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East Staffordshire Borough Council

Infrastructure Delivery Study

Part 1 Growth options assessment

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1 INTRODUCTION

1.1 This Part 1 infrastructure assessment undertaken by Roger Tym & Partners (part of Peter Brett Associates LLP) on behalf of East Staffordshire Borough Council provide a high level infrastructure assessment, to inform decisions relating to the East Staffordshire Preferred Options (PO) assessment.

1.2 The aim of the study is to consider potential infrastructure capacity, deficit issues and any 'showstoppers' or phasing constraints to guide decisions relating to the growth options being considered. The following infrastructure categories were assessed:

- transport,
- education,
- utilities (electricity, gas, waste water, portable water and flood)

1.3 The assessment focused on Burton on Trent and Uttoxeter, the smaller rural settlements were not assessed.

This study considered four growth options

1.4 The four growth options provided by the client team are summarised in table 1.1[1]. These growth options were accompanied with maps depicting broad directions of growth.

[1] Maps to accompany these options were also provided by ESBC

Table 1.1 Four Preferred Options Assessed

Other Settlements	Burton on Trent	Uttoxeter	Total (Burton and Uttoxeter)
2a based on concentrating growth to north west and south of Burton and some growth to north west of Uttoxeter and strategic villages			
575 dwellings	West of B = 1000 dwellings South of B = 650 dwellings Brownfield within B = 750 **Total = 2,400 dwellings** 18ha greenfield and 20ha brownfield employment	West of U = 500 dwellings Brownfield within U = 100 **Total = 600 dwellings** 10ha greenfield and 1 ha brownfield employment	2150 greenfield dwellings 850 brownfield dwellings **Total = 3000 dwellings** 28 ha greenfield employment 21 ha brownfield employment **Total 49 ha employment**
2b concentrating most growth to north and north west (Outwoods and Stretton) of Burton and some growth to south of Uttoxeter and strategic villages			
500 dwellings	North & N west of B = 2050 dwellings Brownfield within B = 500 **Total = 2550 dwellings** 20ha brownfield employment	South of U = 450 dwellings Brownfield within U = 100 **Total = 550 dwellings** 10ha greenfield and 1 ha brownfield employment	2500 greenfield dwellings 600 brownfield dwellings **Total = 3100 dwellings** 10 ha greenfield employment 21 ha brownfield employment **Total 31 ha employment**
2c concentrating most growth to south west and north west of Burton with some growth to west of Uttoxeter and strategic villages			
500 dwellings	North west of B = 1050 dwellings South west of B = 2000 dwellings Brownfield within B = 500 **Total = 3,550 dwellings** 20ha greenfield and 20ha brownfield employment	West of U = 400 dwellings Brownfield within U = 100 **Total = 500 dwellings** 10ha greenfield and 1 ha brownfield employment	3450 greenfield dwellings 600 brownfield dwellings **Total = 4050 dwellings** 30 ha greenfield employment 21 ha brownfield employment **Total 51 ha employment**
2d concentrating most growth to south west of Burton with some growth to north west of Uttoxeter and strategic villages			
860 dwellings	South west crescent = 2750 dwellings North west = 300 Brownfield within B = 850 **Total = 3900 dwellings** 20ha greenfield and 20ha brownfield employment	North west of U = 700 dwellings South west of U = 100 dwellings Brownfield within U = 250 dwellings Total = 1050 dwellings 10ha greenfield and 1 ha brownfield employment	3850 greenfield dwellings 1050 1100 brownfield dwellings **Total = 4950 dwellings** 30 ha greenfield employment 21 ha brownfield employment **Total 51 ha employment**

Study approach

1.5 This assessment has been based primarily on a desk review of the following evidence:

- Utilities information has been based on the Asset Management Plans (AMPs) for the utility service providers, the Water Study, the Flood Risk Assessment.
- Transport (highway) modelling that was previously undertaken based on two growth options (13,000 to 18,000 dwellings), the Staffordshire County Council (SCC) Integrated Strategy, and various planning applications currently being considered.
- Education service provider meeting with Tracey Botherton and Stuart Lane of SCC Education Department and published data on SCC website.
- Findings in the Strategic Housing Land Availability Assessment, recent planning applications and issues and options consultation comments relating to possible infrastructure inputs.

1.6 A large number of documents were reviewed, and inevitably, some are more up-to-date than others, and the level of detail varies, and direct comparison with the options being assessed has not been possible.

The key study questions

1.7 For each infrastructure item we asked the following questions:

- Is there any surplus capacity to accommodate growth in the direction proposed for each option?
- Are there any showstoppers, phasing issues or other barriers to inform the growth options assessment?
- What infrastructure might be needed to accommodate the growth?

Pros and cons of urban extensions Vs urban dispersal

1.8 We also considered the pros and cons of urban concentration (lots of small sites) within brownfield land in Burton on Trent versus providing growth at a few standalone greenfield urban extensions. The purpose of this is to provide an analysis of the implications for different infrastructure types of urban concentration versus more dispersed Greenfield approaches.

1.9 Where appropriate this information has been summarised in a table for the relevant infrastructure item as shown in table 1.1.

Table 1.1 Pro and cons matrix for urban concentration Vs greenfield development

	Pros	Cons
Urban dispersal within built up area		
Urban extension (s) on greenfield sites		

RAG Traffic light assessment

1.10 Where possible, it was important to provide a summary view of the infrastructure capacity issues for each option. To do this, we present our findings for each infrastructure item assessed using the RTP 'Red-Amber-Green ('RAG')' tables. These provide a quick visual snapshot of possible showstoppers or phasing issues for each of the options considered.

1.11 The interpretation of traffic lights is as follows:

- A red bar indicates there are infrastructure capacity limits to the growth identified and there are no deliverable solutions.
- An amber bar indicates there are capacity limits, however, these can be overcome by planning for additional infrastructure or improvements elsewhere.
- A green bar indicates there are no capacity limits to growth.

1.12 It must be emphasised that at this stage, we do not have sufficient information to make informed decisions in terms of deliverability or cost effectiveness of the various options in any detail.

2 TRANSPORT

Context

2.1 This section provides a high level review of the key transport infrastructure in Burton and Uttoxeter, set out as follows:

- An overview of existing transport infrastructure.
- Existing capacity of transport infrastructure.
- Review of the scope of capacity to meet growth.
- Conclude with some headline comments on the impact of transport infrastructure for the four growth options.

Caveats to our assessment

2.2 This transport review has been based on:

- A review of third party research and so it is important to note that the conclusions reviewed are not those arrived at by PBA.
- Transport modelling work undertaken by Atkins for different housing growth options around Burton that are not identical to those being assessed as part of the Preferred Options assessment.
- For Uttoxeter, due to a lack of research documents, our comments are based solely on our knowledge of the area without the benefit of any other assessments.
- Further modelling and air quality assessment work is likely to be required to inform the requirements for taking the preferred option forward.

The documents reviewed to inform this assessment

2.3 The following documents were reviewed for the transport review:

- Draft East Staffordshire Borough Integrated Transport Strategy 2011-2026 November 2011.
- Upper Outwoods (Beamhill) Environmental Statement Volume 4: Transport Assessment for a mixed use development to the west of Burton.
- Lawns Farm planning application development plan for a mixed use development north-west of Branston Interchange.
- Land South of Branston planning application Transport Assessment for a mixed use development south of Branston.
- Drakelow Park planning application summary Transport Assessment for a mixed use development to the east of Branston.

2.4 The transport modelling reports prepared by Atkins which consider growth options for Burton have also been reviewed, and include:

- Growth Options Study Model Forecasting report July 2008.
- Growth Options Study Land Use Options report August 2008.
- Growth Options Study Draft Initial Option Assessment report December 2008.

- Growth Options Study Strategic Development & Appraisal report February 2009.
- Growth Options Study Transport Strategy report May 2009.

2.5 The Atkins growth options modelling tested four different housing growth options around Burton – these are summarised in Appendix 1. It is important to note that the growth options assessed by the Atkins study are quite different to those now being assessed as part of the Preferred Options assessment; however, they provide a useful starting point for this assessment. It is likely that further modelling may be required to inform the future stages of Local Plan preparation.

Current and future transport capacity and impact for Burton

2.6 The main highway corridor is the A38 (T) which runs to the west of Burton and is managed by the Highway Agency. Access to the A38 (T) from Burton is primarily provided by the Clay Mills junction to the north of the town and the Branston junction to the south, the Barton Turns junction south of Branston also provides an alternative route into Burton.

Local highway information has been summarised to identify current and future capacity issues

2.7 The local highway network is managed by SCC and is divided into a number of key corridors/areas. Appendix 2 includes maps of Burton and Uttoxeter and also provides a summary table describing the existing highway network and existing and future capacity issues.

2.8 Our starting point for this assessment was to consider if there is any surplus capacity to accommodate growth. The transport capacity modelling provides an important context for this assessment. We considered the overall network capacity from the Atkins modelling work for 2007 AM and PM peaks based on information contained in the Growth Options Study Initial Option Assessment report.

2.9 The table provided in Appendix 2 summarises the current and future capacity issues along the key corridors identified from the transport modelling already undertaken.

2.10 The overarching conclusion is that substantial areas of the highway network in Burton are already at, or approaching capacity during peak hour periods. The historic nature of most of Burton's built form means that there is limited opportunity to provide significant transport capacity improvements within the existing highway boundary.

Future highway capacity in Burton

2.11 The analysis provided within the Growth Options Study Model Forecasting Report (July 2008) indicates that significant proportions of the network will be at capacity by 2016 with all indicators showing an increase in congestion in Burton on the main links into and out of the town centre as a result of new developments in Burton by 2026. These issues are captured in the summary table in Appendix 2.

