermore, pedestrian and cycle infrastructure will be provided throughout the Branston Locks development. Therefore, the opportunities for cycle travel (particularly on any existing and future desire lines to and from the north) will further improve as the Branston Locks development is constructed and occupied.

2.8 Accessibility by bus

2.8.1 The IHT Guidelines for 'Planning for Public Transport in New Developments', state that the maximum walking distance to a bus stop should not exceed 400 metres. As shown in Figure 9, the closest bus stop to the site is located on Branston Road within 400 metres walking distance.

2.8.2 The bus stop is served by Bagnalls Coaches Service 403, which runs at an irregular frequency between Burton and Abbotts Bromley on Tuesdays, Thursdays and Fridays only.

2.8.3 However, as shown in Figure 9, there are a number of other bus services just beyond walking distance of the site, and the nearest bus stops for these services are on Main Street and Clays Lane. The bus services include:

- Service 7/7A/7E which run between Burton and Lichfield. The service runs through Branston at an hourly frequency from Monday to Saturday, and once every three hours on Sundays.
- Service 247 which runs between Castle Gresley and Fradley Park at a frequency of one bus every three hours seven days a week.
- Service 813 which runs from Tamworth to Burton, via Branston, once in the morning peak hour and returns once in the evening peak hour.
- Service V4 which runs between Burton upon Trent and Beans Covert, via Branston, at an hourly frequency from Monday to Saturday.
- Service X12 which runs between Lichfield and Burton Upon Trent, via Branston, at a 30 minute frequency from Monday to Saturday.

2.8.4 The increased walking distances to these bus services will not deter bus users. The IHT guidelines note that the 400 metres walking distance should be "*treated as guidance, to be achieved where possible by services that operate at regular frequencies and along direct routes. It is more important to provide services that are easy for passengers to understand and attractive to use than to achieve adherence to criteria for walking distance".* Therefore, the nearest bus stops would still be attractive for public transport users living at the site. This is further highlighted by the fact the preferred acceptable walking distance for commuters, as detailed in Section 2.6.2, is 1,000 metres and consequently includes these bus stops.

2.8.5 Overall, given the frequency of buses, the destinations served and the proximity of the existing bus stops, there are good opportunities for bus travel to and from the development.

2.8.6 Opportunities for bus travel will further increase as the Branston Locks development is built and occupied. The 2012 DTA Transport Assessment states that *"as part of the development proposals it is envisaged that a service will be provided which creates a circular route through Centrum and Branston Locks linking to the town centre. The overall aim will be to provide a bus service of at least 20 minute frequencies peak and 30 minute frequencies off peak."* It goes on to state that *"Clearly, careful planning of the location and type of bus stops will be required at a more detailed design stage to ensure that bus stops are appropriately located throughout the development. However, the masterplan*

shows that it would be possible to provide high quality public transport accessibility to the site." Depending on the location of the bus stops, residents at the proposed development on land off Tatenhill Lane will therefore be able to utilise the new bus service.

2.9 Accessibility by train

2.9.1 Branston Railway Station was closed in the 1930s, and therefore the nearest train station is in Burton upon Trent. Burton upon Trent rail station is beyond walking distance of the site, but within cycling distance.

2.9.2 From the station, East Midlands Trains run frequent services to Derby, Sheffield, Birmingham and Nottingham.

2.9.3 The station has a staffed ticket office, as well as ticket machines. The station includes a taxi rank, free cycle parking, and a car park with 110 spaces. Car parking is £6.00 during the weekday peak (or £21.50 weekly, £63.00 monthly, £176 quarterly, or £590.00 annually) and £3.40 off-peak on weekdays, and at weekends.

2.9.4 Given the above, there are opportunities to travel by rail as part of a multi-modal journey to and from the site, involving either cycling, or taxi travel. Given the distance to the station, the provision of free cycle parking at the station, and the costs associated with car parking at the rail station, most residents at the proposed development travelling to the station may cycle.

2.10 Summary

2.10.1 The site is accessible by a range of sustainable travel modes. Given the areas contained within acceptable walking distance of the site, and the existing pedestrian infrastructure along the desire lines to the centre of Branston, there are good opportunities for pedestrian travel. Similarly, given the areas contained within cycling distance, there are good opportunities for cycle travel between the site and the local area.

2.10.2 In addition, whilst the site is not within 400 metres of the nearest bus stops located on Main Street and Clays Lane, walking routes between the locations are available, ensuring users can easily walk between the site and bus stops to reach the bus services. The Burton upon Trent rail station also provides opportunities

for rail travel to and from the site as part of a multi-modal journey, involving either cycling, or taxi travel. Given the distance to the station, the provision of free cycle parking at the station, and the costs associated with car parking at the rail station, residents travelling to the station may cycle.

2.10.3 The HA have previously confirmed that the site satisfies the guidelines on accessibility and the level of access by sustainable modes is acceptable. SCC have also previously agreed the above conclusions.

2.10.4 The accessibility of the site, and the opportunities for pedestrian, cycle and bus travel, will further improve if the Branston Locks development is built and occupied. If granted planning consent, the Branston Locks development will increase the range of retail, employment and education facilities within walking and cycling distance of the site, as well as provide improved sustainable travel infrastructure (including new pedestrian and cycle routes, and new bus services).

3.0 PROPOSED DEVELOPMENT

3.1 Development proposals

3.1.1 The development proposals comprise 55 new dwellings and the formation of a new access point onto Tatenhill Lane. However, the proposed development will involve the demolition of two existing houses (78 and 80 Tatenhill Lane), and therefore the proposals only result in a net increase of 53 dwellings.

3.1.2 Appendix A contains an indicative masterplan and, as shown, the dwellings include:

- 12 5-bedroom detached houses
- 26 x 4-bedroom detached houses
- 11 x 3-bedroom detached houses
- 2 x 2-bedroom detached houses
- 4 x 1-bedroom apartments.

3.2 Car parking

3.2.1 Car parking at the proposed residential development has yet to be finalised, but will be provided in accordance with the parking standards for ESBC, as detailed in SCC's 'Local Transport Plan - A Policy Framework for Parking'. The guidelines state that the maximum parking standards are as follows:

- for one and two bedroom dwellings
  - one space per dwelling within the curtilage or specifically allocated in a communal area
  - plus one visitor's space for every two dwellings
- for three bedroom dwellings
  - two spaces per dwelling, with at least one space provided within the curtilage of the dwelling
- for four or more bedroom dwellings
  - three spaces per dwelling provided within the curtilage of the dwelling.

3.2.2 The proposed development will therefore provide car parking at, or below, the maximum allowance in accordance with the standards. The parking provision will include a combination of single and double garages, driveways, and unallocated spaces.

3.3 Proposed access

3.3.1 It is proposed to access the residential development via an internal access road with a new junction onto Tatenhill Lane. The construction of the access will involve the demolition of 78 and 80 Tatenhill Lane (rather than 54 Tatenhill Lane as previously presented in the Transport Statements prepared for the 81, 79 and 33 dwellings schemes in 2010 and agreed with SCC and the HA).

3.3.2 The proposed junction is shown in Drawing NTT/415/001 revision P6, and has been designed based on the geometry previously agreed with SCC[2]. However, the proposed junction layout includes 6 metres kerb radii, as this is now more appropriate for residential roads.

3.3.3 The site access road and proposed Tatenhill Lane/site access junction can be accommodated within the public highway or on land controlled by the Client (numbers 78 and 80 Tatenhill Lane). A copy of the highway boundary information is contained in Appendix H.

3.3.4 Pedestrian access will be provided via a 1.8 metre wide footway along the internal access road. The footway along the internal access road will link to the existing footways on Tatenhill Lane.

3.3.5 The site access roads and the proposed Tatenhill Lane/site access junction will be designed to adoptable standards and offered for adoption.

3.4 Internal layout and servicing

3.4.1 Whilst the masterplan has yet to be finalised, the development layout will be designed to ensure that service vehicles will be able to enter the site, manoeuvre, and exit in a forward gear.

[2] BWB Consulting Ltd submitted Drawing NTT/415/001 revision P1 to SCC in a letter dated 8 July 2008, when the proposed access was further east and involved the demolition of 54 Tatenhill Lane. SCC confirmed their requirements in a letter dated 12 August 2008, and stated that they required a 5.5 metres wide carriageway, with 1.8 metres wide footways, and 10 metres kerb radii, taken perpendicular to Tatenhill Lane. The visibility requirements were 2.4x90 metres in each direction.

Revision P2 of the drawing was therefore produced and included in the subsequent Transport Statements for 81, 79 and 33 dwellings respectively. Revision 2 showed the agreed junction layout, but with the visibility splays provided in accordance with the DfT's Manual for Streets, as requested by SCC in their email dated 7 May 2010.

4.0 TRIP GENERATION

4.1 Existing use

4.1.1 As detailed in Section 2 the site has no existing use that is likely to create vehicle movements, and therefore no traffic is currently generated by the site.

4.2 Proposed use vehicle trip generation – residential development

4.2.1 As detailed in Section 3, the proposed development includes 55 dwellings. However, the development requires the demolition of two existing dwellings, and therefore results in a net increase of only 53 dwellings. Nevertheless, for the purposes of a robust assessment, this Transport Statement assesses the impact of an additional 55 dwellings.

4.2.2 As discussed with SCC, it is possible to calculate the likely traffic generation of the proposed development using the previously agreed methodology and associated trip rates.

4.2.3 Previously, it was considered appropriate to derive a site specific trip rate per dwelling, using the observed traffic flows generated by the 50 existing dwellings fronting Tatenhill Lane. The trip rate and traffic generation, for the 55 dwellings, using this methodology is summarised in Table 2 below:

	Observed traffic flows on Tatenhill Lane (from Figure 4)	**Trip rate per dwelling (observed flows/ 50 dwellings)**	**Development traffic flows (trip rate x 55 dwellings as a worst case)**
AM peak hour	5 arrive 9 depart 14 two-way	0.10 arrive 0.18 depart 0.28 two-way	6 arrive 10 depart 16 two-way
PM peak hour	28 arrive 17 depart 45 two-way	0.56 arrive 0.34 depart 0.90 two-way	31 arrive 19 depart 50 two-way

Table 2: Traffic generation using site-specific trip rates

4.2.4 However, whilst the trip rate and likely traffic generation of the proposed residential development based on the recorded traffic flows seemed realistic in the evening peak hour, the departure trip rate and likely traffic generation in the morning peak hour appears low. It was assumed that the development is likely to

generate more departure trips during the morning peak hour, associated with journeys to work and to school, than these figures suggest.

4.2.5 Therefore, 85th percentile trip rates were obtained from the 'residential – privately owned houses' category of the TRICS database. The agreed trip rates and the associated traffic generation using this methodology is summarised in Table 3 below:

	Trip rate per dwelling	Development traffic flows (trip rate x 55 dwellings)
Morning peak hour	0.203 arrive 0.506 depart 0.709 two-way	11 arrive 28 depart 39 two-way
Evening peak hour	0.519 arrive 0.319 depart 0.838 two-way	29 arrive 18 depart 47 two-way

Table 3: Traffic generation using agreed 85th percentile trip rates

4.2.6 As shown, the evening peak hour 85th percentile trip rates from TRICS are similar to the trip rates based on the observed traffic flows in Table 2, and result in a comparable evening peak hour trip generation. It is therefore proposed to use the 85th percentile trip rates detailed above to calculate both the morning and evening peak hour trip generation for the development, to provide a consistent approach. The HA and SCC have previously confirmed that this methodology and the trip rates are acceptable.

4.2.7 Nevertheless, it is highlighted that these figures are robust, given the use of 85th percentile trip rates from the robust privately owned houses category. The development is likely to contain a range of housing types and tenures, which could generate lower trip rates. In addition, the trip rates have also been applied to a worst case development of 55 dwellings, when the development will only result in a net increase of up to 53 dwellings. The development therefore has the potential to generate lower volumes of traffic.

4.3 Proposed residential modal split and person trip generation

4.3.1 The agreed modal split, based on the method of travel to work data for the Branson ward, taken from the 2001 Census, is as follows:

- pedestrians 5.0%
- cyclist 5.1%
- bus 3.1%
- train 1.7%
- vehicle drivers, including motorcycles 78.2%
- vehicle passengers, including taxi 6.9%

4.3.2 However, the method of travel to work data from the 2011 Census has now been released. As a result, in order to determine a probable modal split for the trips generated by the proposed residential development, it is proposed to use the 2011 National Census travel to work data for the Branston ward. A copy of the Census data is contained in Appendix I and the modal split is summarised below. As shown, the modal split is similar, although the proportion of car drivers, bus users and cyclists has decreased, whilst the proportion of car passengers and pedestrians has increased.

4.3.3 The table below details the 2011 modal split and person trip generation of the proposed residential development, assuming a worst case development density of 55 dwellings.

	Car driver	Passenger	Bus	Train	Bicycle	On foot	Total
	77.8%	7.8%	2.1%	1.4%	3.7%	7.2%	-
0800 - 0900	39	4	1	1	2	4	51
1700 - 1800	47	5	1	1	2	4	60

Table 4: Modal split and associated person trip generation – 55 dwellings

4.4 Impact of additional person trips on the local infrastructure

4.4.1 Table 4 details the likely increase in pedestrian, cycle, public transport and car trips as a result of the proposed development.

4.4.2 The existing pedestrian, cycle, and public transport infrastructure in the vicinity of the site is detailed in Section 2. Whilst there are no designated footways east of the site along Branston Road, there is a footway along Tatenhill Lane, which connects via a subway to wider infrastructure in Branston to the east. This is therefore the route that pedestrians, cyclists, and public transport users will take to reach the centre of Branston and beyond, and the associated facilities.

4.4.3 Therefore, it is considered that the existing and proposed infrastructure has the capacity to accommodate the additional trips, and no improvements to the off-site infrastructure are required as part of the development proposals.

4.4.4 SCC previously queried whether off-site highway works have been considered along Branston Road and around the Branston Interchange, to connect the existing cycleway along the A5121 Wellington Road as part of the development proposals.

4.4.5 As shown in Table 2, the proposed development will generate two two-way cycle movements in the morning and evening peak hours, or three two-way movements assuming the train users cycle to and from the station. Given the minimal number of cyclists likely to be generated by the development, it is not considered necessary to provide off-site highway works as part of the proposed development.

4.4.6 It is also noted that there are currently no plans to provide pedestrian/cycle facilities along Branston Road and around the Branston Interchange as part of the Branston Locks development. Instead, the DTA Transport Assessment suggests that it is proposed to promote the use of Tatenhill Lane and the existing subway under the A38. Given that the Branston Locks scheme will generate significantly more pedestrian and cycle trips than the proposed development, it is considered that any required infrastructure should be provided as part of that scheme.

5.0 VEHICLE TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

5.1 Distribution

5.1.1 In order to distribute the proposed residential development traffic to the local highway network, it is proposed to use the previously agreed distribution pattern, which was based on the 2001 National Census 'Origin-Destination' data. The equivalent data from the 2011 National Census has not yet been released, and thus the 2001 Census data remains appropriate to use.

5.1.2 Figure 10 shows the previously agreed distribution pattern at the Branston Road/Tatenhill Lane junction based on the Census data. As shown: 7.5% of residential traffic would travel to and from the west along Branston Road, and the remaining 92.5% would travel through the Branston Interchange to the east.

5.1.3 Of the traffic travelling to and from the Branston Interchange, 20.8% would travel to and from the A38(N), and 35.1% would travel on the A38(S). The remaining 36.6% would travel on the A5121. The previously agreed distribution pattern of the residential traffic at the A38 Branston Interchange is shown in Figure 11.

5.1.4 In terms of the impact on the A38, this distribution pattern is a worst case and is adopted for the remainder of the assessment. Both SCC and the HA have previously confirmed that the distribution pattern is acceptable.

5.2 Assignment

5.2.1 The residential development traffic shown in Table 3 was assigned to the local highway network in accordance with the agreed distribution patterns. The development traffic assignment at the Branston Road/Tatenhill Lane junction is shown in Figure 12 for the morning and evening peak hour periods. The development traffic assignment at the A38 Branston Interchange is shown in Figure 13 for the morning and evening peak hour periods.

5.2.2 On Branston Road, as shown in Figure 12, the proposed residential development will generate an additional 36 two-way vehicle movements east of Tatenhill Lane, and three two-way vehicle movements west of Tatenhill Lane in the morning peak hour. In the evening peak hour, the development will result in 43 and four two-way vehicle movements on Branston Road east and west respectively. The

impact of these additional trips on the operation and safety of the Branston Road/Tatenhill Lane junction is detailed in Section 7.

5.2.3 At the A38, shown in Figure 13, the residential development will result in an additional eight and 10 two-way vehicle movements on the A38(N) in the morning and evening peak hours. The residential development will result in an additional 14 and 18 two-way vehicle movements on the A5121 in the morning and evening peak hours. The residential development will result in an additional 14 and 16 two-way vehicle movements on the A38(S) in the morning and evening peak hours. The impact of these additional trips on the operation and safety of the Branston Interchange is detailed in Section 7.

6.0 ASSESSMENT TRAFFIC FLOWS

6.1 Study area

6.1.1 This Transport Statement assesses the impact of the proposed residential development traffic at the Tatenhill Lane/site access junction, the Branston Road/Tatenhill Lane T-junction, and the A38 Branston Interchange. This study area was previously agreed with SCC and the HA.

6.2 Observed traffic flows

6.2.1 As detailed in Section 2.4, a traffic count was undertaken at the Branston Road/Tatenhill Lane junction on Thursday 4 March 2010. The morning and evening peak hours were found to be 0815 to 0915 hours and 1700 to 1800 hours respectively. The observed peak hour traffic flows are shown in Figure 4.

6.2.2 It is possible to estimate the vehicle movements on Tatenhill Lane, past the proposed Tatenhill Lane/site access junction using the observed traffic flows turning into and out of Tatenhill Lane.

6.2.3 Traffic flow information for the A38 Branston Interchange was obtained from a traffic count undertaken on Tuesday 21 April 2009. The peak hour traffic flows are shown in Figure 5.

6.3 Assessment year

6.3.1 The DfT 'Guidance on Transport Assessment' suggests the use of an assessment year of five years after the date of registration of the planning application. As the planning application would be made in 2013, this would mean an assessment year of 2018.

6.3.2 The observed 2010 traffic flows at the Branston Road/Tatenhill Lane junction were therefore growthed to 2018 using TEMPRO (version 6.2, dataset 62), which includes links to the National Traffic Model. The TEMPRO extracts are contained in Appendix J. As shown, the growth rates for all roads in Burton on Trent are as follows:

- 2010 to 2018 (AM) 1.0632
- 2010 to 2018 (PM) 1.0683.

6.3.3 These growth rates were applied to the 2010 traffic flows at the Branston Road/Tatenhill Lane junction. The 2018 background traffic flows are shown in Figure 14 for the morning and evening peak hour respectively. It should be noted that traffic turning into and out of Tatenhill Lane was not growthed, as this is not likely to increase as Tatenhill Lane is a residential cul-de-sac.

6.3.4 The 2009 traffic flows at the A38 Branston Interchange were also growthed to 2018 using TEMPRO. The TEMPRO output is contained in Appendix J. As shown, the growth rates for rural trunk roads in Burton on Trent are as follows:

- 2009 to 2018 (AM) 1.0657
- 2009 to 2018 (PM) 1.0728.

6.3.5 In addition, the HA previously requested that a future year assessment of no less than 10 years after the date of registration of the planning application should be undertaken for the Strategic Road Network. Therefore, the 2009 flows were also growthed to 2023. The TEMPRO extracts are contained in Appendix J. As shown, the growth rates for rural trunk roads in Burton on Trent are as follows:

- 2009 to 2023 (AM) 1.1374
- 2009 to 2023 (PM) 1.1470

The 2018 and 2023 morning and evening peak hour background traffic flows are shown in Figures 15 and 16 respectively.

6.4 Committed development

6.4.1 In accordance with the DfT's Guidance on Transport Assessment, this assessment should *'consider person trips from all committed developments that would impact significantly on the transport network, particularly…at the same junctions and/or roads as the proposed development. Committed developments will typically include development sites that have extant planning permission, as well as development plan allocations in an adopted or approved plan. Developments that have been completed but not fully occupied should also be included in these assessments.'* Therefore, the traffic flows associated with any committed developments should be included within the 2018 and 2023 assessment year traffic flows.

6.4.2 As detailed in Section 2.2, the Burton Rugby Club has planning permission for a new ground to the west of the site. This will create increased traffic along Branston Road through the Branston Road/Tatenhill Lane junction.

6.4.3 However, as detailed in the Transport Assessment prepared by David Tucker Associates in support of the planning application for the rugby club, very few trips will be made during the peak hours due to the nature and times of use of the development. The report states that *"on average there will be around 100 off-peak trips made to the site during the weekday. None of these trips will be made during the peak hours, although maintenance and management trips might take place during the peak hours".* The report therefore does not specify how many trips will be made in the peak hours due to the predicted minimal numbers.

6.4.4 Therefore, it is not necessary to include traffic flows associated with the permitted rugby club development within the 2018 and 2023 peak hour background traffic flows. This was previously acceptable to SCC and the HA.

6.4.5 As detailed in Paragraph 2.3.2, Tatenhill Lane serves residential dwellings, a public house, and a vacant unit. The previous use of the vacant unit is not known, although it appears to have been used for industrial use. The vacant unit has the potential to generate vehicle movements. However, given the size of the unit (641.5sqm as measured on OS mapping) it was not considered necessary to quantify the potential trip generation. This was previously acceptable to SCC and the HA.

6.4.6 Finally, an outline application has been submitted for the mixed use development at Branston Locks. However, as part of that scheme, Branston Road will be realigned and all through-traffic on Branston Road will be diverted through the Branston Locks site. Therefore, the traffic flows through the Branston Road/Tatenhill Lane T-junction will significantly reduce. Therefore, it is not necessary to include any of the Branston Locks development traffic within the assessment of the existing Branston Road/Tatenhill Lane T-junction.

