

## TRANSPORT AND INFRASTRUCTURE PLANNING

Tamworth Borough Council  
Anker Valley Sustainable Urban  
Extension

Transport Package Appraisal





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### Transport Package Appraisal

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PROJECT NUMBER: LDT2057			REPORT REFERENCE: LDT2057TIP v3		
VERSION	DATE	AUTHOR	CHECK	APPROVE	COMMENTS
1	15/09/13	Shazad Khan	A Passmore	A Passmore	
2	01/10/13	Shazad Khan	C Holloway	A Passmore	TBC comments incorporated
3	06/11/13	Shazad Khan	C Holloway	A Passmore	Steering Group comments incorporated

## CONTENTS

<b>1.0 EXECUTIVE SUMMARY .....</b>	<b>01</b>
<b>2.0 BACKGROUND .....</b>	<b>04</b>
<b>3.0 SITE CONTEXT .....</b>	<b>06</b>
General	
The Site	
Local Highway Network	
Sustainable Travel	
Constraints	
Flood Risk	
Utilities	
Key Existing Issues	
<b>4.0 PLANNING POLICY CONTEXT .....</b>	<b>15</b>
National Planning Policy	
Tamworth Borough Council Local Planning Policy	
Lichfield District Council Local Planning Policy	
Staffordshire Local Transport Plan 2011	
<b>5.0 PREVIOUS RELEVANT STUDIES .....</b>	<b>21</b>
Tamworth Future Developments & Infrastructure Report (2009)	
Strategy for the A5 (2011)	
Community Infrastructure Levy Study (2012)	
Lichfield Infrastructure Delivery Plan (2012)	
Arkall Farm Initial Access and Infrastructure Review (2013)	
Upper Gungate Technical Note (2013)	
Summary of Key Findings	
<b>6.0 KEY TRANSPORT DRIVERS .....</b>	<b>29</b>
Vehicular Connection Across the West Coast Mainline	
Maximise Rail Travel	
Reduce Single Occupancy Car Travel	
Further improve Upper Gungate operation	
Key Transport Driver Summary	
<b>7.0 TRANSPORT SCHEME OPTIONS .....</b>	<b>34</b>
Scheme A - Amington Link road and Anker Valley Link Road	
Scheme B - Anker Valley link Road	
Scheme C - Improve existing footpath through Stationfields Park Homes	
Scheme D - Moor Lane link using existing tunnels	
Scheme E - Station footbridge	
Scheme F - Direct pedestrian/cycle access to Tamworth Railway Station	
Scheme G - Vehicular access via South Staffordshire College site	
Scheme H - Vehicular access via Ashby Road	
Scheme I - Footbridge across the Birmingham to Derby Railway	
Scheme J - Station car park and public transport connection	
Scheme K - Pedestrian/cycle link to Amington	
Scheme L - Funding Education Travel Plans	
Scheme Summary	
<b>8.0 TRANSPORT PACKAGE APPRAISAL .....</b>	<b>46</b>
Transport Package Costs	
Appraisal Matrix	
<b>9.0 CONCLUSIONS &amp; RECOMMENDATIONS .....</b>	<b>50</b>

## TABLES

Table 1	Comparison of Journeys to Work by Mode (Census 2011)
Table 2	Distribution of Journeys to Work originating in Tamworth (Census 2001)
Table 3	Tamworth Future Developments & Infrastructure Report cost assumptions
Table 4	Viability conclusions of Tamworth Future Developments & Infrastructure
Table 5	Maximum SUE Housing Density without impacting on Upper Gungate
Table 6	Scheme Option Assessment Summary
Table 7	Key Transport Drivers addressed by Scheme Options
Table 8	Estimated Transport Package Costs
Table 9	Transport Package Appraisal

## FIGURES

Figure 1	General site location
Figure 2	Detailed site location
Figure 3	Location of Tamworth Education Hub
Figure 4	Sustainable Transport Connections
Figure 5	Walking Catchments to key Services
Figure 6	Key site constraints
Figure 7	Extract - Tamworth Local Plan (2011-2011)
Figure 8	Extract - Tamworth Pre-Submission Local Plan (2006-2028)
Figure 9	Extract - Lichfield SHLAA (2012)
Figure 10	Extract - Lichfield District Proposed Submission Local Plan Strategy
Figure 11	Extract - Staffordshire LTP (2011)
Figure 12	Extract - Tamworth Future Developments & Infrastructure Report
Figure 13	Transport scheme options
Figure 14	Section of existing POR to south of West Coast Mainline
Figure 15	Underbridge UB78 beneath the West Coast Mainline
Figure 16	Extract - Network Rail ownership
Figure 17	Extract - SCC lease plan for Landau Forte Academy
Figure 18	Proposed Ashby Road/SUE traffic signal controlled junction
Figure 19	Possible Birmingham to Derby Line footbridge locations
Figure 20	Preferred Options and Package

## APPENDICES

Appendix A	Tamworth Traffic Model Output
Appendix B	Calculation of Maximum SUE Dwelling Numbers

## 1.0 EXECUTIVE SUMMARY

- 1.1 BWB Consulting was commissioned by Tamworth Borough Council on behalf of Tamworth Borough, Lichfield District and Staffordshire County Councils to assess and appraise a number of potential transport packages associated with the Anker Valley Sustainable Urban Extension (SUE) to the northwest of Tamworth. The SUE contains land within both Lichfield District Council and Tamworth Borough Council and is expected to deliver a combined residential development of some 2,150 to 2,400 dwellings, with associated local centre and primary school.
- 1.2 The Upper Gungate corridor provides the main vehicular route from the Anker Valley SUE to the A5 and wider road network. All other site boundaries are constrained and providing a vehicular route to the south from elsewhere will require crossing either the West Coast Mainline or the Birmingham to Derby Line.
- 1.3 The site is well located in relation to the town centre, train station and local facilities. However, the railway lines again constrain movement and would discourage pedestrian and cycle movements. Consequently, improved pedestrian and cycle access would be required to ensure a sustainable community.
- 1.4 As well as forming an arterial route into the town, the Upper Gungate corridor also provides access to the Tamworth Education Hub, which has a combined role of some 3,200 full-time students and generates approximately 750 vehicular movements in the morning peak hour. As a result, the corridor already suffers from congestion during peak times, with the morning peak hour being most critical.
- 1.5 Each transport package was compiled so as to have a contrasting emphasis in terms of transport delivery. All packages assumed that suggested improvements to the Upper Gungate corridor were implemented at an early stage of development and that access to both the Lichfield District Council and Tamworth Borough Council allocations would be provided from Ashby Road.
- 1.6 The four packages had the following emphasis:
  - Transport Package 1 - A 'do nothing' approach
  - Transport Package 2 - A package primarily making use of the Anker Valley Link Road highway improvement scheme
  - Transport Package 3 - A demand management package, which only makes use of demand management options, pedestrian and cycleway routes and improved public transport access and frequency
  - Transport Package 4 - A package which comprises both highways engineering and improved pedestrian and cycleway routes and improved public transport access and frequency.
- 1.7 This report is structured as follows:
  - Section 1 provides an executive summary
  - Section 2 provides an introduction and describes the methodology adopted.
  - Section 3 outlines the site context, including existing transport conditions
  - Section 4 provides an overview of the planning policy context
  - Section 5 outlines the findings of previous relevant studies
  - Section 6 describes and discusses the key transport drivers
  - Section 7 describes and assesses the transport scheme options
  - Section 8 includes appraisals of the four transport packages
  - Section 9 provides the conclusions and recommendations.
- 1.8 The scope and content of this report was agreed at a series of meetings throughout September 2013 with representatives from the three Councils.

- 1.9 It was identified that the following site constraints would need to be assessed when considering the transport packages:
- Land ownership issues
  - BT and electricity infrastructure along the Ashby Road frontage to the SUE
  - The proximity of the functional floodplain and the associated potential engineering issues
  - The proximity of the Warwickshire Moor and the need to consider habitat disruption and native plant species
  - The proximity of the Amington Hall Conservation area
- 1.10 A review of previous background work identified the following key findings:
- The SUE will need to include a primary school, health centre, community hall, nursery and open space provision.
  - A water main will be required at an estimated cost of £630,000
  - The Highways Agency is likely to require a contribution towards the £2.4M improvements identified at the A5/Mile Oak and A5/Stoneydelph junctions.
  - The provision of a £600,000 contribution towards the improvements proposed within the Upper Gungate Study would enable 500 dwellings to be developed on the SUE without impact on the operation of the Upper Gungate corridor.
- 1.11 It was established that the achievement of the following four key transport drivers would maximise the level of development on the Anker Valley SUE without adversely affecting the sensitive Upper Gungate corridor:
- Vehicular connection across the West Coast Mainline
  - Maximise rail travel
  - Reduce single occupancy car travel
  - Further improve Upper Gungate corridor operation
- 1.12 Paragraph 32 of NPPF states 'Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe'. Given that this is a high level study, it has not been possible to establish the number of units at which the highway impact of the SUE will transition from acceptable to severe. Therefore, this study has been undertaken on the basis of establishing a nil-detriment impact on the critical Upper Gungate corridor with further detailed assessment required to support additional residential dwellings.
- 1.13 Based on this appraisal, it is concluded that the following highway and demand management transport package is likely to be deliverable and would provide the best overall transport strategy for the Anker Valley SUE by providing both strategic and local connectivity improvements:
- Contribution towards the Upper Gungate improvements
  - Improved frequency bus service to the site
  - Contribution towards A5/Mile Oak and A5/Stoneydelph junction improvements
  - Anker Valley link Road
  - Improve existing footpath through Stationfields Park Homes
  - Direct pedestrian/cycle access to Tamworth Railway Station
  - Vehicular access via Ashby Road
  - Footbridge across the Birmingham to Derby Railway
  - Station car park and public transport connection
  - Pedestrian/cycle link to Amington
  - Funding Education Travel Plans
- 1.14 This would enable approximately 1,350 dwellings to be developed on the Anker Valley SUE without detriment to the Upper Gungate corridor. However, based on high level cost estimates of £10,000 to £15,000 per dwelling, the transport package is unlikely to be viable without public investment. This investment could

be justified on the basis that the transport package would address a key strategic transport issue by improving public transport provision to the West Midlands through increasing accessibility to Tamworth Railway Station and providing much needed car parking.

- 1.15 Without public investment and subject to additional investment in demand management measures, the Anker Valley SUE could be developed for approximately 700 dwellings without detriment to Upper Gungate. Whilst this would provide similar local connectivity improvements to the preferred package, it would result in fewer strategic transport benefits.
- 1.16 It is recognised that this is a high level appraisal and the following further work will be required to support the recommendations and initial conclusions contained within this report;
- Registration plate traffic survey to establish the level of traffic routing between Ashby Road and Tamworth Railway Station during peak periods to confirm the likely demand for a new parking facility within the SUE.
  - Peak hour traffic surveys in consultation with SCC at a similarly located residential area of Tamworth to establish local trip rates that reflect trip internalisation and current accessibility levels.
  - SUE traffic distribution should be reviewed against journey to work data for Tamworth from the 2011 Census data when available.
  - The implications of banning the right turn from Ashby Road to Comberford Lane on the operation of Upper Gungate and traffic flows on Browns Lane.
  - Liaison with both Network Rail and London Midland regarding the provision of an eastern access to Tamworth Railway Station
  - Production of an horizontal and vertical alignment of the Anker Valley Link Road in consultation with SCC, Network Rail, Environment Agency & Natural England to provide a better understanding of deliverability and cost.
  - Review and monitor the effectiveness of the current Tamworth Hub Travel Plans
  - Further detailed investigations into the viability of the scheme options by the development industry, which should include establishing the number of units at which the highway impact of the SUE will transition from acceptable to severe.
- 1.17 It should be noted that this further work may result in a change in the housing capacity deemed acceptable in the Anker Valley SUE, which in turn may have implications for the viability of the transport solutions identified within this appraisal.

## 2.0 BACKGROUND

### Introduction

- 2.1 Anker Valley is a strategic development site intended to assist Tamworth Borough Council with meeting its future housing supply needs. The site has been identified for a number of years and has therefore been allocated in subsequent Local Plans. The current Local Plan for the Tamworth Borough allocates some of the site for 800 units. The withdrawn replacement Local Plan states that up to 1,400 units could be achieved with a minimum number of 1,150.
- 2.2 Lichfield District Council, which has an administrative boundary that abuts the site, has also identified a broad location for at least 1,000 dwellings and together the areas form the wider Anker Valley SUE. Overall the area will contribute to meeting the 5,500 houses needed for Tamworth Borough up to 2028, as well as some need arising within Lichfield District.
- 2.3 Whilst the Anker Valley SUE is well located, it is severed from Tamworth by railway lines to the west and south. Highway access is currently only possible from the B5493 Ashby Road and this would lead to the majority of SUE traffic routing via the congested and constrained Upper Gungate corridor to access the town centre and strategic routes such as the A5 & A38. As a result, development of the Anker Valley SUE has been limited by the need to provide vehicular connections across the West Coast Mainline.
- 2.4 The site has the benefit of considerable background and historical work, which has been undertaken over the years. This appraisal draws on this extensive knowledge base.

### Understanding the Brief

- 2.5 Tamworth Borough Council submitted the 2006 to 2028 Local Plan for examination in 2012. The Planning Inspector raised a number of concerns in particular relating to the level of detail available for the Anker Valley SUE.
- 2.6 In response, the Council engaged ATLAS (Advisory Team for Large Applications, part of the Homes and Communities Agency) to assist with the preparation of a spatial framework and masterplan for the development area. As the wider Anker Valley extension will also fall within the Lichfield District area, Lichfield District Council (LDC) together with Staffordshire County Council (SCC) are key stakeholders in the process forming the Steering Group.
- 2.7 Ensuring the site can be sustainably accessed is a key requirement and as such the brief of this appraisal was to consider and examine different possible sustainable transport packages for the Anker Valley SUE. The scope was to undertake a high level appraisal of the following four suggested transport packages:
  - TP1 - A 'no nothing' option
  - TP2 - A highways based option;
  - TP3 - A demand management/ sustainable travel based option; and
  - TP4 - A combination of highways and sustainable travel solutions.
- 2.8 The Steering Group have identified the following eight transport scheme options to include within the appraisal.
  - Scheme A - Amington Link road and Anker Valley Link Road
  - Scheme B - Anker Valley link Road
  - Scheme C - Improve existing footpath through Stationfields Park Homes



- Scheme D - Moor Lane link using existing tunnels
- Scheme E - Station footbridge
- Scheme F - Direct pedestrian/cycle access to Tamworth Railway Station
- Scheme G - Vehicular access via South Staffordshire College site
- Scheme H - Vehicular access via Ashby Road

2.9 These historical schemes aimed to improve the vehicular, pedestrian and cycle routes between the Anker Valley SUE and the town centre, local facilities and strategic transport routes. The schemes include highway and sustainable modes based solutions and can be included within each of the four transport packages. The brief allowed flexibility to suggest and include any other reasonable and realistic scheme options.

2.10 This appraisal comprises the early stage of an overall masterplan framework exercise, which is to be developed by ATLAS. Therefore, it is important that each package is realistic and deliverable based on an understanding and consideration of any constraints and should suggest appropriate mitigation. The packages and options within each must therefore be realistic and deliverable to ensure the spatial framework and masterplan are informed and developed robustly.

### **Methodology**

2.11 The first stage of the appraisal was to undertake a baseline review of the site, its transport characteristics and the physical constraints to improving accessibility. This was supplemented by a review of the planning policy context and previous relevant studies, which resulted in the identification of the key transport drivers that would need to be addressed to maximise the development potential of the Anker Valley SUE. The opportunity to address these key transport drivers was also assessed and preliminary development levels for various vehicular access scenarios were subsequently identified.

2.12 The transport scheme options identified by the Steering Group were reviewed along with a number of additional scheme options identified by BWB. The technical feasibility and deliverability of these schemes were examined, with high level budgets produced for those schemes considered to be implementable. All implementable schemes were taken forward to the transport package appraisal stage.

2.13 Each transport package was then appraised against the following common criteria that were discussed and agreed with the Steering Group:

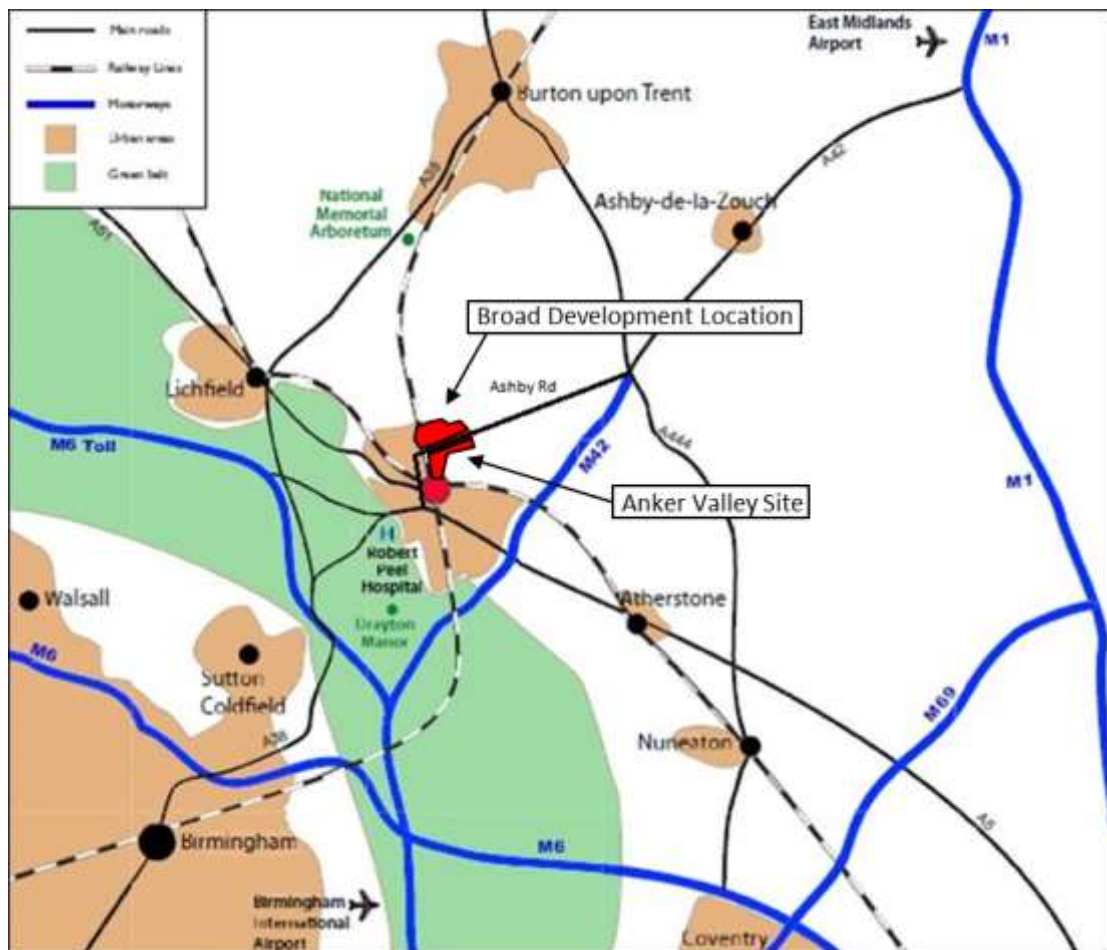
- Financially viability (cost per dwelling)
- Deliverability (approvals needed/constraints to be overcome)
- Environmental issues (including highway impact)
- Strategic transport connectivity benefits
- Local transport connectivity benefits.