Transport growth options assessment for Burton

2.12 The following transport issues are relevant to all of the Preferred Options growth scenarios being considered:

- The Growth Options Study Model Forecasting Report identifies that Burton town centre congestion is currently a problem; particularly at the A5121/ A511 junction, A5121 northbound and southbound from the A511, A5121 / Wellington Street gyratory and A5121 Shobnall Road junction.
- The Growth Options Study Model Forecasting Report also identifies that there is forecast to be increased congestion as a result of new development at Bridge Street and St Peter's Bridges, the A511/ A444 junction, B5018 Branston Road southbound, and south of St Peter's Bridge by 2026.
- The Draft East Staffordshire Borough Integrated Transport Strategy 2011-2026 identifies[2] the need for a range of integrated transport infrastructure schemes including the A5189 St Peter's Bridge third lane and improved bus services linking the town centre with Beamhill, Lawns Farm, Drakelow and South of Branston developments.
- The Draft East Staffordshire Borough Integrated Transport Strategy 2011-2026 also identifies[3] that key capacity improvements will be required at the A5121/ A511 junction, St Peter's Bridge and A511 Horninglow Street widening to the west of Guild Street.
- Specific testing of the impact of 500 - 850 dwellings within the urban area would be needed to assess the impact on the Air Quality Management Areas (AQMAs). The impact will need to be managed by increasing sustainable travel, and managing town centre traffic by measures such as Urban Traffic Management Control.

Transport assessment for Burton Option 2a

2.13 The following provides a summary of the issues and requirements relevant to Option 2a. For this assessment we have assumed that this option would increase pressure on the A511 Horninglow Road, B5017 Shobnall Road and A38 (T) at both Branston and Clay Mills.

Area to the West of Burton (Beamhill)

- This may require new bus services.
- The impact on the A511 Horninglow Road, B5017 Shobnall Road, Beamhill Road and Hopley Road corridors is likely to require physical improvements along with sustainable travel measures to accommodate the proposed growth; especially to reduce the impact on the B5017 Shobnall Road.

2.14 Based on information contained in the Beamhill mixed use development Transport Assessment accompanying the Planning Application[4], localised capacity improvements would be required at:

[2] As part of the Burton Transport Strategy (Town Centre and A38 Corridor)
[3] As part of the Burton Transport Strategy (Town Centre and A38 Corridor)
[4] ref. P/2012/00133/MB/PO

- A511 Tutbury Road/ Harehedge Lane/ Beamhill Road junction.
- Harehedge Lane/ Bitham Lane/ Rolleston Road junction.
- A5121 Derby Road/ Horninglow Road/ Derby Street/ Horninglow Street junction.
- Hopley Road/ Postern Road/ Henhurst Hill junction.
- Anslow village traffic calming.
- There will be some impact on A511 Air Quality Management Area.

Area to the South of Burton (South Branston)

2.15 This option could potentially divert existing bus services which run south on the A38 (T).

- Based on information contained in the South Branston mixed use development Transport Assessment accompanying the Planning Application[5], localised capacity improvements are likely to be required at:
- Branston Main Street/ Hollyhock Way junction.
- Branston Main Street/ B5018 Burton Road junction.
- Wellington Road corridor between A38 Branston interchange and the Parkway/ Retail Park access roundabout.
- A38 (T) Branston Interchange.
- A38 (T) left-in/ left-out junction south of the A38 (T) Branston Interchange.
- A38 (T) Barton junction.

Summary assessment of Burton Option 2a

In summary, the main impact of Option 2a is likely to be on the A511, Beamhill Road/ Hopley Road, B5017 Shobnall Road corridors and the A38 Branston Interchange.

However it is considered for the level of development proposed these impacts could potentially be mitigated with appropriate measures.

Transport assessment for Burton Option 2b

2.16 The following provides a summary of the issues and requirements relevant to Option 2b. For this assessment we have assumed that this option would significantly increase pressure on the B5017 Shobnall Road, the A511 Horninglow Road, Beamhill/ Church Road corridor and the A38 (T) at Clay Mills.

Area to the North West of Burton (Beamhill and additional development south of Rolleston)

- This area of growth could potentially tie into and provide support for existing bus services serving the neighbouring communities.
- Puts significant pressure on the A511 Horninglow Road, Beamhill Road and B5017 Shobnall Road corridors where there are limits on the type of physical improvements that can be made due to land constraints over and above those identified in the Beamhill mixed use development Transport Assessment.

[5] ref P/2011/01243/JPM/PO

- This option would place pressure on the A38 (T) junction at Clay Mills which may trigger the need for substantial improvements to be put in place to overcome safety and capacity issues. The deliverability of these improvements could be more onerous and the costs higher than improvements at the A38 (T) Branston Interchange as indicated within the Growth Options Study Strategy Development and Appraisal Report (Trunk Road Improvement scheme estimates).
- This option may substantially increase traffic levels on the constrained Beamhill Road/ Church Street corridor. Improvements on links and at junctions may prove difficult to achieve without a requirement for land outside the highway boundary.
- Likely to have a significant impact on A511 Horninglow Road Air Quality Management Area.

Summary assessment of Burton Option 2b

In summary, this option would impact heavily on the B5017, A511 and Beamhill Road/ Church Road corridors and A38 (T) at Clay Mills, along with placing a significant pressure on the A511 Air Quality Management Area. There is limited opportunity to accommodate the necessary improvements due to physical constraints and this option may require significant improvement at the A38 Clay Mills, the costs of which may be prohibitive for the amount of growth proposed. The practicality of improvements to the network would need to be considered in further detail.

Transport assessment for Burton Option 2c

2.17 The following provides a summary of the issues and requirements relevant to Option 2c. For this assessment we have assumed that this option would increase pressure on the A511 Horninglow Road, B5017 Shobnall Road and the A38 (T) at both Branston and Clay Mills.

Area to the North West of Burton (Beamhill)

- This may require new bus services.
- The impact on the A511 Horninglow Road, B5017 Shobnall Road, Beamhill Road and Hopley Road corridors is likely to be an issue and may require physical improvements along with sustainable travel measures to accommodate the proposed growth; especially to reduce the impact on the B5017 Shobnall Road.

2.18 Based on information contained in the Beamhill mixed use development Transport Assessment accompanying the Planning Application[6], localised capacity improvements would be required at:

- A511 Tutbury Road/ Harehedge Lane/ Beamhill Road junction.
- Harehedge Lane/ Bitham Lane/ Rolleston Road junction.
- A5121 Derby Road/ Horninglow Road/ Derby Street/ Horninglow Street junction.
- Hopley Road/ Postern Road/ Henhurst Hill junction.

[6] ref. P/2012/00133/MB/PO

- Anslow village traffic calming.
- There will be some impact on A511 Air Quality Management Area.

Area to the South West of Burton (Lawns Farm)

- Is likely to require new bus services.
- The Lawns Farm development is set to provide a new road between A38 (T) Branston and Shobnall Road assuming that the road will be utilised solely by the Lawns Farm development traffic, and that through traffic would not be permitted in order to remove the chance of the road becoming a route between the A38 (T) and B5017 Shobnall Road.
- Development traffic is likely to increase pressure on the B5017 Shobnall Road and the quantum of development gaining access off this road may need to be limited to reduce its impact on what is a sensitive route that where there is limited potential for improvements due to physical constraints.
- Capacity improvements for the west of Burton could potentially be achieved by sustainable travel measures and improvements to local junctions, with specific focus on testing of options for the B5017 Shobnall Road.
- Traffic as a result of the Lawns Farm development will place increased pressure on the A38 (T) Branston junction, A5121/ Shobnall Road junction, and the B5017 Shobnall Road. This may require significant infrastructure improvements and further analysis would be required to test the capacity of the planned improvements at A38 (T) Branston and sustainable links to planned developments.
- The impact of additional traffic on the B5017 Shobnall Road will be substantial and will need careful management, and any new links between the A38 (T) at Branston and B5017 Shobnall Road should be reviewed to attempt to dissipate this impact.

Summary assessment of Burton Option 2c

The impact of Option 2c on both the A511 Horninglow Road and B5017 Shobnall Road corridors is an issue requiring more detailed analysis, as is the impact at the A38 Branston Interchange.

Although significant improvements and sustainable measures will need to be put in place to reduce the impact on the B5017 Shobnall road in particular, this option does offer the potential to disipate the transport impact over a wider area and could potentialy provide integrated transport solutions common to the two growth areas. The 'critical mass' potential of this option could bring added deliverability opportunities and spread the risk to delivery.

Transport assessment for Burton Option 2d

2.19 The following provides a summary of the issues and requirements relevant to Option 2d. For this assessment we have assumed that this option would increase pressure on the B5017 Shobnall Road, A38 (T) at Branston and A511 route into Burton.

Area to the North West of Burton (south of Rolleston)

- This could potentially tie into existing bus services serving the neighbouring communities.
- Development traffic will put pressure on the A511 Horninglow Road (and A511 Horninglow Road Air Quality Management Area, the A511/ A5121 junction in particular), Beamhill Road and the B5017 Shobnall Road corridors. However given the scale of development proposed, it is considered that the impact may be able to be accommodated with minor improvements, but further analysis will be required to demonstrate this.