6.4.7 Furthermore, the Branston Locks development will provide improvements to the Branston Interchange, including the installation of traffic lights to provide a signal controlled gyratory. Therefore, it is not necessary to include any of the Branston Locks development traffic within the assessment of the existing priority-controlled Branston Interchange.

6.4.8 Instead, if granted planning consent, the traffic generated by the proposed development on land at Tatenhill Lane should be included within any assessments/subsequent highway works undertaken by DTA for the Branston Locks scheme.

6.5 With development traffic flows

6.5.1 The proposed development traffic at the Branston Road/Tatenhill Lane T-junction and shown in Figure 12 were added to the 2018 background traffic flows shown in Figure 14. The '2018 with development' traffic flows are shown in Figure 17.

7.0 HIGHWAY IMPACT

7.1 Introduction

7.1.1 This Section details the capacity assessments undertaken at the Tatenhill Lane/site access junction, and the Branston Road/Tatenhill Lane junction using the '2018 with development' scenario, as shown in Figure 17.

7.1.2 It also details a qualitative assessment of the impact of the proposed development traffic at the A38 Branston Interchange junction.

7.1.3 This combination of methodologies was previously agreed with both SCC and the HA as part of the Transport Statements for the larger developments (of 81 and 79 dwellings at the site), and should therefore still be acceptable.

7.2 Tatenhill Lane/site access junction

7.2.1 The Tatenhill Lane/site access junction capacity assessments were modelled using computer software PICADY for the 2018 with development scenario. The results are shown in Table 5 and the PICADY outputs are contained in Appendix K.

Scenario	Peak		site access to Tatenhill Lane (W) B-C	site access to Tatenhill Lane (E) B-A	Tatenhill Lane (W) ahead and right C-AB
2018 with development	AM	degree of saturation	4.7%	0.0%	1.9%
		max queue (pcu)	0.0	0.0	0.0
		av delay (mins/pcu)	0.10	0.00	0.10
2018 with development	PM	degree of saturation	2.9%	0.0%	4.8%
		max queue (pcu)	0.0	0.0	0.1
		av delay (mins/pcu)	0.09	0.00	0.10

Table 5: Tatenhill Lane/site access junction PICADY results

7.2.2 As shown in Table 5, the junction would operate well within capacity, with a ratio of flow to capacity of less than 85% in both the morning and evening peak hours with the development in place.

7.2.3 Therefore, the proposed junction layout presented in Drawing NTT/415/001 revision P6 should be found acceptable.

7.3 Branston Road/Tatenhill Lane junction

7.3.1 In order to overcome the visibility issue, it is proposed to alter the layout of the Branston Road/Tatenhill Lane junction, narrow the carriageway over the canal bridge, and implement traffic signals and one-way shuttle working as part of the development proposals.

7.3.2 The traffic signal controlled shuttle working scheme over Branston Bridge will start from a default red, and as vehicles approach, trigger a demand for the lights to change to green. This system will ensure vehicles slow down on the approach to and over the bridge, and will allow sufficient visibility to be achieved from Tatenhill Lane relative to the speed of the oncoming vehicles. The previously agreed proposals[3] are shown in Drawing NTT/415/002 revision P3.

7.3.3 Whilst there are no recorded PIAs at Branston Bridge and only one recorded at the Branston Road/Tatenhill Lane junction, which was due to driver error and not the restricted visibility, as detailed in Section 2.5.3, the proposals will provide a highway benefit and reduce the PIA potential in this location.

7.3.4 The capacity of the junction was assessed using computer software LINSIG, for the 2018 with development scenario. The results are shown in Table 6, and the LINSIG outputs are contained in Appendix L.

Peak	Cycle time (s)	PRC	Total delay PCUh		Branston Road (W) ahead	Ahead	Tatenhill Lane	Right Ahead	Branston Road (E)
AM	50	52.6%	3.6	degree of saturation (%)	59.0%	56.9%	2.8%	26.0%	9.6%
				max queue (pcu)	5.5	2.7	0.0	0.2	0.1
				av delay (secs/pcu)	16.1	33.8	1.5	1.4	1.1
PM	50	90.6%	2.8	degree of saturation (%)	47.2%	45.6%	2.8%	17.1%	13.5%
				max queue (pcu)	3.7	2.7	0.0	0.1	0.1
				av delay (secs/pcu)	17.6	23.9	1.5	1.2	1.2

Table 6: Proposed Branston Road shuttle working – summary of LINSIG results

[3] BWB Consulting Ltd submitted Drawing NTT/415/002 revision P1 to SCC in a letter dated 8 July 2008. SCC confirmed that the proposals were acceptable in principle subject to them being designed in accordance with current standards and subject to a Stage 1 and 2 road safety audit.

Drawing NTT/415/002 revision P2 was issued to SCC as part of the previous Transport Statement. The revised drawing included for the stopline on Branston Road (E) to be relocated further east towards the Branston Road/Tatenhill Lane junction in order to accommodate the swept path of a maximum length articulated vehicle.

However, SCC have requested that the proposed scheme was subject to a Stage 1 Road Safety Audit (RSA). Therefore, an RSA was completed by TMS Consultancy, and a Design Team Response was completed by BWB Consulting. Drawing NTT/415/002 revision P3 was therefore produced and agreed with SCC as part of the previous Transport Statements for 81 and 33 dwellings respectively.

7.3.5 Table 6 shows that the proposed traffic signal arrangement would have a positive practical reserve capacity in both the morning and evening peak hours, and therefore would operate within normally accepted limits of performance when modelled in 2018 with the development in place.

7.3.6 Therefore, the proposed junction layout presented in Drawing NTT/415/002 revision P3 should be found acceptable, and should satisfactorily mitigate any perceived safety issues associated with the restricted visibility from Tatenhill Lane towards oncoming eastbound vehicles on Branston Road, as well as forward visibility for oncoming eastbound vehicles on Branston Road towards vehicles waiting to turn right into Tatenhill Lane.

7.3.7 However, as detailed in Sections 2.3.5-2.3.7, Branston Road will be realigned as part of the Branston Locks development. Therefore, the link over the existing Branston Bridge and towards Tatenhill Lane will form a cul-de-sac and will not be open to through traffic on Branston Road. As a result, it is highlighted that once Branston Road has been realigned as part of Phase Two of the Branston Locks scheme (assumed to be between 2017 and 2021 as shown in Table 1), the traffic signals may no longer be required.

7.3.8 This is because the existing Branston Road carriageway will no longer connect to the Branston Interchange. Therefore, no vehicles will turn right from Tatenhill Lane to Branston Road (E), and there will be no eastbound vehicles (other than those slowing to turn into Tatenhill Lane), which will make the visibility to the left less critical. Furthermore, vehicles turning from Branston Road (W) into Tatenhill Lane will no longer have to wait for a gap in the oncoming westbound traffic, and therefore the forward visibility to any waiting vehicles also becomes less critical.

7.3.9 Therefore, the proposed mitigation works may only need to be provided as a temporary measure, to be removed once Branston Road has been realigned as part of the Branston Locks scheme. Alternatively, if the proposed Branston Road realignment comes forward earlier, and before the proposed residential development at Tatenhill Lane, there may be no need to provide the mitigation scheme at all. However, it will be necessary for suitable access to Tatenhill Lane to be provided as part of the wider highway works implemented as part of the Branston Locks development.

7.4 A38/A5121 grade separated roundabout (Branston Interchange)

7.4.1 The DfT's Guidance on Transport suggests a threshold for assessment at any junction where there would be an increase of 30 or more two-way vehicle movements as a result of a proposed development.

7.4.2 As shown in Figure 13, the proposed development would result in 36 two-way vehicle movements in the morning peak hour and 44 two-way movements in the evening peak hour on the Branston Road arm of the junction. However, the northern, eastern and southern arms of the roundabout would all experience traffic increases of significantly less than 30 two-way vehicles.

7.4.3 Based on the previous work, it is understood that the junction has spare capacity in the evening peak hour, and that the morning peak hour is of more concern. However, as detailed above, in the morning peak hour, the number of two-way vehicle movements is only just above the threshold for assessment.

7.4.4 Furthermore, as shown in Figure 13, the proposed development (with a maximum of 55 dwellings) would result in an additional 26 vehicles entering onto the roundabout from Branston Road in the morning peak hour. This therefore equates to approximately one additional vehicle every two to three minutes entering the roundabout. This is unlikely to have an impact on the operation or safety of the Branston Interchange.

7.4.5 Similarly, in the evening peak hour, the proposed development would result in an additional 17 vehicles entering onto the roundabout from Branston Road. This therefore equates to approximately one additional vehicle every three to four minutes and, again, is unlikely to have an impact on the operation of the junction.

7.4.6 In addition, Figure 18 shows the 2018 background traffic flows, the total development traffic flows, and the percentage increase in the morning peak hour and evening peak hour. Figure 19 shows the same information for the 2023 assessment year. As shown, the development will result in a low percentage increase in vehicle movements, and will therefore not have an impact on the operation or safety of the junction.

7.4.7 Furthermore, the traffic increases are based on robust assumptions adopted in the trip generation and distribution stages. In the morning peak hour, based on the trip rates and distribution from the observed counts, the residential development

would generate 15 two-way vehicle trips, of which 71% (11 vehicles) would route to the A38. Yet the calculations adopted more robust figures based on TRICS of 39 two-way trips, and a Census distribution of 92.5% routing to the A38 (36 vehicles). It is clear that the traffic increases on the A38 may be significantly lower than the worst case that has been demonstrated.

7.4.8 This approach and conclusion was agreed by SCC and the HA as part of the previous Transport Statements prepared for 81 and 79 dwellings, and therefore remains valid for the latest development proposals of 55 dwellings.

7.5 Conclusions

7.5.1 Based on the above capacity assessments, it can be concluded that the existing local highway network has the capacity to accommodate the increased vehicle movements associated with the residential development of 55 dwellings. As a result, no further mitigation measures are required.

7.5.2 Both SCC and the HA have previously confirmed that this conclusion was acceptable, as part of the previous Transport Statements produced in support of the larger schemes with 81 dwellings and 79 dwellings. Given that the number of dwellings has reduced, the conclusions should remain valid.

7.5.3 It is proposed to narrow the carriageway and install traffic lights and one-way shuttle working over the Branston Bridge. The proposals will reduce the perceived accident risk associated with the restricted visibility from Tatenhill Lane towards oncoming eastbound traffic and the forward visibility towards waiting vehicles, and was previously approved by SCC and the HA.

7.5.4 However, if granted planning consent, the highway works associated with the Branston Locks development will remove the need for this mitigation, as the road will effectively form a cul-de-sac. The realignment of Branston Road will come forward as part of Phase Two of that scheme, and will therefore be implemented between 2017 and 2021, as detailed in Table 1.

7.5.5 Therefore, the traffic signal scheme should be implemented until this time, and any costs associated with the subsequent removal of the traffic signals should be covered by the Branston Locks development, given that it will be necessary for suitable access to Tatenhill Lane to be provided as part of the wider highway works implemented as part of the Branston Locks development.

7.5.6 Alternatively, should the Branston Road realignment come forward sooner, and before the proposed development, there would be no need for the shuttle working scheme to be provided at all.

8.0 SUMMARY AND CONCLUSIONS

8.1 Central and Country Developments Ltd control 2.55 hectares of land off Tatenhill Lane, in Branston, Staffordshire. The land is vacant and is located within the settlement boundary of Burton upon Trent.

8.2 A planning application is now being submitted. The development proposals have yet to be finalised, but will comprise no more than 55 dwellings and associated parking. The development proposals will include the demolition of two existing dwellings (78 and 80 Tatenhill Lane), and will therefore only result in a net increase of up to 53 dwellings.

8.3 The proposed development will be accessed from Tatenhill Lane, and Drawing NTT/415/001 revision P6 shows the access proposals. As part of the development proposals, it is also proposed to alter the layout of the Branston Road/Tatenhill Lane junction in order to overcome the restricted visibility. The proposals include narrowing the carriageway over the canal bridge, and implementing traffic signals and one-way shuttle working. Drawing NTT/415/002 revision P3 shows the proposals, and this design has been subject to a Stage 1 Road Safety Audit and previously agreed with SCC and the HA.

8.4 The site is accessible by a range of sustainable travel modes. Given the areas contained within acceptable walking distance of the site, and the existing pedestrian infrastructure along the desire lines to the centre of Branston, there are good opportunities for pedestrian travel. Similarly, given the areas contained within cycling distance there are good opportunities for cycle travel between the site and the local area. In addition, whilst the site is slightly beyond 400 metres of the nearest bus stops located on Main Street and Clays Lane, walking routes between the locations are available, ensuring users can easily walk to reach the bus services. The Burton upon Trent rail station provides opportunities for rail travel to and from the site as part of a multi-modal journey, involving either cycling or taxi travel to and from the station. Given the distance to the station, the provision of free cycle parking at the station, and the costs associated with car parking at the rail station, residents travelling to the station may cycle.

8.5 The opportunities for pedestrian, cycle and bus travel will improve further if the Branston Locks development is built and occupied, by further increasing the employment, education and retail facilities in proximity to the site, and by

providing improved infrastructure. This includes new pedestrian and cycle routes and new bus services and bus stops.

8.6 The proposed residential development would result in an increase in the number of pedestrian, cycle and public transport trips, but it is concluded that the existing and proposed infrastructure has the capacity to accommodate these trips and no further mitigation measures are required. This conclusion was previously agreed with both SCC and the HA as part of the larger schemes for 81 and 79 dwellings.

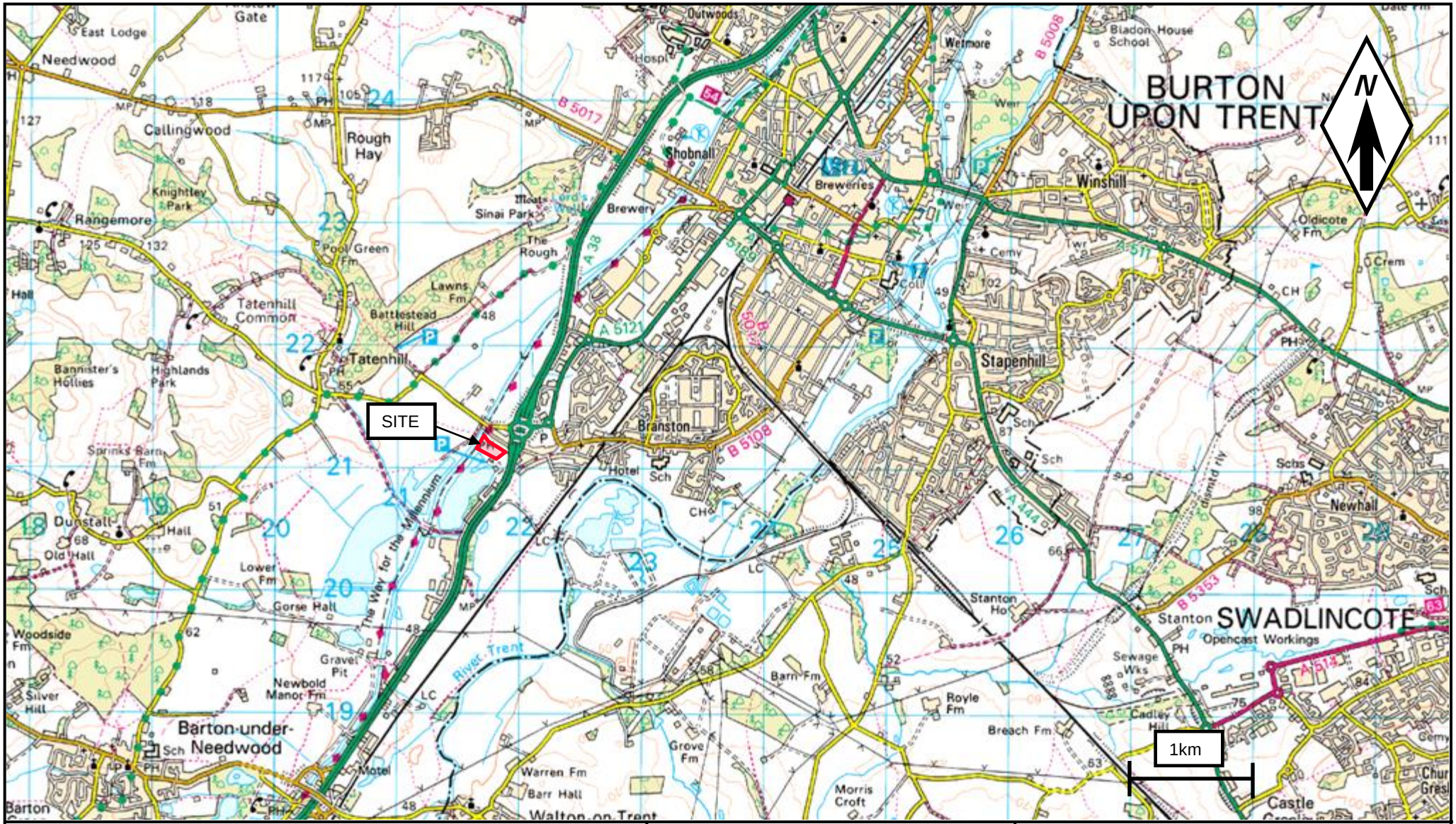
8.7 The proposed residential development would also result in an increase in the number of two-way vehicle movements on the local highway network. However, the proposed development traffic will not have a material impact at any of the roads and junctions within the study area, at the 2018 or 2023 assessment year. The additional traffic as a result of the proposed development will be accommodated within the capacity of the proposed road and junction layouts, and no further mitigation measures are therefore considered necessary. This conclusion was previously agreed with SCC and the HA for the larger schemes comprising 81 and 79 dwellings respectively, and should remain valid for the 55 dwellings.

8.8 The proposals to install the traffic signals and shuttle working scheme at the Branston Bridge and the Branston Road/Tatenhill Lane junction will mitigate the restricted visibility and reduce the potential for accidents. This conclusion and the scheme were previously approved by SCC and the HA.

8.9 However, the highway works associated with the proposed mixed-use Branston Locks development on land to the north of the site will change how the development is accessed. This is because Branston Road will be realigned, and the existing Branston Road and Tatenhill Lane will form a cul-de-sac. Therefore, if the proposals for the realignment of Branston Road come forward as part of the Branston Locks scheme, the shuttle working mitigation scheme will no longer be required. It is understood that Branston Road would be realigned between 2017 and 2021 and, therefore, the traffic signal scheme should be implemented until this time. Any costs associated with the subsequent removal of the traffic signals should be covered by the Branston Locks development, given that it will be necessary for suitable access to Tatenhill Lane to be provided as part of the wider highway works implemented as part of the Branston Locks development. Alternatively, should the Branston Road realignment come forward sooner, and

before the proposed development, there would be no need for the shuttle working scheme to be provided at all.

8.10 Overall, given the above conclusions, the proposed development should be found acceptable to Staffordshire County Council and the Highways Agency from a highways perspective.



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Project
LAND AT TATENHILL

Title
General site location

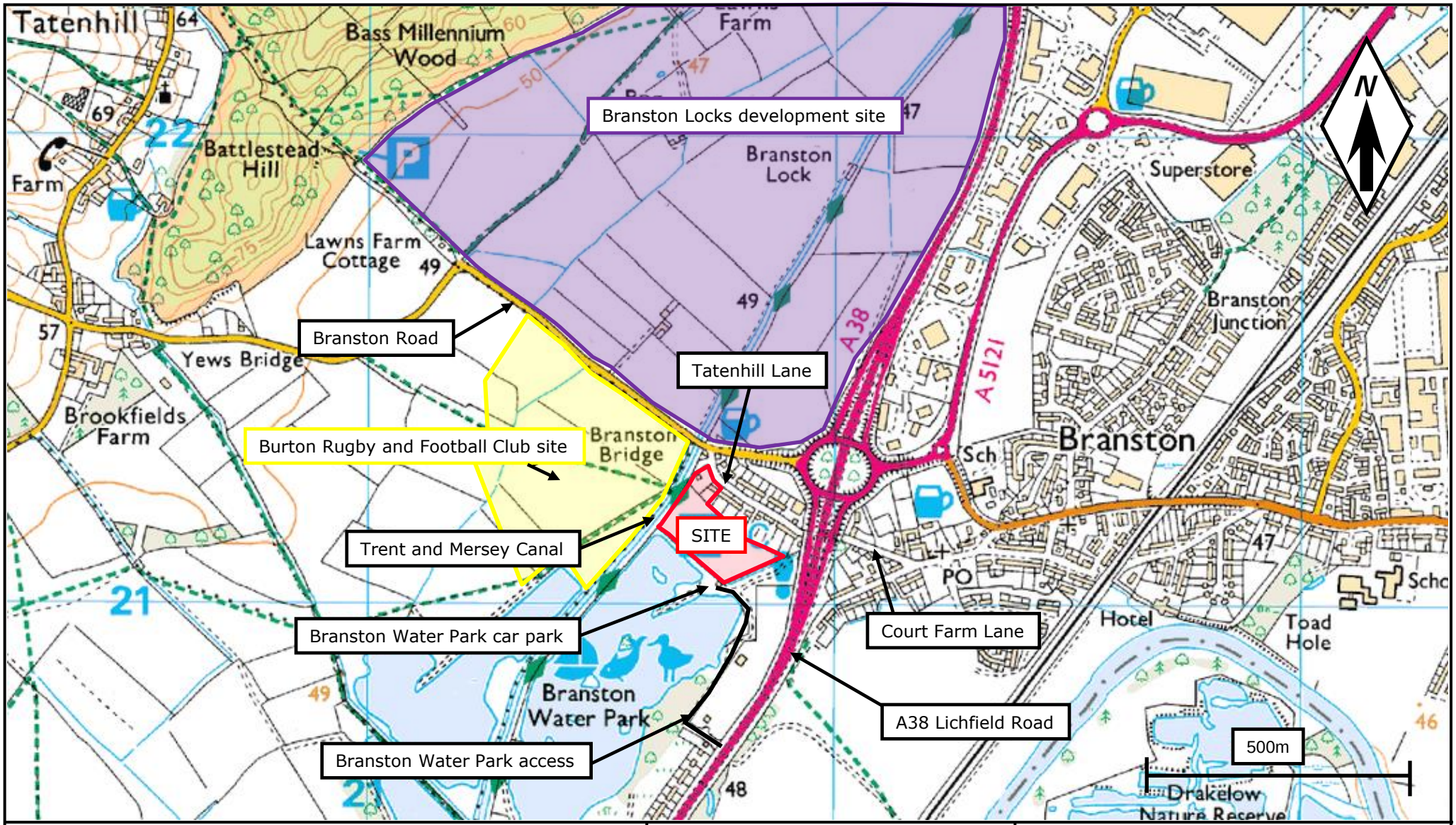
Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale: AS SHOWN

Drg. No.: FIGURE 1

Rev.



