
Land North and South of Baldock

Feasibility Report DRAFT

November 2014



Land North and South of Baldock

Feasibility Report

November 2014

Contents

Section 1: Scope of Work

Section 2: Analysis

Section 3: Option Testing

Section 4: Transport Study

Document verification

Client:	Hertfordshire County Council
Project:	Land North and South of Baldock
Job number:	A086401
Document title:	Feasibility Report
Status:	Draft
Date:	November 2014
Document reference:	Baldock_North and South_Feasibility_Report_A086401

This report is copyright: © WYG Environment Planning Transport Limited, 2014
All drawings and photographs are by WYG Environment Planning Transport Limited unless stated otherwise
Drawings based on the Ordnance Survey map are reproduced with the permission of Her Majesty's Stationery Office:
© Crown copyright WYG Environment Planning Transport Limited licence number: AR 1000 17603



Scope of Work



Scope of work

1.1 Project history

WYG were appointed by Hertfordshire County Council (HCC) to undertake a high level assessment of the development opportunities of a site of approximately 139ha to the North of Baldock. The Land, currently within HCC ownership has been identified as a strategic site in relation to meeting North Hertfordshire District Council's (NHDC) housing requirement.

As requested by the project brief, for both the initial piece of work and also that which this report is focused, our site analysis is based upon high level urban design and landscape appraisals as well as strategic transport analysis combined with information made available by the council.

Our findings showed that up to 2800 residential units could be accommodated on this land at an average density of 35 dph.

However, due to the limitations of the existing road network (as per Aecom's report in 2007), specifically the limited capacity at the A507/B656 Junction, this development of 2800 units would require a new Local Distributor Road connecting A507 North Road with Royston Road (B656). This Local Distributor Road would involve the construction of a bridge over an existing railway line.

Subsequent work undertaken has discovered that an option to bring forward a smaller development of 673 units in advance of a functioning Local Distributor Road and rail bridge is no longer viable on transport grounds. This work has also found that these elements of transport infrastructure would need to be fully operational before any residential unit is inhabited on this site.

1.2 Current Undertaking

Within the following report we explore the potential of utilising land to the south of Baldock, within HCC Ownership, to bring forward comprehensive residential development in north and south Baldock while delaying the requirement for a Northern Local Distributor Road and, the potentially costly, railway bridge.

A high level site analysis Four options for development are presented that take into consideration previous work undertaken by the WYG Urban Design, Transport and Management Services teams as well as the studies previously undertaken by Aecom and Vincent and Goring.

The rationale behind undertaking this option testing exercise is in exploring how to best bring forward comprehensive development in the most cost effective way.

Option One shows a development of 2800 units but requires the upfront costs of building a northern Local Distributor Road and railway bridge before any residential unit can be inhabited. While this development, in its completed state, has been shown to be viable (Land North of Baldock WYG Appraisal Report, 2014) it is the significant upfront costs required that may present issues in bringing forward the development.