Area to the South West of Burton (Lawns Farm)

- Is likely to require new bus services.
- The Lawns Farm development is set to provide a new road between A38 (T) Branston and Shobnall Road assuming that the road will be utilised solely by the Lawns Farm development traffic, and that through traffic would not be permitted in order to remove the chance of the road becoming a route between the A38 (T) and B5017 Shobnall Road.
- Development traffic is likely to increase pressure on the B5017 Shobnall Road and the quantum of development gaining access off this road may need to be limited to reduce its impact on what is a sensitive route that where there is limited potential for improvements due to physical constraints.
- Capacity improvements for the west of Burton could potentially be achieved by sustainable travel measures and improvements to local junctions, with specific focus on testing of options for the B5017 Shobnall Road.
- Traffic as a result of the Lawns Farm development will place increased pressure on the A38 (T) Branston junction, A5121/ Shobnall Road junction, and the B5017 Shobnall Road. This may require significant infrastructure improvements and further analysis would be required to test the capacity of the planned improvements at A38 (T) Branston and sustainable links to planned developments.
- The impact of additional traffic on the B5017 Shobnall Road will be substantial and will need careful management, and any new links between the A38 (T) at Branston and B5017 Shobnall Road should be reviewed to attempt to dissipate this impact.

Area to the South of Burton (South Branston)

- This option could potentially divert existing bus services which run south on the A38 (T).
- Based on information contained in the South Branston mixed use development Transport Assessment accompanying the Planning Application[7], localised capacity improvements are likely to be required at:
- Branston Main Street/ Hollyhock Way junction
- Branston Main Street/ B5018 Burton Road junction

[7] ref P/2011/01243/JPM/PO

- Wellington Road corridor between A38 Branston interchange and the Parkway/ Retail Park access roundabout.
- A38 (T) Branston Interchange
- A38 (T) left-in/ left-out junction south of the A38 (T) Branston Interchange
- A38 (T) Barton junction.

Summary assessment of Burton Option 2d

The impact of Option 2d on both the A38 Branston Interchange and the B5017 Shobnall Road corridor will require further detailed analysis. Significant improvements and sustainable measures are likely to be needed to off-set the impact.

This option will provide access to combined housing and employment opportunities that could maximise the 'internalisation' of trips and potentially lessen the impact on the wider network. The 'critical mass' potential of this option could bring added deliverability opportunities..

At this stage, it is considered that the limited additional development to the northwest of Burton could be accomodated on the network subject to further analysis.

Transport growth options review for Uttoxeter

2.20 The background data reviewed as part of this study relates to Burton without specific or detailed reference to Uttoxeter. Notwithstanding the absence of information for Uttoxeter, we have provided a high level commentary of the local issues based on local knowledge.

Brownfield development within Uttoxeter

2.21 Delivery of 100 dwellings on an unknown site within the urban area for Options 2a, 2b and 2c (based on an assumption that there is no Bamford site application) is unlikely to substantially increase pressure on the road network. For this reason, it is thought that the level of traffic from this quantum of housing could be accommodated without significant mitigation.

2.22 The proposed mixed use development (planning ref: OU/05254/018/JR/PO) at the vacant JCB Bamford site (Option 2d) would include the provision of 257 dwellings alongside a mix of further uses. The Transport Assessment supporting the application states that access to the site would be off Hockley Road, Pinfold Street and Trinity Road and the development will provide traffic signal control at the A518 Old Knotty Way office car park access and at the Trinity Road/ Bridge Street junction. The development will also see minor improvements at the Town Meadows Way/ Brookside roundabout and the Bridge Street/ Highwood Road roundabout. It is assumed that the mitigation measures proposed are sufficient and deliverable.

Transport review for Uttoxeter Option 2a

2.23 This option would focus housing and employment development to the west of Uttoxeter, and could therefore provide the potential for internalisation of trips which may lessen the impact of the growth.

2.24 The mixed use development parcel is likely to be accessed primarily from the A522 and this will impact on both the A522 and the A50 (T) / A522 junctions which are likely to require improvements. The improvements to the A50 (T)/ A522 junctions and slip roads may require third-party land to be acquired (subject to clarification of land ownerships).

2.25 For travel in and out of Uttoxeter, the A522 is a single carriageway route lined with residential properties on both sides which may have limited reserve capacity to support additional traffic. This link is also constrained at the A522/ B5030 Ashbourne Road mini-roundabout junction and at several junctions towards the town centre; the options for providing improvements to capacity may be limited without acquiring third-party land.

Summary review of Uttoxeter Option 2a

In summary, Option 2a focusses strategic impact at the A50(T)/ A522 junction and this may trigger the need to improve the junction layout which could require third-party land. Although some internalisation may occur at the local level, increased impact on the A522 between the mixed use site and the town centre is likley to require improvements where there is limited scope. The practicality of delivering improvements will require further consideration to demonstarte deliverability.

Transport review for Uttoxeter Option 2b

2.26 This option includes the employment development to the north of Uttoxeter and residential development to the south of Uttoxeter.

2.27 We have assumed that the 10ha employment site will be located to the west of the sewerage works with access gained from either the A518 to B5030 flyover or via the existing racecourse public house/ petrol station site to the A518; both of which appear feasible in design terms. Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate this development.

2.28 Provision of additional residential development to the south of Uttoxeter is likely to need access to be provided off the A518 and / or through the residential settlement at Balance Hill by utilising the B5017. It is considered likely that the B5103 to the southwest of Uttoxeter would require improvement of its junction with the A518.

2.29 Based on local knowledge, both the A518 and B5017 may have sufficient reserve capacity to accommodate this residential option although further analysis is required to confirm this.

2.30 For access to the A50 (T), traffic from the residential site could utilise any of the three junctions, although the A50 (T)/ B5030 and A50 (T)/ A518 junctions are known to be congested on the approaches from all directions.

2.31 The Uttoxeter rail station is located off the A518 at Bridge Street and provides regular services between Crewe and Derby. This residential option would therefore have the potential advantage of providing access to these services.

Summary review of Uttoxeter Option 2b

Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate the employment site to the west of the sewerage works

which could potentially be accessed off either the A518 to B5030 flyover of off the A518 Derby Road.

In strategic terms, the residential option to the south of Uttoxeter dissipates the impact onto the A50 (T) junctions and access to the town centre could be gained off the A518 and/ or through the residential settlement at Balance Hill.

More detailed analysis is essential in determining the optimum solutions for residential growth to the south of Uttoxeter, although some relief is available with traffic utilising the A518 towards Stafford and by sustainable travel opportunity with the rail station being located off the A518 at Bridge Street.

Transport review for Uttoxeter Option 2c

2.32 This option considers both the employment development to the north of Uttoxeter and residential development to the south west of Uttoxeter.

2.33 As with Option 2b, we have assumed that the 10ha employment site will be located to the west of the sewerage works with access gained from either the A518 to B5030 flyover or via the existing racecourse public house/ petrol station site to the A518 (subject to clarifying access principles); both of which appear feasible in design terms. Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate this development.

2.34 Residential development to the south west of Uttoxeter for 400 dwellings is likely to need access to be provided off the B5027 Stone Road which provides a connection to the A518 at Hockley Road. Further analysis would be required to ascertain the impact of through traffic routeing along Holly Road for access to the A51 and B5030 to the north of Uttoxeter.

2.35 For travel in and out of Uttoxeter, the B5027 is a single carriageway route lined with residential properties and immediate access to the town centre is gained off Smithfield Road. Both routes may have limited reserve capacity to support additional traffic.

2.36 For access to the A50 (T), traffic from the residential site is likely to utilise the A50 (T)/ A522 or the A50 (T)/ B5030 junction. Further analysis would be required to ascertain if improvements to the A50 (T)/ A522 junction are needed.

Summary review of Uttoxeter Option 2c

Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate the employment site to the west of the sewerage works which could potentially be accessed off either the A518 to B5030 flyover of off the A518 Derby Road.

In strategic terms, the residential option to the south west of Uttoxeter could potentially spread the impact onto the A50 (T) junctions and additional analysis is required to ascertain if improvements to the A50 (T)/ A522 junction would be needed. Any significant increase in the use of Holly Road for access to the A51 and B5030 to the north of Uttoxeter will need to be analysed further. Access to the town centre would be focussed along the B5027 Stone Road which is constrained in places.

Transport review for Uttoxeter Option 2d

2.37 This option would focus the majority of employment and residential development to the west of Uttoxeter, with a further residential development to the south west of Uttoxeter. The mixed use development to the west of Uttoxeter would provide the potential for an element of 'internalisation' of trips and potentially lessen the impact on the wider network in proportion to the scale of development proposed.

2.38 The mixed use development parcel to the west of Uttoxeter is likely to be accessed primarily from the A522 and this will impact on the A50 (T) / A522 junctions and A522 which are likely to require improvements. Improvements to the A50 (T)/ A522 junctions and slip roads may require third-party land to be acquired (subject to clarification of land ownerships).

2.39 For travel in and out of Uttoxeter, the A522 is a single carriageway route lined with residential properties on both sides which may have limited reserve capacity to support additional traffic. This link is also constrained at the A522/ B5030 Ashbourne Road mini-roundabout junction and at several junctions towards the town centre; with limited options for improvements to capacity without acquiring third-party land.

2.40 Provision of additional residential development to the south west of Uttoxeter for 100 dwellings is likely to need access to be provided off the B5027 Stone Road which provides a connection to the A518 at Hockley Road. Although this level of development might be able to be accommodated on the road network without significant mitigation, the cumulative impact of this quantum and the planned development at the vacant JCB Balance Street site within the urban area would need to be assessed. The impact of these combined developments on Holly Road and the minor roads leading to the A518 may therefore need to be managed.