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Project
LAND AT TATENHILL

Title
Detailed site location

Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale: AS SHOWN
Drg. No.: FIGURE 2
Rev.

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Project
LAND AT TATENHILL

Title
Aerial photograph of the site

Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale	Drg. No.	Rev.
NTS	FIGURE 3	

Lights	HGVs	Total	
429	5	434	→
149	2	151	←
578	7	585	2way

Lights	HGVs	Total	
427	5	432	→
2	0	2	↓

Branston Road (W)

	←	→
Lights	2	7
HGVs	0	0
Total	2	7

Branston Road (E)

	Lights	HGVs	Total
←	147	2	149
↓	3	0	3

	Lights	HGVs	Total
→	434	5	439
←	150	2	152
2way	584	7	591

Tatenhill Lane

	↑	↓	2way
Lights	9	5	14
HGVs	0	0	0
Total	9	5	14

Morning peak hour traffic flows (0815-0915 hours)

Lights	HGVs	Total	
281	2	283	→
184	0	184	←
465	2	467	2way

Lights	HGVs	Total	
278	2	280	→
3	0	3	↓

Branston Road (W)

	←	→
Lights	3	14
HGVs	0	0
Total	3	14

Branston Road (E)

	Lights	HGVs	Total
←	181	0	181
↓	25	0	25

	Lights	HGVs	Total
→	292	2	294
←	206	0	206
2way	498	2	500

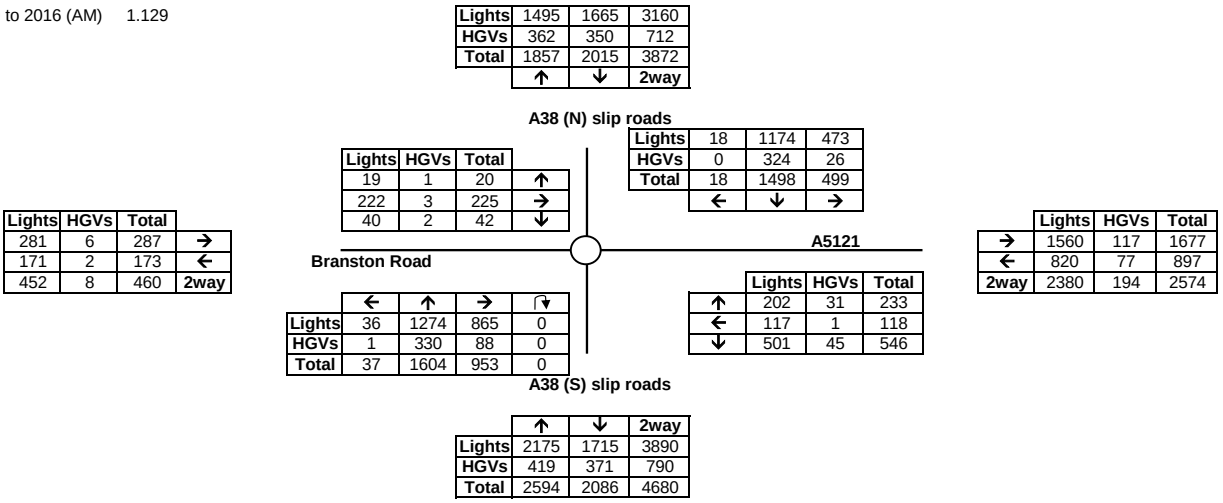
Tatenhill Lane

	↑	↓	2way
Lights	17	28	45
HGVs	0	0	0
Total	17	28	45

Evening peak hour traffic flows (1700-1800 hours)

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2010 peak hour observed traffic flows**		**FIGURE 4**
Drawn:	**RE**	**Drawn:**	**08.03.10**
Checked:	**PW**	**Checked:**	**DAC**

2009 to 2016 (AM) 1.129



Lights	1495	1665	3160
HGVs	362	350	712
Total	1857	2015	3872
	↑	↓	2way

Lights	18	1174	473
HGVs	0	324	26
Total	18	1498	499
	←	↓	→

Lights	HGVs	Total	
19	1	20	↑
222	3	225	→
40	2	42	↓

Lights	HGVs	Total	
281	6	287	→
171	2	173	←
452	8	460	2way

	←	↑	→	↱
Lights	36	1274	865	0
HGVs	1	330	88	0
Total	37	1604	953	0

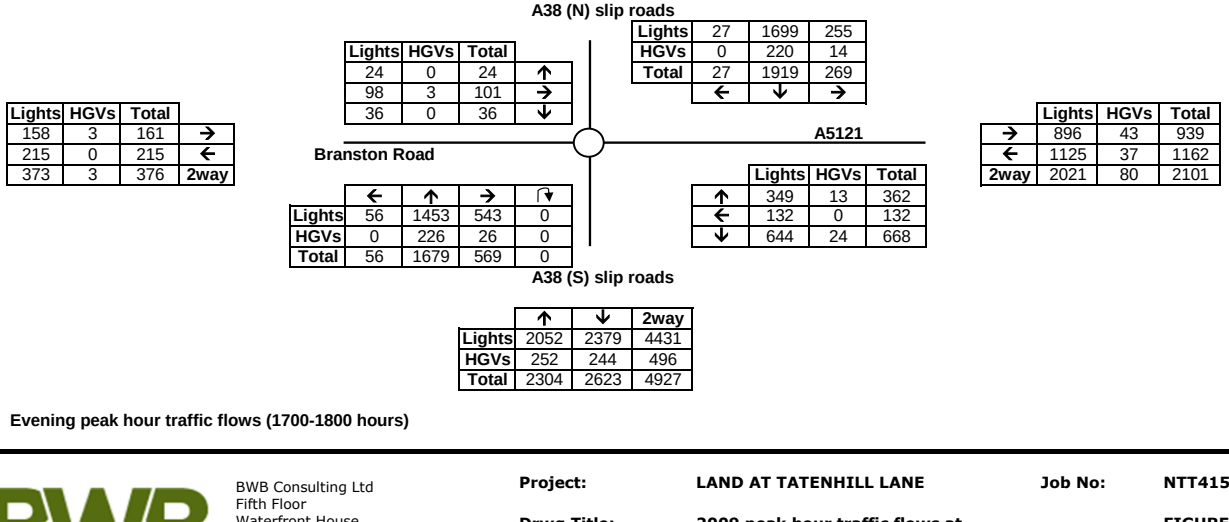
	Lights	HGVs	Total
↑	202	31	233
←	117	1	118
↓	501	45	546

	Lights	HGVs	Total
→	1560	117	1677
←	820	77	897
2way	2380	194	2574

	↑	↓	2way
Lights	2175	1715	3890
HGVs	419	371	790
Total	2594	2086	4680

Morning peak hour traffic flows (0815-0915 hours)

2009 to 2016 (AM) 1.1274



Lights	1826	1981	3807
HGVs	239	234	473
Total	2065	2215	4280
	↑	↓	2way

Lights	27	1699	255
HGVs	0	220	14
Total	27	1919	269
	←	↓	→

Lights	HGVs	Total	
24	0	24	↑
98	3	101	→
36	0	36	↓

Lights	HGVs	Total	
158	3	161	→
215	0	215	←
373	3	376	2way

	←	↑	→	↱
Lights	56	1453	543	0
HGVs	0	226	26	0
Total	56	1679	569	0

	Lights	HGVs	Total
↑	349	13	362
←	132	0	132
↓	644	24	668

	Lights	HGVs	Total
→	896	43	939
←	1125	37	1162
2way	2021	80	2101

	↑	↓	2way
Lights	2052	2379	4431
HGVs	252	244	496
Total	2304	2623	4927

Evening peak hour traffic flows (1700-1800 hours)

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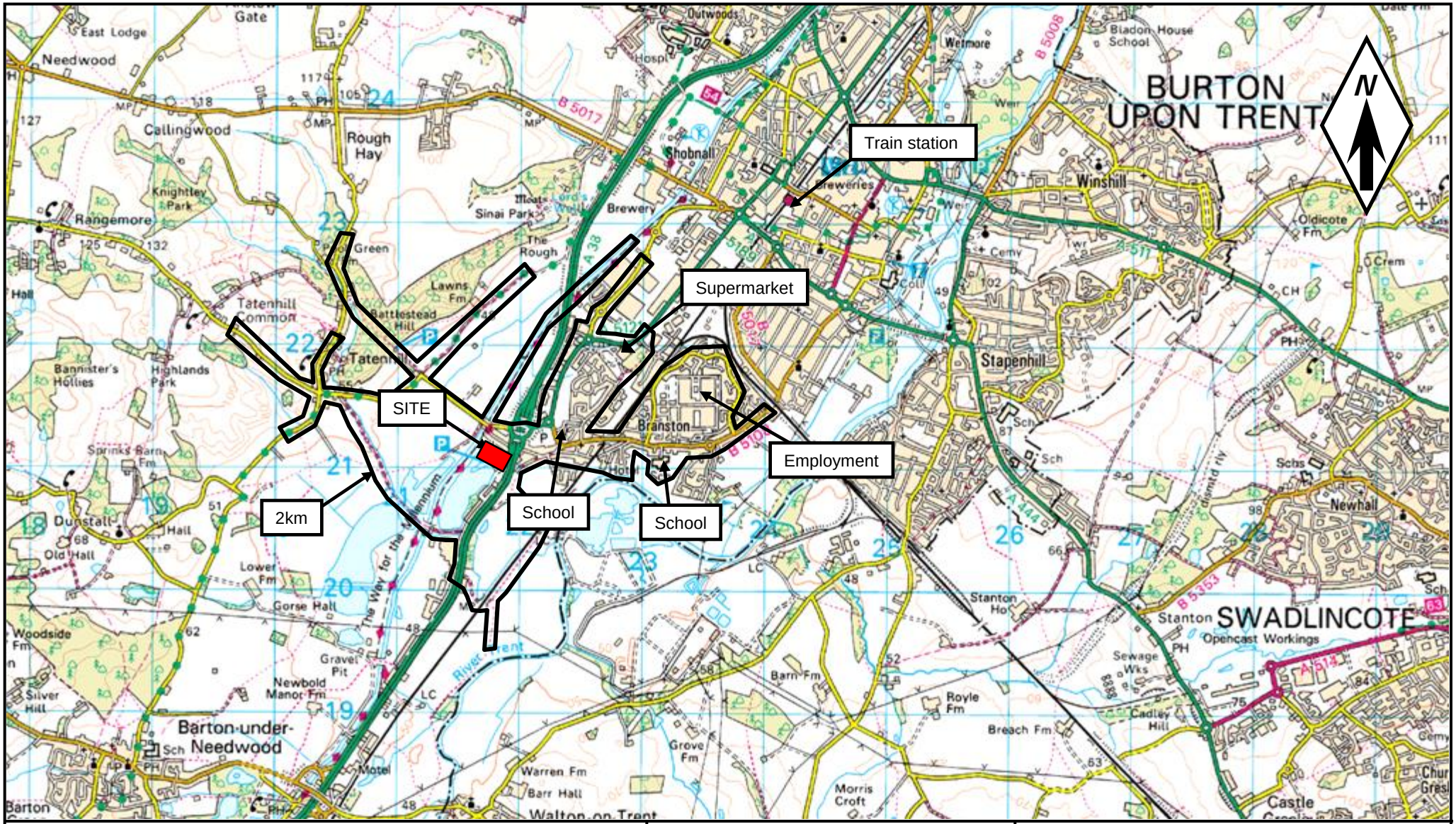
Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2009 peak hour traffic flows at the A38 Branston Interchange**		**FIGURE 5**
Drawn:	**RE**	**Drawn:**	**17.03.10**
Checked:	**PW**	**Checked:**	**DAC**



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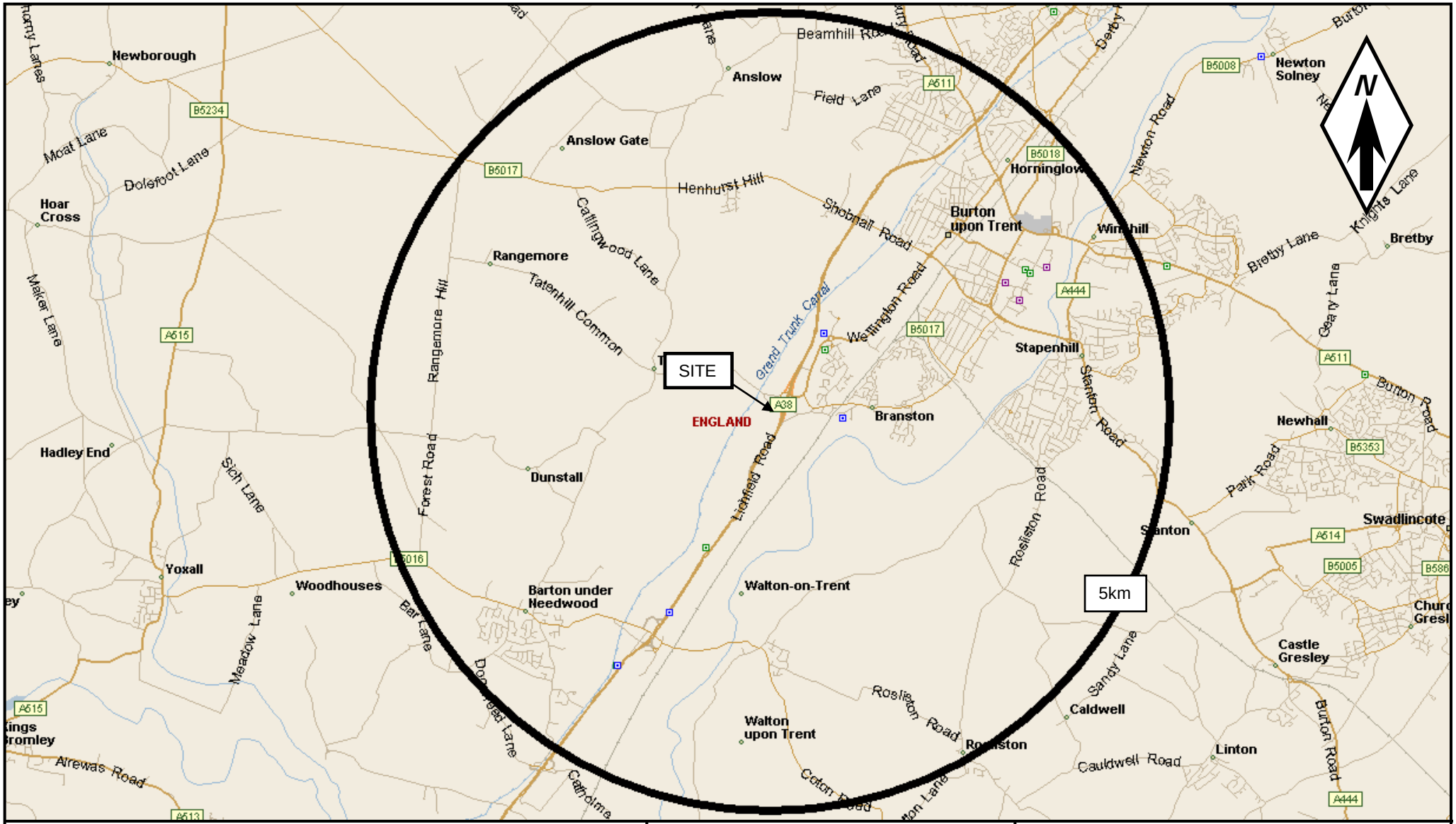
Project
LAND AT TATENHILL

Title
Pedestrian catchment area

Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale	Drg. No.	Rev.
AS SHOWN	FIGURE 6	



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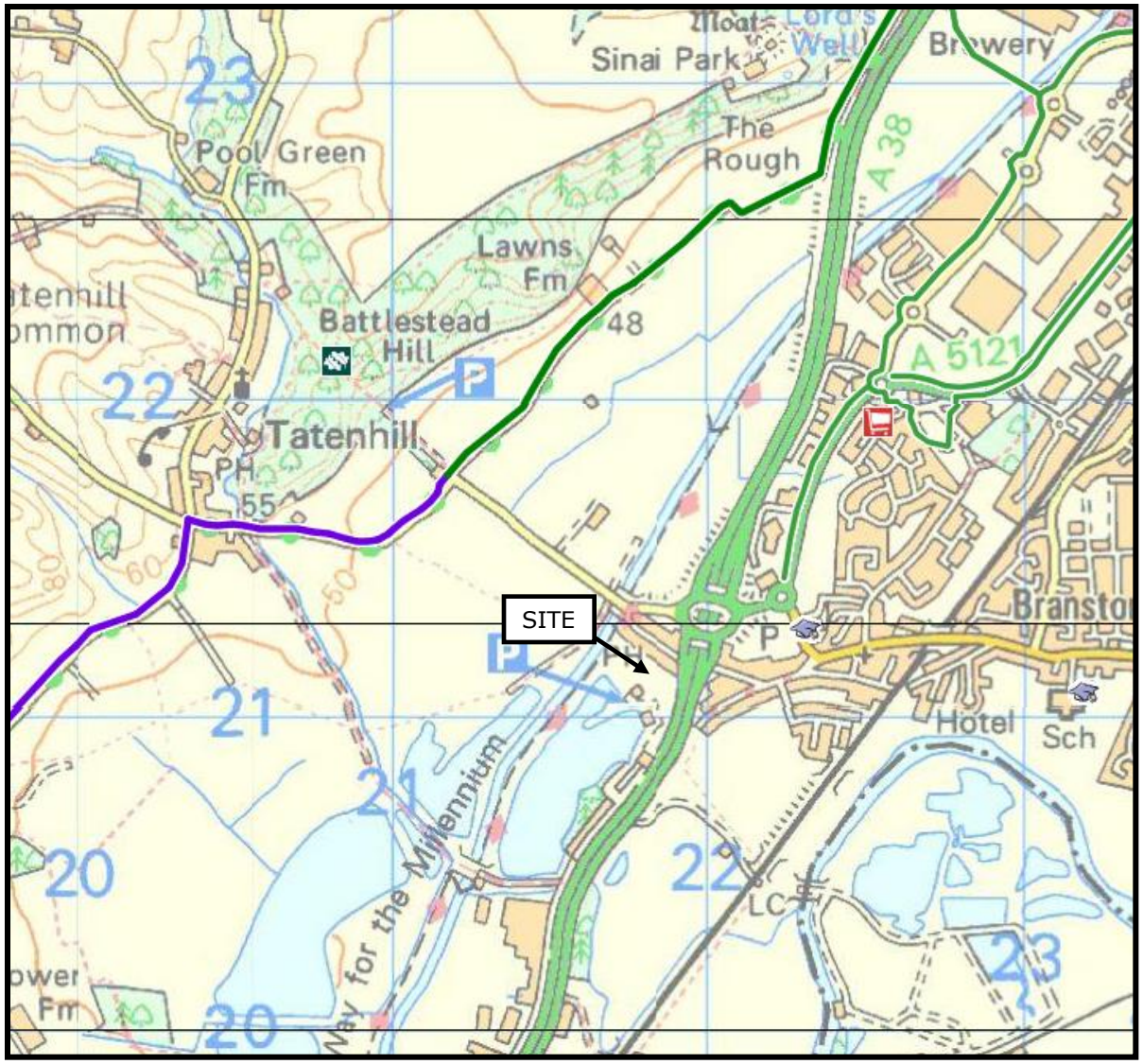
Project
LAND AT TATENHILL

Title
Cyclist catchment area

Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale	Drg. No.	Rev.
AS SHOWN	FIGURE 7	



Walking/cycling route	Public transport
On-road	Train station
Traffic-free	Coach or bus station
Proposed	
Access point	Bus stop

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Project
LAND AT TATENHILL

Title
Local cycle routes

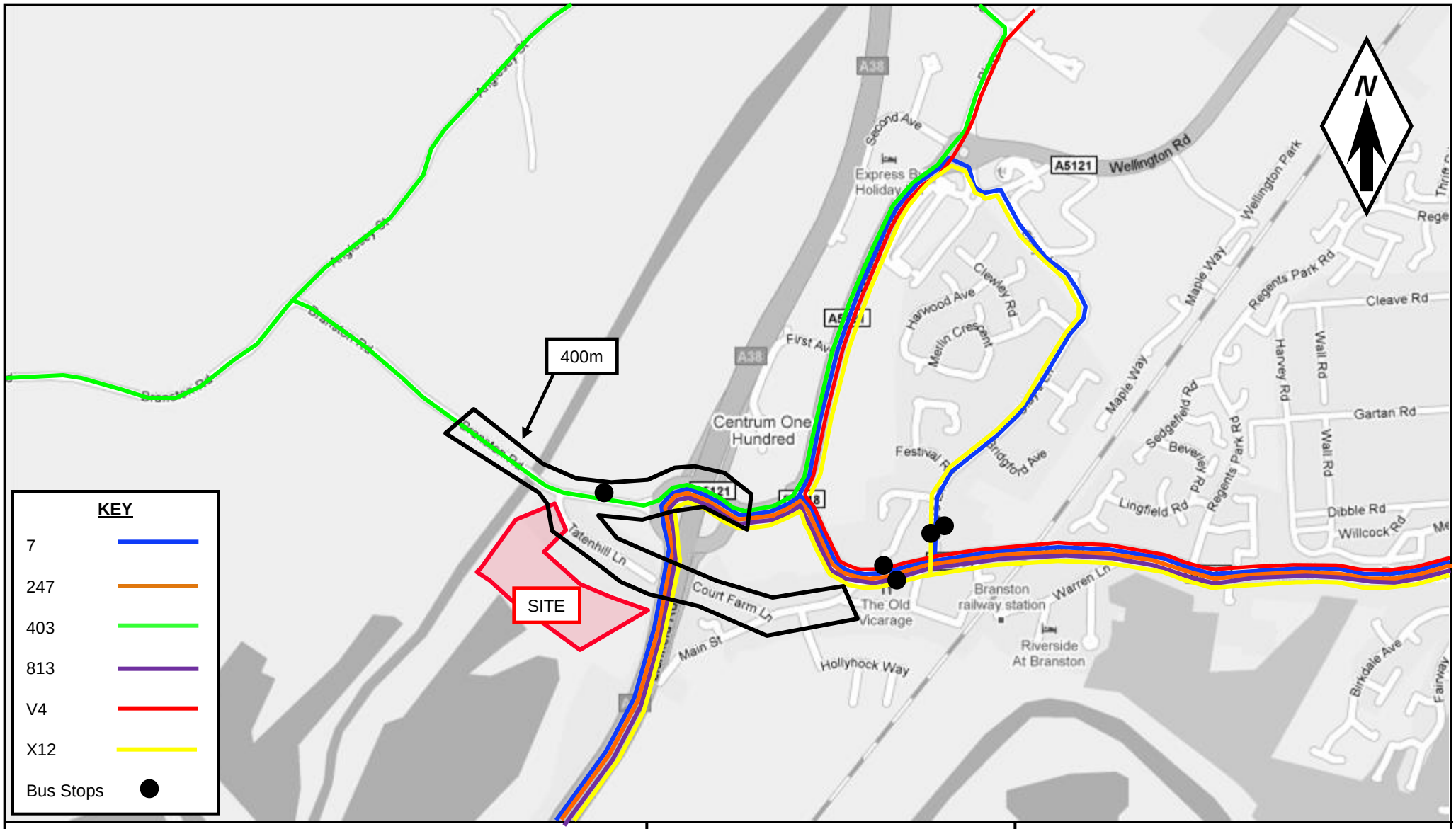
Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale: NTS

Drg. No.: FIGURE 8

Rev.