2.14 An assessment matrix was subsequently produced and used to appraise the relevant strengths and weaknesses of each transport package.

### 3.0 SITE CONTEXT

#### General

- 3.1 Tamworth is located approximately 18 miles northwest of Birmingham and has a population of close to 77,000, which reside in approximately 32,000 households. The town benefits from good connections to the national transport network. The A5 (T) provides links to Cannock, Nuneaton, the A38 (T), the M42 and the M6 Toll. The A51, A513 and A4091 local routes also run north to south through the Borough. **Figure 1** shows Tamworth in its sub-regional context.



**Figure 1: General location plan**

- 3.2 Tamworth is well served by a local bus network, with more than 90% of residents within 350 metres of a 30 minute weekday service. Daytime bus services are at least at an hourly frequency to Lichfield and the West Midlands conurbation. These bus services are supported by the Tamworth Community Transport scheme, which provides transport by mini bus and car for local residents.
- 3.3 Tamworth rail station is located close to the town centre and is served by both the West Coast Mainline and Birmingham to Derby Line. As such, it forms a key interchange on the rail network providing regular services to local centres, such as Lichfield, Stafford, Nuneaton, Rugby Birmingham, Derby and Nottingham, as well as major cities such as Manchester, Liverpool, London, Bristol, Leeds and Sheffield.
- 3.4 **Table 1** details the journey to work by mode data derived from the 2011 Census and indicates that the Spital ward has increased levels of travel by rail and on foot

than the average in Tamworth, or the County and marginally reduced car driver levels. All other modal shares appear to be similar to local, regional and national levels, with the exception of cycle and bus travel which are lower than the national average

Mode	Spital Ward	Tamworth Borough	Staffordshire County	England
Car driver	69%	74%	72%	65%
Car passenger	7%	7%	6%	7%
Bus	3%	4%	3%	8%
Train	4%	2%	2%	3%
Cycle/motorcycle	3%	3%	4%	5%
Foot	13%	9%	12%	11%
Other (inc Taxi)	1%	1%	1%	1%
Total	100%	100%	100%	100%

**Table 1: Comparison of Journeys to Work by Mode (Census 2011)**

3.5 The multi-modal distribution of journeys to work originating in the Tamworth Borough is shown in Table 3 below. It should be noted that the full datasets from the 2011 Census are not currently available and therefore the below distribution has been based on the 2001 Census.

Destination	Proportion	Car Driver	Lone Drivers	Bus	Rail	Cycle	Ped
Tamworth	47%	55%	80%	8%	0.1%	5%	17%
Birmingham	18%	77%	92%	8%	6%	1%	0.1%
N Warwickshire	10%	80%	85%	3%	0.3%	1%	1.2%
Lichfield	8%	72%	84%	4%	0.3%	1%	1.2%
Total	83%						

**Table 2: Distribution of Journeys to Work originating in Tamworth (Census 2001)**

3.6 **Table 2** indicates that the majority of journeys to work in 2001 were made to four specific areas and highlights the following travel characteristics within the town:

- A significant proportion of Tamworth residents work within the town, which presents a good opportunity to increase travel by bus, cycle and on foot.
- A significant proportion of single occupancy car trips are being made to Birmingham, Lichfield and North Warwickshire, which could be reduced by increased usage of bus, rail and car sharing.

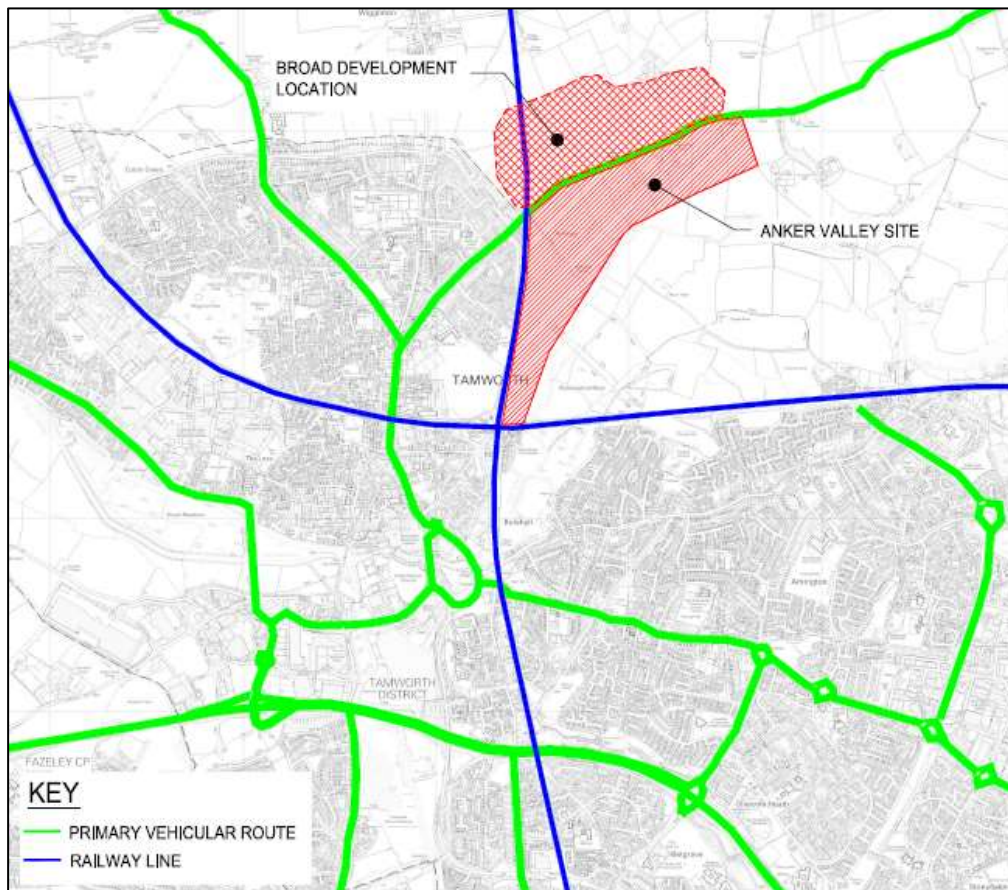
3.7 A comparison of 2001 and 2011 journey to work data for Tamworth Borough suggests that the proportion of trips made by car drivers increased from 68% to 74% during the decade, with the main reductions being in bus and car passenger travel. This could be as a result of modal shift. However, the total number of residents of working age in Tamworth has increased by 5% to approximately 57,000 during this period, with the level of those travelling to work increasing by 8% to approximately 37,000. Consequently, the changing modal share could also be influenced by the limited availability of jobs for the increased employable population living within Tamworth, thereby leading to increased levels of commuter outflow.

## The Site

3.8 The Anker Valley SUE comprises approximately 125 hectares of open grassland and is located around 1.5 kilometres northeast of Tamworth town centre. The site

consists of two distinct areas bisected by the B5943 Ashby Road and falling within different authorities.

- 3.9 The northern element of the SUE is located within the boundary of Lichfield District Council. It comprises open grassland and is identified within the Emerging Lichfield District Local Plan as the North of Tamworth site. The site is bisected by the Birmingham to Derby Line and is bounded by Browns Lane to the west; the B5943 Ashby Road to the south and open grassland to the north and east.
- 3.10 The southern element of the SUE is located within the boundary of Tamworth Borough Council. It comprises open grassland and is identified within the Emerging Tamworth Local Plan as the Anker Valley Sustainable Urban Neighbourhood. The site is bounded by the Birmingham to Derby Rail Line to the west; open grassland including a Site of Biological Importance (SBI) and identified flood plain associated with the River Anker to the east; the West Coast Mainline to the south and Ashby Road to the north. **Figure 2** shows the detailed site location.

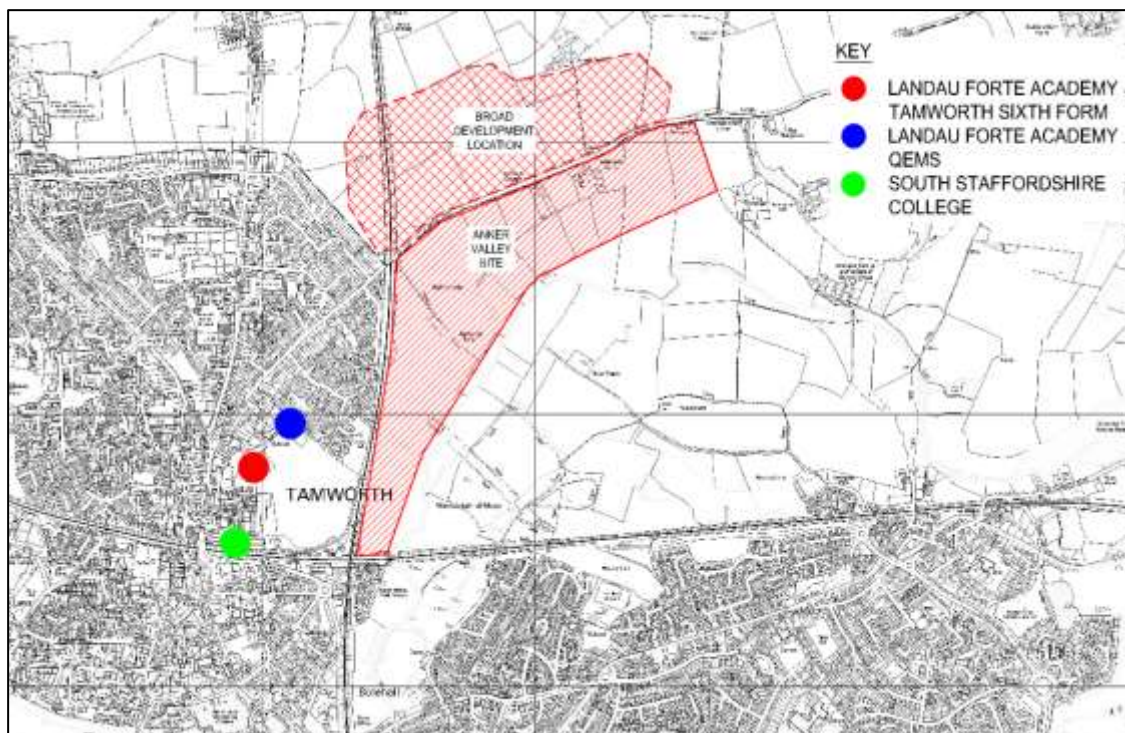


**Figure 2: Detailed Site Location**

### **Local Highway Network**

- 3.11 The B5943 Ashby Road bisects the overall area being proposed for development and due to the presence of the two railway lines, provides the only direct highway access to both sites. To the southwest, the Ashby Road leads to Tamworth town centre via the A513 whilst to the northwest it leads to M42 Junction 11, which provides routes to the M1 via M42 (N) and Burton-upon-Trent/Nuneaton via the A444.

- 3.12 The majority of traffic generated by the Anker Valley SUE is expected to travel to/from the south, whether to the town centre and other local facilities, or further afield via the A38, A5 and M42. This currently requires traffic to route through the centre of the town and connect with the strategic highway through the following three junctions:
- A5/Marlborough Way
  - A5/Ventura Park
  - A5 Mile Oak
  - A5/Stoneydelph
- 3.13 Approximately 600 metres southwest of the SUE, the B5493 connects with the A513 Comberford Road and the A513 Upper Gungate at a traffic signal controlled 'Y' junction known as Fountains Junction. On-site observations and previous studies (see section 5.0) confirm that this junction and the associated Upper Gungate corridor experiences congestion during peak periods, with journey times in excess of 4.5 minutes to travel the length of the 1.1 kilometre corridor during peak periods. As a result, the operation of the corridor is seen as a major constraint to the development of the Anker Valley SUE by SCC.
- 3.14 This congestion is partly due to the Upper Gungate forming the main arterial route into Tamworth from the northeast, but is exacerbated by the proximity of the Tamworth Education Hub comprising:
- Landau Forte Academy Tamworth Sixth Form
  - Landau Forte Academy QEMS
  - South Staffordshire College.
- 3.15 **Figure 3** shows the location of these establishments.



**Figure 3: Location of Tamworth Education Hub**

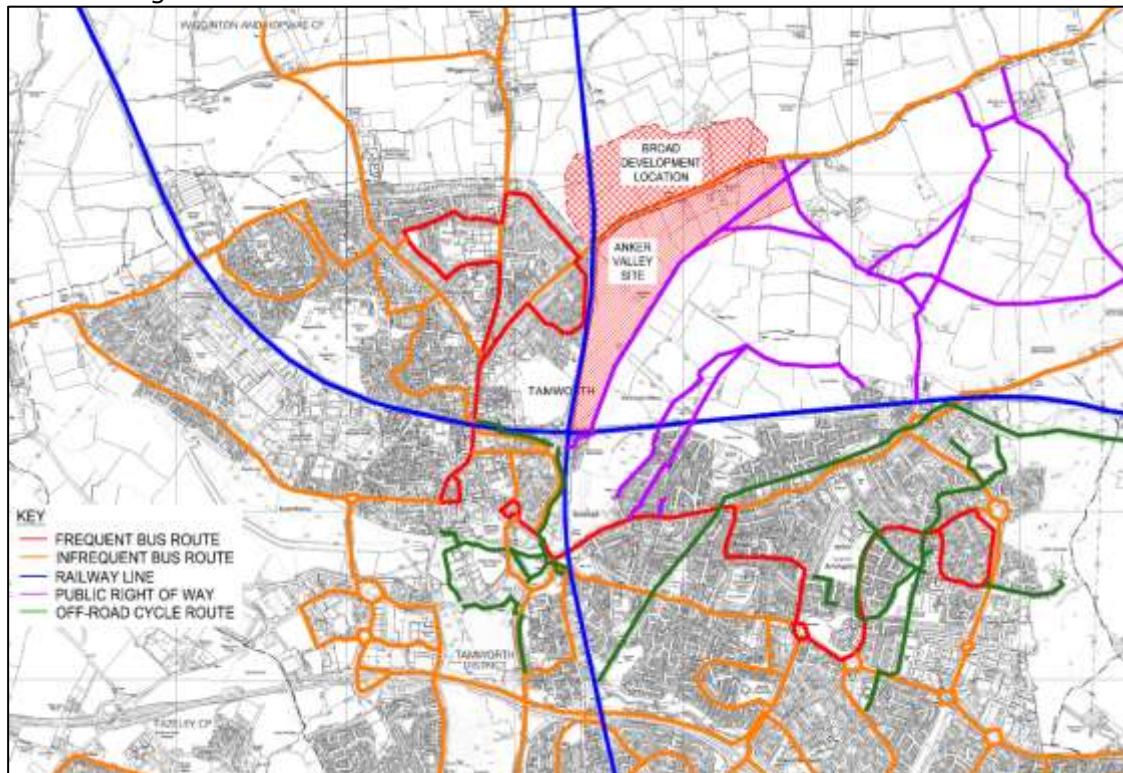
- 3.16 The Tamworth Education hub has a combined role of some 3,200 full time students and a 2012 traffic survey commissioned for the Upper Gungate Study indicates that it generates around 750 vehicular movements during the morning peak hour and 450 movements during the afternoon school and evening peak

periods. This constitutes approximately 45% of morning peak hour and 25% of evening peak hour flows on Upper Gungate respectively.

- 3.17 Modal share information collected by SCC in 2009 indicated that approximately one third of the 860 Year 7 to 11 students at Landau Forte Academy QEMS are taken to school by car, with 18% also being picked up. It also revealed that approximately 86% of the 120 staff commute by car. These establishments now operate Travel Plans and whilst the effectiveness of these is unknown, there would appear to be scope for reducing education based car travel on the corridor.
- 3.18 A number of Local Plan policies and transport studies have proposed various highway improvement measures to facilitate the Anker Valley SUE including geometrical junction improvements and the implementation of Urban Traffic Control along the Upper Gungate Corridor and the construction of new link roads across the West Coast Mainline to the south of the site.

### Sustainable Travel

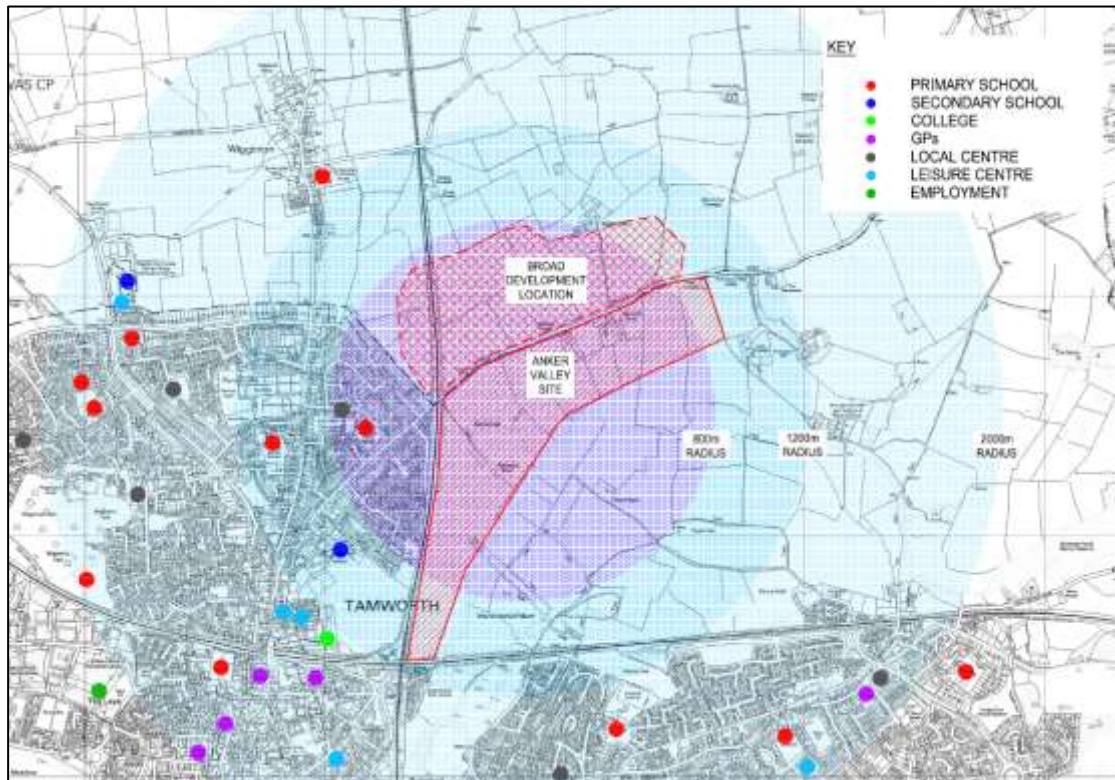
- 3.19 **Figure 4** identifies the existing sustainable transport connections relative to the site. It highlights the public rights of way, cycle network and bus routes surrounding the sites.