Summary review of Uttoxeter Option 2d

In summary, the mixed use development of Option 2d focusses strategic impact at the A50(T)/ A522 junction and this may trigger the need to improve the junction layout which may need third-party land to deliver the improvements. Although some internalisation may occur at the local level, increased impact on the A522 between the site and the town centre is likley to require improvements where there is limited scope. The practicality of delivering both will need to be determined by further investigations.

The impact of adding 100 dwellings to the south west of Uttoxeter is not considered to provide significant challenges in traffic impact terms although the combined impact of this and the planned development at the Bamford site within Uttoxeter may trigger the need for positive management of traffic on Holly Road and other minor roads leading to the A518.

Growth options RAG assessment

2.41 Whilst the RAG traffic light assessment does not highlight any showstoppers for any of the options at this stage, the analysis indicates that further detailed analysis is required to quantify development impacts and resultant mitigation needed as the Plan proceeds and provides greater clarity. Figure 2.1 and 2.2 provide a summary for each option for Burton and Uttoxeter.

Figure 2.1 1 Transport RAG assessments for Burton on Trent

Burton on Trent	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Transport																	
Option 2a	The main impact of this option is likely to be on the A511, Beamhill Road/ Hopley Road, B5017 Shobnall Road corridors and the A38 Branston Interchange. However it is considered for the level of development proposed these impacts could potentially be mitigated with appropriate measures.																
Transport																	
Option 2b	This option would impact heavily on the B5017, A511 and Beamhill Road/ Church Road corridors and A38 (T) at Clay Mills, along with placing a significant pressure on the A511 Air Quality Management Area. There is limited opportunity to accommodate the necessary improvements due to physical constraints and this option may require significant improvement at the A38 Clay Mills, the costs of which may be prohibitive for the amount of growth proposed. The practicality of improvements to the network would need to be considered in further detail.																
Transport																	
Option 2c	The impact of this option on both the A511 Horninglow Road and B5017 Shobnall Road corridors is an issue requiring more detailed analysis, as is the impact at the A38 Branston Interchange. Although significant improvements and sustainable measures will need to be put in place to reduce the impact on the B5017 Shobnall road in particular, this option does offer the potential to disipate the transport impact over a wider area and could potentialy provide integrated transport solutions common to the two growth areas. The 'critical mass' potential of this option could bring added deliverability opportunities and spread the risk to delivery.																
Transport																	
Option 2d	The impact of this option on both the A38 Branston Interchange and the B5017 Shobnall Road corridor will require further detailed analysis. Significant improvements and sustainable measures are likely to be needed to off-set the impact. This option will provide access to combined housing and employment opportunities that could maximise the 'internalisation' of trips and potentially lessen the impact on the wider network. The 'critical mass' potential of this option could bring added deliverability opportunities and spread the risk to delivery. At this stage, it is considered that the limited additional development to the northwest of Burton could be accomodated on the network subject to further analysis.																

Figure 2.2 Transport RAG assessments for Uttoxeter

Uttoxeter	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Transport																	
Option 2a	This option focusses strategic impact at the A50(T)/ A522 junction and this may trigger the need to improve the junction layout which could require third-party land. Although some internalisation may occur at the local level, increased impact on the A522 between the mixed use site and the town centre is likley to require improvements where there is limited scope. The practicality of delivering improvements will require further consideration to demonstarte deliverability.																
Transport																	
Option 2b	Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate the employment site to the west of the sewerage works which could potentially be accessed off either the A518 to B5030 flyover of off the A518 Derby Road. In strategic terms, the residential option to the south of Uttoxeter dissipates the impact onto the A50 (T) junctions and access to the town centre could be gained off the A518 and/ or through the residential settlement at Balance Hill. More detailed analysis is essential in determining the optimum solutions for residential growth to the south of Uttoxeter, although some relief is available with traffic utilising the A518 towards Stafford and by sustainable travel opportunity with the rail station being located off the A518 at Bridge Street.																
Transport																	
Option 2c	Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate the employment site to the west of the sewerage works which could potentially be accessed off either the A518 to B5030 flyover of off the A518 Derby Road. In strategic terms, the residential option to the south west of Uttoxeter could potentially spread the impact onto the A50 (T) junctions and additional analysis is required to ascertain if improvements to the A50 (T)/ A522 junction would be needed. Any significant increase in the use of Holly Road for access to the A51 and B5030 to the north of Uttoxeter will need to be analysed further. Access to the town centre would be focussed along the B5027 Stone Road which is constrained in places.																
Transport																	
Option 2d	The mixed use development of ths option focusses strategic impact at the A50(T)/ A522 junction and this may trigger the need to improve the junction layout which may need third-party land to deliver the improvements. Although some internalisation may occur at the local level, increased impact on the A522 between the site and the town centre is likley to require improvements where there is limited scope. The practicality of delivering both will need to be determined by further investigations. The impact of adding 100 dwellings to the south west of Uttoxeter is not considered to provide significant challenges in traffic impact terms although the combined impact of this and the planned development at the vacant JCB Balance Street within Uttoxeter may trigger the need for positive management of traffic on Holly Road and other minor roads leading to the A518.																

Source: RTP 2012

Pros and cons of urban extensions vs urban dispersal

2.42 For each infrastructure item, we considered the pros and cons in relation to urban dispersal in Burton on Trent Vs creating a single or few major urban extensions (brownfield concentration versus greenfield).

Table 2.1 Pros and cons of greenfield extensions Vs urban dispersal

Buxton on Trent	Pros	Cons
Urban dispersal of smaller sites within Burton on Trent (e.g. dispersal of 500 dwellings across the town mainly on brownfield sites)	▪ Sustainable in terms of potential use of existing public transport network. ▪ Dispersed local road network impact. ▪ Pre-use traffic generation could be discounted from new development. ▪ Dispersed impact onto strategic road network (A38). ▪ May not require major road infrastructure.	▪ Potential localised road network constraints that may require mitigation ▪ Land preparation costs in terms of converting brownfield sites for residential, may have possible contamination, drainage and earthworks retention (could be counter balanced by other infrastructure savings).
Urban extension (s) on greenfield sites (Concentration of 500 dwellings or more one site)	▪ Drives wider infrastructure improvements ▪ Bolsters sustainability of adjacent communities ▪ Could minimising journeys by aligning employment and housing needs ▪ Infrastructure/ development delivery phasing	▪ Greenfield impact ▪ Possible Air Quality Management Area impact due to increased levels of traffic along a single corridor. ▪ Strategic road network stress and need for higher intervention costs due to scale of development.

3 EDUCATION

3.1 We review primary and secondary school infrastructure capacity and potential to meet additional requirements as proposed in each of the growth options.

Approach to this assessment

3.2 Staffordshire County Council (SCC) is the Education authority for East Staffordshire. Our assessment has been informed by Education Department officers (Tracey Brotherton and Stuart Lane) of SCC. It should however be noted that, SCC have not been involved in arriving at the emerging recommendations for this section; any such response from SCC would form part of a County Council joint response at the time of consultation on the Preferred Options.

3.3 We reviewed some of the published information provided by the client team and the SCC Education Planning Obligations Policy March 2009[8]. We have assumed that officers statement that all primary schools are at capacity, as they have detailed evidence to back this up.

Context

3.4 Physically the River Trent, the Trent and Mersey Canal and railway line has led to limited east-west movement in Burton town; due to limited physical opportunities to cross the river and railway line. This tends to restrict east-west movement of children between schools.

Primary schools in Burton are at capacity and unable to accommodate new growth

3.5 The overarching issue is that there is no primary school capacity in Burton on Trent in the short term to accommodate any additional pupils and schools that can be expanded are being expanded to meet current deficit. SCC is undertaking the following range of school investments:

- The former Belvedere Sports and Social Club site will be developed create a new 420 place academy.
- Christ Church infant school is to be extended and will become a 315 place primary school (resulting in a net increase of 195 primary school places).
- St Modwens primary school will be relocated to a new school at land off Tutbury Road, (situated to the north west of Burton).This will expand the school size from 210 to 420 places.
- A number of existing schools may be expanded to create an additional primary school places.

[8] http://www.staffordshire.gov.uk/Resources/Documents/e/EducationPlanningObligationsPolicyMarch2009.pdf

3.6 Thus although not a show stopper, the provision of new primary school capacity within Burton will be very difficult and the preferred option for this particular infrastructure would be for growth options that can meet their own primary school requirement.

Secondary schools on the western side of Burton are at capacity

3.7 Generally, the secondary schools, on the western side are more popular. They have had intakes close to the pupil admissions number and are also seeing the greatest growth in pupil catchment numbers. As a consequence they have less capacity to accommodate new growth. Note that the majority of housing with planning permission granted, or pending are also located on the Western side of Burton and so will further compound existing capacity issues.

3.8 This means there is some capacity in capacity at present at Abbot Beyne High School, (on the eastern side of Burton), however this capacity is expected to be absorbed in about three years time once the primary 'bulge' filters through to secondary schools.

3.9 A number of secondary schools (e.g. John Taylor High School, De Ferrers, Paget High) are full or will be full once recent consents are factored in. The general view on capacity to accommodate growth is that any new development will need capital investment and land to support the delivery of a secondary school.

3.10 The current Basic Needs budget available to SCC for education infrastructure is spread between eight districts and is required to meet the current and projected shortage of school places based on children living and being born in Staffordshire now.

Uttoxeter operates a three tier system

3.11 It is important to note that Uttoxeter operates a three tier school system as follows:

- Primary school
- Middle school (for children aged 9 to 14 years)
- High (secondary) school

3.12 Most of the middle schools are likely to be full and will need further investigation.

3.13 There was limited knowledge of the capacity at Uttoxeter schools, however, the general comment for all the scale of growth proposed was that it is likely to require expansion of existing schools. At this stage no showstoppers are expected and so a separate RAG assessment has not been included.