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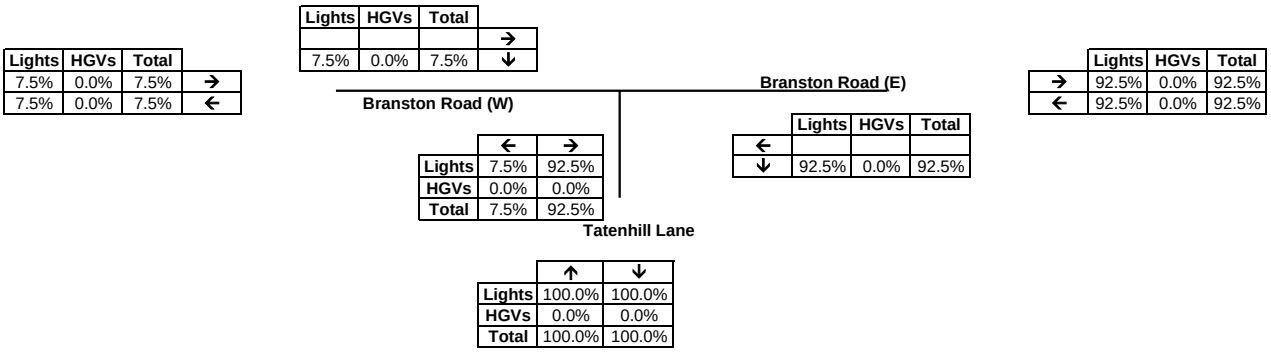
Project
LAND AT TATENHILL

Title
Local bus routes

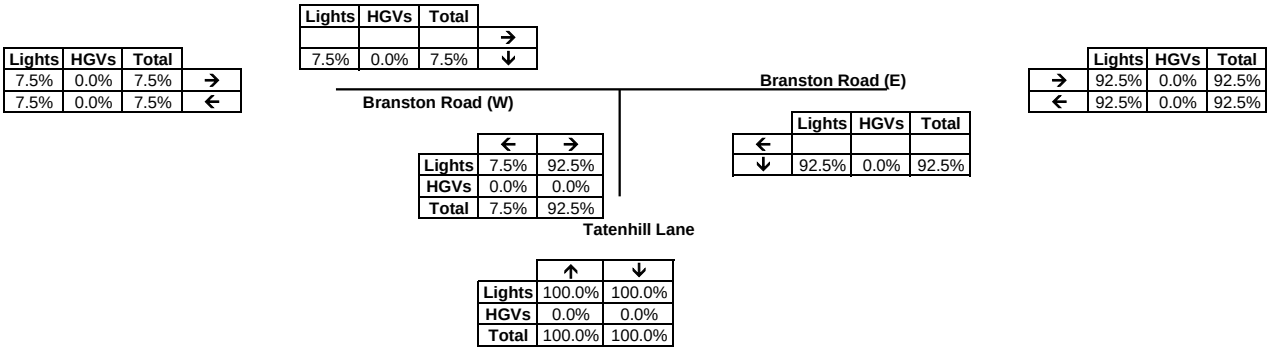
Project No. **NTT415**

Drawn	SF	Approved	DAC
Checked	RE	Date	11.02.13

Scale: AS SHOWN
Drg. No.: FIGURE 9
Rev.



Morning peak hour traffic flows (0815-0915 hours)



Evening peak hour traffic flows (1700-1800 hours)

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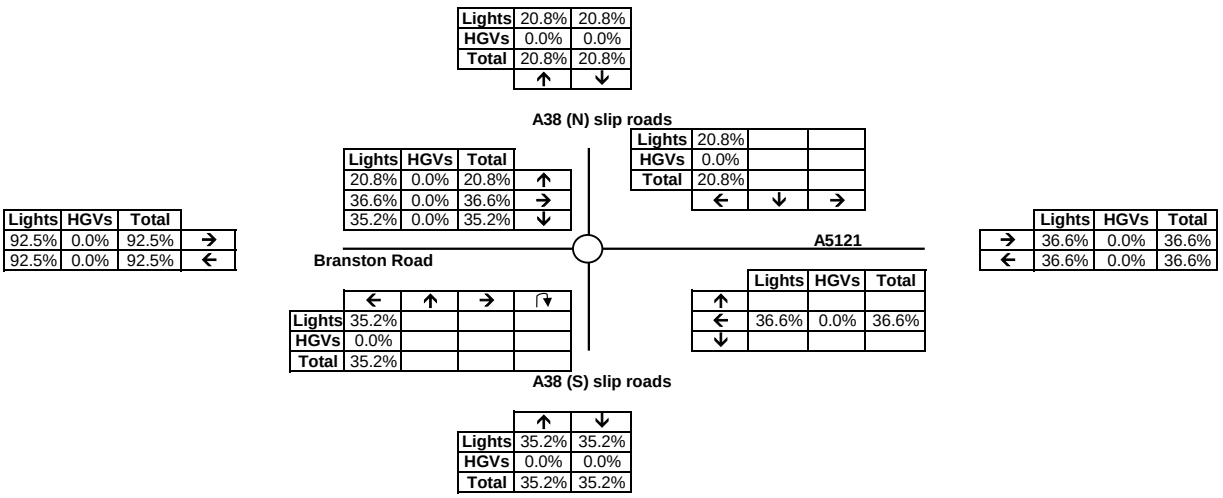
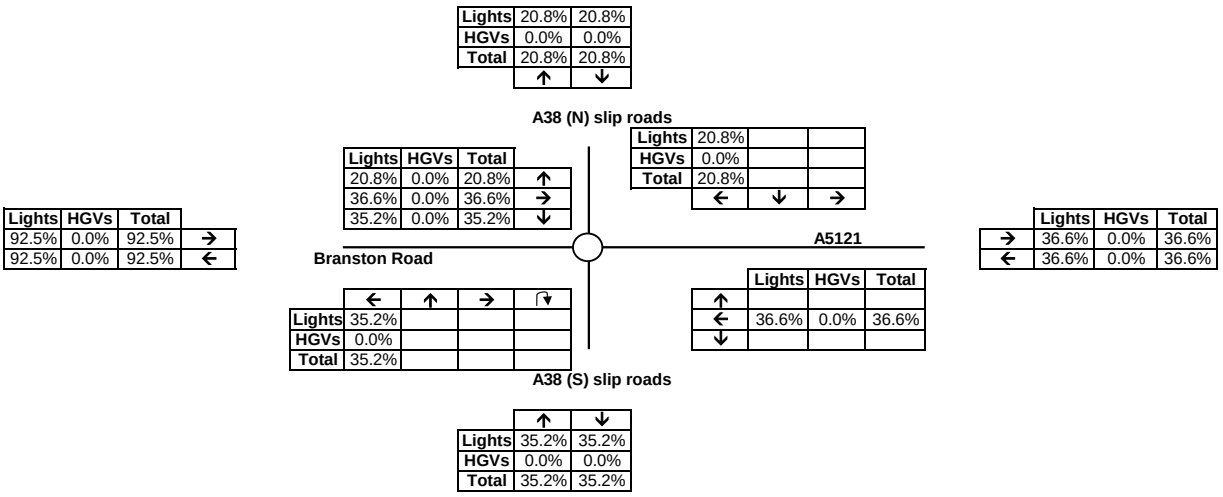
Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Agreed residential development traffic distribution**		**FIGURE 10**
Drawn:	**RE**	**Drawn:**	**08.03.10**
Checked:	**PW**	**Checked:**	**DAC**



Morning peak hour traffic flows (0815-0915 hours)



Evening peak hour traffic flows (1700-1800 hours)

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Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Agreed residential distribution at the A38 Branston Interchange**		**FIGURE 11**
Drawn:	**RE**	**Drawn:**	**17.03.10**
Checked:	**PW**	**Checked:**	**DAC**

Lights	HGVs	Total	
1	0	1	→
2	0	2	←
3	0	3	2way

Lights	HGVs	Total	
			→
1	0	1	↓

Branston Road (W)

	←	→
Lights	2	26
HGVs	0	0
Total	2	26

Branston Road (E)

	Lights	HGVs	Total
←			
↓	10	0	10

	Lights	HGVs	Total
→	26	0	26
←	10	0	10
2way	36	0	36

Tatenhill Lane

	↑	↓	2way
Lights	28	11	39
HGVs	0	0	0
Total	28	11	39

Morning peak hour traffic flows (0815-0915 hours)

Lights	HGVs	Total	
2	0	2	→
1	0	1	←
4	0	4	2way

Lights	HGVs	Total	
			→
2	0	2	↓

Branston Road (W)

	←	→
Lights	1	17
HGVs	0	0
Total	1	17

Branston Road (E)

	Lights	HGVs	Total
←			
↓	27	0	27

	Lights	HGVs	Total
→	17	0	17
←	27	0	27
2way	43	0	43

Tatenhill Lane

	↑	↓	2way
Lights	18	29	47
HGVs	0	0	0
Total	18	29	47

Evening peak hour traffic flows (1700-1800 hours)

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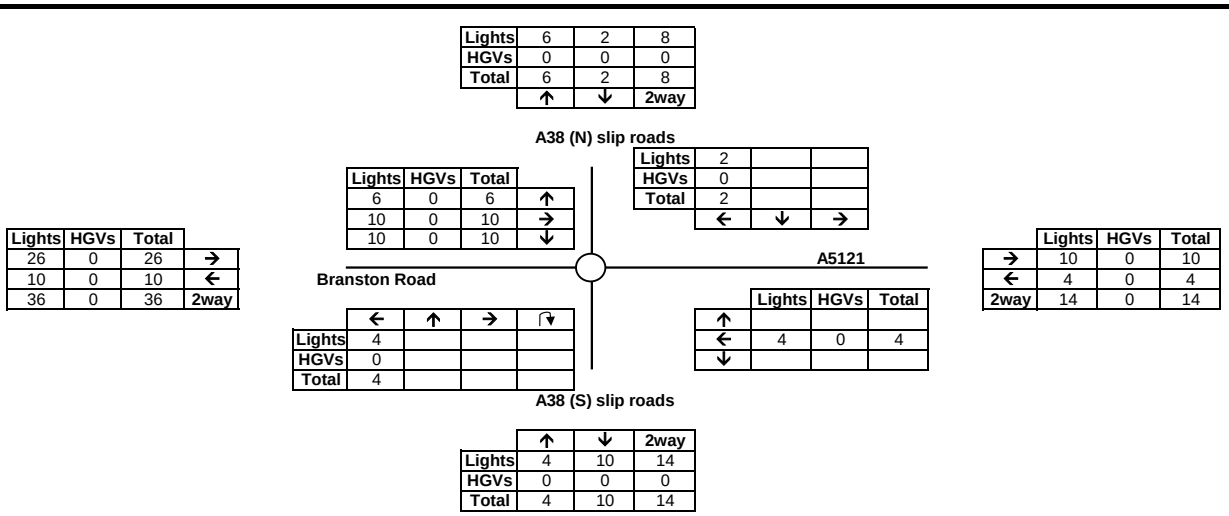
Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Residential development traffic assignment**		**FIGURE 12**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**



	↑	↓	2way
Lights	6	2	8
HGVs	0	0	0
Total	6	2	8

	↑	↓	→	2way
Lights	6	0	6	26
HGVs	0	0	0	0
Total	6	0	6	26

	↑	↓	→	2way
Lights	10	0	10	10
HGVs	0	0	0	0
Total	10	0	10	10

	↑	↓	→	2way
Lights	10	0	10	36
HGVs	0	0	0	0
Total	10	0	10	36

	←	↑	→	↱
Lights	4			
HGVs	0			
Total	4			

	↑	↓	→	2way
Lights	4	10	14	14
HGVs	0	0	0	0
Total	4	10	14	14

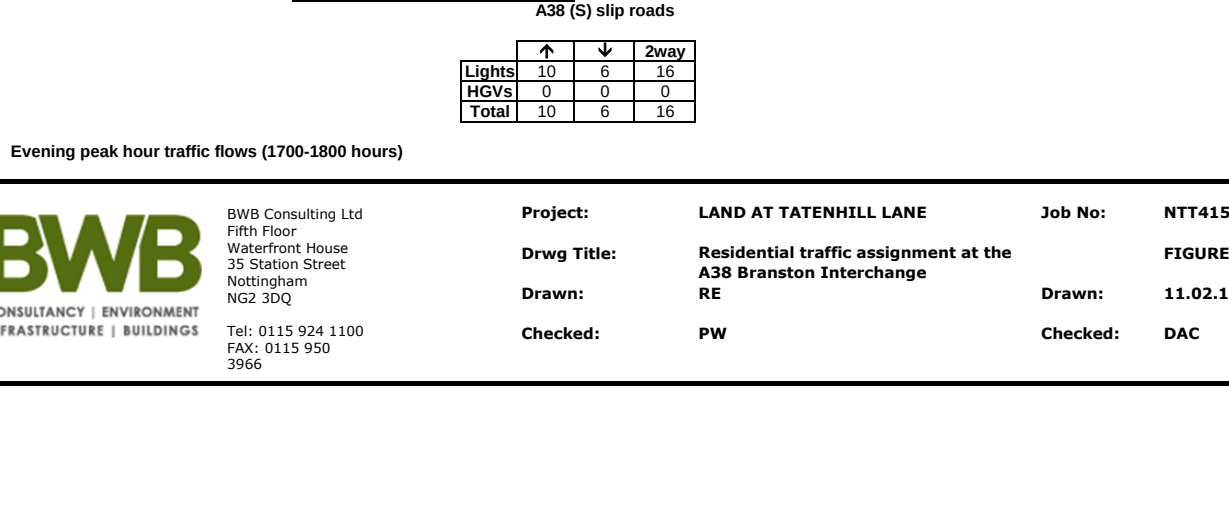
	←	↓	→	2way
Lights	2			2
HGVs	0			0
Total	2			2

	↑	←	→	2way
Lights		4		4
HGVs		0		0
Total		4		4

	↑	←	↓	2way
Lights		10		10
HGVs		0		0
Total		10		10

	↑	←	↓	2way
Lights		4		4
HGVs		0		0
Total		4		4

Morning peak hour traffic flows (0815-0915 hours)



	↑	↓	2way
Lights	4	6	10
HGVs	0	0	0
Total	4	6	10

	↑	↓	→	2way
Lights	4	0	4	17
HGVs	0	0	0	0
Total	4	0	4	17

	↑	↓	→	2way
Lights	7	0	7	27
HGVs	0	0	0	0
Total	7	0	7	27

	↑	↓	→	2way
Lights	6	0	6	44
HGVs	0	0	0	0
Total	6	0	6	44

	←	↑	→	↱
Lights	10			
HGVs	0			
Total	10			

	↑	↓	2way
Lights	10	6	16
HGVs	0	0	0
Total	10	6	16

	←	↓	→	2way
Lights	6			6
HGVs	0			0
Total	6			6

	↑	←	→	2way
Lights		11		11
HGVs		0		0
Total		11		11

	↑	←	↓	2way
Lights		7		7
HGVs		0		0
Total		7		7

	↑	←	↓	2way
Lights		11		11
HGVs		0		0
Total		11		11

	↑	←	↓	2way
Lights		18		18
HGVs		0		0
Total		18		18

Evening peak hour traffic flows (1700-1800 hours)

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Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Residential traffic assignment at the A38 Branston Interchange**		**FIGURE 13**
Drawn:	**RE**	**Drawn:**	**11.02.13**
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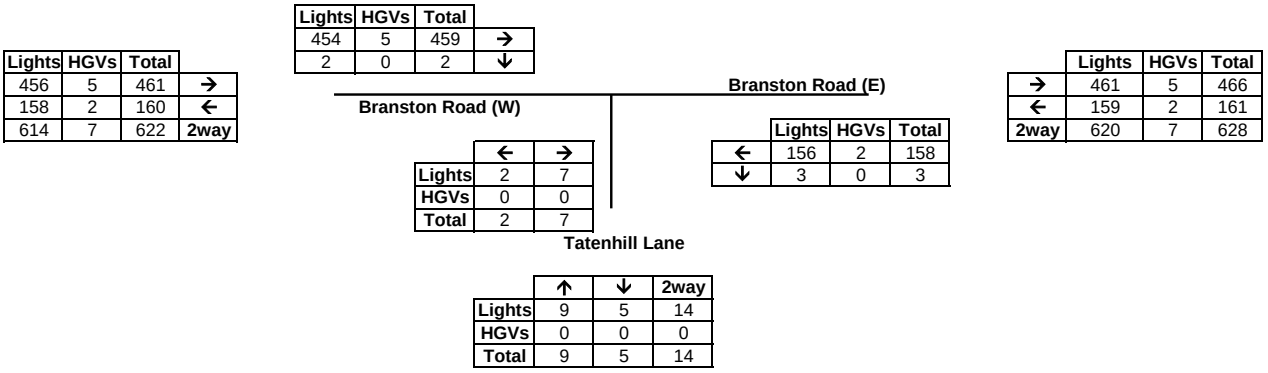
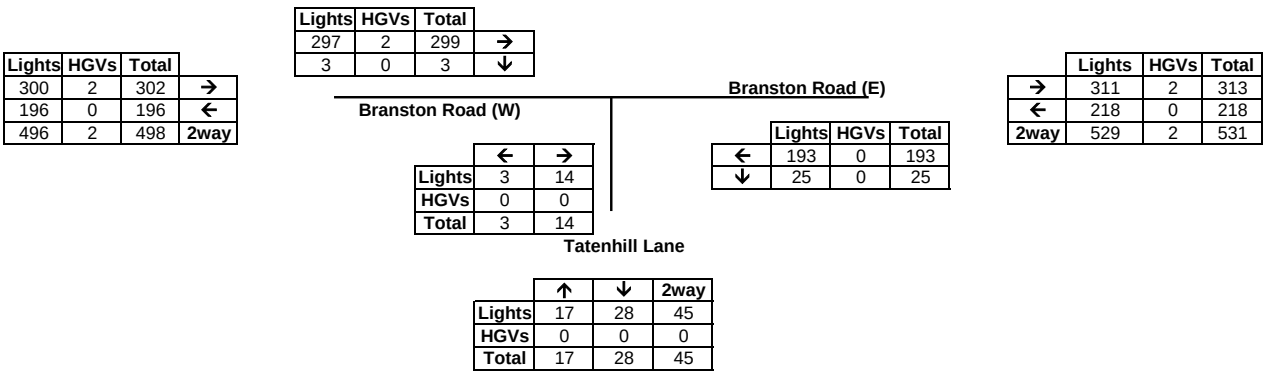


Morning peak hour traffic flows (0815-0915 hours) **1.0632 growth rate**



Evening peak hour traffic flows (1700-1800 hours) **1.0683 growth rate**

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Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2018 background traffic flows**		**FIGURE 14**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

2009 to 2018 (AM) 1.066

Lights	1593	1774	3367
HGVs	386	373	759
Total	1979	2147	4126
	↑	↓	2way

A38 (N) slip roads

Lights	19	1251	504
HGVs	0	345	28
Total	19	1596	532
	←	↓	→

Lights	HGVs	Total	
20	1	21	↑
237	3	240	→
43	2	45	↓

Lights	HGVs	Total	
300	6	306	→
182	2	184	←
482	8	490	2way

Branston Road

A5121

	Lights	HGVs	Total
→	1663	125	1788
←	874	82	956
2way	2537	207	2744

	Lights	HGVs	Total
↑	215	33	248
←	125	1	126
↓	534	48	582

	←	↑	→	↱
Lights	38	1358	922	0
HGVs	1	352	94	0
Total	39	1710	1016	0

A38 (S) slip roads

	↑	↓	2way
Lights	2318	1828	4146
HGVs	447	395	842
Total	2765	2223	4988

Morning peak hour traffic flows (0815-0915 hours)