**Figure 4: Sustainable Transport Connections**

- 3.20 The Institution of Highways and Transportation (IHT) publication 'Guidelines for Providing for Journeys on Foot' (2000) describes acceptable walking distances for pedestrians without mobility impairment. It suggests the following preferred maximum walking distances:
- Town centres 800 metres
  - Facilities and services 1,200 metres
  - Commuting/School 2,000 metres

- 3.21 **Figure 5** shows the local facilities that could potentially be located within these walking distances of the Anker Valley SUE should direct pedestrian routes be provided.



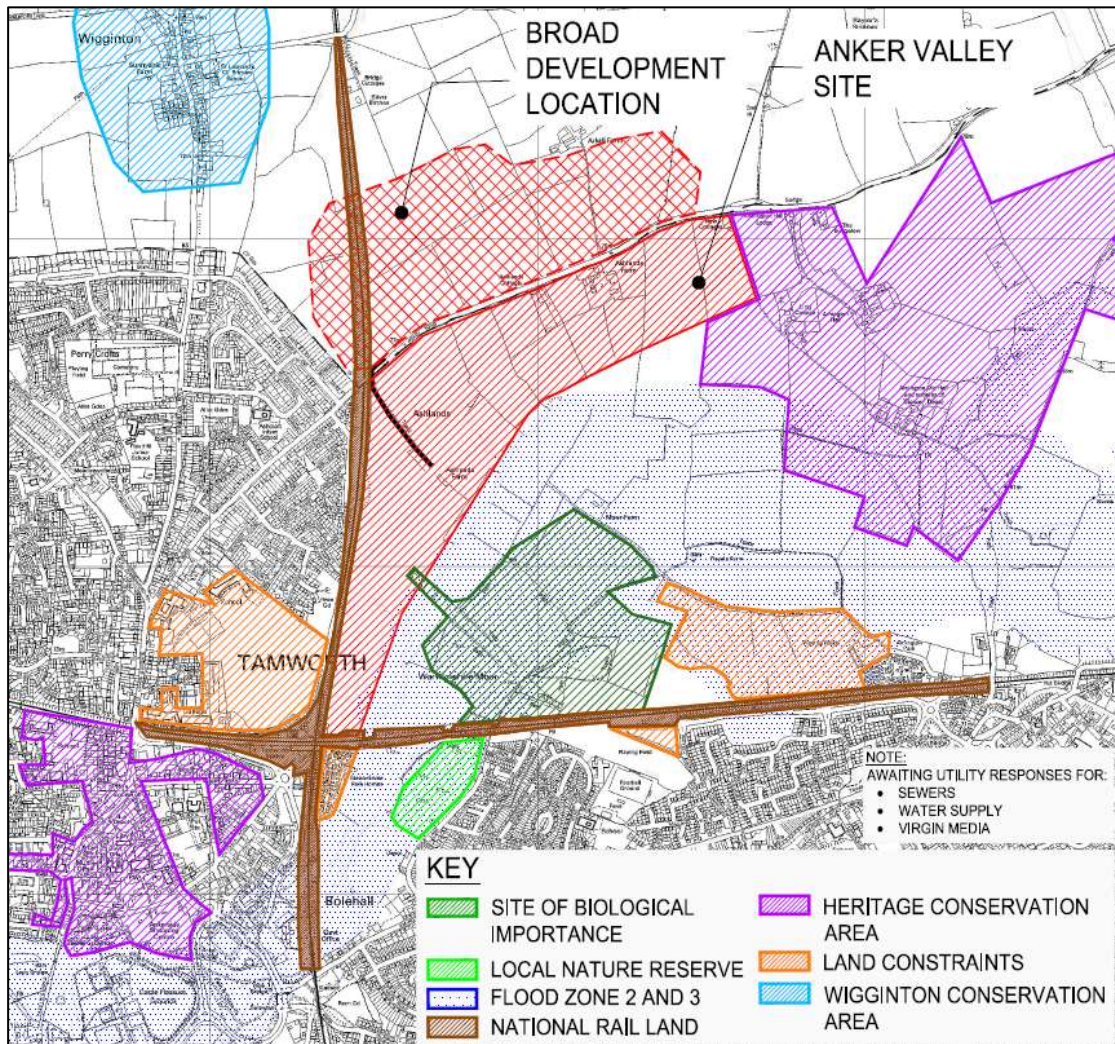
**Figure 5: Walking Catchments to Key Local Services**

- 3.22 Tamworth has an extensive network of cycle routes across the town. **Figure 4** shows the existing cycle facilities in the vicinity of the SUE together with the public rights of way (PROW) which run through or adjacent to the site.
- 3.23 The nearest regular bus service to the site is the Arriva Service 2, which is a circular service that routes from the town centre via Upper Gungate, Perrycrofts, Browns Lane and Gillway at a 30 minute frequency from Monday to Saturday. The closest bus stop for this service would currently be on the Ashby Road opposite Browns Lane approximately 150 metres from the western boundary of the site.
- 3.24 In addition, Arriva Service 780 provides a town wide circular service that operates at an hourly frequency throughout the week. This does not currently pass close to the Anker Valley SUE, but could potentially be enhanced to do so should the highway access solution permit.

### **Constraints**

- 3.25 The SUE is bounded by the Birmingham to Derby railway line to the east and Tamworth railway station is located to the west of this railway line immediately southwest of the site. Whilst the site shares a boundary with Platform 4 of the station, there is current no direct access to the station.
- 3.26 The site currently consists of open green space to the north east of the existing built settlement. It is severed from the town centre by the West Coast Mainline, which runs in an east-west alignment to the south of the site and the Birmingham to Derby Line which runs in a north – south alignment forming the western boundary of the site.

3.27 **Figure 6** shows the key constraints affecting the development of the Anker Valley SUE. It identifies notable, ecological, environmental, heritage and infrastructure constraint's either within or adjacent to the site, these are summarised below. Land ownership of the site and surrounding area has also been considered to determine any land constraints in delivering any of the scheme options.



**Figure 6: Key site constraints**

3.28 Severn Trent Water in their response to site allocations proposed in the Tamworth and Lichfield Local Plans highlighted that there is a potential impact on sewerage infrastructure resulting from the development of the Anker Valley SUE.

3.29 Natural England identified that the site is in close proximity to Warwickshire Moor Local Nature Reserve. They suggested that the potential allocation of the site for residential use should give full consideration to its impact on the adjacent Local Wildlife Sites and make appropriate mitigation measures including buffer zones and additional planting of native species.

3.30 Parts of the River Anker and River Tame may support populations of water voles and otters and therefore any proposal should conduct surveys to identify their presence and if so mitigation to avoid disruption to habitat.

3.31 In terms of heritage, there are no designated heritage assets within the site or in immediate vicinity. The site is however adjacent to the Amington Hall



Conservation Area, within 200 metres of Tamworth Town Centre Conservation Area and within 500 metres of Amington Hall; a Grade II\* Listed Building.

### **Flood Risk**

- 3.32 The River Anker and River Tame present varying degrees of challenges to the site and improving connectivity. The site is adjacent to part of the River Anker Biodiversity Alert Site and the area immediately east of the site boundary and south of the railway line are designated Flood Zone 3b (Functional flood plain). The Environment Agency considers that developments should not be permitted in these areas.
- 3.33 Further areas of the site are classified as Flood Zone 3 (high probability of flooding) and development should only be considered in such areas once they have a Sequential Test has been applied and the proposals meet the Exception Test.
- 3.34 In terms of Biodiversity, the site is adjacent to a Staffordshire Site of Biological Importance along the watercourse. Together with the river corridor these areas should be conserved and enhanced.
- 3.35 The Masterplan Framework would need to consider the above constraints and ensure the development layout avoids sensitive areas that need to be protected and located away from Flood Zone 3b and where possible 3. The above constraints have been taken into account when appraising the transport scheme options and packages.

### **Utilities**

- 3.36 As part of this appraisal, BWB consulted with all major utility providers to determine any existing apparatus and/ or services which could be potential constraints. Below is a summary of the key responses obtained:
- *Western Power Distribution (Electricity)*: Within the vicinity of the site various 11kV high voltage and low voltage electricity cables can be found within Ashby Road and the existing residential areas to the south and west of the site. There is no electricity apparatus within the site boundary.
  - *National Grid Gas*: Within the vicinity of the site, various low pressure gas mains can be found within the existing residential areas to the south and west of the site. There is no gas apparatus within Ashby Road or the site boundary.
  - *British Telecommunications (BT)*: Within the vicinity of the site, various BT apparatus can be found within Ashby Road and the existing residential areas to the south and west of the site. Most notable is the overhead BT equipment which enters the development area from Ashby Road along the on-site track.
  - *Instalcom*: Investigations confirm the presence of Instalcom apparatus running along the railway lines to the south and west of the site. There is no apparatus within Ashby Road or the surrounding residential areas.
- 3.37 In addition the following utility companies have confirmed that they do not have any apparatus within the vicinity of the development proposals:
- Verizon
  - KCOM
- 3.38 We are currently awaiting responses from the following providers and will include any key issues as received:
- South Staffordshire Water (Water Supply)
  - Severn Trent Water (Sewers)
  - Virgin Media

- Vodafone (formerly Cable & Wireless)

### **Key Existing Issues**

- 3.39 The Upper Gungate corridor provides the main vehicular route from the Anker Valley SUE to the A5 and wider road network. All other site boundaries are constrained and providing vehicular access from elsewhere will require crossing either the West Coast Mainline or the Birmingham to Derby Line.
- 3.40 The site is well located in relation to the town centre, train station and local facilities. However, the railway lines again constrain movement and would discourage pedestrian and cycle movements. Consequently, improved pedestrian and cycle access would be required to ensure a sustainable community.
- 3.41 As well as forming an arterial route into the town, the Upper Gungate corridor also provides access to the Tamworth Education Hub, which has a combined role of some 3,200 full-time students and generates approximately 750 vehicular movements in the morning peak hour. As a result, the corridor already suffers from congestion during peak times, with the morning peak hour being most critical.
- 3.42 In addition to the above, the following constraints need to be addressed to ensure a deliverable transport package:
- Land ownership issues
  - BT and electricity infrastructure along the Ashby Road frontage to the SUE
  - The proximity of the functional floodplain and the associated potential engineering issues
  - The proximity of the Warwickshire Moor and the need to consider habitat disruption and native plant species
  - The proximity of the Amington Hall Conservation area

## 4.0 PLANNING POLICY CONTEXT

### National Planning Policy

- 4.1 The NPPF was introduced in March 2012 and brings the Government's planning policies for England into a single document and describes how it expects these to be applied. The purpose of the planning system is to contribute to the achievement of sustainable development. The NPPF replaces previous planning policy statements and planning policy guidance notes including PPG13.
- 4.2 NPPF identifies that there are three elements to sustainable development comprising of economic, social and environmental, which are expanded upon as follows:
- **an economic role** – *contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;*
  - **a social role** – *supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and*
  - **an environmental role** – *contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.*
- 4.3 NPPF identifies a set of core land-use planning principles that should underpin both plan-making and decision-taking. The most relevant of these to transport is that planning should "actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable".
- 4.4 Paragraph 32 states that "All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:
- *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 effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".*

### Tamworth Borough Council Local Planning Policy

- 4.5 The Adopted Tamworth Local Plan 2001-2011 included Policies HSG4: Anker Valley – Strategic Housing Proposal, as shown in **Figure 7** overleaf:

**Policy HSG4: Anker Valley – Strategic Housing Proposal**

**The provision of 800 dwellings in the Anker Valley is subject to:**

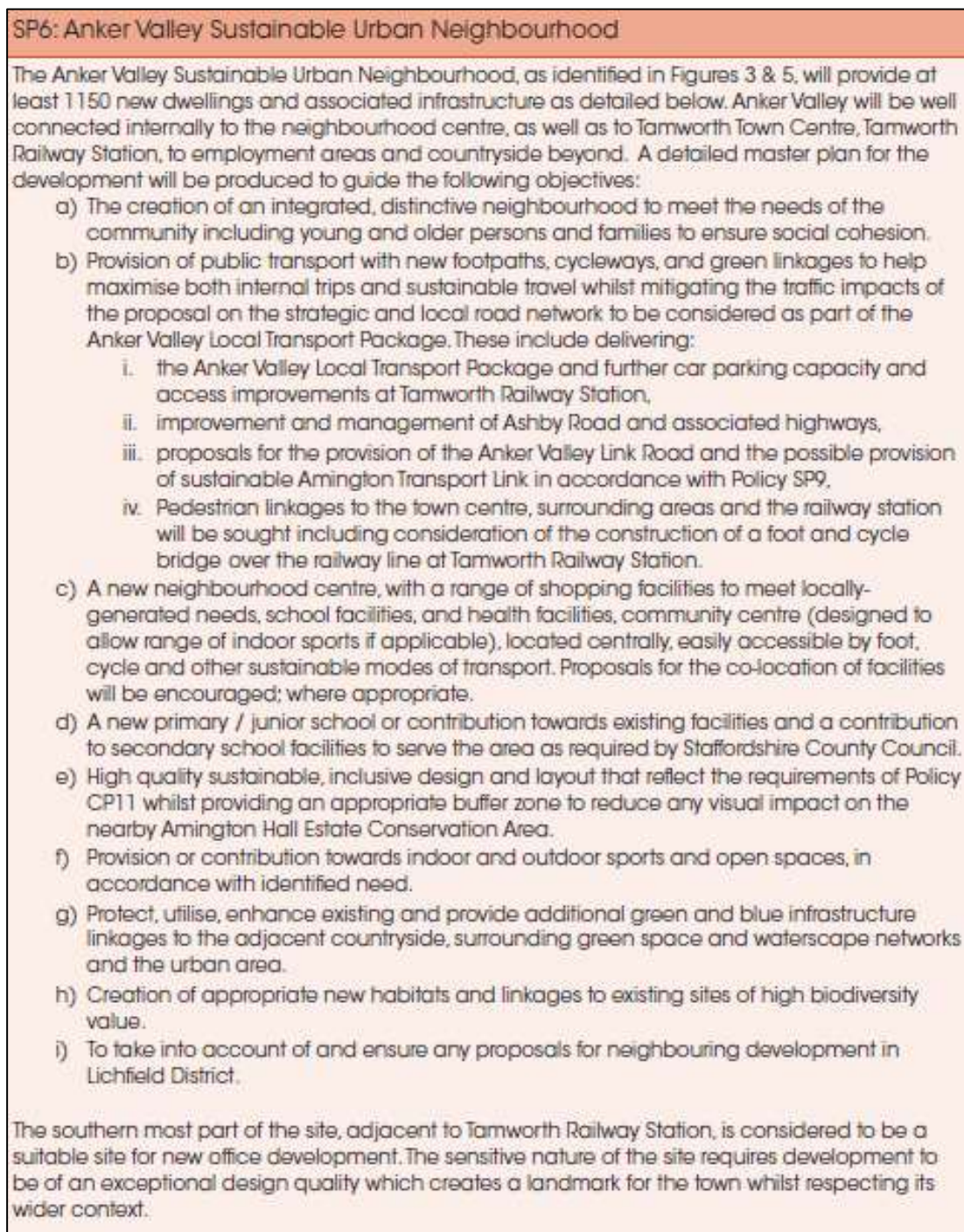
- i) Proposals for the provision of the Anker Valley Link**
- ii) Proposals for the satisfactory improvement and highway management of the Ashby Road and associated highways**
- iii) Proposals for the satisfactory disposal of foul and surface water drainage**
- iv) The provision of a new primary / junior school and a contribution to secondary school facilities to serve the area**
- v) Proposals for the provision of open space and public access to the floodplain of the River Anker**
- vi) Consideration of a possible 'Park & Ride' scheme to the north-east of Tamworth station**
- vii) The provision of affordable housing in line with the requirements of Policy HSG12**
- viii) The provision of a local centre**

**The Borough Council will apply planning conditions and/or require a planning obligation to secure the provision of off-site works and contributions towards the provision of facilities.**

**Figure 7: Extract from the Tamworth Local Plan (2011-2011)**

- 4.6 The Plan also included Policy TRA8, which identified five transport proposals needed to cater for existing and forecast transportation needs of the Borough. This included both the Anker Valley and Amington Link Roads.
- 4.7 During 2008 and 2009, Tamworth Borough Council developed its Core Strategy, as part of the then Local Development Framework process. This was based on a Regional Spatial Strategy requiring the Borough to deliver 2,900 new dwellings during the period 2006 to 2026. Taking into account the number of dwellings completed, under construction or the subject of a planning consent since 2006, the Core Strategy identified that 1,400 houses were still to be identified.
- 4.8 In October 2009, Tamworth Borough Council published its Proposed Spatial Strategy which included for a revised EA Flood Modelling and responded to the requirements of the Regional Spatial Strategy by extending the boundary of the site to facilitate between 900 and 1150 dwellings.
- 4.9 In May 2012, Nathaniel Lichfield Partners published the Southern Staffordshire Districts Housing Needs Study and SHMA Update, which sought to provide an evidence base to forecast future housing requirements in Lichfield District, Cannock Chase and Tamworth Borough Councils. The Study assessed 12 scenarios for future housing requirements using demographic, economic and housing factors. This established that Tamworth Borough Council would need to provide between 5450 and 5850 dwellings over the Plan Period.
- 4.10 Tamworth Borough Council subsequently published an update to its Strategic Housing Land Availability Assessment (SHLAA). The report reflected the findings of the Southern Staffordshire Districts Housing Needs Study and SHMA Update and concluded that the Borough was only able to provide 4,500 of the required 5,500 dwellings within its boundary during the Plan Period. Accounting for completed sites and those with planning permission, the SHLAA established that 3,883 dwellings would need to be constructed from 2012 to the end of the Plan Period of which 1,150 dwellings were identified at Anker Valley (SHLAA ID 651)

- 4.11 In June 2012, Tamworth Borough Council published its Pre-Submission Local Plan (2006-2028). It also included Strategic Policy SP6, which related specifically to the development of that site and is shown in **Figure 8** below.