Growth options RAG assessment

3.14 The RAG traffic light assessment (see figure 3.1) does not highlight any showstoppers for any of the options at this stage. Primary school capacity in Burton is already stretched, as is most of the secondary school capacity, so any option that places further stress on this will need to proceed with caution to ensure that school places can be provided.

3.15 New school infrastructure is likely to be required. However, it should be noted, that without a detailed analysis of each of the current school sites' potential for expansion in conjunction with all the known housing sites this cannot be confirmed.

Figure 3.1 Education RAG assessment for Burton on Trent

Burton on Trent	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Education																	
Option 2a	Existing primary schools (Moseley, Outwoods and Rykneld) and secondary schools (De Ferrers, Paget) are all stretched and would prefer a new standalone school. Not keen on the higher level of urban growth especially in the short term as there is no capacity to expand. Assumed new provision could be provided on geenfield sites.																
Education																	
Option 2b	Urban area is totally at capacity so proceed with caution on urban development for primary school. There maybe potential scope to expand site off Tutbury Road which is currently being designed as a 2 form primary school to north west of Burton. Alternative would be to provide three smaller primary schools. This level of growth would make it suitable to support a standalone new secondary school on western fringe as de Ferrers is full.																
Education																	
Option 2c	Urban area is totally at capacity so proceed with caution on urban development for primary school. There maybe potential scope to expand site off Tutbury Road which is currently being designed as a 2 form primary school to north west of Burton. Would require new primary and secondary schools similar to option 2b, and scale is suitable to support new secondary and primary schools.																
Education																	
Option 2d	Urban area is totally at capacity so proceed with caution on urban development for primary school. There maybe potential scope to expand site off Tutbury Road which is currently being designed as a 2 form primary school to north west of Burton to support growth to north of Burton. Would require new primary and secondary schools and scale is suitable to support new secondary school.																

Optimum size of settlement for a new school

3.16 The published SCC child per year group yield rate for schools is 0.03, however, the officers we interviewed indicated that current experience suggests that the child yield rates is closer to 0.06 (double the published rate currently applied to planning applications).

3.17 Much depends on birth rates and SCC pupil yield policy prevalent at the time, but as a general, 'rough and ready' rule the indication from the officers is as follows:

- 750 to 1000 dwellings = one new primary school.
- 3000 to 5000 dwellings = one new secondary school.

3.18 Note the SCC School Organisation Team is currently reviewing the Planning Obligations Policy and yield rates could be revised as a result of this.

3.19 The important issue for Burton is whether the scale of growth proposed in Burton is sufficient to support a new secondary school or whether there is capacity to accommodate the expansion of an existing school. The actual location of development may not be a critical issue as secondary school children are expected to travel slightly longer distances than primary school children (though good planning decisions would look to minimise the distance and time needed to travel for daily school trips).

Pros and cons of urban extensions vs urban dispersal

3.20 For each infrastructure, we considered the pros and cons in relation to urban dispersal in Burton on Trent vs creating a single or few major urban extensions (brownfield concentration versus greenfield). This is summarised in table 3.2

Table 3.2 Pros and cons of greenfield extensions Vs urban dispersal

Buxton on Trent	Pros	Cons
Urban dispersal within Burton on Trent	If there was infrastructure capacity, this would permit more efficient use of infrastructure; however, there is not surplus capacity.	No benefits as all schools (primary and secondary) are at capacity / stretched or will be at capacity once predicted growth is factored in.
Greenfield extension(s)	Could enable new stand alone primary and secondary school to be provided	Very costly and land intensive and unclear how the full cost will be met.

4 UTILITIES

4.1 In this section we assess the following utilities – gas, electricity, potable water, waste water, and flood.

Approach to this review

4.2 We reviewed the following publically available documents to inform the utilities assessment:

- Western Power Distribution (East Midlands[9]) Long Term Development Statement[10]
- Eon Drakelow Power Station Environmental Study[11]
- National Grid Gas Utility Plans
- National Grid Gas Distribution Long Term Development Plan[12]
- National Grid High Voltage Cable Location Plans
- East Staffordshire Water Cycle Strategy
- South Staffordshire Water Resources Management Plan[13]
- Severn Trent Water Resources Management Plan[14]
- Severn Trent Water Final Business Management Plan[15]
- Environment Agency Flood Maps[16]
- Sam Knows Telephone Exchange Database[17]
- Core Strategy Responses 2011

Context to utilities

4.3 This high level strategic review of the utilities provision to support the East Staffordshire Preferred Options (PO) assessment considers at this stage the provision of electricity, gas, potable water, telecoms and waste water treatment to facilitate the growth scenarios and also provides a high level review of the restriction to growth caused by flooding.

Electricity

4.4 Staffordshire's electricity distribution network operator (DNO) is Western Power Distribution (WPD). It is responsible for reliability, capacity and maintenance and

[9] Note East Staffordshire is in the West Midlands.

[10] http://www.westernpower.co.uk/Documents/Long-Term-Development/WebSite_Copy-of-WPD(EastMids)LTDS_Nov11.aspx

[11] http://www.eon-uk.com/downloads/Drakelow_CCGT_Extension_Environmental_Statement_April_2009.pdf

[12] http://www.nationalgrid.com/NR/rdonlyres/D25A08C9-C20D-4D2A-8631-BE1A4C57A45B/49780/UKGD2011LTDP.pdf

[13] http://www.south-staffs-water.co.uk/publications/community_environment/FinalWaterResourcesPlan_Section1.pdf

[14] http://www.stwater.co.uk/upload/pdf/Final_WRMP_2010.pdf

[15] http://www.stwater.co.uk/upload/pdf/SVT_-_PR09_-_FBP_-_A.pdf

[16] http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=531500.0&y=181500.0&topic=floodmap&ep=map&scale=3&location=London,%20City%20of%20London&lang=_e&laerGroups=default&textonly=off

[17] http://www.samknows.com/broadband/exchange_search

emergency response. WPD is also responsible for the operation and maintenance of its own infrastructure. WPD provides a Long Term Development Statement (LTDS), which is updated annually. This document provides capacity information on WPD's distribution network and has been used to inform this assessment. The LTDS provides information of the network capacity down to the primary sub station (PSS). It should be noted that local capacity information below the PSS level is not available without consultation with WPD.

4.5 A summary of the PSS capacities serving the Burton and Uttoxeter area has been extracted from the LTDS and summarised in table 4.1.

Table 4.1 Summary of primary sub station electricity capacity for the study area

Group	Bulk Supply Point Name	Primary Substation Name	Sub Station Demand at System Peak 2010/2011 (MVA)	Forecast Load Information 2015/2016 (MVA)	Firm Capacity of Substation (MVA)
Drakelow 132kV	Burton 11	-	41.19	33.58	48
Drakelow 132kV	Burton 33	-	54.64	60.98	58.5
Drakelow 132kV	Burton 33	Hatton	20.26	24.32	24
Drakelow 132kV	Burton South	-	44.82	76.67	117
Drakelow 132kV	Burton South	Barton Under Needwood	8.07	30.87	24
Drakelow 132kV	Burton South	Station Street	18.7	22.75	24
Drakelow 132kV	Burton South	Wellington Street	26.71	32.47	38.1
Willington 132kV	Uttoxeter	-	40.8	37.23	58.5
Willington 132kV	Uttoxeter	Church Street	16.85	16.74	24

4.6 Table 4.1 shows the actual firm capacity[18] at each sub station, peak demand and forecast demand (based on known consented planning applications). The figures in red highlight the PSS which will be in deficit once forecast demand has been taken up by about 2016[19].