2009 to 2018 (AM) 1.0728

Lights	1959	2126	4085
HGVs	256	251	507
Total	2215	2377	4592
	↑	↓	2way

A38 (N) slip roads

Lights	29	1823	274
HGVs	0	236	15
Total	29	2059	289
	←	↓	→

Lights	HGVs	Total	
26	0	26	↑
105	3	108	→
39	0	39	↓

Lights	HGVs	Total	
170	3	173	→
231	0	231	←
401	3	404	2way

Branston Road

A5121

	Lights	HGVs	Total
→	962	46	1007
←	1207	40	1247
2way	2169	86	2254

	Lights	HGVs	Total
↑	374	14	388
←	142	0	142
↓	691	26	717

	←	↑	→	↱
Lights	60	1559	583	0
HGVs	0	242	28	0
Total	60	1801	610	0

A38 (S) slip roads

	↑	↓	2way
Lights	2202	2553	4755
HGVs	270	262	532
Total	2471	2815	5286

Evening peak hour traffic flows (1700-1800 hours)

BWB Consulting Ltd
Fifth Floor
Waterfront House
35 Station Street
Nottingham
NG2 3DQ

Tel: 0115 924 1100
FAX: 0115 950 3966

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2018 background traffic flows at the A38 Branston Interchange**		**FIGURE 15**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

2009 to 2023 (AM) 1.137

Lights	1701	1893	3594
HGVs	411	399	810
Total	2112	2292	4404
	↑	↓	2way

A38 (N) slip roads

Lights	20	1335	538
HGVs	0	369	30
Total	20	1704	568
	←	↓	→

Lights	HGVs	Total	
22	1	23	↑
253	3	256	→
45	2	47	↓

Lights	HGVs	Total	
320	6	326	→
194	2	196	←
514	8	522	2way

A5121

	Lights	HGVs	Total
→	1775	133	1908
←	933	87	1020
2way	2708	220	2928

Branston Road

	Lights	HGVs	Total
↑	230	35	265
←	133	1	134
↓	570	51	621

	←	↑	→	↱
Lights	41	1449	984	0
HGVs	1	375	100	0
Total	42	1824	1084	0

A38 (S) slip roads

	↑	↓	2way
Lights	2474	1950	4424
HGVs	476	422	898
Total	2950	2372	5322

Morning peak hour traffic flows (0815-0915 hours)

2009 to 2023 (AM) 1.1470

Lights	2095	2272	4367
HGVs	274	268	542
Total	2369	2540	4909
	↑	↓	2way

A38 (N) slip roads

Lights	31	1949	292
HGVs	0	252	16
Total	31	2201	308
	←	↓	→

Lights	HGVs	Total	
28	0	28	↑
112	3	115	→
41	0	41	↓

Lights	HGVs	Total	
181	3	184	→
246	0	246	←
427	3	430	2way

A5121

	Lights	HGVs	Total
→	1027	49	1076
←	1290	43	1333
2way	2317	92	2409

Branston Road

	Lights	HGVs	Total
↑	400	15	415
←	151	0	151
↓	739	28	767

	←	↑	→	↱
Lights	64	1667	623	0
HGVs	0	259	30	0
Total	64	1926	653	0

A38 (S) slip roads

	↑	↓	2way
Lights	2354	2729	5083
HGVs	289	280	569
Total	2643	3009	5652

Evening peak hour traffic flows (1700-1800 hours)

BWB Consulting Ltd
Fifth Floor
Waterfront House
35 Station Street
Nottingham
NG2 3DQ

Tel: 0115 924 1100
FAX: 0115 950 3966

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2023 background traffic flows at the A38 Branston Interchange**		**FIGURE 16**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

Lights	HGVs	Total	
457	5	462	→
160	2	162	←
617	7	624	2way

Lights	HGVs	Total	
454	5	459	→
3	0	3	↓

Branston Road (W)

	←	→
Lights	4	33
HGVs	0	0
Total	4	33

Branston Road (E)

	Lights	HGVs	Total
←	156	2	158
↓	13	0	13

	Lights	HGVs	Total
→	487	5	492
←	169	2	171
2way	656	7	663

Tatenhill Lane

	↑	↓	2way
Lights	37	16	53
HGVs	0	0	0
Total	37	16	53

Morning peak hour traffic flows (0815-0915 hours)

Lights	HGVs	Total	
302	2	304	→
197	0	197	←
499	2	501	2way

Lights	HGVs	Total	
297	2	299	→
5	0	5	↓

Branston Road (W)

	←	→
Lights	4	31
HGVs	0	0
Total	4	31

Branston Road (E)

	Lights	HGVs	Total
←	193	0	193
↓	52	0	52

	Lights	HGVs	Total
→	328	2	330
←	245	0	245
2way	573	2	575

Tatenhill Lane

	↑	↓	2way
Lights	35	57	92
HGVs	0	0	0
Total	35	57	92

Evening peak hour traffic flows (1700-1800 hours)

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BWB Consulting Ltd
Fifth Floor
Waterfront House
35 Station Street
Nottingham
NG2 3DQ

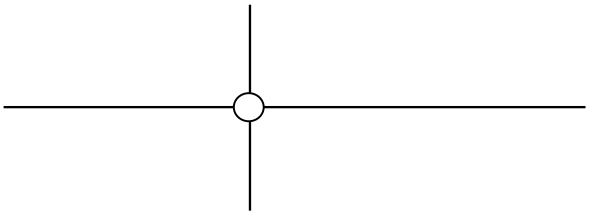
Tel: 0115 924 1100
FAX: 0115 950 3966

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**2018 with development**		**FIGURE 17**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

2018	1979	2147	4126
Dev	6	2	8
%	0.3%	0.1%	0.2%
	↑	↓	2way

A38 (N) slip roads

2018	Dev	%	
306	26	8.5%	→
184	10	5.4%	←
490	36	7.3%	2way



	2018	Dev	%
→	1788	10	0.6%
←	956	4	0.4%
2way	2744	14	0.5%

A38 (S) slip roads

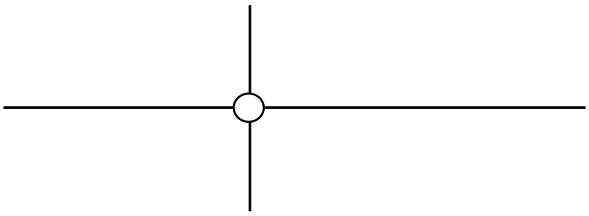
	↑	↓	2way
2018	2765	2223	4988
Dev	4	10	14
%	0.1%	0.4%	0.3%

Morning peak hour traffic flows (0815-0915 hours)

2018	2215	2377	4592
Dev	4	6	10
%	0.2%	0.3%	0.2%
	↑	↓	2way

A38 (N) slip roads

2018	Dev	%	
173	17	9.8%	→
231	27	11.7%	←
404	44	10.9%	2way



	2018	Dev	%
→	1007	7	0.7%
←	1247	11	0.9%
2way	2254	18	0.8%

A38 (S) slip roads

	↑	↓	2way
2018	2471	2815	5286
Dev	10	6	16
%	0.4%	0.2%	0.3%

Evening peak hour traffic flows (1700-1800 hours)

BWB Consulting Ltd
Fifth Floor
Waterfront House
35 Station Street
Nottingham
NG2 3DQ

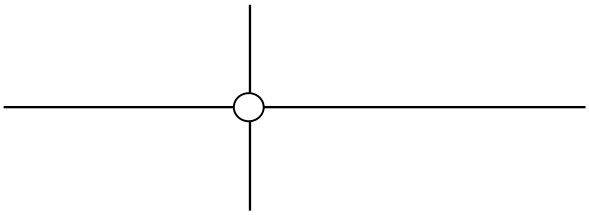
Tel: 0115 924 1100
FAX: 0115 950 3966

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Development impact in 2018 at the A38 Branston Interchange**		**FIGURE 18**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

2023	2112	2292	4404
Dev	6	2	8
%	0.3%	0.1%	0.2%
	↑	↓	2way

A38 (N) slip roads

2023	Dev	%	
326	26	8.0%	→
196	10	5.1%	←
522	36	6.9%	2way



	2023	Dev	%
→	1908	10	0.5%
←	1020	4	0.4%
2way	2928	14	0.5%

A38 (S) slip roads

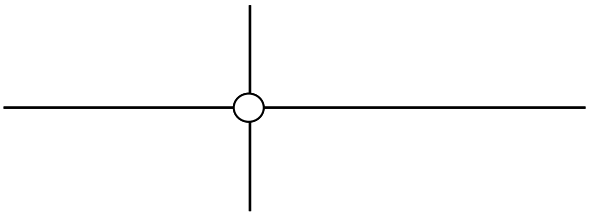
	↑	↓	2way
2023	2950	2372	5322
Dev	4	10	14
%	0.1%	0.4%	0.3%

Morning peak hour traffic flows (0815-0915 hours)

2023	2369	2540	4909
Dev	4	6	10
%	0.2%	0.2%	0.2%
	↑	↓	2way

A38 (N) slip roads

2023	Dev	%	
184	17	9.2%	→
246	27	11.0%	←
430	44	10.2%	2way



	2023	Dev	%
→	1076	7	0.7%
←	1333	11	0.8%
2way	2409	18	0.7%

A38 (S) slip roads

	↑	↓	2way
2023	2643	3009	5652
Dev	10	6	16
%	0.4%	0.2%	0.3%

Evening peak hour traffic flows (1700-1800 hours)

BWB Consulting Ltd
Fifth Floor
Waterfront House
35 Station Street
Nottingham
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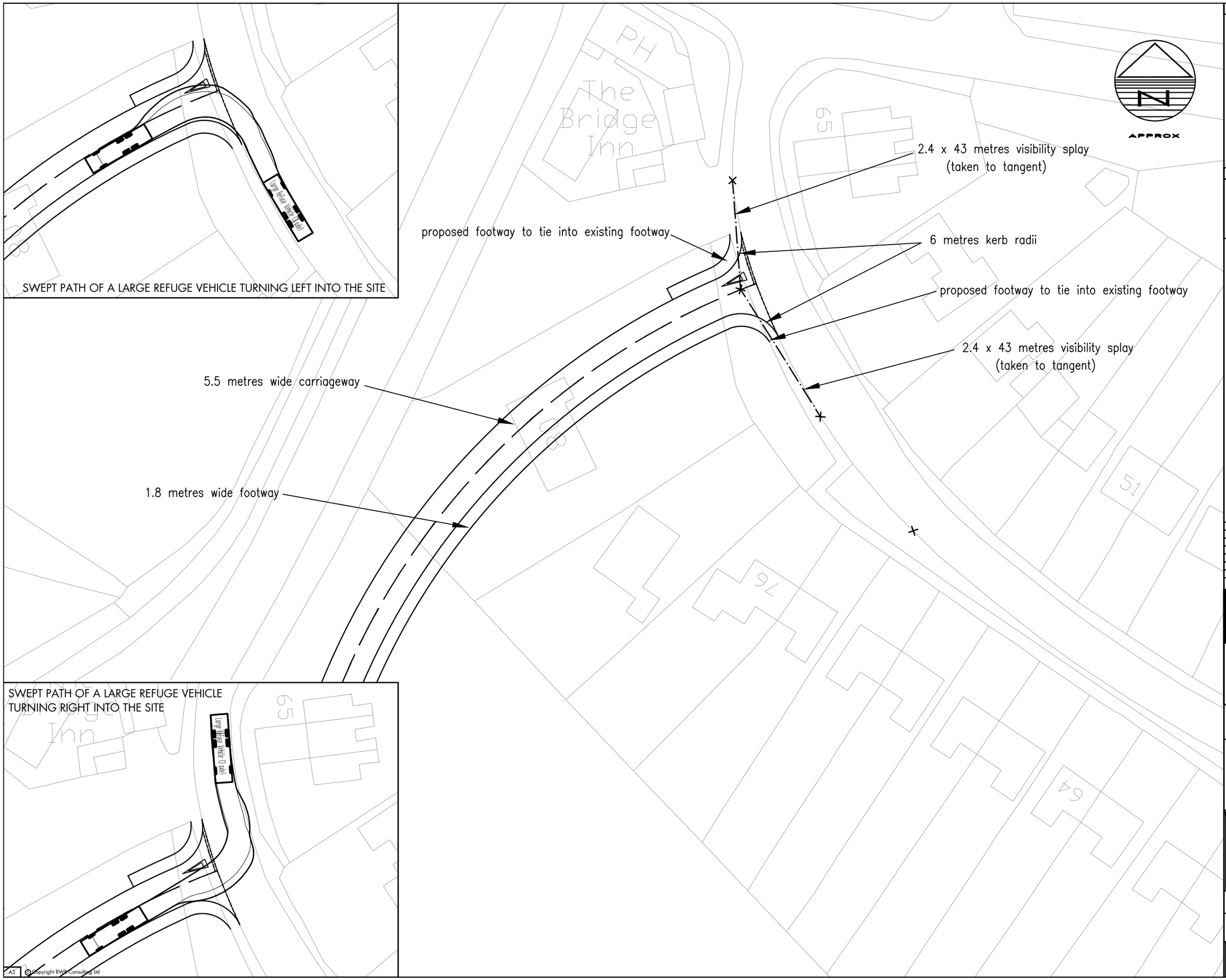
Tel: 0115 924 1100
FAX: 0115 950 3966

Project:	**LAND AT TATENHILL LANE**	**Job No:**	**NTT415**
Drwg Title:	**Development impact in 2023 at the A38 Branston Interchange**		**FIGURE 19**
Drawn:	**RE**	**Drawn:**	**11.02.13**
Checked:	**PW**	**Checked:**	**DAC**

SWEPT PATH OF A LARGE REFUGE VEHICLE TURNING LEFT INTO THE SITE



SWEPT PATH OF A LARGE REFUGE VEHICLE TURNING RIGHT INTO THE SITE

A3

NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.

3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.

4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

KEY

Extent of highway boundary

Rev	Date	Description	Drawn	Auth'd
P6	21.02.13	Access design amended	AJO	RE
P5	05.02.13	Access design amended	AJO	RE
P4	26.07.11	Access design amended	AJO	DAC
P3	30.03.11	Access via No78 Tatenhill Lane	AJO	DAC
P2	13.05.10	Visibility added in accordance with MfS	AJO	DAC
P1	10.06.08	PRELIMINARY ISSUE	AJO	DAC

AMENDMENTS

BWB CONSULTING

Integrated Engineering and Environmental Consultants

3-4 Kayes Walk The Lace Market Nottingham NG1 1PY
T 0115 924 1100 **F** 0115 950 3966 **W** bwbconsulting.com

environmental | water | transportation | civil | structural | highways | infrastructure

Client
CENTRAL & COUNTRY DEVELOPMENTS LIMITED

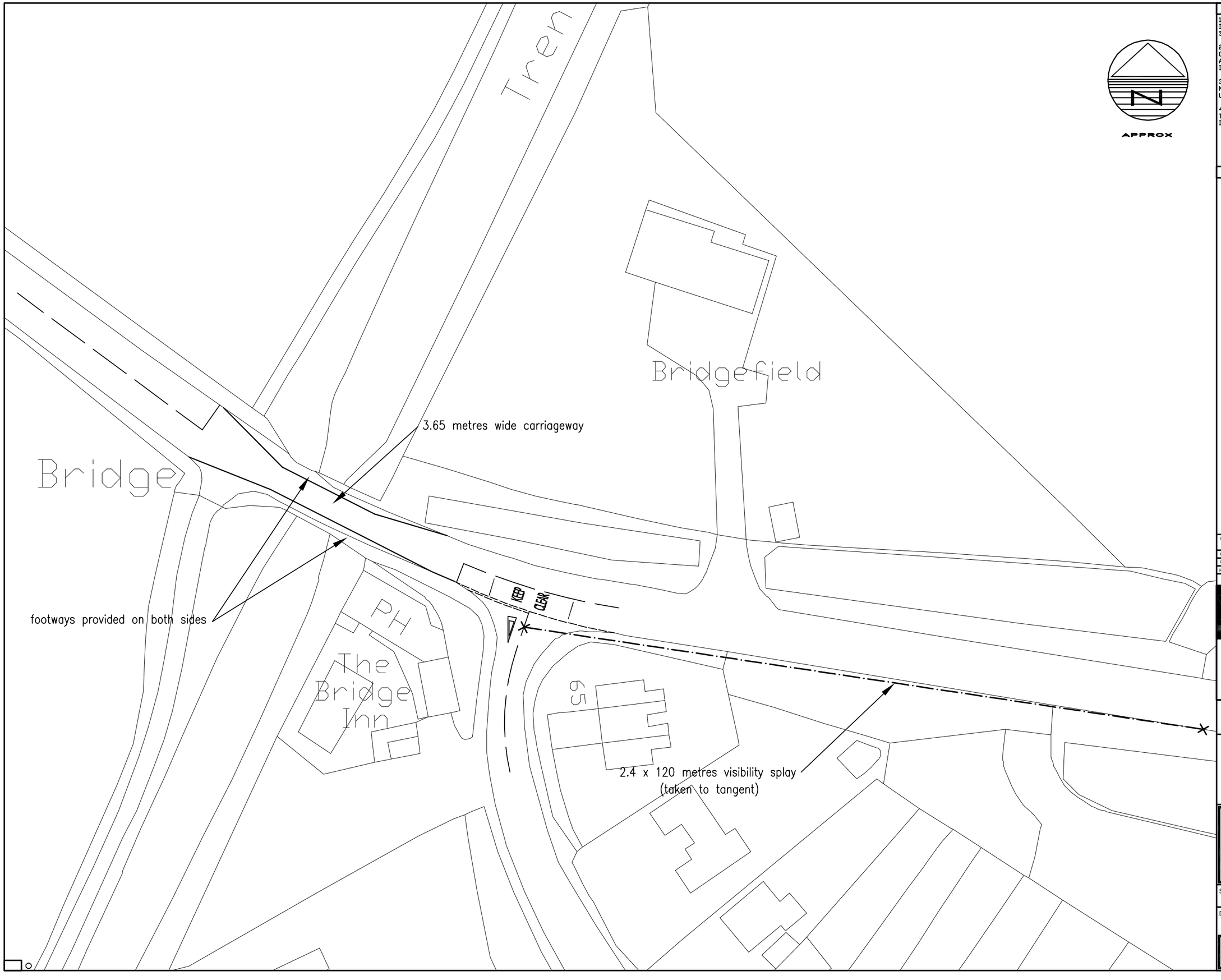
Project Title
LAND AT TATENHILL, BURTON UPON TRENT

Drawing Title
PROPOSED SITE ACCESS ARRANGEMENT

Scale	Date	Drawn	Authorised
1:500	10.06.08	AJO	DAC

Drawing Status
PRELIMINARY

Drawing No:	Revision
NTT/415/001	P6



NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.

3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.

4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

APPROX

KEY

Rev	Date	Description	Drawn	Au
P3	13.05.10	KEEP CLEAR MARKINGS ADDED AND SIGNAL HEADS REMOVED	AJO	Di.
P2	17.03.10	STOP LINE RELOCATED EAST	RE	Di.
P1	10.06.08	PRELIMINARY ISSUE	AJO	Di.

AMENDMENTS

BWB CONSULTING

Integrated Engineering and Environmental Consultants

3-4 Kayes Walk The Lace Market Nottingham NG1 1PY
T 0115 924 1100 **F** 0115 950 3966 **W** bwbconsulting.com

environmental | water | transportation | civil | structural | highways | infrastructure

Client
CENTRAL & COUNTRY DEVELOPMENTS LIMITED

Project Title
LAND AT TATENHILL, BURTON UPON TRENT

Drawing Title
PROPOSED SHUTTLE WORKING TO INCREASE FOOTWAY WIDTH AT EXISTING CANAL BRIDGE

Scale	Date	Drawn	Authorised
1:500	10.06.08	AJO	DAC

Drawing Status
PRELIMINARY

Drawing No:	Revision
NTT/415/002	P3

APPENDIX A

PROPOSED DEVELOPMENT MASTERPLAN

N

PLANTING TO MAXIMUM HEIGHT OF 900mm AT ROAD EDGE TO MAINTAIN VISIBILITY

END GABLE DESIGNED TO FACE CANAL

END GABLE DESIGNED TO FACE ROAD

ACTIVE FRONTAGE TO CANAL- MONOPITCH ROOF OPENING UP TO CANAL

LOW PLANTING. END GABLES DESIGNED TO FACE CANAL.