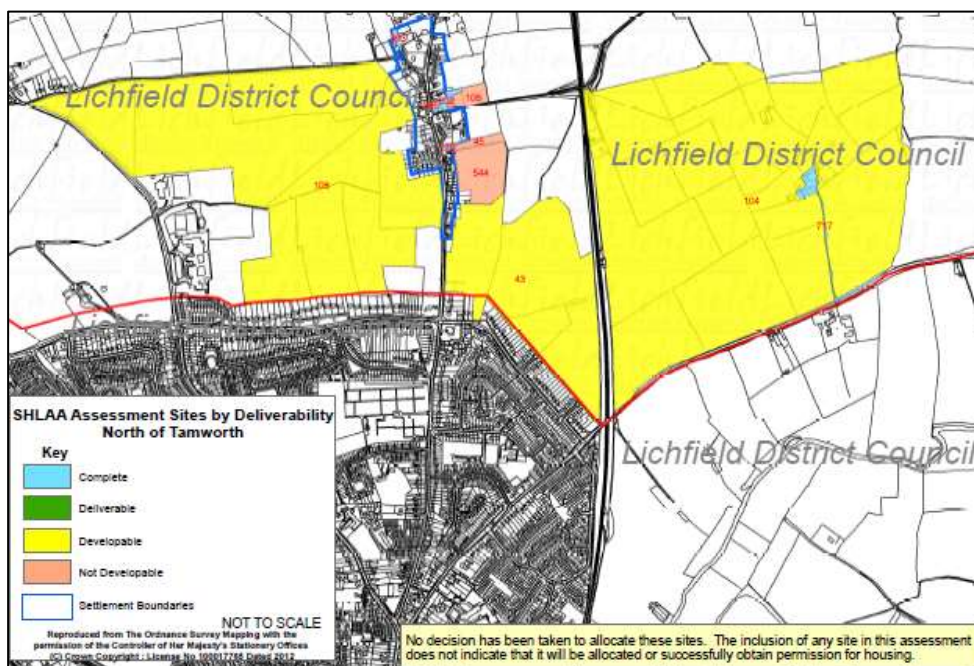
**Figure 8: Extract from the Tamworth Pre-Submission Local Plan (2006-2028)**

- 4.12 Examination of the Emerging Local Plan commenced in February 2013, but was withdrawn in March 2013 following an exploratory meeting with the Inspector who requested more evidence on technical matters.
- 4.13 In relation to the Anker Valley, the Inspector was concerned that the principles of the development had not been established within the Emerging Local Plan and too much detail had been left for the master planning stage. In particular, the Inspector considered that the following required further supporting evidence:

- Site constraints to be incorporated, overcome or mitigated.
- Scale and quantum of land uses.
- Infrastructure requirements, funding and delivery timescales/triggers incorporating the 1,000 dwellings included North of Tamworth Broad Development Location in the Lichfield Local Plan.
- Timescales for key development milestone.

### Lichfield District Council Local Planning Policy

- 4.14 The Adopted Lichfield District Local Plan (1998) included no housing allocations to the north of Tamworth as there was no identified requirement under the RSS and the Structure Plan. Since then, the District Council has submitted its Local Plan: Strategy (2008 – 2028) for Examination which proposed 8,700 homes with 1000 to meet the cross boundary needs of Rugeley (in Cannock Chase District) and Tamworth (500 per District). In terms of Tamworth, the plan proposed 1000 homes in a Broad Development Location to the North of Tamworth, with 500 of those homes to meet Tamworth’s needs.
- 4.15 In May 2013, Barwood Strategic Land II LLP submitted a Hearing Statement for the Arkall Farm site at the Lichfield District Local Plan Strategy Examination. The statement sought to address the Inspector’s concerns regarding the Tamworth Local Plan by asserting that the site was available, suitable, viable and deliverable.
- 4.16 The Hearing Statement indicated that a planning application could be submitted in 2013 for the site, with 200 dwellings constructed by 2016 and 1,000 dwellings constructed by 2020. The assumptions on suitability, viability and deliverability were informed by an Initial Access and Infrastructure Review, which was undertaken by Peter Brett Associates LLP (Section 5.0)
- 4.17 In July 2012, Lichfield District Council published its Strategic Housing Land Availability Assessment (SHLAA). This identified a number of sites to the North of Tamworth as set out in **Figure 9** below.



**Figure 9: Extract from the Lichfield SHLAA (2012)**

- 4.18 The sites and the potential capacities were identified as:
- Browns Lane (SHLAA ID 43) 250 dwellings
  - Arkhall Farm (SHLAA ID 104) 1,909 dwellings
  - Gillway Lane (SHLAA ID 106) 550 dwellings
- 4.19 In July 2012, Lichfield District Council published its Proposed Submission Local Plan Strategy, which included the Policy: North of Tamworth in **Figure 10** below;

**Policy: North of Tamworth**

Within the Broad Development Location identified to the north of Tamworth, a sustainable, safe, well designed mixed use development of approximately 1,000 dwellings will be delivered by 2028 including:

1. A range of housing in accordance with Development Management Policies H1 and H2 and having regards to needs arising within Tamworth Borough;
2. Provision for open space, sport and recreation facilities in line with Development Management Policies HSC1 and HSC2 and incorporating playing pitches, amenity green space, equipped play, allotments;
3. Landscaping and Green Infrastructure provision including the retention of quality hedgerows and significant trees, and their incorporation into the landscape, and the allowance for significant tree canopy cover in line with Development Management Policies NR4 and NR6;
4. A clear strategy for delivering links to Tamworth, and showing how these will be incorporated into an integrated open space and green infrastructure network;
5. Protection of local areas and habitats of biological interest;
6. The provision of public transport to serve the site: all development should be within 350m of a bus stop;
7. The provision of pedestrian and cycling routes throughout the site, linking to the green infrastructure network and to settlements, services and facilities beyond the site boundaries including safe crossing points;
8. Vehicular access that is integrated with the Anker Valley and Amington links proposed within Tamworth Borough;
9. The provision and maintenance of sustainable drainage systems and flood mitigation measures;
10. Adherence to all other policies in the Local Plan.

The development shall cause no coalescence with Wigginton village and shall commence no earlier than 2021 or prior to essential infrastructure being delivered within Tamworth Borough.

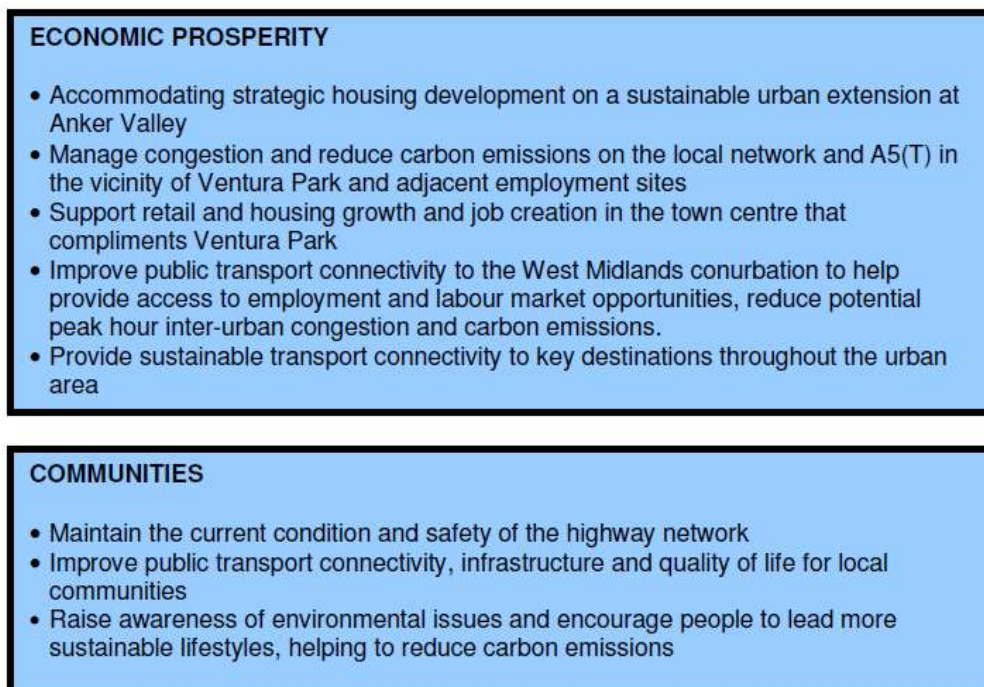
**Figure 10: Extract from the Lichfield District Proposed Local Plan Strategy (2012)**

- 4.20 However, in response to the Inspector's concerns with the Emerging Tamworth Local Plan, Lichfield District Council has now proposed amendments to the wording of this Policy and refers to the North of Tamworth allocation comprising 'at least 1,000 dwellings' and that development shall 'not commence prior to essential infrastructure being delivered at an appropriate stage'

- 4.21 It should also be noted that, at the time of writing this Appraisal, the Lichfield Inspector has stated through his Initial Findings report (28th August 2013) that there is no significant evidence to dispute the provision of 1000 homes to meet the cross boundary needs of Tamworth and Rugeley. However he did state that this figure should be subtracted from the 8,700 dwellings cited by Lichfield District given that it was meeting the needs of other Districts. This left Lichfield District with a figure of 7,700 over the plan period. He stated that, to rectify this matter a site (or sites) for an additional 900 houses should be provided, and the Council has agreed to this and work is now underway to take this aspect of the plan forward.

### **Integrated Transport Strategy 2013-2031**

- 4.22 The Staffordshire Local Transport Plan (LTP) sets out SCC's transport proposals and focuses on the following three objectives:
- Supporting growth and regeneration.
  - Maintaining the highway network.
  - Making transport easier to use and places easier to get to.
- 4.23 To reflect the diverse nature of the County, the LTP identified District Integrated Transport Strategies, which include specific transport measures relevant to that area. The Tamworth Borough Integrated Transport Strategy 2013 to 2031 identified the key priorities shown in **Figure 11** below:



**Figure 11: Extract from Tamworth Borough Integrated Transport Strategy 2013-2031**

- 4.24 It identifies the following transport improvements as part of the Anker Valley local Transport Package:
- Urban Traffic Control, safety and capacity improvements of Aldergate/Upper Gungate corridor
  - Increased car parking capacity at Tamworth railway station
  - Salters Lane Pedestrian Improvements
  - Bus Access improvements for Service 2 Tamworth-Gillway-Perrycrofts.
  - Consideration of Anker Valley and Amington Link Roads.



- Improved sustainable Travel Links to the town centre, rail station and education.
- 4.25 SCC assumes that the majority of the costs for the Anker Valley local Transport Package will be developer funded via Community Infrastructure Levy (CIL).

## **5.0 PREVIOUS RELEVANT STUDIES**

- 5.1 As part of this Appraisal BWB have conducted a comprehensive review of historical reports and studies which have been produced over the years considering the Tamworth and Lichfield areas, the housing needs and supply, capacity of existing transport provisions and infrastructure requirements to facilitate and accommodate the delivery of the developments.
- 5.2 The following reports and studies have been identified as having specific relevance to this appraisal.

### **Tamworth SATURN traffic model**

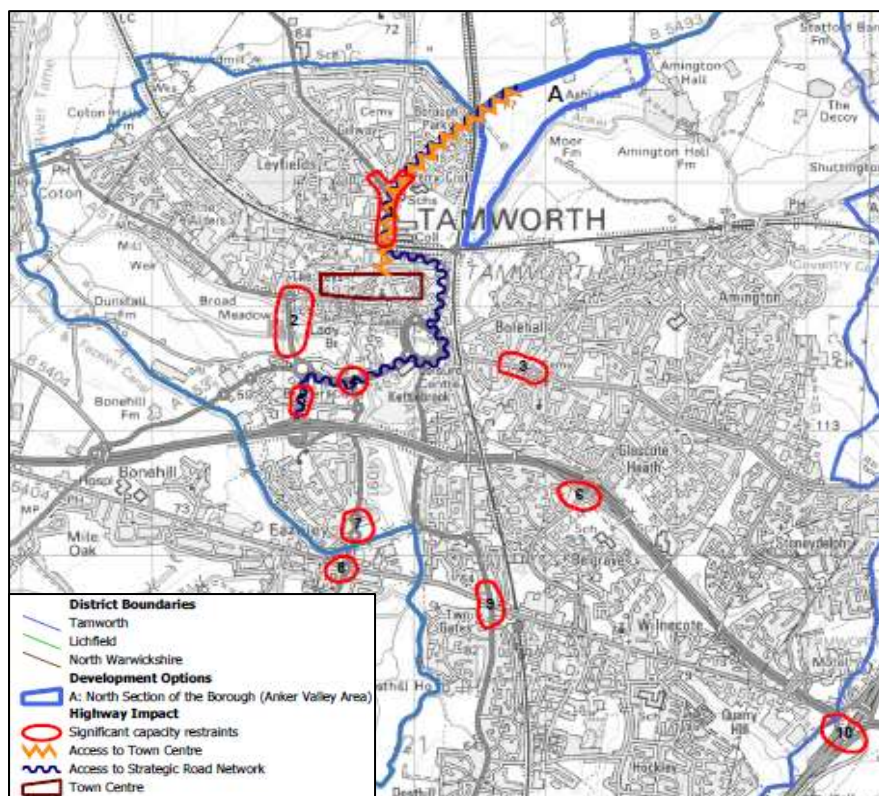
- 5.3 The Tamworth SATURN traffic model was produced to provide an evidence base to support the 2004 Local Plan process. A base model was calibrated and validated to Design Manual for Roads and Bridges standards using 1998 survey data for the evening peak hour between 1700 and 1800 hours. A 2011 forecast year was constructed from the base model, so that the traffic impacts of various Local Plan sites could be examined and assessed.
- 5.4 The forecasting work estimated a likely trip distribution for the Anker Valley SUE (and all other Local Plan) housing proposals by replicating the 1998 surveyed data in all homogenous housing zones within the base year model. This enabled percentage trip distributions to be estimated for the Anker Valley SUE both 'with' and 'without' the Anker Valley Link Road.
- 5.5 Use of the traffic flows from the Tamworth Saturn traffic model within this study would not be appropriate, due to the historic nature of the base data. However, SCC advised that the peak hour distribution of Anker Valley SUE traffic was still likely to be representative for both the 'with' and 'without' Anker Valley Link Road scenarios. An examination of the distribution of journey to work trips from the 2001 Census confirmed this to be the case. However, it would be prudent to revisit the traffic distribution once the relevant 2011 Census datasets have been released.

### **Tamworth Future Developments & Infrastructure Report (2009)**

- 5.6 In 2009, Peter Brett Associates and Drivers Jonas (now part of Deloitte Real Estate) produced the Tamworth Future Developments & Infrastructure Report, which provided a strategic review of the infrastructure needed to deliver the housing targets for Tamworth.
- 5.7 The Study identified both the Anker Valley (Option A -1,135 dwellings) and the Arkall Farm (Option C - 1,498 dwellings) Growth Options and assessed the respective impacts to environmental resource as being low/moderate and moderate/limited respectively, due the following:
- Both sites are located in Flood Zone 1, outside the Green Belt and would not impact on major open space facilities
  - The Anker Valley site lies close to the Warwickshire Moor, which is identified as a site of local nature conservation importance and adjacent to the Amington Hall Conservation Area. Albeit, the report notes that this could be mitigated with sensitive design and construction using screening/buffering
  - Both sites have areas of agricultural land considered of higher quality (Grade 2). Albeit, the report notes that this is a common feature of the majority of Growth Options considered.

- 5.8 Both Growth Options were considered to have reasonable access to community infrastructure based on DfT accessibility standards, although current access to nursery, health and employment facilities was assessed as being more moderate. However, it was noted that accessibility to such facilities could be enhanced through the provision of new on-site facilities as part of future development.
- 5.9 The report highlighted the following highway constraints based on a review of SCC's evening peak hour SATURN strategic traffic model for the town
- Area 1 – Upper Gungate corridor where capacity improvements or an alternative route are suggested.
  - Area 2 – Lichfield Street roundabout where capacity improvements on the southern approach arm are suggested.
  - Area 3 - Glascoate Road/Abbey Road roundabout where capacity improvements on the northern and southern approaches are suggested.
  - Area 4 – Riverdrive/Fazeley Road signals where capacity improvements on the Fazeley Road approach are suggested.
  - Area 5 – Jolly Sailor and Ladybridge roundabouts, where capacity improvements are suggested. It should be noted that both these junctions were signalised in 2011 and a secondary egress provided from Sainsbury to Bonehill Road in 2012. Further improvement works are currently being implemented at the Jolly Sailor roundabout.
  - Area 6 –A5/Marlborough Way grade separated roundabout, where capacity improvements to the southern section of the roundabout are suggested.
  - Area 7 – Bitterscote Lane and County Drive roundabouts, with capacity improvements to the link between the two junctions suggested.
  - Area 8 – Fazeley Roundabout where capacity improvements on all approaches are suggested.
  - Area 9 – Two-Gates signals where capacity improvements on the A51 approaches are suggested.
  - Area 10 – M1J10A grade separated roundabout where capacity improvements to the southern section of the roundabout are suggested.

These are shown on **Figure 12** below.