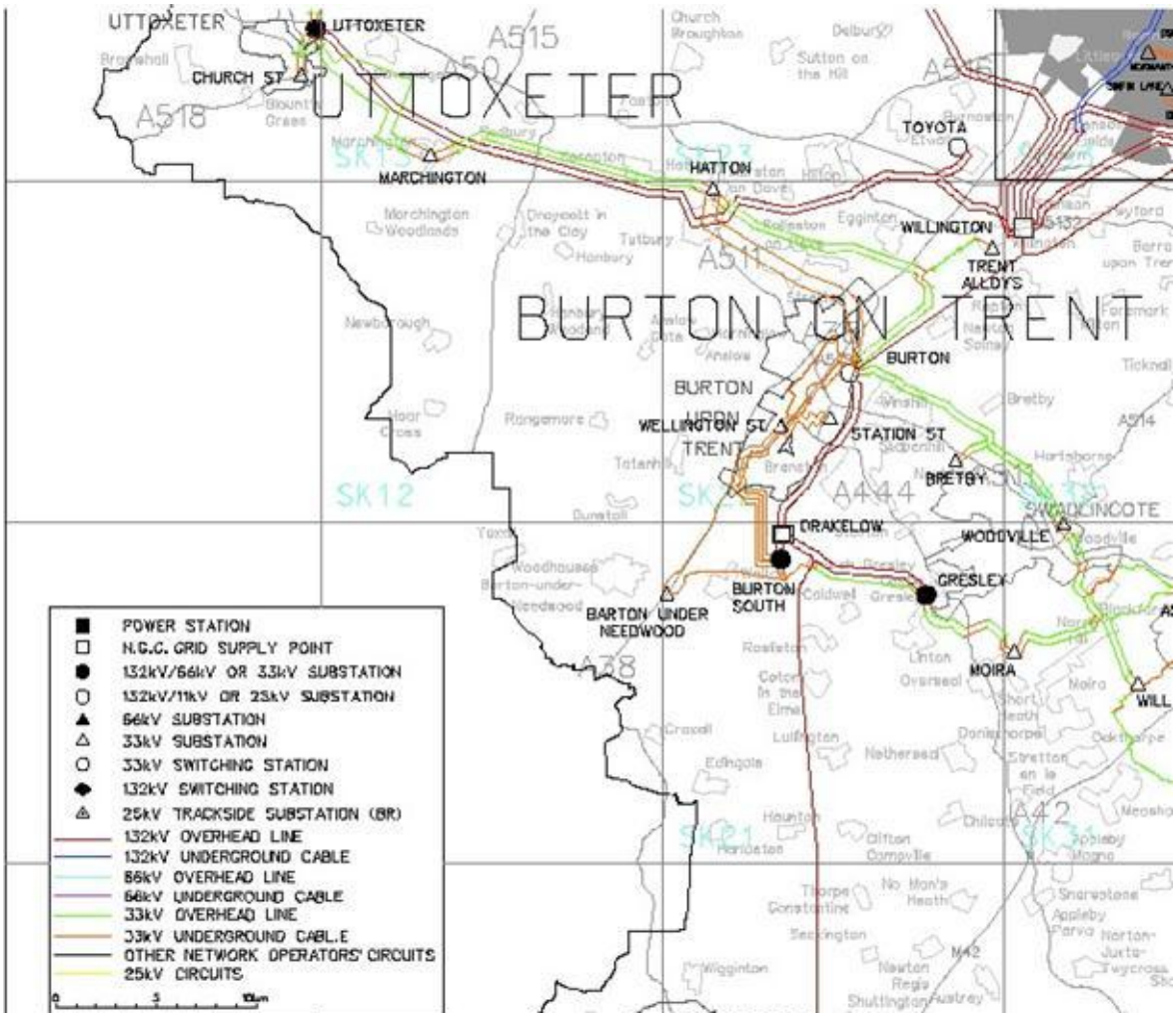
We make an assumption about average peak load electricity use

4.7 Note to carry out this initial appraisal of capacity, we make an assumption of a peak load 2kVA per dwelling and 80VA/m^2 for employment land [20]. It is possible, that some types of employment may require considerably more than this level depending on the type of operation.

4.8 Figure 4.1 provides an overview of the electricity infrastructure serving this East Staffordshire area. The figure shows the location of the relevant grid supply points and sub stations, and power lines.

[18] Firm capacity refers to the amount of load that can be supplied by that substation.
[19] This information is extracted directly from Appendix 4 Table 2A from the LTDS.
[20] Based on a gross internal floor area of 40% of total development area

Figure 4.1 Electricity infrastructure plant serving the East Staffordshire area



Source: Western Power Distributor

Electricity provision in Burton-on-Trent

4.9 The Drakelow grid supply point (see figure 4.1) is situated to the south of Burton-on-Trent. This feeds the two bulk supply points (BSP) at Burton and Burton South situated in north and to the south of Burton respectively. These transform the voltage from 132kV down to 33kV and this is subsequently transformed down to the 11kV local network by the primary sub stations (PSS).

4.10 The general message is that any development towards the north-west and west of Burton is likely to be met by existing electricity capacity at the Burton PSS. Development towards the south west of Burton is likely to require additional electricity reinforcements at the Burton South BSP by providing an additional PSS to supply the growth.

If developed, the Drakelow D power station could provide an opportunity for a PSS

4.11 Eon have planning permission to build a new power station and extension of existing station at "Drakelow D" on the site of the old power station. If built there may be a substantial amount of reinforcement carried out to Drakelow GSP and Burton South BSP. This may bring an opportunity for a new PSS to feed growth to the south. There is limited

information available[21], and it is not clear when the gas fired power station will be delivered, (the residential development linked to the Drakelow proposal are due to come forward during 2013 / 2014).

4.12 If the power station is extended, there may be a substantial amount of reinforcement carried out to Drakelow GSP and Burton South BSP, which may bring an opportunity for a new PSS to feed growth to the south of Burton. For now we have assumed that this is not available.

Growth option 2a Burton

4.13 There are three PSS within the built up area of Burton. There is likely to be sufficient capacity within these PSS to supply proposed 1000 homes to the north west of Burton and the infill development of 750 homes and 20ha of brownfield employment (based on average consumption). The majority of the supply is likely to be provided by the Burton PSS, which has approximately 15MVA capacity (which suggests there is capacity for about 1750 homes and 35Ha employment).

4.14 There is a small amount of capacity available at the Wellington Street PSS, which could supply the housing and some of the greenfield employment areas to the south but a new PSS is likely to be required to enable the full growth of employment.

Proposed local reinforcements to meet external demand

4.15 However, it should be noted that reinforcements are likely to be required to the Burton bulk supply point (BSP) as the Long Term Development Statement (LTDS) has highlighted that by 2015/2016 the anticipated demand on the BSP could exceed the current capacity (based on current enquiries for development in the area received by Western Power Distribution). The Burton BSP is due to be upgraded in 2012/2013 by Western Power Distribution (WPD)[22]. If this reinforcement takes place the, PSS should be able to supply the growth requirements.

Option 2b Burton

4.16 Following the proposed reinforcement of Burton BSP outlined above there should be no significant obstacles to the provision of electricity to the housing developments either to the north west of Burton or the infill developments provided by the Burton PSS.

Option 2c Burton

4.17 In order to meet the supply requirements for the proposed growth to the south west of Burton a new PSS is likely to be required connecting to Burton South. The north western growth would be met from the existing PSS within Burton. It may be possible to provide for some growth with the Wellington Street PSS.

[21] link http://www.eon-uk.com/generation/drakelowccgt.aspx

[22] Replacing the existing 132/33kV transformers with 45/90/117MVA transformers

Option 2d Burton

4.18 As in Option 2c, in order to meet the requirements for the proposed growth to the south west of Burton a new PSS is likely to be required connecting to Burton South. The north western residential growth could be met from the existing PSS within Burton. It may be possible to provide some infill growth around the Wellington Street PSS.

Electricity provision in Uttoxeter

4.19 Uttoxeter is served by the Uttoxeter BSP, which is situated to the north east of Uttoxeter adjacent to the A50 and A518. This in turn supplies the single PSS within Uttoxeter at Church Street.

Options assessment

4.20 All four options for the growth are affected similarly by the electricity infrastructure. There is sufficient capacity within the PSS to supply the proposed growth within Uttoxeter. However, the issue to be considered is the capacity within the 11kV network and whether it is robust enough to deliver supply to the growth areas. Discussions with WPD would be required to evaluate the capacity issues within the local network and if new 11kV circuits are required to the greenfield housing and employment areas.

Gas

4.21 Staffordshire's gas distribution network operator (GDN) is National Grid Gas (NGG) who also operates the national transmission system. There is no publicly available information regarding the capacity of the gas distribution network but the Long Term Development Statement (LTDS) has been reviewed and there are no significant projects (above £0.5million) anticipated to be carried out by NGG in the period up to 2016/2017.

4.22 However, PBA LLP has access to the NGG asset plans and from these we have been able to locate the Intermediate Pressure (IP) and Medium Pressure (MP) gas mains, and assess whether they may provide the capacity to meet the demands of the growth options. For the purpose of this high level assessment it has been assumed that the MP and IP gas mains would have sufficient capacity to supply the adjacent growth. This will have to be confirmed in consultation with NGG for the next stage of the assessment.

Gas supply provision in Burton-on-Trent

4.23 Based on maps that we hold, we have been able to ascertain that a High Pressure (HP) gas main runs north/south to the west of Burton between Anslow and Anslow Gate and another HP main runs from Anslow eastwards through Burton. An IP main is fed from the HP main at Anslow Gate and runs into the heart of Burton and then runs north and south along the railway feeding a MP network down the B5018 and up the A5121 and along Dovecliff Road.

Option 2a

4.24 It is anticipated that the housing growth to the west of Burton would be supplied by the IP main running into Burton and that the southern growth would be supplied by the MP main along the B5018. The capacity within these gas mains would have to be confirmed by

NGG. It is anticipated that the infill growth can be supplied within the existing gas infrastructure within Burton.

Option 2b

4.25 It is anticipated that the growth to the north west of Burton would be well served by both the IP main to the south and the MP to the north.

Option 2c

4.26 The 1050 dwellings to the west of Burton should be able to be supplied via a connection to the IP main feeding Burton. The mixed housing and employment growth to the south west would be fed from the MP gas main running along Wellington Road.

Option 2d

4.27 As in Option 2c the mixed housing and employment growth to the south west would be fed from the MP gas main running along Wellington Road. The 300 dwellings to the north west of Burton should be able to be supplied via a connection to the medium pressure mains feeding the northern Burton area.

Gas supply provision in Uttoxeter

4.28 Uttoxeter is served by several MP gas mains running through the town.

Option 2a

4.29 It is anticipated that the housing growth within Uttoxeter can be supplied by the existing infrastructure. The mixed growth to the west of Uttoxeter could be supplied by the MP main running along Bramshall Road.

Option 2b

4.30 It is anticipated that the employment growth to the north west would be served by he MP running along Park Avenue/Street

Option 2c

4.31 The employment growth would be supplied as above and growth to the west of Uttoxeter could be supplied by the MP main running along Bramshall Road and the MP main that runs along the railway line.

Option 2d

4.32 As in Option 2a the mixed growth to the west of Uttoxeter could be supplied by the MP main running along Bramshall Road and the growth to the south fed by the MP main that runs along the railway line.