ACTIVE FRONTAGE TO CANAL- MONOPITCH ROOF OPENING UP TO CANAL

ALL PROPERTIES TO HAVE SOLAR TILES/ PVS

ANGLE OF PROPERTIES SHIELDS THE CARS AND AVOIDS THE DOMINANCE OF VEHICLES ON THE STREET SCENE

Branston Water Park

ANGLE OF PROPERTIES SHIELDS THE CARS AND AVOIDS THE DOMINANCE OF VEHICLES ON THE STREET SCENE

ALL PROPERTIES TO HAVE SOLAR TILES/ PVS

GABLES OF HOUSES 44,45,52,53 DESIGNED TO FACE ROAD. FRONT OF PROPERTIES TO OVERLOOK OPEN SPACE

UNITS 14 AND 15 PULLED FORWARD TO PROVIDE ACTIVE FRONTAGE TO ROAD

VISITOR PARKING

TATENHILL LANE

Drain

Track

SCALE BAR 1:1000

0 10 20 30 40 50 60 70 80 90 100

SCALE BAR 1:500

0 10 20 30 40 50 60 70 80 90 100

SCHEDULE OF ACCOMMODATION

TOTAL 55 UNITS

Open Space: 2666 m²

NO.	NO. OF BEDS	SEMI OR DETACHED	GARAGE
12	5	DETACHED	DOUBLE
14	4	DETACHED	DOUBLE
8	4	DETACHED	SINGLE
4	4	SEMI-DETACHED	NO
4	3	DETACHED	SINGLE
5	3	DETACHED	NO
1	3	SEMI-DETACHED	SINGLE
1	3	SEMI-DETACHED	NO
2	2	SEMI-DETACHED	NO
4	1	APARTMENT	NO

Rev No.	Date.	Rev.	By.	Chk.
E	12.06.13	Amended further to planners comments	HR	CH
D	20.05.13	Amended further to planners comments	HR	CH
C	13.05.13	Amended further to planners comments	HR	CH
B	23.04.13	Southern road widened by 1m	HR	CH
A	19.04.13	Amended further to planners comments	HR	CH

PLANNING

Scale.	Date.	Drawn by.	Chk.
1:500@A1/1:1000@A3	Jan 2013	HR	CH

base. ARCHITECTS

Project Title. Land off Tatenhill Lane, Burton

Client. Central and Country Developments

Drawing Title. Proposed Site Plan: 55 Units

Project No.	Drawing No.	Revision.
BA445	003	E

base Architecture & Design Limited : Unit 1 : NEXUS : Roushill : Shrewsbury : Shropshire : SY1 1PT : T: 01743 236400 : F: 01743 236405 E: office@basearchitecture.co.uk

APPENDIX B

PREVIOUS TRANSPORT STATEMENT VERIFICATION FORMS FROM SCC

TRANSPORT ASSESSMENT/STATEMENT VALIDATION FORM FOR:

Development: LAND OFF TAGHILL LANE FOR MAXIMUM 79 DWELLINGS

Date. 14/06/10

		YES	NO
1.	Does the proposed development require a Transport Assessment or Statement.	✓	

NOTE: IF ANSWER TO Q1 is 'NO' PLEASE PROCEED TO BOTTOM OF PAGE SIGN AND SECURE SIGNATURE OF COUNTY COUNCIL

2.	If the answer to Q1 is 'Yes' has the assessment been submitted in support of the Planning Application.	✓	
3.	If the answer to Q2 is 'Yes' please confirm that the assessment has been audited by the Highway Authority.	✓	

NOTE: IF EITHER OF THE ANSWERS TO Q2 and Q3 ARE 'NO' PLEASE DO NOT SUBMIT PLANNING APPLICATION AS THE LOCAL PLANNING AUTHORITY WILL NOT REGISTER THE APPLICATION.

4.	If the answer to Q3 is 'Yes' please advise whether the highway authority are in agreement with the proposed conclusions in the assessment.	✓	

NOTE: IF ANSWER TO Q4 is 'YES' PLEASE PROCEED TO BOTTOM OF PAGE SIGN AND SECURE SIGNATURE OF COUNTY COUNCIL

5. If the answer to Q 4 is 'No' please attach a letter explaining the areas of dispute so that consideration can be given to validating the Planning Application.

NOTE: IF ANSWER TO Q4 is 'NO' AND THE LOCAL PLANNING AUTHORITY REGISTER THE APPLICATION AS VALID PLEASE NOTE THAT THE APPLICATION WILL BE DETERMINED ON THIS BASIS.

Applicants Signature

Director on behalf of Central & Country Developments Ltd.

Development Control Engineer's Signature on behalf of Staffordshire County Council

TRANSPORT ASSESSMENT/STATEMENT VALIDATION FORM FOR:

Development: LAND OFF TATENHILL LANE, BRANSTON FOR 33 DWELLINGS

Date 03/09/10

		YES	NO
1.	Does the proposed development require a Transport Assessment or Statement.	✓	

NOTE: IF ANSWER TO Q1 is 'NO' PLEASE PROCEED TO BOTTOM OF PAGE SIGN AND SECURE SIGNATURE OF COUNTY COUNCIL

2.	If the answer to Q1 is 'Yes' has the assessment ~~been submitted in support of the Planning~~ Application.	✓	
3.	If the answer to Q2 is 'Yes' please confirm that the assessment has been audited by the Highway Authority.	✓	

NOTE: IF EITHER OF THE ANSWERS TO Q2 and Q3 ARE 'NO' PLEASE DO NOT SUBMIT PLANNING APPLICATION AS THE LOCAL PLANNING AUTHORITY WILL NOT REGISTER THE APPLICATION.

4.	If the answer to Q3 is 'Yes' please advise whether the highway authority are in agreement with the proposed conclusions in the assessment.	✓	

NOTE: IF ANSWER TO Q4 is 'YES' PLEASE PROCEED TO BOTTOM OF PAGE SIGN AND SECURE SIGNATURE OF COUNTY COUNCIL

5. If the answer to Q 4 is 'No' please attach a letter explaining the areas of dispute so that consideration can be given to validating the Planning Application.

NOTE: IF ANSWER TO Q4 is 'NO' AND THE LOCAL PLANNING AUTHORITY REGISTER THE APPLICATION AS VALID PLEASE NOTE THAT THE APPLICATION WILL BE DETERMINED ON THIS BASIS.

Applicants Signature

Director on behalf of Central & Country Developments Ltd.

Development Control Engineer's Signature on behalf of Staffordshire County Council

APPENDIX C

CONSENTED RUGBY CLUB MASTERPLAN

N

A 24/7/09 Footpath relocated behind bund, new opening created through from Branston Bridge. New hedgerow added between overflow car park and existing ditch alongside footpath mjl

aja architects

aja architects llp
1170 Elliott Court
Herald Avenue
Coventry Business Park
COVENTRY CV5 6UB

T: 024 7620 3090
F: 024 7620 3010
E: aja@aja-architects.com
W: www.aja-architects.com

Burton Rugby Football Club

PA32378/003

New Ground, Clubhouse & Facilities
Branston Road
Burton - Upon - Trent

Site Context Plan

RECEIVED
6 AUG 2009

scale 1:1250 @ a1 drawn gcd
checked date 24/7/09

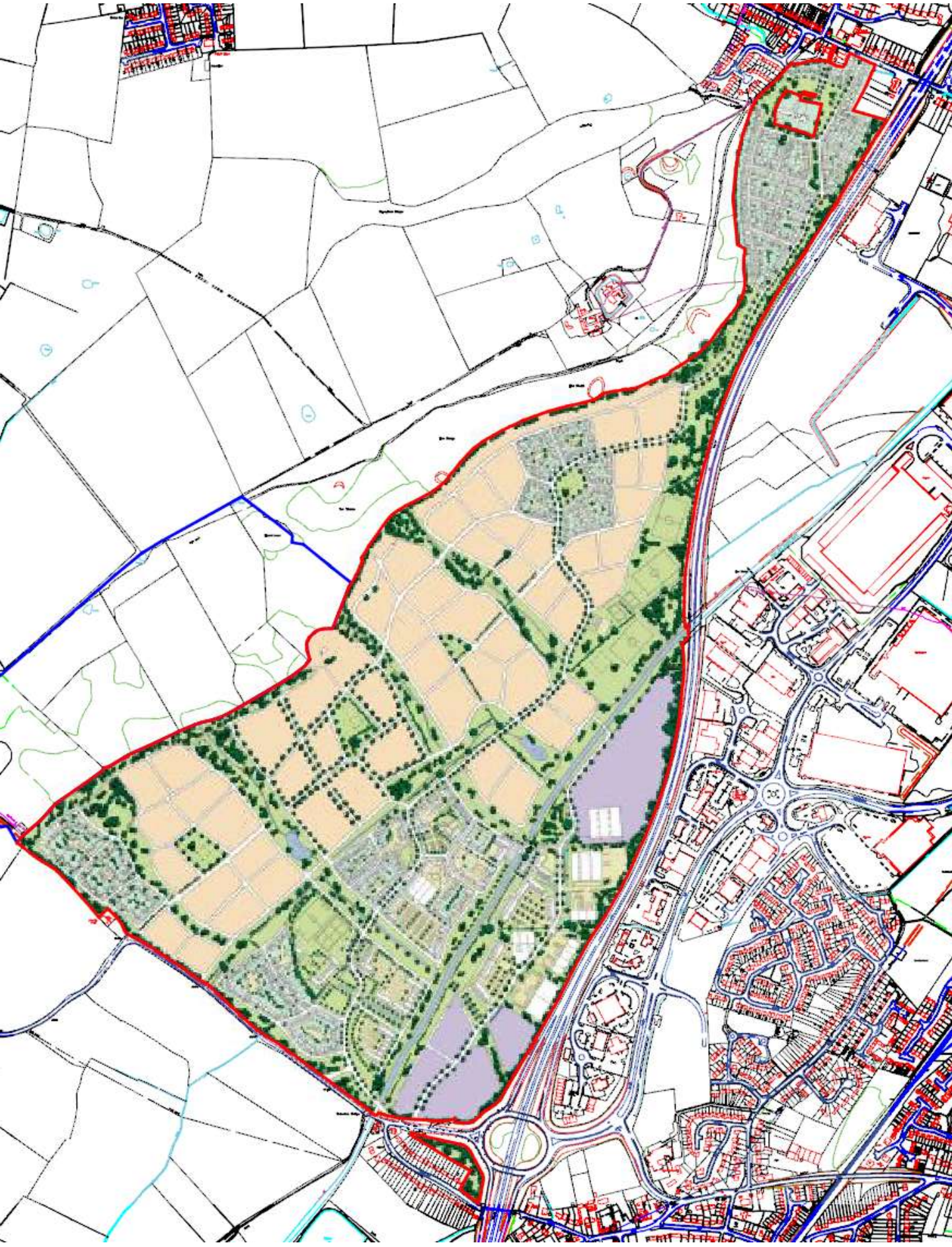
4039 - 36 Rev A

PLANNING

REVISED PLAN

APPENDIX D

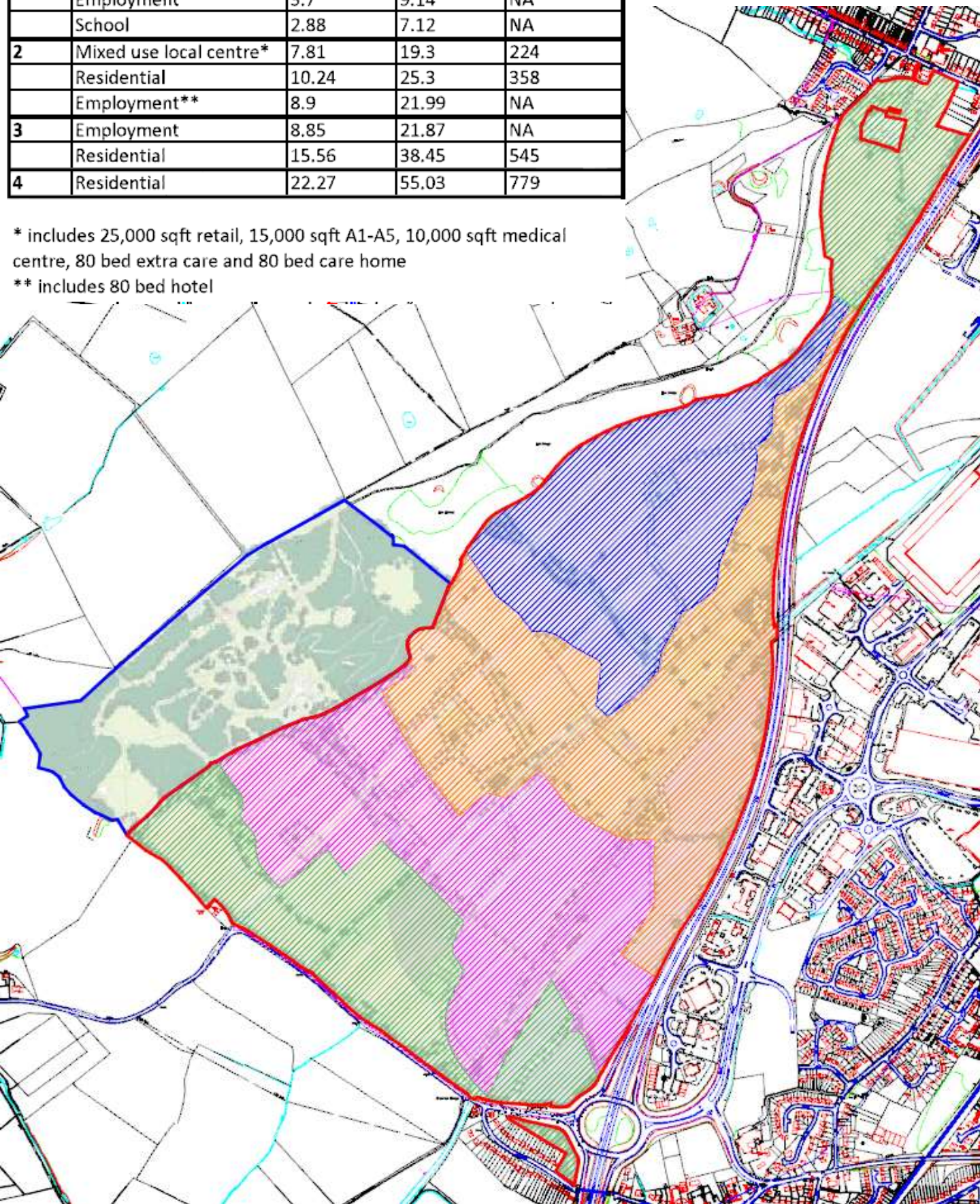
PROPOSED BRANSTON LOCKS ILLUSTRATIVE MASTERPLAN AND PHASING PLAN



Phase	Sub-area	Area (ha)	Area (acres)	Approx units
1	N residential	6.87	16.98	240
	SW residential	10.42	25.75	360
	Employment	3.7	9.14	NA
	School	2.88	7.12	NA
2	Mixed use local centre*	7.81	19.3	224
	Residential	10.24	25.3	358
	Employment**	8.9	21.99	NA
3	Employment	8.85	21.87	NA
	Residential	15.56	38.45	545
4	Residential	22.27	55.03	779

* includes 25,000 sqft retail, 15,000 sqft A1-A5, 10,000 sqft medical centre, 80 bed extra care and 80 bed care home

** includes 80 bed hotel



APPENDIX E

ILLUSTRATION OF BRANSTON ROAD REALIGNMENT, TAKEN FROM THE BRANSTON LOCKS DESIGN AND ACCESS STATEMENT

Design and access parameters

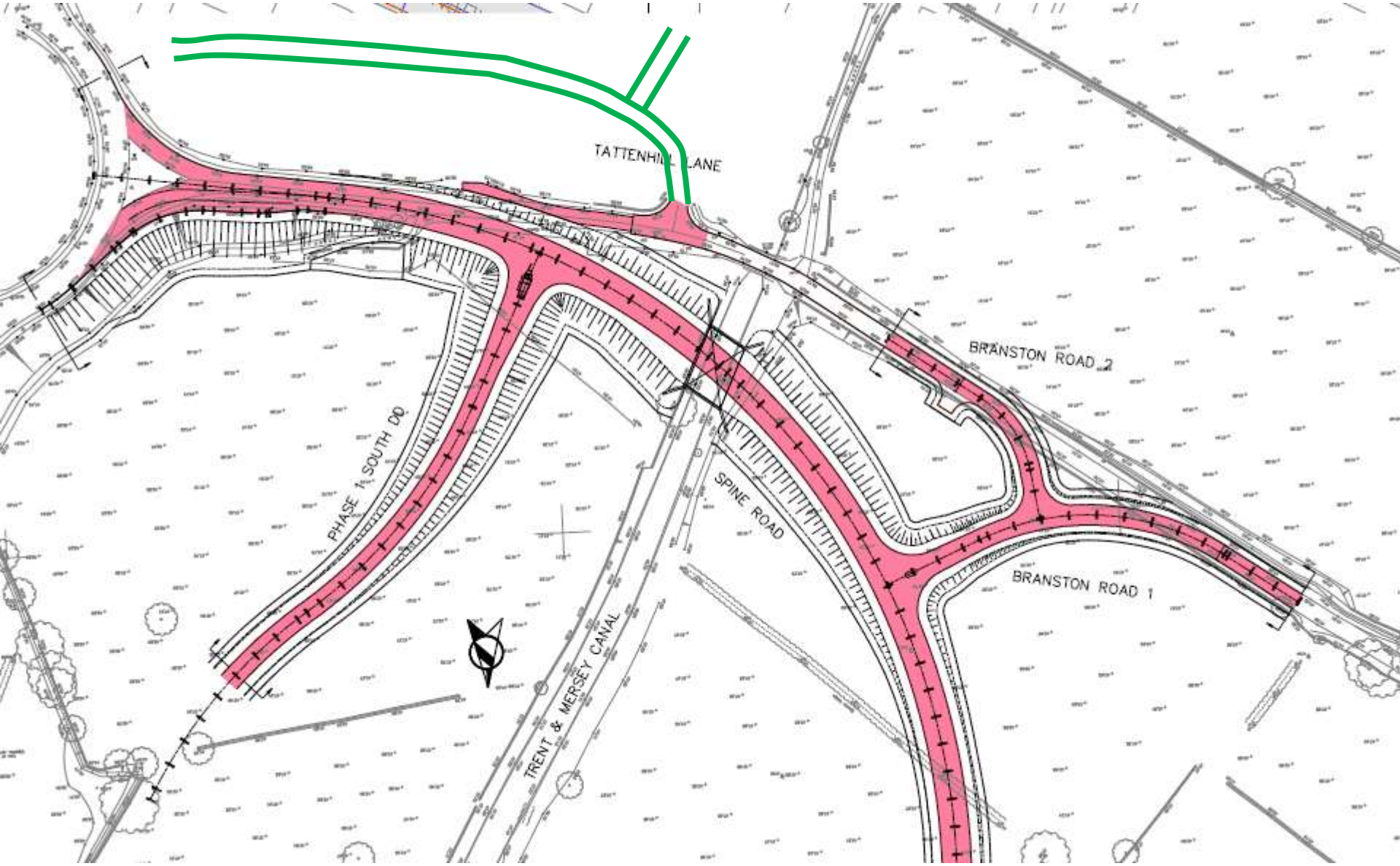
Proposed site access

There are two proposed vehicular access points to the Branston Locks development. The strategy has been adopted to provide high quality access to the adjacent A38 (T) both north and southbound. In addition access has been provided to the north for local trips via Shobnall Road.

It is intended that the principal highway access to the Branston Locks development will be via Branston Interchange.

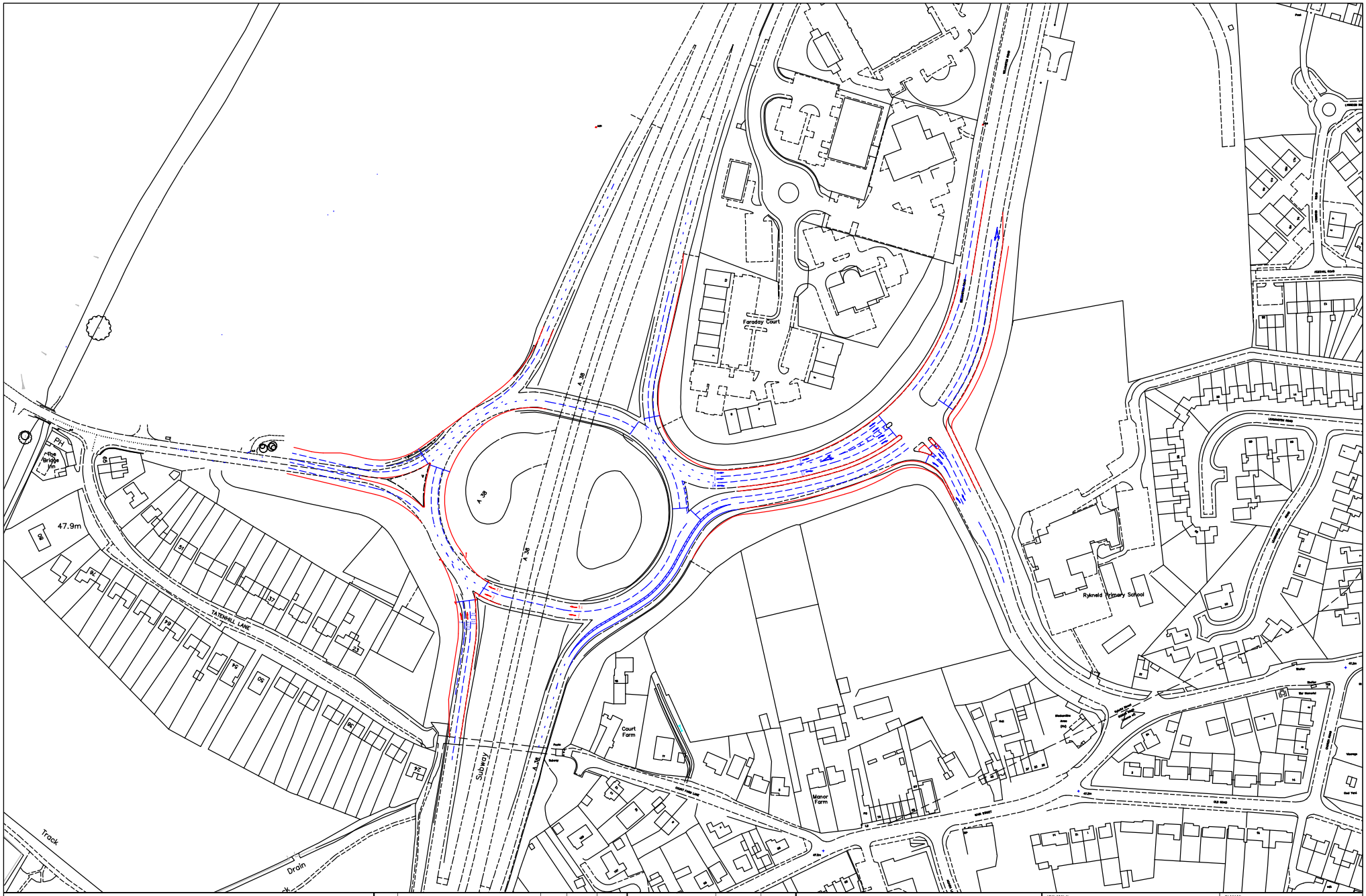
Some off-site improvements will be required to Branston Interchange in particular to maintain highway capacity. It is noted that the Highways Agency has a long term improvement scheme for the roundabout and provision of full signal control on the junction. It is expected that development at Branston Locks will make a significant contribution towards this scheme.