**Figure 12: Extract from the Tamworth Future Developments & Infrastructure Report**

- 5.10 The report concludes that providing sufficient highway capacity to allow connection to local trip destinations and the strategic road network is the key problem to solve for both Group Options. This centres around the barrier created by the railway that creates bottlenecks at the points where the barrier is crossed. The solution to this centres around two key areas:
- Creating a development that reduces vehicular trips through creating connections to the nearby facilities and providing facilities on site;
  - Providing highway capacity to cater for the bottleneck associated with the link between the site and Tamworth Town Centre.
- 5.11 This site offers the potential for providing walking and cycling links to the south east of the site across the railway barrier, directly to the rail station and town centre.
- 5.12 The report assesses the impact on other forms of physical infrastructure as being generally moderate/low. However, it does note that the availability of potable water supplies is more limited than for other Growth Options and the resultant requirements for necessary off-site infrastructure is therefore greater.
- 5.13 In terms of deliverability, the report attributes both options with high ownership scores due to the engagement with the planning process. Both sites are considered to be relatively free from site-specific physical and environmental constraints, due to its relatively flat form and present Greenfield agricultural use. However, the following are identified:
- A ridge running through the Arkhall Farm site would limit the potential density of dwellings and may need a particular design response
  - The Environment Agency could require a 20m zone of access to the River Anker thereby limiting the Anker Valley site
  - The adjacent Birmingham - Derby railway line may cause a degree of noise disturbance to both sites. Albeit the report notes that this could be mitigated by screening/buffering where required.
- 5.14 The key deliverability issue for both schemes is identified as the need to overcome the significant highway constraint associated with the Upper Gungate corridor through highway capacity improvements. Whilst the Anker Valley and Amington Link Roads are identified, the following was noted:
1. Any capacity improvements should complement sustainability goals of internalising trips and encouraging modal shift through links to the Tamworth Town Centre and other nearby facilities.
  2. Both options would benefit from the roads and could therefore contribute to the cost of implementation, but the Arkhall Farm site could not provide the links without the Anker Valley site.
- 5.15 Based on criteria set by SCC, the report concluded that the following on-site community uses would be required subject to the following trigger levels:
- |   |                 |
|---|-----------------|
| • Secondary School                        | 4,000 dwellings |
| • Primary School                          | 1,000 dwellings |
| • Nursery, Health Centre & Community Hall | 500 dwellings   |
- 5.16 The cost estimates shown in **Table 3** were used to establish Development Contributions per dwelling for the required infrastructure associated with the Growth Options.

Type	Item	Estimated cost	
		Anker Valley (1,135 dwellings)	Arkhall Farm (1,498 dwellings)
Transport	Anker Valley Link	£20M	
Transport	Amington Link	£30M	
Transport	Area 1	£678k	
Transport	Area 4	£214k	
Transport	Area 5	£535k	
Education	Primary School	£2.6M	
Education	Secondary School	-	
Community	Health Centre	£600k	
Community	Community/Sports Hall	£615k	
Community	Nursery	£375k	£495
Open Space	Children's Play Space	£1.4M	£1.9M
Open Space	Outdoor Sports Space	£850k	£1.1M
Infrastructure	Water Main	£630k	

**Table 3: Tamworth Future Developments & Infrastructure Report cost assumptions (based on 2009 cost estimates)**

5.17 The report then concluded the viability of the Growth areas based on the costs in **Table 4:**

Option	Anker Valley (1,135 dwellings)	Viability	Arkhall Farm (1,496 dwellings)	Viability
No Anker Valley or Amington Links	£7,531	High	£7,033	High
With Anker Valley Link only	£25,157	Low	£20,387	Low
With Anker Valley and Amington Link	£33,969	Low	£27,065	Low

**Table 4: Viability conclusions of Tamworth Future Developments & Infrastructure Report (based on 2009 cost estimates)**

- 5.18 The following should be noted when considering these figures:
- Both sites were considered in isolation and therefore some of the infrastructure costs could be shared between the Growth Areas.
  - The cost information used was based on high level estimates provided by SCC. These have subsequently been refined through work by SCC and Developers.
  - Junction improvements have already been implemented at the Jolly Sailor and Ladybridge roundabouts.

### **Strategy for the A5 (2011 - 2026) A449 Gailey (Staffordshire) to A45 Weedon (Northamptonshire)**

5.19 In February 2012, the A5 Transport Liaison Group produced a strategy for the A5 (2011-2026). The strategy is a joint undertaking between the Highways Agency and the 15 local authorities along the route of the A5 between the A449 Gailey (Staffordshire) and the A45 Weedon (Northamptonshire).

- 5.20 Lichfield District Council and Tamworth Borough Council are part of the group and the following improvements of relevance to the Tamworth area have been identified
- A5/Stoneydelph: – Widening the A5 westbound off-slip to two lanes along with the implementation of a left-only slip on this approach to Pennine Way at an estimated cost of £1M.
  - A5/A51 Ventura Park Study: The Signalisation of the Jolly Sailor and Ladybridge roundabouts at a cost of £3M. These improvements were implemented in 2012

- A5/A453/B5404 Mile Oak: The signalisation of the A5/A453 roundabout and widening of the A453 north approach to the A453/B5404 Mile Oak signals at an estimated cost of £1.32M

5.21 It should be noted that the JMP study was based on the previous Regional Spatial Strategy housing target of 2,900 dwellings. Following the completion of the SHMA, this figure has been identified as 3,883 with changes in the sites identified. However, it is understood that Tamworth Borough Council has subsequently obtained confirmation from the Highways Agency that the proposed improvements would satisfactorily accommodate the traffic generated by 4,254 dwellings.

### **Community Infrastructure Levy Study (2012)**

5.22 In 2012, the 'Local Plan and Community Infrastructure Levy Viability Testing Study to Support the Introduction of the Community Infrastructure Levy' report was issued for Cannock Chase Council, Lichfield District Council and Tamworth Borough Council.

5.23 Whilst recognising the need for the Local Plan policies to provide flexibility to account for viability issues, it concluded that CIL was viable and that the study was a reasonable basis for each authority to develop its own charging schedules.

5.24 Lichfield District Council has confirmed that it is currently developing its own charging schedule, with the CIL for residential developments expected to be in the region of £35 to £50 per sqm of residential floorspace, which equates to around £3,000 to £4,250 for an average 85sqm dwelling. Tamworth Borough Council has confirmed that whilst it is progressing with developing its CIL charging schedules, it is not as far advanced as its neighbouring authority.

### **Lichfield Infrastructure Delivery Plan (2012)**

5.25 The Lichfield Infrastructure Delivery Plan was published by in 2012 by Lichfield District Council and provides details of the infrastructure requirements for a development of 1,000 homes north of Tamworth. The requirements include:

- Provision of well-planned public transport to serve the site; all development to be within 350 metres of a bus stop.
- The provision of pedestrian and cycle routes throughout the site, linking to the green infrastructure network and to the settlements, services and facilities beyond the site boundaries including safe crossing points.
- Vehicular access that is integrated with the Anker Valley and Amington links proposed within Tamworth Borough.
- The provision and maintenance of sustainable drainage and flood mitigation measures.

### **Upper Gungate Technical Note (2013)**

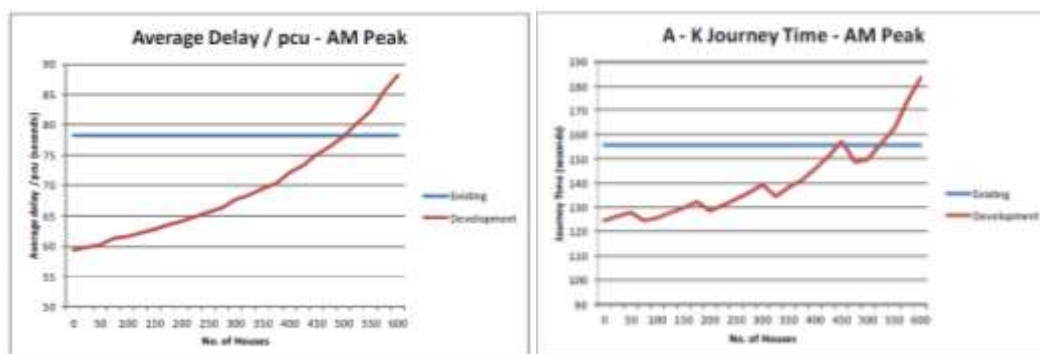
5.26 In February 2013, the JCT Consultancy Ltd undertook a study into the operation of the Upper Gungate highway corridor. The report established that the corridor was marginally overcapacity in the morning peak hour with existing traffic flows and constituted the critical time period with average delay of approximately 78 seconds per passenger car unit and a journey time of almost over 2.6 minutes to travel the 600 metres from Ashby Road to Offa Drive and almost 5 minutes to travel from Ashby Road to Lichfield Street. It is worth noting that at this time approximately 45% of traffic on the corridor is associated with the nearby Tamworth Education Hub.

- 5.27 JCT also identified the following capacity improvements:
- Implementing SCOOT along the Upper Gungate corridor.
  - Improving the Fountains junction to provide a right turn flare from Ashby Road and replacing the crossing patrol with a displaced demand responsive pedestrian crossing.
  - Widening of Upper Gungate in the vicinity of Croft Street to provide harbourage for right turning vehicles.
  - Providing right turn bay on the Lichfield Street approach to the Aldergate/Lichfield Street signals to enable the major movements to operate concurrently.

SCC has estimated that the package of works will cost 1.976M.

- 5.28 The study also examined the impact of introducing various levels of housing on the SUE. Based on traffic generation and distribution information provided by SCC, JCT tested the improved Upper Gungate corridor with increasing levels of housing. This identified that the following critical parameters:
- Practical reserve capacity and delay in the morning peak hour
  - Journey times for southbound traffic from Ashby Road in the AM peak hour
  - Journey times and delay for northbound traffic to Ashby Road during the PM peak period

- 5.29 The graphs in **Figure 13** below have been extracted from the Upper Gungate Study and show the impact of the additional dwellings on average delay and journey times during the morning peak hour. Route A-K is the journey between Ashby Road and Offa Drive:



**Figure 13: Extract from Upper Gungate Study**

- 5.30 Based on the study, it was concluded that if the proposed capacity improvements were implemented, 500 houses could be developed with a nil-detriment effect on the operation of the existing Upper Gungate corridor during the critical morning peak hour. Consequently, it was concluded that the implementation of the proposed improvements would constitute suitable mitigation for a development of this size.
- 5.31 On the 25th September 2013, the DfT announced that a SCC Local Pinch Point bid had been successful and £1.376M of funding had been allocated towards of implementing the Upper Gungate improvements. It is expected that the shortfall of £600,000 will be Developer funding and that the works will be implemented between May 2014 and March 2015.

**Arkall Farm Initial Access and Infrastructure Review (2013)**

- 5.32 In May 2013, Barwood Strategic Land II LLP commissioned Peter Brett Associates LLP to produce a Technical Note entitled 'Initial Access and Infrastructure Review' to support its Hearing Statement for the Arkall Farm site at the Lichfield District Local Plan Strategy Examination.

- 5.33 The purpose of the report was to examine the Inspector's previously stated concerns regarding whether 1,000 houses could be deliverable on the Arkall Farm site without major infrastructure improvements or land within Tamworth Borough being required first and concludes that:
- The site is sustainably located and has the potential to influence a modal shift in travel behaviours in the north of Tamworth area, such as through the provision of a new bus service and possible contributions towards school travel planning.
  - There are no known constraints from a flood risk, drainage or utilities based on a desk top study
  - Delivery of this quantum of homes does not rely on major strategic infrastructure improvements being provided first, including the provision of the new Anker Valley link road, which is the subject of additional working that is planned by Tamworth Borough and Lichfield District Councils.
  - There is potential for transport improvements that will effectively mitigate the impact of development on the highway network including:
    1. Further improvements to the Fountain Junction over and above those identified in the JCT study. Costs not quantified.
    2. Improved pedestrian and cycle links to the Landau Forte Academy and town centre including a new foot/cycle bridge across the Birmingham to Derby railway line (£350k-£500k) and a cycle link through the Landau Forte Academy (£30k to £40k).
    3. Extending the 30 minute Perry Crofts bus service to a 15 to 20 minute service including the Arkhall Farm site, which is estimated to require an extra 2-3 buses and an associated subsidy of £500k to £750k
    4. A contribution of approximately £100k towards improved School Travel Planning to improve sustainable access to the Landua Forte Academy.

### **Summary of Key Findings**

- 5.34 The following key findings have been taken from previous background work:
- The SUE will need to include a primary school, health centre, community hall, nursery and open space provision.
  - A water main will be required at an estimated cost of £630,000
  - The Highways Agency is likely to require a contribution towards the £2.4M improvements identified at the A5/Mile Oak and A5/Stoneydelph junctions.
  - The provision of a £600,000 contribution towards the improvements proposed within the Upper Gungate Study would enable 500 dwellings to be developed on the SUE without impact on the operation of the Upper Gungate corridor.



## 6.0 KEY TRANSPORT DRIVERS

- 6.1 Having undertaken a review of the background studies and considered the local connectivity issues, there would appear to be the following four key transport drivers to maximising the number of residential units on the SUE:
- Vehicular connection across the West Coast Mainline
  - Maximise rail travel
  - Reduce single occupancy car travel
  - Further improve Upper Gungate corridor operation
- These are considered in further detail below

- 6.2 Paragraph 32 of NPPF states 'Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe'. Given that this is a high level study, it will not be possible to establish the number of units at which the highway impact of the SUE will transition from acceptable to severe. Therefore, this study has been undertaken on the basis of establishing a nil-detriment impact on the critical Upper Gungate corridor with further detailed assessment required to support additional residential units.

### **Vehicular connection across the West Coast Mainline**

- 6.3 It is clear that the Upper Gungate corridor provides a significant constraint to the number of dwellings that can be achieved on the Anker Valley SUE. The traffic distribution that JCT utilised within the Upper Gungate Study indicates that without a vehicular connection across the West Coast Mainline, 85% of SUE traffic would route via Upper Gungate.
- 6.4 Output from the Tamworth SATURN Traffic Model supplied by SCC is contained in **Appendix A**. The output shows the distribution of SUE traffic in the evening peak hour should a connection be provided across the West Coast Mainline to Brindley Way. Whilst the traffic model is out of date, SCC considered that the peak hour distribution of SUE traffic would be representative and adequate for the purpose of this study. An examination of the distribution of journey to work trips from the 2001 Census confirmed this to be the case. However, it would be prudent to revisit the traffic distribution once the relevant 2011 Census datasets have been released.
- 6.5 The Tamworth Traffic Model output demonstrates that the proportion of SUE traffic routing via Upper Gungate would be reduced to around 45% should a connection to Brindley Drive be provided. It also indicates that this could be further reduced to around 35% should a new link be provided via the Offa Drive/Saxondrive roundabout immediately adjacent to Tamworth Railway Station.
- 6.6 The Upper Gungate Study indicated that the proposed improvements to that corridor would enable 500 dwellings to be occupied on the SUE without detriment to the operation of the Upper Gungate Corridor. Based on the same trip generation assumptions used in that study, it is considered that a link to Brindley Drive would increase this number to approximately 950 dwellings (85%/45% x 500).
- 6.7 The addition of the connection to Offa Drive/Saxon Drive roundabout would increase the level of SUE development to approximately 1,200 units (85%/35% x 500) without having a detrimental effect on the operation of the Upper Gungate corridor.
- 6.8 These connections are likely to result in some re-routing of existing traffic through the SUE. However, this is likely to be modest and the main purpose of the

vehicular connection across the West Coast Mainline would be to provide an alternative route to the Upper Gungate corridor for SUE traffic. Consequently, it is considered that any connection is unlikely to be significantly trafficked and should be designed accordingly, so as to balance the need for a vehicular connection with that of encouraging travel by sustainable travel modes.

- 6.9 It should be noted that any connection to the south of the site will need to cross identified flood plain, as well as the West Coast Mainline. Previous investigations have proposed to cross both the floodplain and West Coast Mainline via suitable overbridge structures. Consultation with both SCC and NR has confirmed that this is still the case. However, it is considered that crossing the floodplain via a bund with culverts of a similar size and configuration to those under the West Coast Mainline should be acceptable to the EA providing suitable floodplain compensation is provided to reflect the volume lost through the construction of the bund. Nevertheless, any solution will need to be cost effective and deliverable.

### **Maximise rail travel**

- 6.10 Tamworth railway station is well located on two major lines and provides regular connections to a number of local towns and cities. Statistics from the Office of Rail Regulations demonstrate that the number of rail passengers using Tamworth station has increased by 45% since 2004/05, with almost 1 million passengers recorded in 2011/12.
- 6.11 Given the proximity of the station to the Anker Valley SUE, there is the potential for residents to utilise this mode of transport for journeys to a range of local and national destinations. The attractiveness of this mode is dependent on the rail accessibility of the destination. However, some form of connection would need to be provided between the SUE and the railway station to encourage these trips.
- 6.12 The commercial case for a new station access is likely to be substantially improved should car parking and a bus connection also be provided. It is considered that the car parking would be attractive to those currently routing to the railway station via Ashby Road and would also be attractive to those from eastern Tamworth should a vehicular connection be provided across the West Coast Mainline.

### **Reduce single occupancy car travel**

- 6.13 The journey work data from both the 2001 and 2011 Census indicate high levels of single occupancy car travel within the Borough and to the three main employment destinations of Birmingham, Lichfield and North Warwickshire.
- 6.14 The Anker Valley SUE should seek to reduce these levels of single occupancy car trips by the following:
- Promotion of car sharing through the use of websites such as Gocarshare.com and liftshare.com by providing details and cost saving information to residents.
  - Provision of local community, education, health and retail facilities within the SUE to maximise the number of trips made within the development. This will encourage travel by cycle and on foot and reduce the impact on the local highway network.
  - Provision regular public transport services, with new footpaths, cycleways and green linkages to help maximise both internal trips and sustainable travel.
- 6.15 SCC has advised that the trip rates that were used in the Upper Gungate Study were originally calculated for use in other large studies within the County and

have been approved by the HA. The rates were derived from the TRICS trip generation database and represented an average trip rate of all relevant sites contained within the database. Consequently, SCC has concluded that the trip rates inherently make allowances for good levels of internalisation and sustainable travel offer and has advised that recent traffic surveys in the area support this conclusion.

- 6.16 Whilst this position has been accepted for the purposes of this study, it is recommended that peak hour traffic surveys are commissioned in consultation with SCC at a similarly located residential area of Tamworth to establish local trip rates that can be confirmed to reflect the likely trip internalisation and accessibility levels of the Anker Valley SUE.
- 6.17 Measures to reduce single occupancy car trips for other users in Tamworth could include the following:
- Improvements to the existing circular Arriva bus service 780 to provide better connections between key residential and employment areas within the town.
  - Improved pedestrian/cycle routes between the rail station and eastern areas of Tamworth.