Drinking water

4.33 South Staffordshire Water (SSW) is the Distribution Network Owner (DNO) for drinking (potable) water supply and distribution networks, and for water resources and treatment in the study area. The South Staffordshire Water potable water supply network comprises a single water resource zones. The Water Resources Management Plan states that "…there is no deficit in the supply demand balance under any of the planning

scenarios…both the dry year annual average and peak week scenarios show a similar surplus of available headroom throughout the planning period".

4.34 Although the SSW network system is robust with the five strategic service reservoir supply areas, interconnected with large diameter water mains, booster stations and remotely controllable valves enabling the transfer of water throughout SSW's supply area; the existing water supply infrastructure within and around both Burton-on-Trent and Uttoxeter could restrict large scale growth. Consultation with SSW to investigate the location of any restrictions to potable water supply is recommended.

Waste water for Burton and Uttoxeter

4.35 Waste water collection and treatment within East Staffordshire is undertaken and managed by Severn Trent Water (STW). A review of Severn Trent Water's final Business Management Plan for the period AMP5 (2010-2015) has not identified any major upgrades to the Waste Water Treatment Works (WwTW) in the area.

4.36 The information in this report has been obtained from the East Staffordshire Water Cycle Study (WCS). There are two WwTW considered in this report, Clay Mills WwTW, which serves Burton upon Trent, and Uttoxeter WwTW, serving Uttoxeter and the immediate surrounding area. The WCS stated that upgrading works were to be carried out during AMP5 to ensure that capacity at Clay Mills WwTW was increased and "…will not hinder the development proposals for Burton."

4.37 Consultation will be required with STW to confirm that the new capacity of Clay Mills WwTW has been implemented. The WCS also indicates that the Uttoxeter WwTW will also require upgrading and that STW were proposing to rationalise the Uttoxeter WwTW with the nearby Doveridge WwTW. Again consultation with STW will be required to confirm any works anticipated on the Uttoxeter WwTW.

4.38 In addition to the checks on capacity on the WwTWs, a high level review on the foul sewer network would need to be carried out with STW to identify any potential bottlenecks to the predicted growth.

Flooding and Surface Water Drainage in Burton and Uttoxeter

4.39 The East Staffordshire Water Cycle Study (WCS) and Environment Agency website were reviewed to inform this report.

4.40 Flood risk within and around Burton upon Trent is mainly associated with the River Trent. However, the tributary watercourses, such as the Shobnall Brook, the Tatenhill Brook and the Barton Brook also pose a potential flood risk to development sites. Burton benefits from flood defences through the town, which are built to a 200 year standard. For the purposes of this report it is assumed that the infill growth on the brownfield sites will take account of any flood protection zones or mitigation measures at planning application stage.

4.41 The housing and employment growth proposed to the south of the Burton in options 2a and 2d are within the River Trent 1 in 100 and 1 in 1000 year flood plain and as a result would require mitigation measures. The other options are not significantly affected by

flooding other than local flooding by smaller watercourses. In all cases details will need to be picked up at planning application stage.

4.42 Uttoxeter is bounded by the Rivers Dove and Tean, but also bisected by the Picknall Brook, a tributary of the River Dove. The River Dove has a long history of flooding with the potential to affect some of the proposed development sites. Flood risk to the majority of the development sites within Uttoxeter is mainly associated with the Picknall Brook. In addition, a number of smaller, watercourses are present within Uttoxeter and may pose a risk of flooding to the development sites along their banks. The expansion of Uttoxeter is in the main unaffected by flood risk with the exception of the employment area in Options 2b and 2c adjacent to the Uttoxeter WwTW. Further analysis of the flood risk to these areas is recommended.

New approaches to surface drainage

4.43 Conventional surface water drainage utilises underground piped systems designed to remove surface water from a site as quickly as possible. This may result in flooding problems downstream and reduce the natural recharge of groundwater levels. Such systems may also create a direct pathway for pollutants from urban areas to pass into watercourses and groundwater.

4.44 The former Planning Policy Statement 25 (PPS 25) required local planning authorities to promote the use of sustainable urban drainage systems (SuDS) to achieve the control of surface-water. SuDS should be the default drainage measure for all new developments proposed in Burton and Uttoxeter, with other drainage measures only considered if all SuDS forms are considered not viable. A range of SuDS techniques can be implemented into a development to prevent the increased risk of flooding and pollution control.

Growth options RAG assessment

4.45 The RAG traffic light assessment does not highlight any showstoppers or major issues relating to utility provision for any of the options at this stage. The main reason figure 4.2 shows amber for some options is due to the need for further investigation to inform the next stage. This will inform the reinforcements might need to be enhanced to accommodate growth and any potential lead in time that might have to be factored into the infrastructure delivery assessment.

Figure 4.2 Utilities RAG assessment for Burton on Trent

Option	Burton on Trent	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Option 2a	Electricity																	
Option 2a	Development to the west of Burton can be supplied by existing Burton PSS. Growth to south may require new PSS - hence an amber classification as there could be lead in time implications																	
Option 2a	Gas																	
Option 2a	Well served by IP and MP gas mains. Consultation with NGG required.																	
Option 2a	Drinking Water																	
Option 2a	Consultation with SSW required to evaluate any restrictions to local network. Strategic supply is fine.																	
Option 2b	Electricity																	
Option 2b	Development to the north west of Burton can be supplied by existing Burton PSS.																	
Option 2b	Gas																	
Option 2b	Well served by IP and MP gas mains. Consultation with NGG required.																	
Option 2b	Drinking Water																	
Option 2b	Consultation with SSW required to evaluate any restrictions to local network.																	
Option 2c	Electricity																	
Option 2c	Development to the west of Burton can be supplied by existing Burton PSS. Growth to south west may require new PSS																	
Option 2c	Gas																	
Option 2c	Well served by IP and MP gas mains. There may be a restriction to the southern growth by MP gas main. Consultation with NGG required.																	
Option 2c	Drinking Water																	
Option 2c	Consultation with SSW required to evaluate any restrictions and upgrades needed to the local network.																	
Option 2d	Electricity																	
Option 2d	Development to the south west may require new PSS. Some infill growth could be supported by the Wellington Street PSS and north western growth could be met by the existing PSS in Burton.																	
Option 2d	Gas																	
Option 2d	There may be a restriction to the southern growth by MP gas main. Consultation with NGG required.																	
Option 2d	Drinking Water																	
Option 2d	Consultation with SSW required to evaluate any restrictions to local network.																	

Pros and cons of urban extensions vs urban dispersal

4.46 For each utility infrastructure, we also considered the pros and cons in relation to urban dispersal in Burton on Trent vs creating a single or few major urban extensions (brownfield concentration versus greenfield). Table 4.2 summarise this.

Table 4.2 Pros and cons of greenfield extensions Vs urban dispersal

Burton on Trent	Pros	Cons
Urban dispersal	Assumed small scale dispersal of infrastructure, which is unlikely to trigger large scale reinforcement in utilities infrastructure. So there would be reduced connection costs to the developer per unit if there is capacity and close proximity of plant. Connections can be implemented relatively quickly which would help to enable	If however reinforcements are required to existing plant to meet additional capacity, then this could be relatively expensive to supply because the upgrade is likely to necessitate Traffic Management Orders and cost of digging up existing roads.

	speedier delivery of development from utilities connection perspective.	In this case, diversions of existing utilities could also be required to enable development which could be costly.
Greenfield extension(s)	Assuming these are based on serving a larger quantity of development, this could reduce the individual unit costs per dwelling for reinforcement. So in general a larger the quantum will help to reduce unit cost (though thresholds vary depending on capacity). Reduced need for utility diversions on site.	Large scale reinforcement can have high capital costs and would necessitate substantial upfront investment by the developer and could require a long lead in time. Potentially national and regional distribution infrastructure running through site may either require high diversion costs (i.e. 400kV overhead lines or HP gas mains) or wayleave agreements not to build within a certain distance of the infrastructure thus reducing the net developable area.

5 CONCLUSION

5.1 This strategic assessment of the four growth options to inform the Preferred Options has focused on ascertaining if there are any potential show stoppers or infrastructure capacity issues that will affect the needs of the proposed growth. It is important to emphasise that we have relied primarily on a review of existing research. It is also important to note that there is little documented information available for Uttoxeter.

5.2 The headline findings from the three main infrastructure categories are summarised in this section, followed by some infrastructure indicators and concluding comments in relations to the transport infrastructure categories.

Transport headline comments

Burton transport

5.3 There is modelling information available reflecting the level of growth being considered here, however, this does not directly relate to the growth options being considered for the Preferred Options stage. Further modelling may be helpful to inform the detailed infrastructure requirements for the Preferred Option later.

5.4 The physical geography and location of the A38 (T) and River Trent create barriers to movement and places considerable strain on the transport connectors provided by the A38 (T) at Branston and Clay Mills, and the A511 and A5189 river bridges.

5.5 Existing highway capacity at Burton on Trent is already at or nearing theoretical limits particularly at the following key junctions:

- A38 (T) Clay Mills junction especially at southbound exit
- A5121 Derby Road north and south of the A511 Horninglow Road
- A5121 Derby Street/ A511 Horninglow Road junction and A511 at the river bridge
- B5017 and A5189 Shobnall Road especially at the railway and river bridges
- A38 (T) Branston Interchange.

5.6 From our strategic review, Option 2a providing growth to the west and south of Burton is likely to perform best in terms of traffic impact, because in simple terms, the quantum of growth proposed for this option is the least of all the other options, although the impact on the A511 and B5017 and A38 Branston interchange in particular would need to be quantified and better understood.