As part of the proposals it is intended ultimately to 'stop-up' Branston Road to vehicular traffic at the canal bridge. Traffic using Branston Road will be re-routed via the internal site roads within Branston Locks, to reconnect further to the west. It is expected that the canal bridge will remain open to non-vehicular traffic and the residents of the cul-de-sac Tatenhill Lane.


TATTENHILL LANE
BRANSTON ROAD 2
PHASE 1 SOUTH DD
SPINE ROAD
BRANSTON ROAD 1
TRENT & MERSEY CANAL

APPENDIX F

PROPOSED HIGHWAY WORKS AT BRANSTON INTERCHANGE AS PART OF THE BRANSTON LOCKS DEVELOPMENT



REV	DESCRIPTION	DRAWN	INITIALS	DATE

DRAWING STATUS	CHECKED BY	DATE

david tucker associates
transport planning consultants
Forester House, Doctors Lane
Henley-In-Arden
Warwickshire B95 5AW
Tel: +44(0)1564 793598
Fax: +44(0)1564 793983
www.dtatransportation.co.uk

JOB TITLE	CLIENT
Branston Locks	NDQL

DRAWING TITLE

Potential Brantson Interchange
Improvements & Site Access
Arrangements

SCALE	DRAWN BY	DATE	DRAWING No	REVISION
1/1000@A1	BP/MJH	July 09	10146–28	A

APPENDIX G

2010 TRAFFIC SURVEY RESULTS

Place:	Branston	Weather:	Sunny	Survey Ref. No:	NTT415 TT09/147	Page:	1
Date:	04.03.2010	Traffic entering on:	Branston Road Eastbound	Client:	BWB Consulting	of:	3

Time	Left turn to:	NA									Straight on to:	Branston Road East									Right turn to:	Tatenhill Lane									Total	
Begi	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	Vehs	PCUs
0730											0	0	1	46	3	1	0	0	51		0	0	0	1	0	0	0	0	1		52	
0745											0	0	0	79	12	1	2	0	94		0	0	0	0	0	0	0	0	0		94	
0800											0	0	0	89	8	1	1	0	99		0	0	0	0	0	1	0	0	1		100	
0815											0	0	0	82	14	1	0	0	97		0	0	0	0	0	0	0	0	0		97	
0830											0	0	0	96	5	2	0	0	103		0	0	0	1	0	0	0	0	1		104	
0845											0	0	0	114	6	0	1	0	121		0	0	0	1	0	0	0	0	1		122	
0900											0	0	0	104	6	1	0	0	111		0	0	0	0	0	0	0	0	0		111	
0915											0	0	0	67	5	2	3	0	77		0	0	0	0	0	0	0	0	0		77	
1630											0	0	0	42	13	0	0	0	55		0	0	0	0	0	0	0	0	0		55	
1645											0	0	0	41	4	0	0	0	45		0	0	0	2	0	0	0	0	2		47	
1700											0	0	0	63	5	0	0	0	68		0	0	0	0	0	0	0	0	0		68	
1715											0	0	0	57	5	0	0	0	62		0	0	0	0	0	0	0	0	0		62	
1730											0	0	1	73	4	0	0	0	78		0	0	0	0	0	0	0	0	0		78	
1745											0	0	0	66	4	1	1	0	72		0	0	0	3	0	0	0	0	3		75	
1800											0	0	0	69	5	0	0	0	74		0	0	0	3	0	0	0	0	3		77	
1815											0	0	0	66	5	0	0	0	71		0	0	0	3	0	0	0	0	3		74	
Total											0	0	2	####	###	10	8	0	1278		0	0	0	14	0	1	0	0	15		####	

Place:	Branston	Weather:	Sunny	Survey Ref. No:	NTT415 TT09/147	Page:	2
Date:	04.03.2010	Traffic entering on:	Tatenhill Lane	Client:	BWB Consulting	of:	3

Time	Left turn to:	Branston Road West									Straight on to:	NA									Right turn to:	Branston Road East									Total	
Begi	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	Vehs	PCUs
0730	0	0	0	0	0	0	0	0	0												0	0	0	3	0	0	0	0	3		3	
0745	0	0	0	2	0	0	0	0	2												0	0	0	6	1	0	0	0	7		9	
0800	0	0	0	0	0	0	0	0	0												0	0	0	4	1	1	0	0	6		6	
0815	0	0	0	0	0	0	0	0	0												0	0	0	0	1	0	0	0	1		1	
0830	0	0	0	1	0	0	0	0	1												0	0	0	2	0	0	0	0	2		3	
0845	0	0	0	1	0	0	0	0	1												0	0	0	0	0	0	0	0	0		1	
0900	0	0	0	0	0	0	0	0	0												0	0	0	4	0	0	0	0	4		4	
0915	0	0	0	1	0	0	0	0	1												0	0	0	1	1	0	0	0	2		3	
1630	0	0	0	0	0	0	0	0	0												0	0	0	3	0	0	0	0	3		3	
1645	0	0	0	1	0	0	0	0	1												0	0	0	1	0	0	1	0	2		3	
1700	0	0	0	2	0	0	0	0	2												0	0	0	3	1	0	0	0	4		6	
1715	0	0	0	0	0	0	0	0	0												0	0	0	2	0	0	0	0	2		2	
1730	0	0	0	0	0	0	0	0	0												0	0	0	5	0	0	0	0	5		5	
1745	0	0	0	1	0	0	0	0	1												0	0	0	2	1	0	0	0	3		4	
1800	0	0	0	1	0	0	0	0	1												0	0	0	2	0	0	0	0	2		3	
1815	0	0	0	1	0	0	0	0	1												0	0	0	2	0	0	0	0	2		3	
Total	0	0	0	11	0	0	0	0	11												0	0	0	40	6	1	1	0	48		59	

Place:	Branston	Weather:	Sunny	Survey Ref. No:	NTT415 TT09/147	Page:	3
Date:	04.03.2010	Traffic entering on:	Branston Road Westbound	Client:	BWB Consulting	of:	3

Time	Left turn to:	Tatenhill Lane									Straight on to:	Branston Road West									Right turn to:	NA									Total	
Begi	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	OGV1	OGV2	Vehs	PCUs	Vehs	PCUs
0730	0	0	0	0	0	0	0	0	0		0	0	0	9	3	1	1	0	14												14	
0745	0	0	0	1	0	0	0	0	1		0	0	0	16	8	0	1	0	25												26	
0800	0	0	0	0	2	0	0	0	2		0	0	0	19	2	0	0	0	21												23	
0815	0	0	0	0	0	0	0	0	0		0	0	0	30	4	0	1	0	35												35	
0830	0	0	0	0	0	0	0	0	0		0	0	0	50	2	1	0	0	53												53	
0845	0	0	0	2	0	0	0	0	2		0	0	0	32	2	0	0	0	34												36	
0900	0	0	0	1	0	0	0	0	1		0	0	0	26	1	0	0	0	27												28	
0915	0	0	0	2	1	0	0	0	3		0	0	0	17	2	0	0	0	19												22	
1630	0	0	0	5	0	0	0	0	5		0	0	0	39	2	0	1	0	42												47	
1645	0	0	0	3	1	0	1	0	5		0	0	1	39	1	0	0	0	41												46	
1700	0	0	0	6	0	0	0	0	6		0	0	0	38	4	0	0	0	42												48	
1715	0	0	0	4	0	0	0	0	4		0	0	0	42	2	0	0	0	44												48	
1730	0	0	0	4	3	0	0	0	7		0	0	0	38	5	0	0	0	43												50	
1745	0	0	0	7	1	0	0	0	8		0	0	0	49	3	0	0	0	52												60	
1800	0	0	0	6	0	0	0	0	6		0	0	0	22	0	0	0	0	22												28	
1815	0	0	0	3	0	0	0	0	3		0	0	0	21	4	0	0	0	25												28	
Total	0	0	0	44	8	0	1	0	53		0	0	1	487	45	2	4	0	539												592	

APPENDIX H

HIGHWAY BOUNDARY INFORMATION

Staffordshire County Council

Land Charges
Staffordshire County Council
Riverway, Stafford.
ST16 3TJ
01785 854882

According to our current records, the area coloured green is adopted highway maintainable at public expense by this Highway Authority.

N

This information must be viewed in conjunction with any associated correspondence and is based on the records held by this Highway Authority. If you have any documentary evidence which you feel is relevant to the issue of the extent of the highway and that you would like us to consider, please submit it to this office.

20/10/2011

1:500 @ A4

Meters

0 2.5 5 10 15

APPENDIX I

2011 CENSUS MODAL SPLIT

Neighbourhood Statistics

Office for National Statistics

Original URL: http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6500093&c=branston&d=14&e=61&f=32084&g=6463167&i=1001x1003x1032x1004x1005&l=2567&o=362&m=0&r=1&s=1373013632024&enc=1

Method of Travel to Work, 2011 (QS701EW)
Period: Mar11

Area: Branston (Ward)

Variable	Measure	Branston	East Staffordshire (Non-Metropolitan District)	West Midlands	England
All Usual Residents Aged 16 to 74 (Persons)[1]	Count	5,407	83,059	4,067,119	38,881,374
Work Mainly at or From Home (Persons)[1]	Count	124	2,820	121,260	1,349,568
Underground, Metro, Light Rail, Tram (Persons)[1]	Count	0	35	6,663	1,027,625
Train (Persons)[1]	Count	53	626	64,563	1,343,684
Bus, Minibus or Coach (Persons)[1]	Count	79	1,628	194,723	1,886,539
Taxi (Persons)[1]	Count	25	440	13,319	131,465
Motorcycle, Scooter or Moped (Persons)[1]	Count	24	411	16,370	206,550
Driving a Car or Van (Persons)[1]	Count	2,908	36,485	1,649,987	14,345,882
Passenger in a Car or Van (Persons)[1]	Count	270	3,685	154,599	1,264,553
Bicycle (Persons)[1]	Count	141	1,767	50,388	742,675
On Foot (Persons)[1]	Count	271	6,767	251,452	2,701,453
Other Method of Travel to Work (Persons)[1]	Count	10	257	13,552	162,727
Not in Employment (Persons)[1]	Count	1,502	28,138	1,530,243	13,718,653

Last Updated: 30 January 2013
Source: Office for National Statistics

Notes

[1] National Statistics

APPENDIX J

TEMPRO OUTPUT

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2010		
Future Year:	2018		
Trip Purpose Group:	All purposes		
Time Period:	Weekday AM peak period (0700 - 0959)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		
Growth Factor			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0638	1.0411
Base Year - Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	942	883
Base Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	14748	21467
Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	15690	22351
Level	Area	Local Growth Figure	
41UC1	Burton Upon Trent	**1.063190332**	

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2010		
Future Year:	2018		
Trip Purpose Group:	All purposes		
Time Period:	Weekday PM peak period (1600 - 1859)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		
Growth Factor			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0493	1.0657
Base Year - Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1153	1210
Base Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	23364	18392
Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	24518	19602
Level	Area	Local Growth Figure	
41UC1	Burton Upon Trent	**1.068291867**	

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2009		
Future Year:	2018		
Trip Purpose Group:	All purposes		
Time Period:	Weekday AM peak period (0700 - 0959)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		
Growth Factor			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0609	1.04
Base Year - Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	902	861
Base Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	14788	21490
Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	15690	22351
Rural trunk road			
Level	Area	Local Growth Figure	
41UC1	Burton Upon Trent	**1.065672202**	

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2009		
Future Year:	2018		
Trip Purpose Group:	All purposes		
Time Period:	Weekday PM peak period (1600 - 1859)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		
Growth Factor			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0496	1.0654
Base Year - Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1159	1204
Base Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	23359	18398
Future Year			
Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	24518	19602
Level	Area	Local Growth Figure	
41UC1	Burton Upon Trent	**1.072824365**	

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2009		
Future Year:	2023		
Trip Purpose Group:	All purposes		
Time Period:	Weekday AM peak period (0700 - 0959)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		

Growth Factor

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0985	1.0618

Base Year - Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1457	1329

Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	14788	21490

Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	16245	22818

Rural Trunk Road

Level	Area	Local Growth Figure
41UC1	Burton Upon Trent	**1.137395806**

Dataset Version:	62		
Result Type:	Trip ends by time period		
Base Year:	2009		
Future Year:	2023		
Trip Purpose Group:	All purposes		
Time Period:	Weekday PM peak period (1600 - 1859)		
Trip End Type:	Origin/Destination		
Alternative Assumptions applied:	No		

Growth Factor

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1.0758	1.1028

Base Year - Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	1771	1891

Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	23359	18398

Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
41UC1	Burton Upon Trent	25129	20290

Level	Area	Local Growth Figure
41UC1	Burton Upon Trent	**1.147030738**

APPENDIX K

TATENHILL LANE/SITE ACCESS JUNCTION PICADY RESULTS

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 3.0 (MAY 2001)

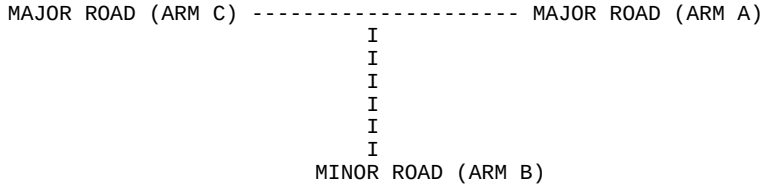
FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

Run with file:-
"y:\NTT\NTT415HTN_Land at Tatenhill\Documents\Reports\Transport Statement\2013 WORK\130705TL_SA 2018 AMWD 55.vpi"
(drive-on-the-left) at 09:55:56 on Friday, 5 July 2013

RUN TITLE
****
130705 TL/SA 2018 AMWD (55 dwellings)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tatenhill Lane (E)
ARM B IS site access
ARM C IS Tatenhill Lane (W)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	110.0 M.
- BLOCKS TRAFFIC		YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	18.0 M.
- VISIBILITY TO RIGHT	(VB-A)	15.0 M.
- LANE 1 WIDTH	(WB-C)	-
- LANE 2 WIDTH	(WB-A)	-
- WIDTH AT 0 M FROM JUNC.		10.00 M.
- WIDTH AT 5 M FROM JUNC.		4.00 M.
- WIDTH AT 10 M FROM JUNC.		2.50 M.
- WIDTH AT 15 M FROM JUNC.		2.50 M.
- WIDTH AT 20 M FROM JUNC.		2.50 M.
- LENGTH OF FLARED SECTION		DERIVED: 0 PCU

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.11	0.17	0.11
ARM B	15.00	45.00	75.00	0.35	0.52	0.35
ARM C	15.00	45.00	75.00	0.20	0.30	0.20

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.45 - 09.15	ARM A	0.000	0.000	1.000
		0.0	0.0	9.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	28.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.313	0.688	0.000
		5.0	11.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	0.35	10.84	0.032		0.0	0.0	0.5	
B-A	0.00	8.84	0.000		0.0	0.0	0.0	
C-AB	0.14	10.64	0.013		0.0	0.0	0.2	
C-A	0.06							
A-B	0.00							
A-C	0.11							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	0.42	10.84	0.039		0.0	0.0	0.6	
B-A	0.00	8.82	0.000		0.0	0.0	0.0	
C-AB	0.17	10.64	0.016		0.0	0.0	0.2	
C-A	0.07							
A-B	0.00							
A-C	0.13							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-C	0.51	10.83	0.047		0.0	0.0	0.7	
B-A	0.00	8.80	0.000		0.0	0.0	0.0	
C-AB	0.20	10.65	0.019		0.0	0.0	0.3	
C-A	0.09							
A-B	0.00							
A-C	0.16							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-C	0.51	10.83	0.047		0.0	0.0	0.7	
B-A	0.00	8.80	0.000		0.0	0.0	0.0	
C-AB	0.20	10.65	0.019		0.0	0.0	0.3	
C-A	0.09							
A-B	0.00							
A-C	0.16							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-C	0.42	10.84	0.039		0.0	0.0	0.6	
B-A	0.00	8.82	0.000		0.0	0.0	0.0	
C-AB	0.17	10.64	0.016		0.0	0.0	0.2	
C-A	0.07							
A-B	0.00							
A-C	0.13							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-C	0.35	10.84	0.032		0.0	0.0	0.5	
B-A	0.00	8.84	0.000		0.0	0.0	0.0	
C-AB	0.14	10.64	0.013		0.0	0.0	0.2	
C-A	0.06							
A-B	0.00							
A-C	0.11							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	38.4	25.6	3.7	0.10	3.7	0.10
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	15.2	10.1	1.5	0.10	1.5	0.10
C-A	6.7	4.5				
A-B	0.0	0.0				
A-C	12.3	8.2				
ALL	72.7	48.4	5.1	0.07	5.1	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

[Printed at 09:56:03 on 05/07/2013]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 3.0 (MAY 2001)

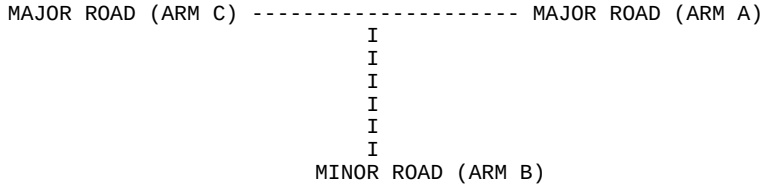
FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

Run with file:-
"y:\NTT\NTT415HTN_Land at Tatenhill\Documents\Reports\Transport Statement\2013 WORK\130705 TL_SA 2018 PMWD 55.vpi"
(drive-on-the-left) at 09:56:59 on Friday, 5 July 2013

RUN TITLE
****
130705 TL/SA 2018 PMWD (55 dwellings)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tatenhill Lane (E)
ARM B IS site access
ARM C IS Tatenhill Lane (W)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 6.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 110.0 M.
- BLOCKS TRAFFIC	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 18.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.
- LANE 1 WIDTH	(WB-C) -
- LANE 2 WIDTH	(WB-A) -
- WIDTH AT 0 M FROM JUNC.	10.00 M.
- WIDTH AT 5 M FROM JUNC.	4.00 M.
- WIDTH AT 10 M FROM JUNC.	2.50 M.
- WIDTH AT 15 M FROM JUNC.	2.50 M.
- WIDTH AT 20 M FROM JUNC.	2.50 M.
- LENGTH OF FLARED SECTION	DERIVED: 0 PCU

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.21	0.32	0.21
ARM B	15.00	45.00	75.00	0.21	0.32	0.21
ARM C	15.00	45.00	75.00	0.69	1.03	0.69

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000	0.000	1.000
		0.0	0.0	17.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	17.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.509	0.491	0.000
		28.0	27.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
16.45-17.00								
B-C	0.21	10.82	0.020		0.0	0.0	0.3	
B-A	0.00	8.70	0.000		0.0	0.0	0.0	
C-AB	0.35	10.80	0.032		0.0	0.0	0.5	
C-A	0.34							
A-B	0.00							
A-C	0.21							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15								
B-C	0.25	10.81	0.023		0.0	0.0	0.4	
B-A	0.00	8.66	0.000		0.0	0.0	0.0	
C-AB	0.42	10.84	0.039		0.0	0.0	0.6	
C-A	0.40							
A-B	0.00							
A-C	0.25							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.15-17.30								
B-C	0.31	10.79	0.029		0.0	0.0	0.4	
B-A	0.00	8.60	0.000		0.0	0.0	0.0	
C-AB	0.52	10.88	0.048		0.0	0.1	0.8	
C-A	0.49							
A-B	0.00							
A-C	0.31							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-C	0.31	10.79	0.029		0.0	0.0	0.4	
B-A	0.00	8.60	0.000		0.0	0.0	0.0	
C-AB	0.52	10.88	0.048		0.1	0.1	0.8	
C-A	0.49							
A-B	0.00							
A-C	0.31							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-C	0.25	10.81	0.023		0.0	0.0	0.4	
B-A	0.00	8.66	0.000		0.0	0.0	0.0	
C-AB	0.42	10.84	0.039		0.1	0.0	0.6	
C-A	0.40							
A-B	0.00							
A-C	0.25							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-C	0.21	10.82	0.020		0.0	0.0	0.3	
B-A	0.00	8.70	0.000		0.0	0.0	0.0	
C-AB	0.35	10.80	0.032		0.0	0.0	0.5	
C-A	0.34							
A-B	0.00							
A-C	0.21							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.1
17.45	0.1
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	23.3	15.5	2.2	0.09	2.2	0.09
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	38.6	25.7	3.9	0.10	3.9	0.10
C-A	36.8	24.6				
A-B	0.0	0.0				
A-C	23.3	15.5				
ALL	122.0	81.4	6.1	0.05	6.1	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