### **Further improve Upper Gungate operation**

- 6.18 There are the following three main ways of improving the operation of a highway network:
- Increase capacity;
  - Reduce demand;
  - Reduce conflict.
- 6.19 The Upper Gungate Study has identified a package of geometrical improvements, as well as both linking and optimising the traffic signal timings. These are achievable within the highway boundary and therefore deliverable. Whilst there is always the potential to refine signal timings, further significant capacity improvements are considered unlikely as the corridor is tightly constrained by private properties, the Landau Forte Academy/South Staffordshire College site and the West Coast Mainline overbridge. Consequently, any further improvements are likely to require third party land and are considered to be undeliverable at this stage.
- 6.20 There is potential to reduce demand on the Upper Gungate corridor. Approximately 45% of morning peak hour and 25% of evening peak hour traffic is associated with the Landau Forte Academy/South Staffordshire College establishments. A typical travel plan target of reducing generated traffic flows by 10% would reduce flows on Upper Gungate by approximately 70 vehicles in the morning and 40 vehicles in the evening peak hours. Based on the calculations in **Appendix B**, it is estimated that this would release capacity for the following additional dwellings based on impact during the critical morning peak hour:
- |  |               |
|--|---------------|
| • No link                              | 140 dwellings |
| • Anker Valley Link Road               | 270 dwellings |
| • Anker Valley and Amington Link Roads | 345 dwellings |
- 6.21 The current 290 car parking spaces at Tamworth railway station are inadequate to satisfactorily accommodate parking demand on busy days. Providing station car parking and access to the east of Tamworth railway station is likely to result in traffic that currently routes to the station from Ashby Road finding it easier to access the station from within the SUE.

- 6.22 Further investigations would be required by registration plate survey to understand what traffic is likely to re-route. However, for the purposes of this high level assessment, it is assumed that a modest 10% of existing car park traffic would route to the east of the station during the morning and evening peak hours. Hence, 29 vehicles could be removed from the Upper Gungate corridor. Based on the calculations in **Appendix B**, it is estimated this would release capacity for approximately the following additional dwellings on the Anker Valley SUE based on impact during the critical morning peak hour:
- No link 60 dwellings
  - Anker Valley Link Road 110 dwellings
  - Anker Valley and Amington Link Roads 145 dwellings
- 6.23 It should be noted that additional spaces would be required to cater for suppressed and additional demand should a vehicular link be provided from the SUE to Amington. However, this would not affect traffic flows on Upper Gungate corridor.
- 6.24 The final way of improving the operation of Upper Gungate would be by reducing conflict along the corridor. This could be achieved by banning particular movements and forcing drivers to use alternative routes. An example of a movement that could potentially be banned is the right turn from Ashby Road to Comberford Road. This would avoid the need to widen the Ashby Road approach and enable pedestrian crossing facilities to be incorporated within the junction, so that the existing guardrailling could be removed and the junction made more pedestrian friendly.
- 6.25 Whilst banning movement could improve the operation of Upper Gungate, it would result in impacts elsewhere, which would need to be considered. For example banning the right turn from Ashby Road to Comberford Road would encourage additional traffic to route via Browns Lane and Gillway. As this is a partly traffic calmed residential road, SCC has already advised that it would be unlikely to support such a proposal. However, this could be investigated in greater detail.

**Indicative Anker Valley SUE residential units**

- 6.26 Based on the above, the likely number of dwellings achievable without detriment to the operation of Upper Gungate corridor during the critical morning peak hour, are shown in **Table 5** below:

	No Link	Anker Valley	Amington Link
Distribution via Upper Gungate	85%	45%	35%
Amington connection	500	950	1,200
+ Education Travel Plans	650	1,200	1,550
+ Rail Station car Park	700	1,350	1,700

**Table 5: Indicative SUE without impacting on Upper Gungate**

- 6.27 It should be noted that the above are based on the assumption that the trip rates provided by SCC are representative of Tamworth and include for internalisation and potential modal shift. However, should the recommended surveys demonstrate that lower trip rates are more appropriate, the number of dwellings in each scenario will change. Nevertheless, it is considered unlikely that the overall number of dwelling in each scenario would increase by more than 10% to 15%.
- 6.28 Based on the above, the 2,150 to 2,400 dwellings being sought by Tamworth Borough Council and Lichfield District Council would have an impact on the operation of the Upper Gungate corridor regardless of the transport package

implemented. Further detailed assessments will be required to test the threshold at which the highway impact on the Upper Gungate transitions from acceptable to severe. This could further support additional residential units on the SUE.

6.29 Taking into account the different traffic distributions resulting from each access scenario, the minimum impact of SUE traffic on the Upper Gungate corridor would be equivalent to the following additional dwellings over and above those identified in Table 5:

- |                                      |                 |
|--------------------------------------|-----------------|
| • No Link                            | 1,700 dwellings |
| • Anker Valley Link                  | 555 dwellings   |
| • Anker Valley & Amington Link Roads | 290 dwellings   |

6.30 To provide a high level assessment of the effect of these additional dwellings on the Upper Gungate corridor without the need for junction modelling, reference was made to the morning peak hour average delay and journey time graphs from the Upper Gungate Study in Figure 13.

6.31 It can be seen that an additional 100 dwellings would result in the average delay increasing from 78 to 88 seconds per passenger car unit, with the average journey time from Ashby Road to Offa Drive increasing from 2.6 minutes to 3.0 minutes. It can also be seen that as the network becomes more congested, both delay and journey times begin to increase exponentially. Consequently, further detailed assessments will be required to test the threshold at which the highway impact on the Upper Gungate transitions from acceptable to severe. These further assessments should account for possible traffic re-routing in the scenarios where access is provided across the West Coast Mainline and could support additional residential dwellings on the SUE.

### **Key Transport Driver Summary**

6.32 It is considered that the number of units on the SUE could be maximised by successfully addressing the following four transport drivers:

- Vehicular connection across the West Coast Mainline
- Maximise rail travel
- Reduce single occupancy car travel
- Further improve Upper Gungate corridor operation

6.33 This high level study suggests that the 2,150 to 2,400 dwellings being sought by Tamworth Borough Council and Lichfield District Council would have a significant impact on the operation of the Upper Gungate corridor regardless of the transport package adopted. It also suggests that approximately 1,700 dwellings could be achieved without detriment to the operation of Upper Gungate during the critical morning peak. Further detailed assessments will be required to test the threshold at which the highway impact on the Upper Gungate transitions from acceptable to severe. These further assessments could support additional residential dwellings on the SUE.

## 7.0 TRANSPORT SCHEME OPTIONS

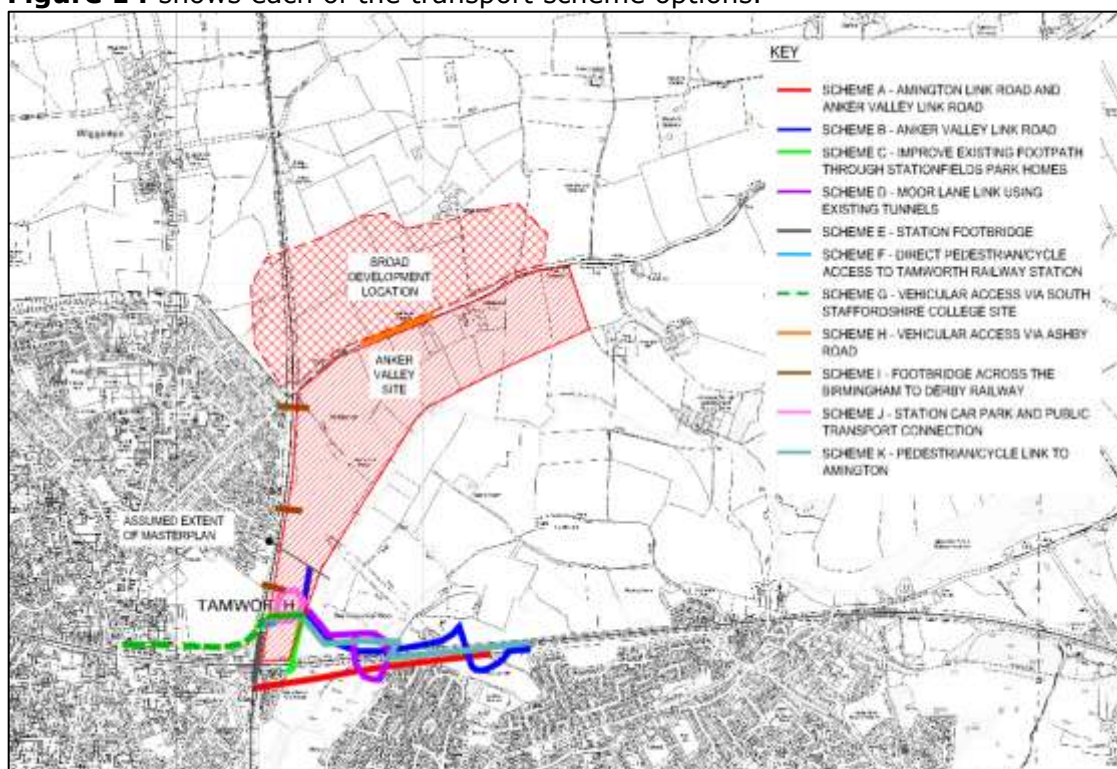
7.1 Tamworth Borough Council has identified the following eight transport scheme options to be appraised within the study:

- Scheme A - Amington and Anker Valley Link Road
- Scheme B - Anker Valley link Road
- Scheme C - Improve existing footpath through Stationfields Park Homes
- Scheme D - Moor Lane link using existing tunnels
- Scheme E - Station footbridge
- Scheme F - Direct pedestrian/cycle access to Tamworth Railway Station
- Scheme G - Vehicular access via South Staffordshire College site
- Scheme H - Vehicular access via Ashby Road

7.2 As a result of the study, BWB has also assessed the following additional scheme options:

- Scheme I - Footbridge across the Birmingham to Derby Railway
- Scheme J - Station car park and public transport connection
- Scheme K - Pedestrian/cycle link to Amington
- Scheme L - Funding Education Travel Plans

7.3 **Figure 14** shows each of the transport scheme options.



**Figure 14: Transport scheme options**

7.4 This section of the report assesses each transport scheme option in terms of technical feasibility and deliverability. Only those schemes that are likely to be both technically feasible and deliverable will be put forward for the transport package appraisal.

7.5 The high level costs of the various schemes have been based on BCIS and Spans cost information. However, no detailed design work has been undertaken. Consequently, all costs should be considered as budgetary guidance only.

- 7.6 The masterplan has yet to be established and therefore it is difficult to identify the extent of infrastructure that would be considered abnormal to the development costs. For the purposes of this assessment, it has been assumed that any infrastructure to the south of existing drainage ditch that runs from west to east across the site approximately 400 metres north of the West Coast Mainline would constitute an abnormal cost, with any infrastructure to the north of this ditch forming part of normal development costs. The alignment of this ditch is shown on **Figure 14**.

#### **Scheme A - Amington Link road & Anker Valley link**

- 7.7 Scheme A was proposed in the 2001 to 2011 Tamworth Local Plan and involves the construction of two new highway links. Firstly, a road known as the Anker Valley Link Road would be provided between the site and Brindley Drive. This 1,000 metre road would require crossing of the River Anker at a 40 metre span bridge, identified floodplain, the Warwickshire Moor Nature Reserve and the West Coast Mainline.
- 7.8 Secondly, a connection would be provided between the Anker Valley Link Road and the Offa Drive/Saxondrive roundabout immediately adjacent to Tamworth Railway Station. This 750 metres road would be required to cross the River Anker, pass through the privately owned Stationfields Park Homes site before passing under a height and width restricted underbridge beneath the Birmingham to Derby Line.
- 7.9 The Anker Valley Link Road has previously obtained approval from Network Rail to cross the West Coast Mainline at a 35 metres span bridge in a similar location and at a similar height to the existing pedestrian footbridge. There are land ownership issues to resolve, but the majority of the route appears to be under the control of Developers, Tamworth Borough Council or SCC. The proposal also included crossing the River Anker and identified floodplain by means of a 450 metres bridge in accordance with advice from the Environment Agency.
- 7.10 The scheme is likely to have an ecological impact on the Warwickshire Moor to the north of the West Coast Mainline and would encroach onto playing fields to the south. It is also likely to require noise attenuation/visual screening from the rear of properties in Bridgewater Street. There are land ownership issues. However, these are potentially resolvable. Therefore, the scheme is likely to be both **technically feasible** and **deliverable**.
- 7.11 The previously Amington Link Road would require third party land from the Stationfields Park Homes site to complete the link between the Anker Valley Link Road and the Offa Drive/Saxondrive roundabout immediately adjacent to Tamworth Railway Station. It would also require the approval of Network Rail and SCC to the principle of an adopted highway passing through substandard underbridge DBP1/68, which is 2.77 metres in height and 3.8 metres in width, as there would appear to be little opportunity to improve the existing structure.
- 7.12 Following consultations with both parties, such approval is considered to be unlikely. Consequently, whilst land could potentially be purchased from the owner of the Stationfields Park Homes site, it is concluded that Scheme A is likely to be **technically unfeasible** and therefore **undeliverable**.
- 7.13 An alternative option could be for the Amington Link Road to connect with Amington Road through a combination of either Moor Lane, or the nearby residential streets. This option would require widening of Moor Lane, traffic calming of residential streets and improvement to junctions onto Amington Road.

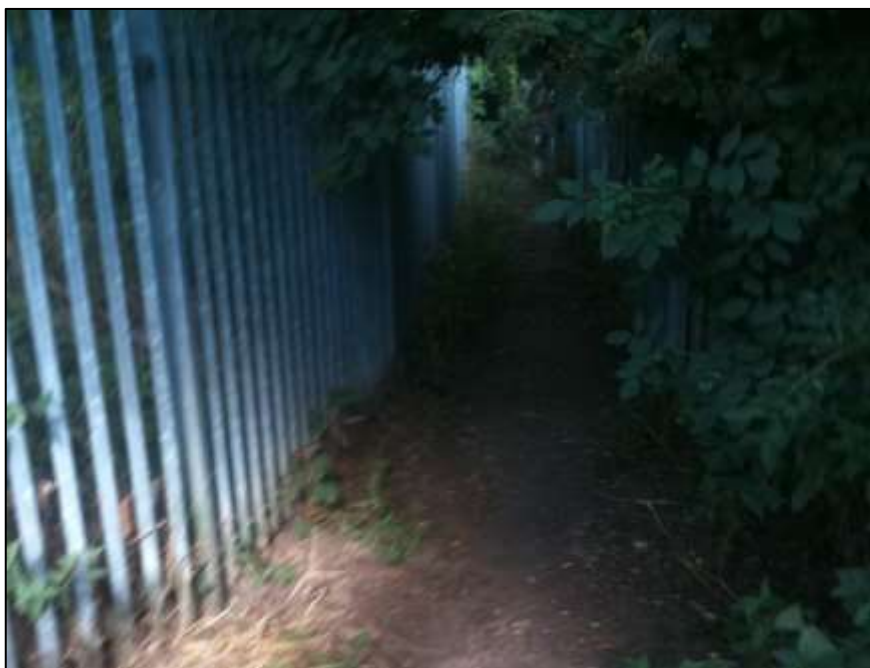
- 7.14 Detailed assessment would be required to demonstrate whether this option is technically feasible. However, SCC has advised that such an option would be unacceptable and therefore in the absence of further detailed assessment, it is considered likely to be **undeliverable**. Consequently, the Amington Link Road has not been taken forward to the transport package appraisal.

#### **Scheme B- Anker Valley link road**

- 7.15 Scheme B was proposed in the withdrawn 2011 to 2028 Tamworth Local Plan, this would involve a bridge crossing over the West Coast Mainline and linking up with Brindley Drive. As described in the previous section, it is considered that this scheme is likely to be **technically feasible** and **deliverable**. Consequently, it has been taken forward to the transport package appraisal.
- 7.16 The Tamworth Future Developments & Infrastructure Report estimates the cost of the Anker Link Road to be in region of £20M. More recent work by developers has suggested a figure of £11.5M. BWB has undertaken a high level review of these costs and believes that the road between the assumed SUE boundary and Brindley Drive could be delivered for between £10M and £16M by the following:
- reducing the design criteria from the previous DMRB to Manual for Streets
  - potentially crossing the floodplain via an earthworks embankment that reflects the existing flood flow pathways under the West Coast Mainline, with compensatory flood plain provided elsewhere.

#### **Scheme C – Improve existing footpath**

- 7.17 Scheme C involves the improvement of the existing Public Right of Way that passes under the West Cast Mainline before routing via the Stationfields Park Homes to the Offa Drive/Saxondrive roundabout adjacent to Tamworth Railway Station via the underbridge beneath the Birmingham to Derby Railway Line.



**Figure 15: Section of existing POR to south of West Coast Mainline**

- 7.18 As demonstrated in the photograph in **Figure 15** above, the Public Right of Way is narrow (a minimum of 1.2 metres in places), constrained and passes under the railway at an isolated location, which is liable to flooding. It would be possible to



improve the route through surfacing and street lighting. However, it is not overlooked and is unlikely to be attractive or safe for pedestrians, particularly outside daylight hours. Consequently, it is concluded that Scheme C is likely to be **technically feasible** and **deliverable**, but is unlikely to provide significant local transport benefits. Nevertheless, the scheme has been taken forward to the transport package appraisal.

- 7.19 The section of Public Right of Way between the West Coast Mainline and the Stationfields Park Homes currently extends approximately 150 metres. Depending on the extent of the masterplan and the provision of the Anker Valley Link Road, a further illuminated 3.0 metres wide footway/cycleway of 400 metres could be required to connect the improved footway to the assumed SUE boundary. It is estimated that surfacing and illuminating the route is likely to cost in the region of £100,000.

#### **Scheme D- Moor Lane link using existing tunnels**

- 7.20 Scheme D would involve utilising existing Network Rail underbridges (BR77 & UB78) passing under the West Coast Mainline approximately 250 to 350 metres east of the site and then provide a 550 metres link road to the roundabout adjacent to the rail station, which would need to bridge over the River Anker and pass through the Birmingham to Derby Line underbridge DBP1/68.
- 7.21 Like the Amington Link Road, this option would require third party land from the Stationfields Park Homes site to complete the link to the Offa Drive/Saxondrive roundabout immediately adjacent to Tamworth Railway Station. In addition, to requiring the approval of Network Rail and SCC to the principle of an adopted highway passing through the substandard Network Rail underbridge DBP1/68, approval would also be required with these parties and the Environment Agency to pass under the West Coast Mainline.
- 7.22 As part of this study, a traffic signal shuttle arrangement was proposed under the West Coast Mainline at Network Rail underbridge UB78, which is shown in the photograph in **Figure 16** below.