5.7 Option 2b presents the most transport challenges. The concentration of growth to the North West of Burton is likely to place considerable pressure on the local road network in the area; particularly the A511 and Beamhill Road/ Church Road corridors, and at the A38 (T) Clay Mills junction which are constrained in terms of capacity. The deliverability of these improvements could be onerous due to land constraints and the costs associated with improvements at the A38 (T) Clay Mills junction (potentially higher than improvements at the A38 (T) Branston Interchange). The practicality of both interventions would need to be determined.

5.8 Option 2c provides significant growth to the west and south west which could offer the potential to dissipate the transport impact on the wider road network by integrating common transport solutions to both directions. The 'critical mass' potential of this distribution could bring funding opportunities and help spread the risk of delivery. However, the impact at the A38 (T) Branston Interchange, the B5017 and A511 needs careful thought and will require impact testing of the infrastructure, along with provision of sustainable measures to minimise the effect on the sensitive B5017 corridor in particular.

5.9 Option 2d includes some growth to the north west and significant growth to the south of Branston (south west of Burton) which will place increased pressure on the A38 (T) Branston junction, A5121/ Shobnall Road junction and the B5017 Shobnall Road which will require further detailed analysis. Significant improvements and sustainable measures are likely to be needed to off-set the impact at these locations. The 'critical mass' of this option could bring help to support the deliverability of this scheme (subject to viability testing). This option also includes a small 'manageable' quantum of growth to the north west of Burton which may well be able to be accommodated, subject to further detailed analysis.

5.10 In consideration of these issues, Option 2a offers the least challenges in transport terms (due to lower scale of growth) and Option 2b, the most challenging. The scale and distribution of Option 2c could potentially bring advantages in terms of a combined infrastructure that could support the deliverability of the transport infrastructure solutions across the wider network. However, this adds to the pressure on the A511, B5017 and A38 (T) at Branston. The scale and distribution of Option 2d provides growth to the north west and south of Branston and also offers deliverability opportunities, however it does place greater reliance on the ability of the A38 (T) Branston junction to accommodate this level of development. Option 2d would however have a less impact on the B5017 and A511 than Option 2c.

Uttoxeter transport

5.11 It is important to emphasise that there was no modelling or background data available for Uttoxeter and we have provided this commentary based on our local knowledge. Going forward, as work on plan preparation progresses to the next stage, further detailed analysis will be required to assess the impacts and mitigation measures to enable growth to take place.

5.12 Delivery of 100 dwellings on an unknown site within the urban area (Options 2a, 2b and 2c) is unlikely to substantially increase pressure on the road network and it is thought that the level of traffic from this quantum of housing could be accommodated without significant mitigation.

5.13 It is assumed that sufficient and deliverable mitigation measures accompany the proposed mixed use development[23] including 250 dwellings at the vacant Bamford site (Option 2d).

[23] planning ref: OU/05254/018/JR/PO

5.14 Options 2a and 2d are likely to require improvements at the A50/ A522 junction which may require third party land. Both these options also impact on the A522 into Uttoxeter which is constrained and may have limited reserve capacity to support additional traffic. Both these are perhaps the most challenging of the options considered and could therefore be considered as the least favoured options in transport terms.

5.15 Options 2b and 2c compare favourably in transport terms with less quantum proposed and spread the impact between the A50 (T) junctions. These options also provide the same employment offer which could be potentially accessed off either the A518 to B5030 flyover or the A518 Derby Road. Further analysis is required to demonstrate that there is sufficient capacity on the A518 and A50 junctions to accommodate this employment development.

5.16 Option 2b will require more detailed analysis to determine the best solutions for access off the A518; and / or through the residential settlement at Balance Hill by utilising the B5017, however this area of growth has the advantage of being situated close to the rail station and offers the potential for increased sustainability.

5.17 For Option 2c, further work is needed to ascertain and manage the impact of development on the A50 (T)/ A522 junction and on the local road network (Holly Road and the B5027 Stone Road in particular). The impact on these and other minor roads leading to the A518 may trigger the need for positive management measures.

Further assessment is needed for both Burton and Uttoxeter

5.18 For both Burton and Uttoxeter, further work is needed; engaging with the Highways Agency, Staffordshire County Council and other stakeholders to understand the deliverability (cost and funding) of the various options and also the scope to acquire land in some instances. This could add a considerable time delay to the deliverability of the growth option.

5.19 For transport infrastructure, urban dispersal is considered better in general as it spreads the ‘pain’ and avoids the need for expensive new highway infrastructure. It is also helps to concentrate people close to a wider range of services and there is usually a better potential to provide public transport.

Education headline comments

5.20 Physically the River Trent, the Trent & Mersey Canal and railway line create an east – west divide in Burton town, this tends to restrict east – west movement of children between schools.

5.21 Primary schools throughout Burton are at capacity / stretched already with limited scope to expand. Schools to the west are generally more popular, particularly the secondary schools, and these are at capacity, particularly de Ferrers. There is limited capacity at Abbot Beyne High, but this is expected to be absorbed in the next few years by the primary bulge.

5.22 With this in mind, the service provider is not keen to see any further demand on capacity without the provision of additional new infrastructure to accommodate this growth. This is particularly an issue for the existing built area of Burton.

5.23 Much depends on birth rates and SCC pupil yield policy prevalent at the time, but as a general, 'rough and ready' rule the indication from the officers as to the ideal growth thresholds to accommodate new infrastructure is as follows:

- 750 to 1000 dwellings = one new primary school.
- 3000 to 5000 dwellings = one new secondary school.

5.24 The options that concentrate growth on greenfield locations, to achieve a threshold level that will support a new secondary school and primary schools is preferable. Similarly the options that will enable the ability to service the requirements of the surrounding rural settlements are also preferable. In each case the option with the least concentration within the urban area of Burton is preferred due to capacity issues identified in Burton.

5.25 The new education infrastructure is likely to be costly, and consideration will be required as to the phasing and funding of this.

Utilities headline comments

5.26 The general message is that any development towards the north-west and west of Burton is likely to be met by existing electricity capacity at the Burton PSS. Development towards the south west of Burton is likely to require additional electricity reinforcements at the Burton South BSP to provide an additional PSS to supply the growth.

5.27 If the Drakelow power station is extended / rebuilt by E-On, there may be a substantial amount of reinforcement carried out to Drakelow GSP and Burton South BSP, which may bring an opportunity for a new PSS to feed growth to the south of Burton. For now we have assumed that this is not available.

5.28 The growth areas all appear to be well served by gas supply; however capacity of the medium and inter-mediate gas pressure mains may need reinforcement and will require detailed assessment.

5.29 It has not been possible to ascertain if the upgrading works referred to in the Water Cycle Study have been carried out by Severn Trent Water. This will require further investigation. For now it has been assumed, based on the information available, that there is capacity, or scope to expand capacity to meet the needs of growth.

5.30 There appears to be sufficient capacity in the water supply at a strategic level within Staffordshire Waters supply area. Further investigation will be needed at a local level to evaluate any local level restrictions.

5.31 Some flood risks highlighted, though through the work of the Environment Agency and East Staffordshire Council, the potential flood risk areas are known and any development will need to avoid or mitigate appropriately.

Concluding comments to inform the growth options assessment

5.32 This is a high level assessment based on a review of existing evidence and professional consideration of the infrastructure requirements identified[24]. No showstoppers have been identified for the growth options assessed at this strategic level and based on the information available.

5.33 We have sought to identify key infrastructure related indicators that will help the client team to make informed decisions about the preferred options being considered. These are summarised below.

Primary and secondary school indicators

5.34 For education, any option that limits urban development in Burton to minimise pressure on primary schools is recognised as being positive. In turn any option that is able to support the delivery of a new standalone secondary school is also considered as positive.

Utilities indicators

5.35 For utilities, any growth options that are focused to the north of Burton where there is some existing electricity capacity is recognised as being positive, whilst areas to the south are classed as 'proceed with caution', as there could be a phasing and cost issue due to potential shortage in electricity capacity.

Transport indicators for Burton

5.36 For transport, any growth areas which minimise the requirements for major transport infrastructure (due to a smaller quantum of growth proposed / or are more practical to deliver) are considered positively.

5.37 With regard to growth in Burton, it has also been considered that options that require improvements to the A38 (T) at Branston Interchange are likely to be more achievable than those that require improvements at the A38 (T) Clay Mills junction due to land constraints and potentially higher costs. Much will depend on detailed assessment of viability, and cost of delivery and the level of growth proposed.

5.38 For Uttoxeter, any growth option that is likely to require improvements at the A50/ A522 junction is viewed negatively as it may require third party land (subject to clarifying land ownerships). Any options that may impact on the A522 into Uttoxeter which is constrained and may have limited reserve capacity to support additional traffic are also considered negatively.

This assessment is part a bigger investigation to inform the preferred option

5.39 This assessment must be treated with care, as it provides part of the information into a much wider assessment of sustainability and deliverability considerations being undertaken by East Staffordshire Borough Council, and so should not be considered in isolation.

[24] We do not have any cost, detailed capacity or development viability information.

5.40 Once other factors such as:

- development viability,
- infrastructure delivery,
- contributing to community cohesion,
- economic growth of the wider area
- physical form and ease of movement,
- delivery of green infrastructure,
- ecological benefits
- brownfield reclamation,
- the creation of a comprehensive sustainable community are considered,

5.41 Then the overall choice of preferred growth direction could be different to the one for this focused assessment based on critical infrastructure.

APPENDIX ONE

Housing growth options assessed for the Transport Growth Options Study 2008

APPENDIX TWO

Summary of transport infrastructure, current capacity and future requirement