APPENDIX L

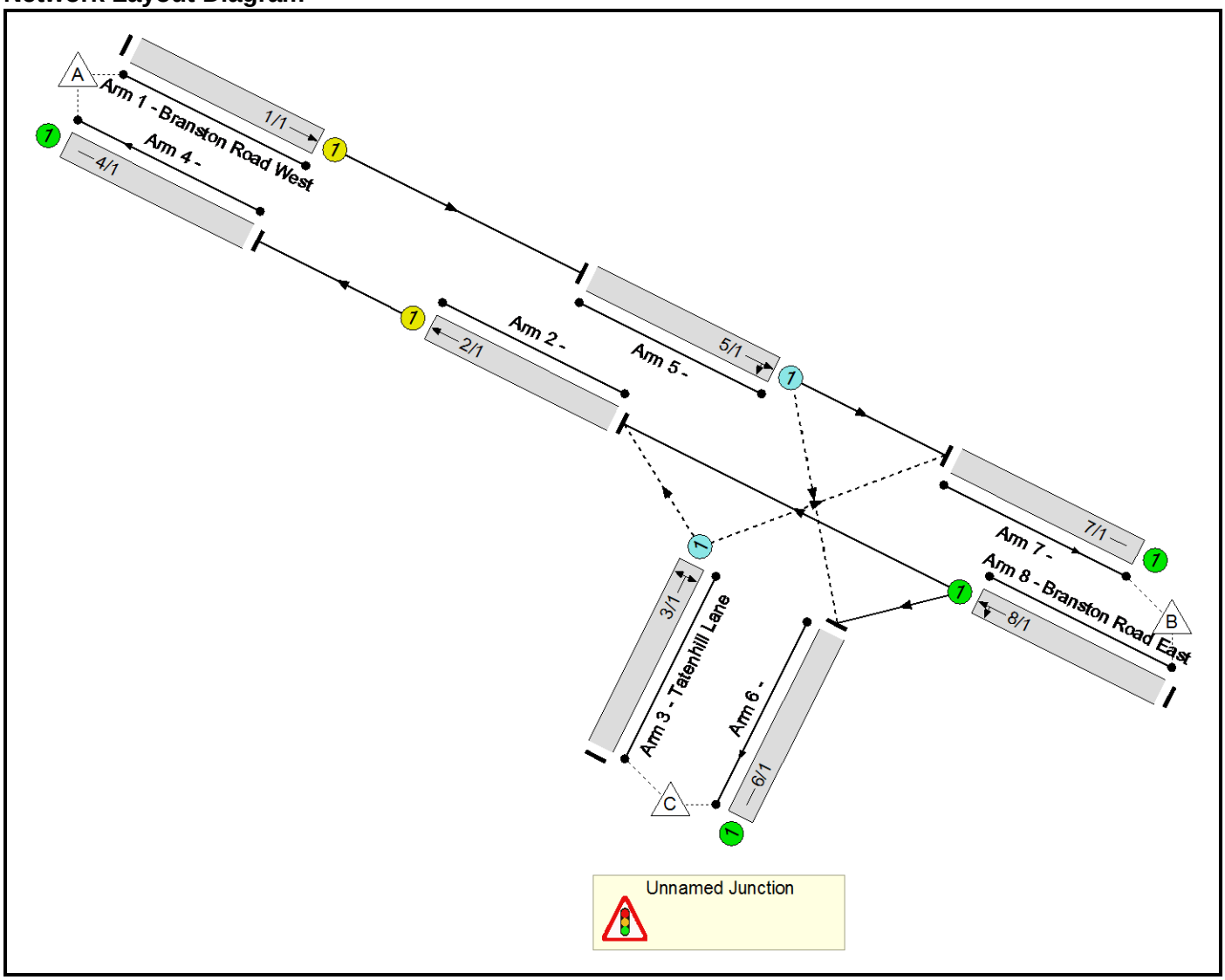
BRANSTON ROAD/TATENHILL LANE JUNCTION LINSIG RESULTS

Full Input Data And Results

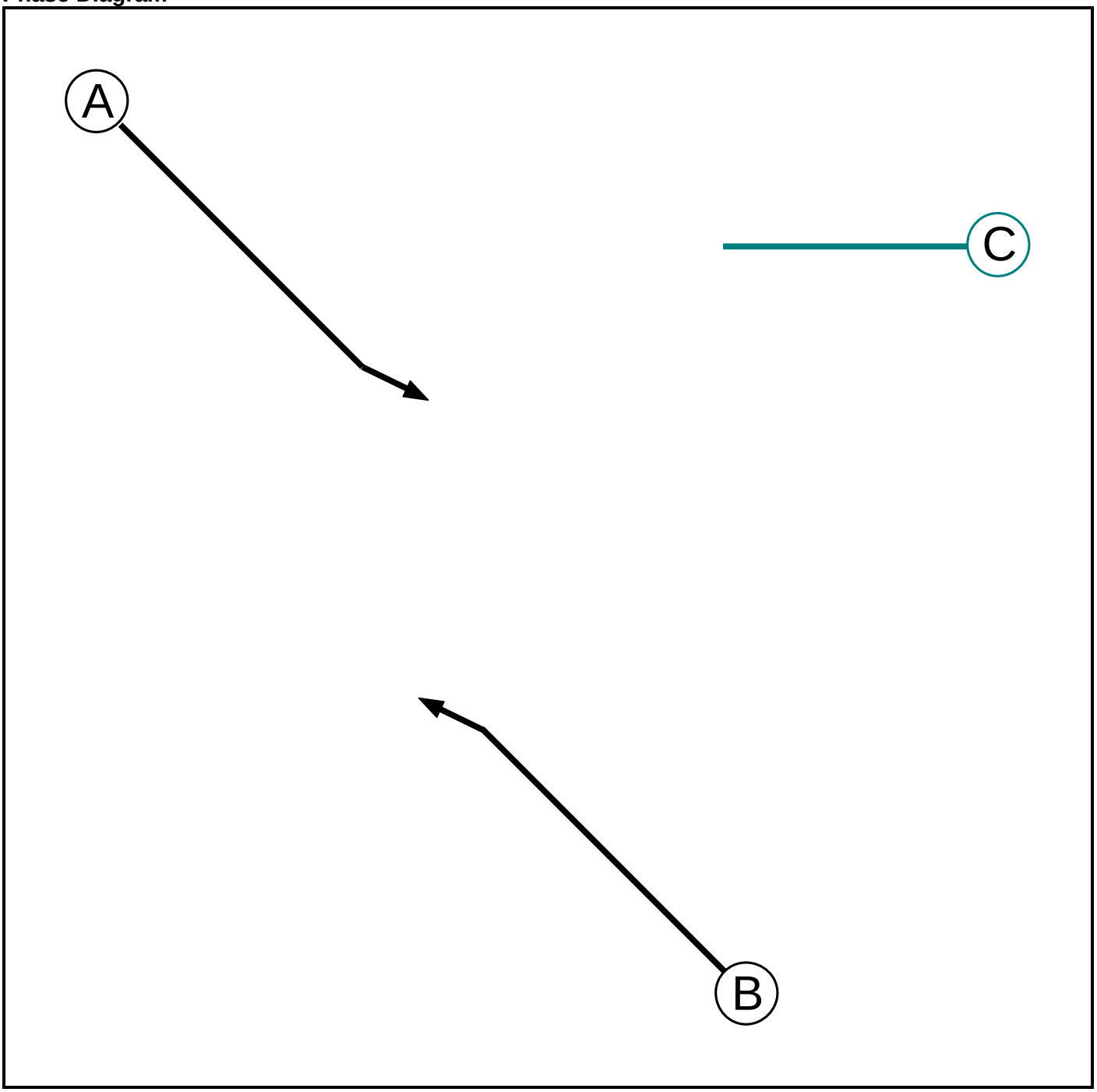
User and Project Details

Project:	**Land at Tatenhall**
Title:	**130206 2018 With Development Shuttle Working**
Location:	Tatenhall, Burton on Trent
File name:	130206 2018 With Development Shuttle Working Capacity Assessment.lsg3x
Author:	Andrew Oakes
Company:	BWB Consulting
Address:	
Notes:	Traffic flows updated 06.02.13

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Dummy		3	3

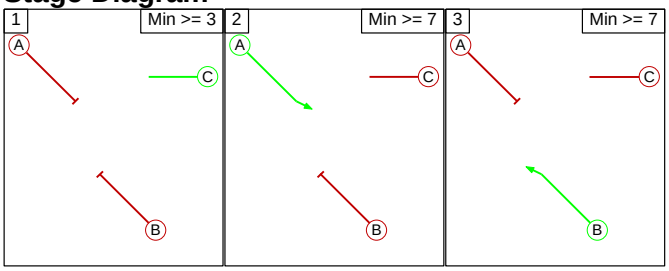
Phase Intergreens Matrix

	Starting Phase			
Terminating Phase		A	B	C
	A		11	3
	B	11		3
	C	2	2	

Phases in Stage

Stage No.	Phases in Stage
1	C
2	A
3	B

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage			
From Stage		1	2	3
	1		2	2
	2	3		11
	3	3	11	

Give-Way Lane Input Data

Junction: Unnamed Junction										
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
3/1 (Tatenhill Lane)	2/1 (Left)	1440	8/1	1.09	8/1	-	-	-	-	-
	7/1 (Right)	1440	8/1	1.09	8/1					
			6/1	1.09	6/1					
5/1	6/1 (Right)	1440	8/1	1.09	8/1	-	-	-	-	-

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Branston Road West)	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/1	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Tatenhill Lane)	O		2	3	60.0	User	1800	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	O		2	3	60.0	User	1800	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Branston Road East)	U		2	3	60.0	User	1800	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2018 Total Traffic AM Peak Hour'	08:00	09:00	01:00	
2: '2018 Total Traffic PM Peak Hour'	17:00	18:00	01:00	

Scenario 1: 'Scenario 1' (FG1: '2018 Total Traffic AM Peak Hour', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	464	3	467
	B	160	0	13	173
	C	4	31	0	35
	Tot.	164	495	16	675

Traffic Lane Flows

Lane	Scenario 1: Scenario 1
Junction: Unnamed Junction	
1/1	467
2/1	164
3/1	35
4/1	164
5/1	467
6/1	16
7/1	495
8/1	173

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Branston Road West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Tatenhill Lane Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	This lane uses a directly entered Saturation Flow						1800	1800
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Branston Road East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

Scenario 2: 'Scenario 2' (FG2: '2018 Total Traffic PM Peak Hour', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	301	5	306
	B	193	0	50	243
	C	4	30	0	34
	Tot.	197	331	55	583

Traffic Lane Flows

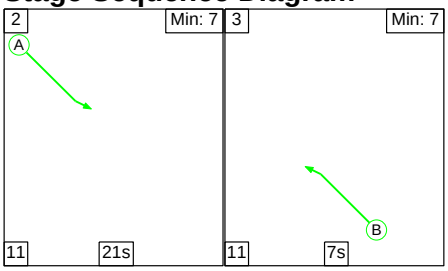
Lane	Scenario 2: Scenario 2
Junction: Unnamed Junction	
1/1	306
2/1	197
3/1	34
4/1	197
5/1	306
6/1	55
7/1	331
8/1	243

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Branston Road West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Tatenhill Lane Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	This lane uses a directly entered Saturation Flow						1800	1800
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Branston Road East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

Scenario 1: 'Scenario 1' (FG1: '2018 Total Traffic AM Peak Hour', Plan 1: 'Staging Plan No. 1')

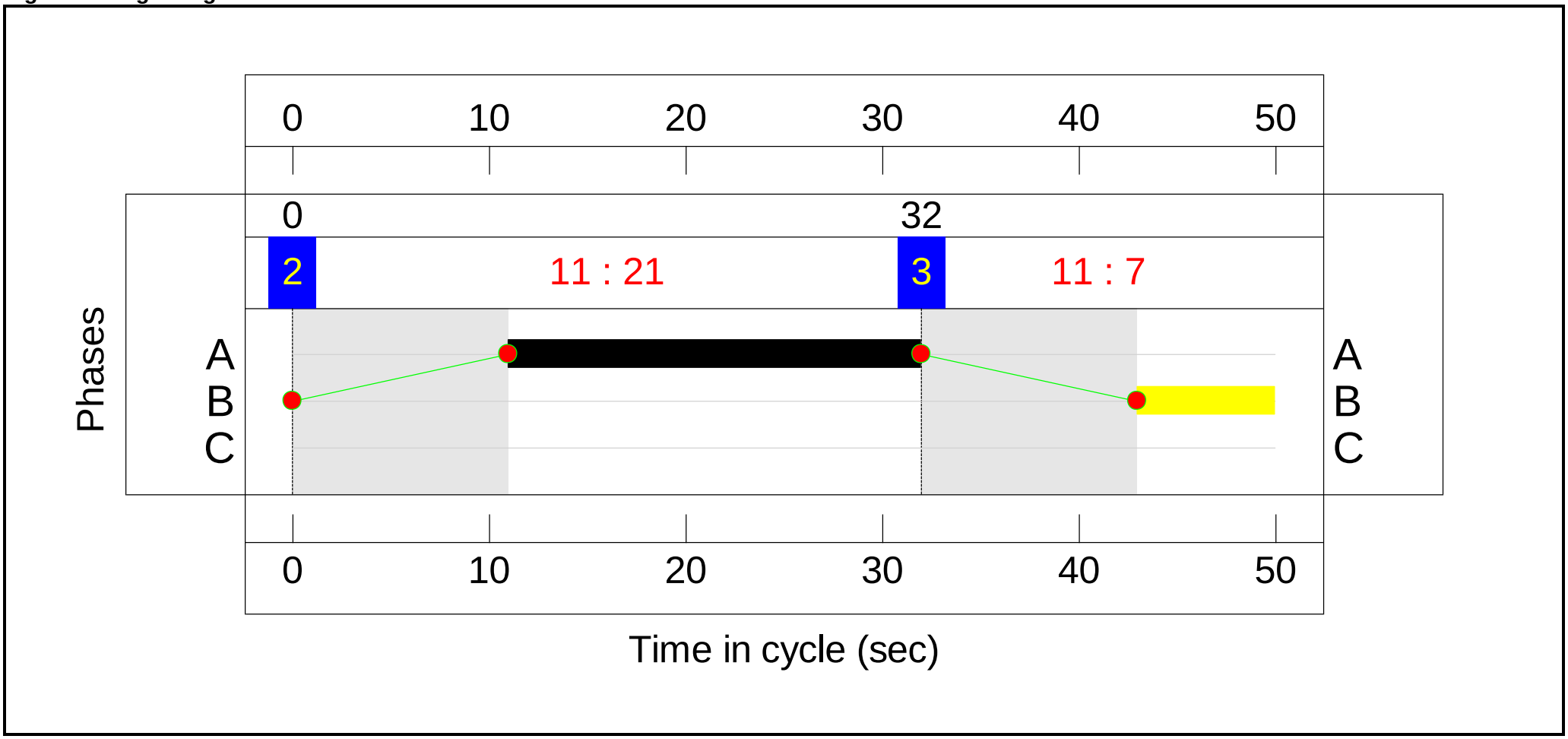
Stage Sequence Diagram



Stage Timings

Stage	2	3
Duration	21	7
Change Point	0	32

Signal Timings Diagram



Network Results

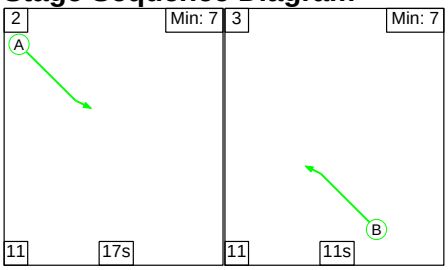
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: 130206 2018 With Development Shuttle Working	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.0%**
1/1	Branston Road West Ahead	U	N/A	N/A	A		1	21	-	467	1800	792	59.0%
2/1	Ahead	U	N/A	N/A	B		1	7	-	164	1800	288	56.9%
3/1	Tatenhill Lane Left Right	O	N/A	N/A	-		-	-	-	35	1800	1264	2.8%
5/1	Right Ahead	O	N/A	N/A	-		-	-	-	467	1800	1795	26.0%
8/1	Branston Road East Ahead Left	U	N/A	N/A	-		-	-	-	173	1800	1800	9.6%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: 130206 2018 With Development Shuttle Working	**-**	**-**	**38**	**0**	**0**	**2.3**	**1.6**	**0.0**	**3.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**38**	**0**	**0**	**2.3**	**1.6**	**0.0**	**3.9**	**-**	**-**	**-**	**-**
1/1	467	467	-	-	-	1.4	0.7	-	2.1	16.1	4.8	0.7	5.5
2/1	164	164	-	-	-	0.9	0.7	-	1.5	33.8	2.1	0.7	2.7
3/1	35	35	35	0	0	0.0	0.0	-	0.0	1.5	0.0	0.0	0.0
5/1	467	467	3	0	0	0.0	0.2	-	0.2	1.4	0.0	0.2	0.2
8/1	173	173	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1

C1 PRC for Signalled Lanes (%): 52.6 Total Delay for Signalled Lanes (pcuHr): 3.63 Cycle Time (s): 50
PRC Over All Lanes (%): 52.6 Total Delay Over All Lanes(pcuHr): 3.87

Scenario 2: 'Scenario 2' (FG2: '2018 Total Traffic PM Peak Hour', Plan 1: 'Staging Plan No. 1')

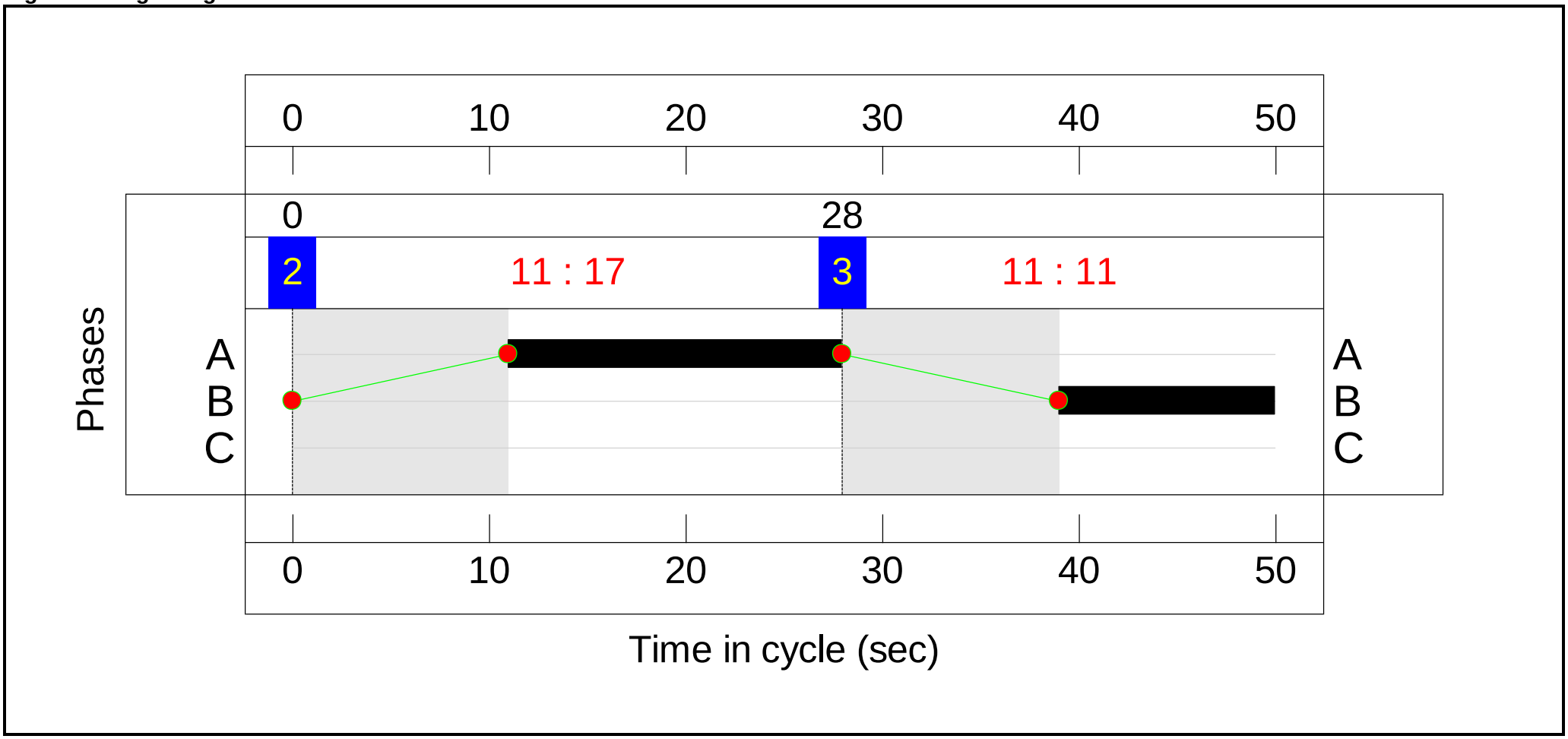
Stage Sequence Diagram



Stage Timings

Stage	2	3
Duration	17	11
Change Point	0	28

Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: 130206 2018 With Development Shuttle Working	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.2%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.2%**
1/1	Branston Road West Ahead	U	N/A	N/A	A		1	17	-	306	1800	648	47.2%
2/1	Ahead	U	N/A	N/A	B		1	11	-	197	1800	432	45.6%
3/1	Tatenhill Lane Left Right	O	N/A	N/A	-		-	-	-	34	1800	1223	2.8%
5/1	Right Ahead	O	N/A	N/A	-		-	-	-	306	1800	1784	17.1%
8/1	Branston Road East Ahead Left	U	N/A	N/A	-		-	-	-	243	1800	1800	13.5%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: 130206 2018 With Development Shuttle Working	**-**	**-**	**39**	**0**	**0**	**1.9**	**1.1**	**0.0**	**3.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**39**	**0**	**0**	**1.9**	**1.1**	**0.0**	**3.0**	**-**	**-**	**-**	**-**
1/1	306	306	-	-	-	1.0	0.4	-	1.5	17.6	3.2	0.4	3.7
2/1	197	197	-	-	-	0.9	0.4	-	1.3	23.9	2.3	0.4	2.7
3/1	34	34	34	0	0	0.0	0.0	-	0.0	1.5	0.0	0.0	0.0
5/1	306	306	5	0	0	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
8/1	243	243	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1

C1 PRC for Signalled Lanes (%): 90.6 Total Delay for Signalled Lanes (pcuHr): 2.80 Cycle Time (s): 50
PRC Over All Lanes (%): 90.6 Total Delay Over All Lanes(pcuHr): 3.00

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