**Figure 16: Underbridge UB78 beneath the West Coast Mainline**

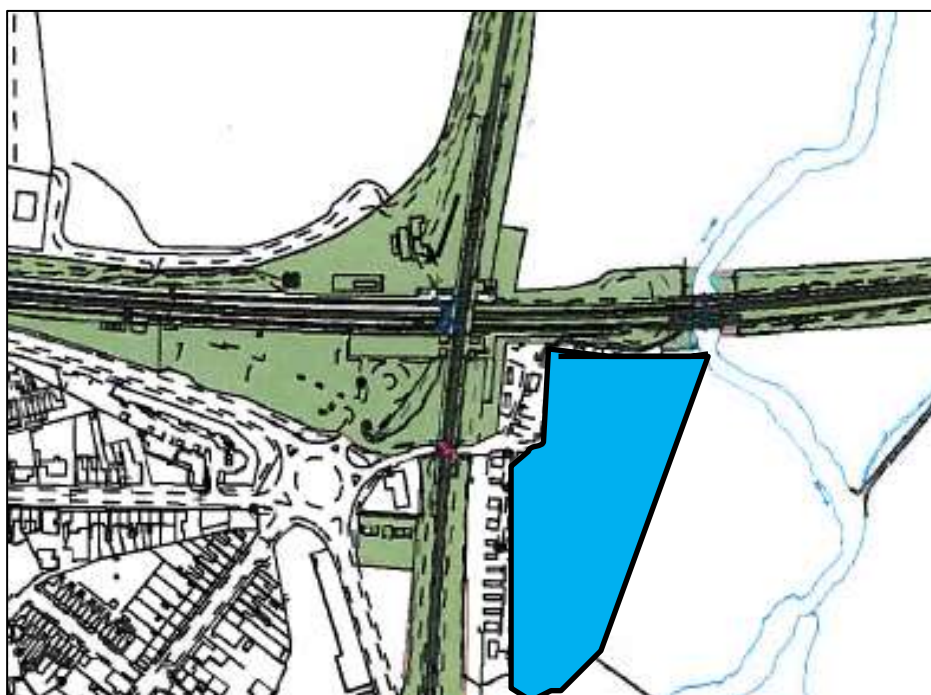
- 7.23 The arrangement was shown to operate satisfactorily with predicted traffic levels. However, despite having the greatest clearance of the West Coast Mainline underbridges, UB78 is still only 3.6 metres in height. Whilst this would be adequate clearance to accommodate a standard public bus, it is below the standard clearance of 5.3 metres for an adopted highway under a railway line.
- 7.24 It was proposed to provide freestanding anti-collision height restrictors in advance of the underbridge to prevent higher vehicles from using the route. However, SCC confirmed that it was not acceptable. Network Rail also rejected the principle of implementing a new underbridge, or introducing vehicles to a currently untrafficked underbridge stating that;

*'the change would introduce unacceptable risk to the operation of the railway especially on such a major route. If a crossing is required over the railway then the solution would be constructing a new over bridge crossing'.*

For these reasons, it is considered that Scheme D is likely to be **technically feasible**, but **undeliverable** due to the stance that Network Rail and SCC have taken regarding increased risk to the structure. Therefore, it and has not been taken forward to the transport package appraisal.

### **Scheme E Station footbridge**

- 7.25 Scheme E involves the potential construction of a new footbridge alongside/ parallel to platform 4 at Tamworth Railway Station. The bridge would cross the West Coast Mainline and could provide a more direct route to the town centre via the Birmingham to Derby underbridge immediately adjacent to the station.
- 7.26 **Figure 17** shows an extract from a land ownership plan provided by Network Rail. It demonstrates that the land to the south of the West Coast Mainline and to the east of Tamworth Railway station is in the ownership of Network Rail (Green). The land currently contains an electricity sub-station, which Network Rail is highly unlikely to permit pedestrians to be in proximity of. Immediately east of this land lies the Stationfields Home Park site (Blue).



**Figure 17: Extract from Network Rail ownership**

- 7.27 Given the topography of the site and the need to provide approximately 6 metres clearance between the rail track and the soffit of any overbridge, ramps of almost 200 metres will be required to provide suitable access for all. There is the potential for this to be provided to the north of the site. However, there is not the space available to accommodate such a ramp on the southern side of the West Coast Mainline in the vicinity of Tamworth Railway Station. Consequently, a station footbridge would be neither **technically feasible** nor **deliverable** and has not been taken forward to the transport packages.
- 7.28 There is the potential to cross the West Coast Mainline to the east of the Stationfields Home Park site. The ownership of this land is not known and would need to be established. However, it is considered that even if the land ownership issues are resolved, the additional distance that pedestrians would need to walk would result in them favouring an improved POR. Consequently, it has also not been taken forward to the transport package appraisal.

#### **Scheme F- Direct pedestrian/cycle access to Tamworth Railway Station**

- 7.29 Scheme F involves providing direct pedestrian / cycle access to Tamworth Station via platform 4. This would give access directly from the Anker Valley site to the train station. A lift is currently in use on platform 4 and could also be modified to allow lift access directly from the Anker Valley site.
- 7.30 Platform 4 of Tamworth railway station provides direct connections into Birmingham and is adjacent to the site albeit it is approximately 4 metres above current site levels. It would be **technically feasible** to construct an earthwork bund at a gradient of 1:20 to provide access to the platform complete with CCTV, ticket machine, cycle parking and a barrier. Whilst this would require agreement with Network Rail and the station operators London Midland, the scheme is likely to be **deliverable**. Consequently, the scheme has been taken forward to the transport package appraisal.
- 7.31 It is estimated that the access works could cost in the region of £150,000, with a 3 metres wide footway/cycleway link to the assumed SUE boundary.

#### **Scheme G - Vehicular access via South Staffordshire site**

- 7.32 Scheme G involves providing access to the site from Upper Gungate via a vacated South Staffordshire College site. The route would need to be approximately 600 metres in length and cross the Birmingham to Derby railway line via either an overbridge or underbridge of at least 50 metres in length and therefore Network Rail approval will be required
- 7.33 The track is on embankment in this location and consequently either significant earthworks or an extended bridge structure will be required to achieve the required clearance for an overbridge. It is estimated this could be in the region of 12 metres above existing ground levels. An underbridge would be a more achievable engineering solution. However, this may prove unacceptable to Network Rail.
- 7.34 **Figure 18** shows a lease plan provided by SCC for the Landau Forte Academy site (hatched), with Network Rail ownership overlaid. SCC has advised that Landau Forte has a 125 year lease on the property and therefore use of the land is restricted. It is considered unlikely that Landau Forte Academy would look favourably upon a road crossing its sports fields. However, should this be overcome by potentially swapping this with an element of South Staffordshire

College land, or provision of sports field within the Anker Valley SUE, there would appear to be no other land ownership issues.



**Figure 18: Extract from SCC lease plan for Landau Forte Academy**

- 7.35 It is anticipated that a traffic signal arrangement could potentially be incorporated into the existing Salters Lane/Upper Gungate/Offa Drive junction, which could provide the opportunity for the problematic Croft Street junction to be closed to traffic, with the residential properties potentially served via the new road. The route would also provide the potential for direct pedestrian/cycle and public transport links into the town centre.
- 7.36 Whilst a route through the South Staffordshire site would result in a proportion of SUE traffic avoiding the Fountains junction, it would still route via the Upper Gungate corridor and the introduction of a new arm to the existing Salters Lane/Upper Gungate/Offa Drive junction will undoubtedly have implications on the operation of that junction. These implications could be minimised by the provision of a right in/ left out arrangement. However, the removal of South Staffordshire College could reduce demand on Upper Gungate by between 250 and 350 movements during peak periods. Providing this was replaced with a lower generating use, the change of land use would itself provide a benefit to the operation of the Upper Gungate corridor.
- 7.37 It is considered that Scheme G is likely to be **technically feasible**. However, it would be reliant on Network Rail approval, South Staffordshire College relocating, Landau Forte agreeing to a potential land swap. Consequently, it is likely to be **undeliverable**. Consequently, the scheme has not been taken forward to the transport package appraisal.

## **Scheme H – Vehicular access via Ashby Road**

- 7.38 Scheme H involves the implementation of a traffic signal controlled junction onto Ashby Road access. This would be used to encourage modal shift to public transport, walking and cycling and to also encourage car users to travel outside of peak hours. The traffic signals could be used to throttle vehicles approaching the Fountains junction from the north. However, given the distance between the two junctions, the effectiveness is likely to be moderate.
- 7.39 **Figure 19** below shows the proposed junction layout, with the orange section of road being the extent of acceptable locations based on forward visibility criteria. BWB has undertaken junction capacity assessment using the LINSIG modelling package for this arrangement based on the maximum 2,400 units both with and without a connection across the West Coast Mainline. The crossroads junction was found to operate within capacity in all scenarios. Therefore, it is considered that a traffic signal arrangement would be **technically feasible** and **deliverable** on the Ashby Road. Consequently, the scheme has been taken forward to the transport package appraisal.

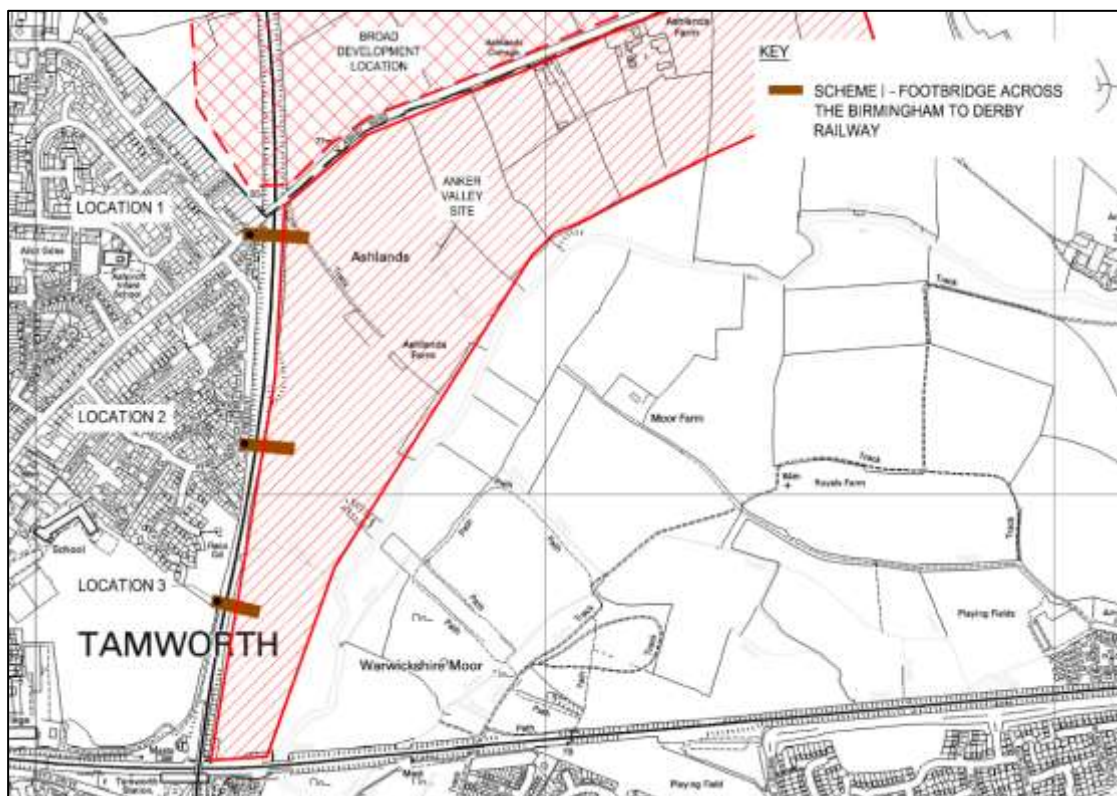


**Figure 19: Proposed Ashby Road/SUE traffic signal controlled junction**

- 7.40 It is estimated that the Ashby Road/SUE traffic signal controlled junction would cost in the region of £1M to deliver. This includes an allowance for diverting an existing 11kV cable on the southern side of Ashby Road & telecommunications infrastructure to the north. However, this cost could be significantly reduced to around £500,000 should the SUE fall solely within the Anker Valley site.

## **Scheme I - Footbridge across the Birmingham to Derby Railway Line**

- 7.41 Network Rail has previously approved a pedestrian overbridge across the Birmingham to Derby Railway Lane in the vicinity of the Ashby Road overbridge. However, in order to reduce the length of pedestrian routes to the town centre, bridge locations further south were examined. This resulted in 3 potential locations being identified, as shown on **Figure 20** below.



**Figure 20: Possible Birmingham to Derby Line footbridge locations**

- 7.42 **Location 1:** This was the bridge location to the south of Ashby Road previously consented by Network Rail. The railway is in cutting in this location and pedestrians/cyclists would cross a 40 metres bridge at grade. There are no apparent land ownership issues and the bridge would provide a link from the site to Arriva Bus Service 2, which routes via Perrycrofts Crescent. The distance from the western side of the bridge to the town centre would be approximately 1.9km via Ashby Road and the route to Rawlett High School would be direct. A footbridge in this location is likely to be both **technically feasible** and **deliverable**
- 7.43 **Location 2:** This bridge location is 400 metres south of Location 1. The railway is still in cutting in this location and pedestrians/cyclists would cross a 40 metres bridge at grade. There are no apparent land ownership issues and the bridge would provide a link between the site and Arriva Bus Service 2, which routes via Perrycrofts Crescent. However, a number of trees will need to be removed. The distance from the western side of the bridge to the town centre would be approximately 60 metres less than from Location 1. However, depending on the final masterplan, it could better reflect desire lines between the SUE and town centre, albeit the route to Rawlett High School would be longer than Location 1. A footbridge in this location is likely to be both **technically feasible** and **deliverable**
- 7.44 **Location 3:** This bridge location would seek to utilise public open space to the rear of Henley Close. The railway is on an embankment approximately 3 to 4 metres above adjacent ground level in this location and pedestrians/cyclists would cross a 40 metres bridge with 60 to 80 metre ramps either side. The route would not provide an attractive link to Arriva Bus Service 2. However, depending on the final masterplan, it could prove to better reflect desire lines between the SUE and the town centre via Landau Forte Academy, albeit the route to Rawlett High School would be longer than other locations. A footbridge in this location is likely to be both **technically feasible** and **deliverable**, but unlikely to be preferable to

locations 1 and 2 due to the need for a bridge. Consequently, a bridge in either location 1 and 2 was taken forward to the transport package appraisal.

- 7.45 The bridges could be either constructed from steel, or reinforced in-situ concrete. For the purposes of this assessment, steel fabricated structures have been assumed. This results in an estimated cost of £500,000.

#### **Scheme J – Station car park and public transport connection**

- 7.46 Scheme F involves the provision of direct pedestrian/cycle access to Tamworth Railway Station from within the SUE. The commercial case for a new station access is likely to be substantially improved should car parking and a bus connection also be provided. It is considered that the car parking would be attractive to those currently routing to the railway station via Ashby Road and would also be attractive to those from eastern Tamworth should a vehicular connection across the West Coast Mainline be provided. The bus connection is also likely to be reliant on a vehicular connection being provided across the West Coast Mainline.
- 7.47 The number of parking spaces to be provided will need to be carefully considered in consultation with London Midland. However, the provision of a notional 100 spaces and bus drop-off area is estimated to cost in the region of £500,000 and is considered to be both **technically feasible** and **deliverable**. Consequently, this scheme was taken forward to the transport package appraisal.

#### **Scheme K – Pedestrian/cycle link to Amington**

- 7.48 Scheme K would involve an illuminated pedestrian/cycle route to Amington to connect the SUE with the pedestrian routes through the Warwickshire Moor and eastern areas of Tamworth, whilst also potentially providing improved links between areas of Amington and the Tamworth railway station.
- 7.49 A pedestrian/cycle connection between the assumed SUE boundary, Brindley Drive and Moor Lane of approximately could be provided to the north of the West Coast Mainline. A bridge of approximately 30 metres span would be required to cross the River Anker and the route would be required to cross the West Coast Mainline at either Network Rail underbridge BR77 or UB78.
- 7.50 Network Rail has indicated that pedestrian/cycle usage of the underbridges would be acceptable and there are no apparent land issues. Consequently, it is considered that this pedestrian/cycle link would be **technically feasible** and **deliverable**. Consequently, this scheme was taken forward to the transport package appraisal.
- 7.51 It is estimated that providing a footway/cycleway from the assumed SUE boundary to Brindley Way, with a connection to Moor Lane would cost in the region of £600,000. This would be reduced to approximately £550,000 should the pedestrian route be provided through the Stationfields Homes Park site (Scheme C). Should the Anker Valley Link Road (Scheme B) be implemented, this cost would potentially reduce to £100,000.
- 7.52 An alternative route would be for pedestrians/cyclists to pass under the West Coast Mainline at the existing location of the PROW, cross the River Anker to the south of the West Coast Mainline and provide a 500 metres pedestrian/cycle route along the southern boundary of the embankment. This option would provide improved links between Amington and the town centre. However, it would cross

third party land. Consequently, it has not been taken forward to the transport package appraisal.

### Scheme L – Funding Education Travel Plans

- 7.53 As proposed by PBA in the Arkall Farm Initial Access and Infrastructure Review, Developers could provide a financial contribution towards enhancing the Landau Forte Academy Travel Plans. The benefit of this could be increased, if this were also to extend to the South Staffordshire College.
- 7.54 There are currently 3,200 full-time students in total on the Landau Forte Academy and South Staffordshire College sites. Based on costs of £30 to £50 per student contained in 'The Effects of Smarter Choices Programmes in the Sustainable Travel Towns: Summary Report (2010)', a contribution of £150,000 could achieve a traffic reduction of between 9% and 17%. This Scheme is considered to be **technically feasible** and **deliverable**. Consequently, this scheme has been taken forward to the transport package appraisal.

### Scheme Summary

- 7.55 A summary of the above assessment is shown in **Table 6**, with the seven schemes shaded green being taken forward to the transport package appraisal:

	Scheme	Technically feasible	Deliverable	Cost
A	Amington Link road and Anker Valley Link Road	N	N	N/A
B	Anker Valley Link Road	Y	Y	£10M to £16M
C	Improve existing footpath through Stationfields Park Homes	Y	Y	£100k
D	Moor Lane link using existing tunnels	N	N	N/A
E	Station footbridge	N	N	N/A
F	Direct pedestrian/cycle access to Tamworth Railway Station	Y	Y	£150k
G	Vehicular access via South Staffordshire College site	Y	N	N/A
H	Vehicular access via Ashby Road	Y	Y	£500k to £1M
I	Footbridge across the Birmingham to Derby Railway	Y	Y	£500k
J	Station car park and public transport connection	Y	Y	£500k
K	Pedestrian/cycle link to Amington	Y	Y	£600k
L	Funding Education Travel Plans	Y	Y	£150k

**Table 6: Scheme option assessment summary**



7.56 The eight schemes being taken forward to the transport package appraisal would address the key transport drivers as shown in **Table 7**:

Scheme		Connection across WCML	Maximise rail travel	Reduce single occupancy car trips	Improve Upper Gungate operation
B	Anker Valley Link Road	X	X		
C	Improve existing footpath through Stationfields Park Homes		X	X	
F	Direct pedestrian/cycle access to Tamworth Railway Station		X	X	
H	Vehicular access via Ashby Road				X
I	Footbridge across the Birmingham to Derby Railway			X	
J	Station car park and public transport connection		X	X	X
K	Pedestrian/cycle link to Amington		X	X	
L	Funding Education Travel Plans			X	X

**Table 7: Key Transport drivers addressed by scheme options**

## 8.0 TRANSPORT PACKAGE APPRAISAL

8.1 This section appraises the four identified transport packages for the Anker Valley SUE. Each package has a contrasting emphasis on transport delivery, but assumes access is provided via Ashby Road that the Upper Gungate improvements have been implemented. The four packages and the relevant scheme options are as follows:

- **Transport Package 1** - A 'do nothing' approach including no other scheme options.
- **Transport Package 2** - A package with a highways emphasis that makes use of only **Scheme B** the Anker Valley Link Road.
- **Transport Package 3** - A package with a demand management emphasis that makes use of **Schemes C, F, I, J, K** and **L** but does not include the Anker Valley Link Road.
- **Transport Package 4** - A package which comprises both highways and demand management and includes include **Schemes B, C, F, I, J, K** and **L**.

### Transport Package Costs

8.2 **Table 8** shows the cost of implementing each transport package by combining the relevant scheme costs determined in the previous section of this report. Each package cost was assumed to include a public transport contribution of £500,000 and a contribution of £600,000 towards the Upper Gungate improvements works.

Package	TP1	TP2	TP3	TP4
	Do Nothing	Highway Engineering based	Demand Management	Highway & Demand Management
<b>Approximate dwellings</b>	500	950	700	1,350
<b>Upper Gungate</b>	£600k	£600k	£600k	£600k
<b>PT contribution</b>	£500k	£500k	£500k	£500k
<b>HA contribution</b>	£280k	£535k	£400k	£760k
<b>Scheme B</b>		£10M to £16M		£10M to £16M
<b>Scheme C</b>			£100k	£100k
<b>Scheme F</b>			£150k	£150k
<b>Scheme H</b>	£600k	£500k	£600k	£500k
<b>Scheme I</b>			£500k	£500k
<b>Scheme J</b>			£500k	£500k
<b>Scheme K</b>			£550k	£100k
<b>Scheme L</b>			£150k	£150k
<b>Total</b>	£2M	£12M to £18M	£4M	£14M to £20M
<b>Cost per dwelling</b>	£4,000	£12,800 to £19,100	£5,800	£10,300 to £14,700

**Table 8: Estimated Transport Package Cost**

8.3 Each package was assumed to also include a contribution towards improvements on the A5 based on the £2.32M improvements to the A5/Mile Oak and A5/Stoneydelph junctions proposed within the Strategy for the A5 (2011 to 2026). These improvements were required on the basis of 2,900 dwellings in Tamworth. However, Tamworth Borough Council has subsequently received confirmation from

the Highways Agency that these works would adequately accommodate the remaining requirement of 4,254 dwellings not already consented, or built. This includes an assumption of 500 dwellings in Lichfield District. Therefore, the contribution was based on a figure of £545 per dwelling.

- 8.4 Given the scale of the approximate SUE established in Section 6, it is considered that all development would be accommodated in the area to the south of Ashby Road. Consequently, the cost of the Ashby Road/site access junction was assumed to comprise the reduced traffic signal controlled T-junction at a cost of £500,000. However, in the case of transport packages 1 and 3 a secondary access onto Ashby Road was assumed at a cost of £100,000.
- 8.5 The total transport package costs were then divided by the maximum number of dwellings for each scenario to establish the average transport cost per dwelling. With average transport costs of £4,000 to £6,000 per dwelling, Transport Package 1 and 3 are likely to be **financially viable** in a proposed policy compliant scheme.
- 8.6 The average costs for Transport Package 2 and 4 would be between £10,000 and £19,000 per dwelling. Even using the lower budget figure of £10M for the Anker Valley Link Road would result in average transport costs in excess of £10,000 per dwelling, which is likely to be **financially unviable** in a proposed policy compliant scheme.

### Appraisal Matrix

- 8.7 **Table 9** below shows the appraisal matrix

Package	Viability (cost per dwelling)	Deliverability	Environment issues	Transport connectivity	
				Strategic	Local
TP1 Do Nothing	£4,000	No deliverability constraints	Environmental issues unlikely	No strategic transport connectivity benefit	No local transport connectivity benefit
TP2 Highway Engineering based	£12,800 to £19,100	AVRL land ownership issues likely to be resolvable. Network Rail, SCC and EA approvals for AVLR considered likely	Ecological, POS and noise issues associated with AVLR, but considered resolvable.	Alternative vehicular route to A5/M42, as well as opportunity for circular bus service	Little benefit for travel to town centre and local services by sustainable modes, but would connect to Amington
TP3 Demand Management	£5,800	No apparent land ownership issues. London Midland approval to station access considered likely.	Limited potential for ecological issues associated with pedestrian route to Amington.	Improved access to rail station for pedestrian & cyclists, limited benefit for cars & no benefit for buses	Significant benefit for travel to local centre and services by sustainable modes.
TP4 Highway and Demand Management	£10,300 to £14,700	AVLR land ownership issues likely to be resolvable. Network Rail, SCC and EA approvals considered likely.	Ecological, POS and noise issues considered resolvable for the AVLR.	Alternative route to A5/M42 and improved multi-modal access and parking capacity to rail station from the east. Also opportunity for circular bus service	Significant benefit for travel to local centre and services by sustainable modes.

**Table 9: Transport Package Appraisal**

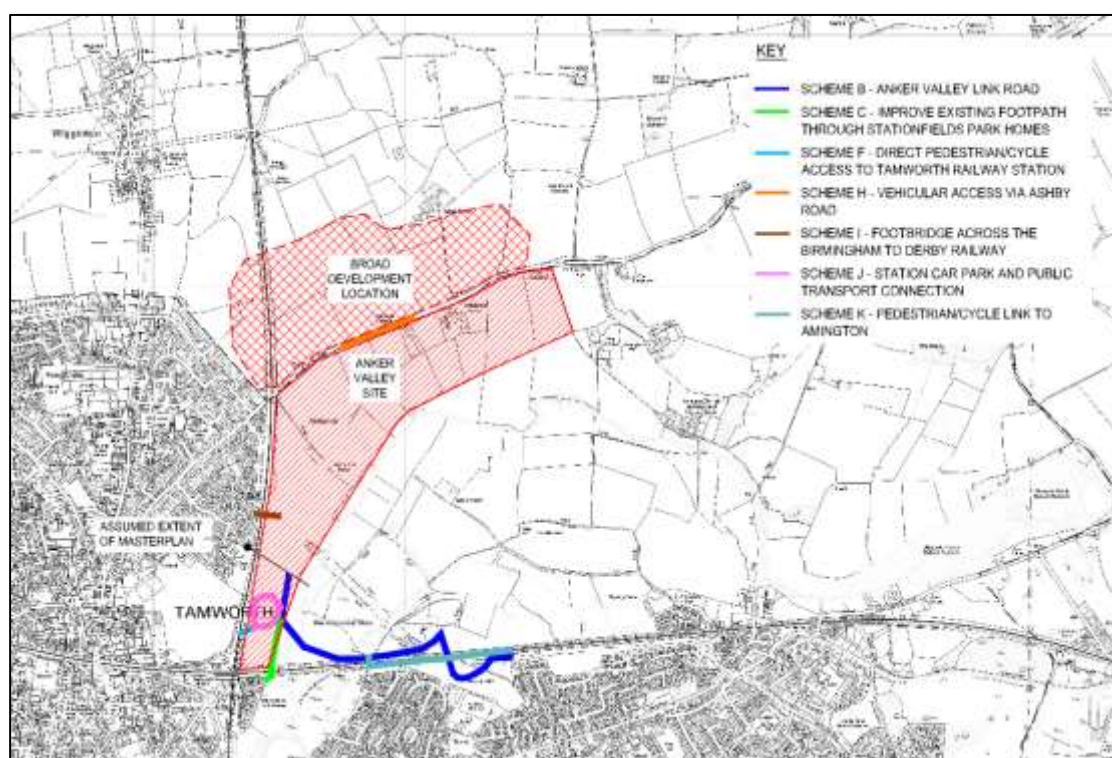
- 8.8 As agreed with the Study Steering Group, a matrix based on the following objectives was used to appraise the transport package:

- Financially viability (cost per dwelling)
- Deliverability (approvals needed/constraints to be overcome)
- Environmental issues (including highway impact)
- Strategic transport connectivity benefits
- Local transport connectivity benefits

8.9 Given the nature of this appraisal, each category was assessed based on its positive contribution and was graded as either high (green), medium (amber) or low (red). It should be noted that given this assessment criteria, both a **low** cost and a **high** transport connectivity would both be scored as a high (green) positive contribution. **Table 9** shows the appraisal matrix.

8.10 Based on this appraisal, it is concluded Transport Package 4 would provide the best strategic and local connectivity benefits. The schemes are shown in **Figure 20** below and would enable 1,350 dwellings to be developed on the site without detriment to the Upper Gungate corridor. However, based on high level cost estimates of £10,000 to £15,000 per dwelling, the transport package is unlikely to be viable without public investment.

8.11 However, it should be noted that this further work may result in a change in the housing capacity deemed acceptable in the Anker Valley SUE, which in turn may have implications for the viability of the transport solutions identified within this appraisal.



**Figure 20: Transport Package 4**

8.12 Transport Package 4 would address a key strategic issue identified in the Tamworth Integrated Transport Strategy 2012-2031 by improving public transport provision to the West Midlands by increasing accessibility to Tamworth Railway Station from eastern areas of the town and providing much needed car parking. Hence, an element of public investment could be justified.

8.13 Without public investment, the SUE could be developed for a maximum of 700 at an estimated cost of £6,000 per dwellings without detriment to Upper Gungate.

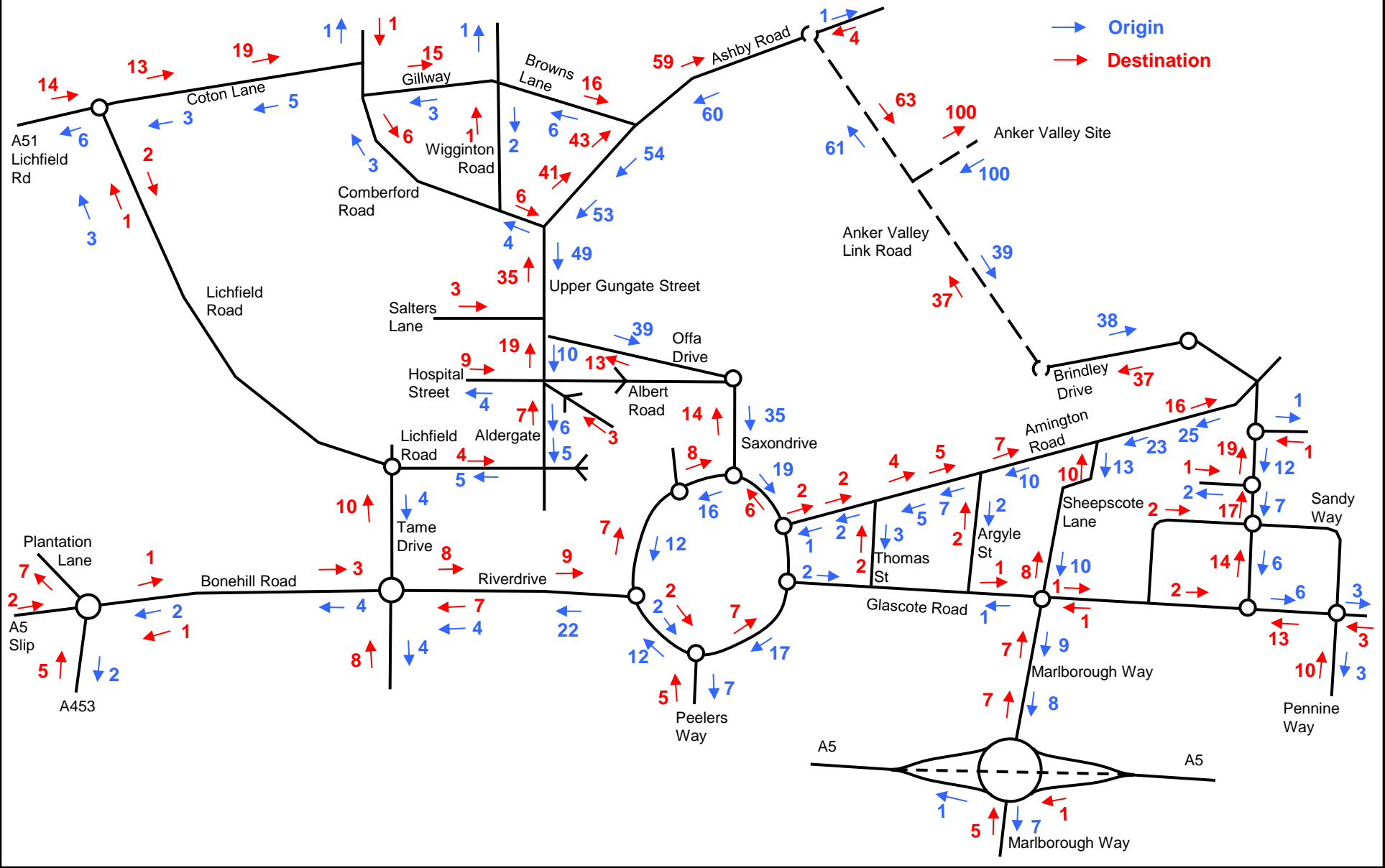
Whilst this would provide similar local connectivity improvements to the preferred package, it would result in fewer strategic benefits.

## 9.0 CONCLUSIONS & RECOMMENDATIONS

- 9.1 Based on this appraisal, it is concluded that the following highway and demand management transport package is likely to be deliverable and would provide the best overall transport strategy for the SUE by providing both strategic and local connectivity improvements:
- Contribution towards the Upper Gungate improvements
  - Improved frequency bus service to the site
  - Contribution towards A5/Mile Oak and A5/Stoneydelph junction improvements
  - Anker Valley link Road
  - Improve existing footpath through Stationfields Park Homes
  - Direct pedestrian/cycle access to Tamworth Railway Station
  - Vehicular access via Ashby Road
  - Footbridge across the Birmingham to Derby Railway
  - Station car park and public transport connection
  - Pedestrian/cycle link to Amington
  - Funding Education Travel Plans
- 9.2 This would enable approximately 1,350 dwellings to be developed on the Anker Valley SUE without detriment to the Upper Gungate corridor. However, based on high level cost estimates of £10,000 to £15,000 per dwelling, the transport package is unlikely to be viable without public investment.
- 9.3 This investment could be justified on the basis that the transport package would address a key strategic transport issue by improving public transport provision to the West Midlands through increasing accessibility to Tamworth Railway Station and providing much needed car parking
- 9.4 Without public investment, the SUE could be developed for approximately 700 dwellings without detriment to Upper Gungate. Whilst this would provide similar local connectivity improvements to the preferred package, it would result in fewer strategic transport benefits.
- 9.5 It is recognised that this is a high level appraisal and the following further work will be required to support the recommendations and initial conclusions contained within this report;
- Registration plate traffic survey to establish the level of traffic routing between Ashby Road and Tamworth Railway Station during peak periods to confirm the likely demand for a new parking facility within the SUE.
  - Peak hour traffic surveys in consultation with SCC at a similarly located residential area of Tamworth to establish local trip rates that reflect trip internalisation and current accessibility levels.
  - SUE traffic distribution should be reviewed against journey to work data for Tamworth from the 2011 Census data when available.
  - The implications of banning the right turn from Ashby Road to Comberford Lane on the operation of Upper Gungate and traffic flows on Browns Lane.
  - Liaison with both Network Rail and London Midland regarding the provision of an eastern access to Tamworth Railway Station
  - Production of an horizontal and vertical alignment of the Anker Valley Link Road in consultation with SCC, Network Rail, Environment Agency & Natural England to provide a better understanding of deliverability and cost.
  - Review and monitor the effectiveness of the current Tamworth Hub Travel Plans
  - Further detailed investigations into the viability of the scheme options by the development industry, which should include establishing the number of units at which the highway impact of the SUE will transition from acceptable to severe.

- 9.6 It should be noted that this further work may result in a change in the housing capacity deemed acceptable in the Anker Valley SUE, which in turn may have implications for the viability of the transport solutions identified within this appraisal.

# PM Peak Hour % Distribution for 800 Dwellings at Anker Valley (extracted from Tamworth Traffic Model)





## Calculation of maximum SUE dwelling numbers

Land Use	AM			PM		
	In	Out	Total	In	Out	Total
SCC trip rate	0.133	0.444	0.577	0.420	0.213	0.633

Upper Gungate Improvements	AM			PM		
	In	Out	Total	In	Out	Total
Capacity created	<b>54</b>	<b>191</b>	<b>245</b>	<b>181</b>	<b>86</b>	<b>267</b>

Note 1: Taken from the JCT Upper Gungate Study

Distribution	Equivalent dwellings					
85%	476	506	499	506	476	496
45%	900	956	943	956	900	937
35%	1157	1229	1212	1229	1157	1205

Education Travel Plan	AM			PM		
	In	Out	Total	In	Out	Total
Capacity created	<b>40</b>	<b>30</b>	<b>70</b>	<b>20</b>	<b>20</b>	<b>40</b>

Note 2: Assumed to be 10% of existing Education trips from the Upper Gungate Study

Distribution	Equivalent dwellings					
85%	354	79	143	56	110	74
45%	668	150	270	106	209	140
35%	859	193	347	136	268	181

Station Park	Car	AM			PM		
		In	Out	Total	In	Out	Total
Capacity created		<b>0</b>	<b>29</b>	<b>29</b>	<b>0</b>	<b>29</b>	<b>29</b>

Note 3: Assumed to be 10% of the existing 290 car parking spaces

Distribution	Equivalent dwellings					
85%	0	77	59	0	160	54
45%	0	145	112	0	303	102
35%	0	187	144	0	389	131



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