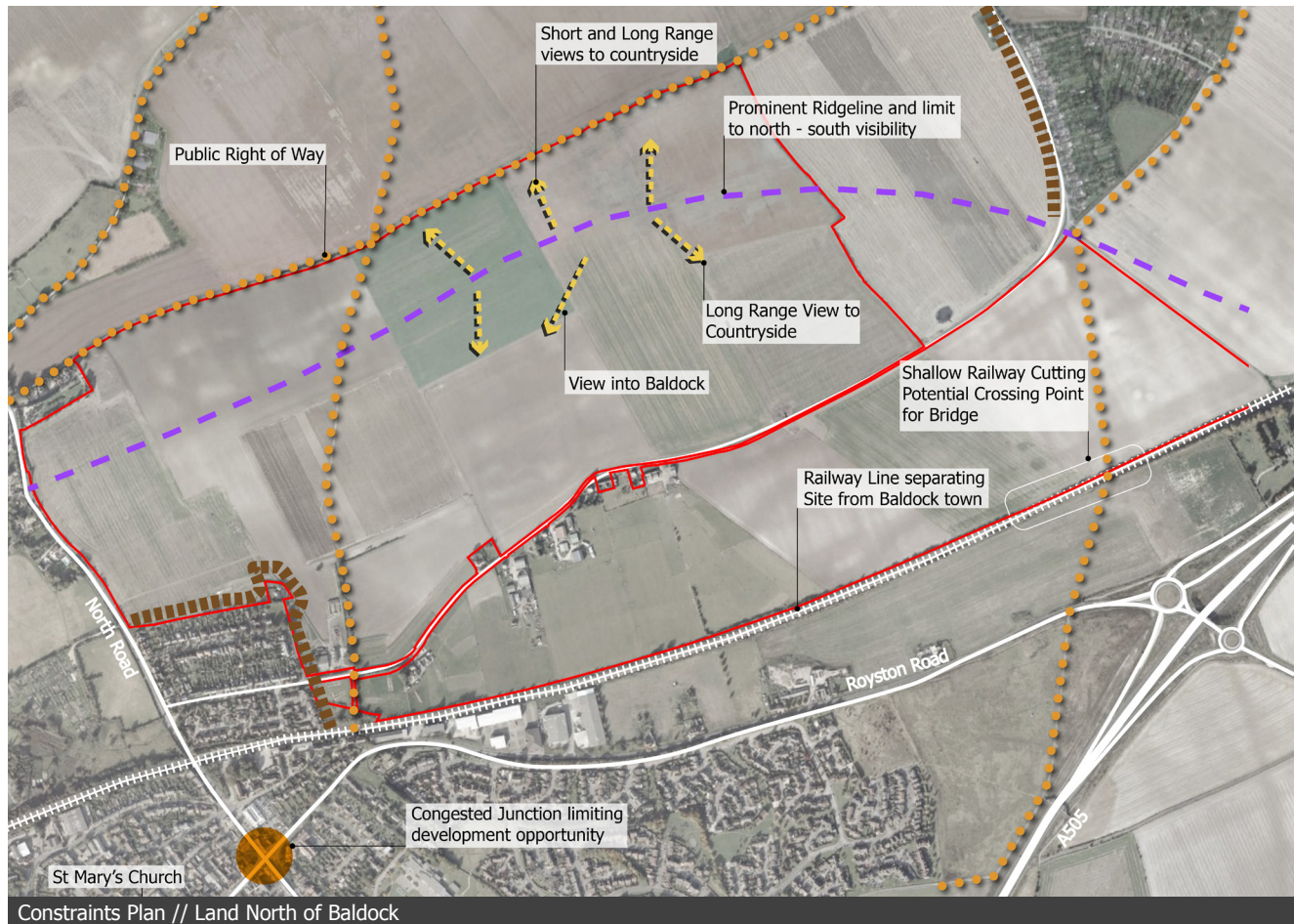
In response, both Option Two and Three explore avenues for bringing forward development that require lesser amounts of up front infrastructure costs and serve as initial phases of a wider, more comprehensive development. These options utilise land in the south of Baldock and require the provision of a southern Local Distributor Road but, importantly, do not require the provision of a railway crossing.

Option Four then brings together the land in the north and south and outlines how a comprehensive solution could be brought forward.

Analysis



Analysis



2.1 Land North of Baldock

Located to the north of the railway line connecting London and Cambridge, the Northern study area is bounded by the A507 North Road to the west and the railway line to the south. Two small residential clusters served by the Bygrave Road can be found at the sites south western and eastern extents. The remainder of the study area is bounded by open countryside and arable farmland.

At present the site is defined by a gently rolling topography and arable farmland character.

The site is accessed from the Bygrave road which runs east-west through the study area and bisects the site. Several Public Rights of Way are located in or near to the site. Two run north through the site and a further one runs east-west along the site's northern boundary.

From the work carried out by LUC (Land North of Baldock: Landscape sensitivity study, July 2013) for North Hertfordshire District Council a prominent ridgeline runs through the site along a east-west axis and acts to limit north-south visibility in the local area as well as containing the site. This ridge provides long range views to both open countryside and into Baldock town and St Mary's Church.

The report also identifies two areas of Landscape Character B1 and B2 (Section 4). Both of these character areas can be found within the study area.



2.2 Land South of Baldock

The analysis for the Land South of Baldock follows the same high level approach and focuses on key urban design and landscape issues. This appraisal is supplemented by work undertaken by Vincent and Gorbing in July 2008, made available to WYG by HCC.

Using the analysis undertaken to support the report published by Vincent and Gorbing in July 2008 titled Land South of Clothall Road/Land South of Clothall Common (Ref: RG 4444), it is evident that, for the most part, the Land South of Baldock remains largely free of major development constraints with the site lying outside the flood plain with no likelihood of flood risk.

Within the report it is suggested that there should be a 20m noise offset along the southern edge of the

site and from the edge of the A505 by-pass and an acoustic bund 2m high.

It was identified that there is high potential for archaeological remains across the site.

The most significant constraint is the adverse impact of development on the landscape, but the report suggests that this could be mitigated, for the most part, through landscape buffers between the development and the by-pass and between existing and proposed residential development. The one exception of this is the land to the south of the allotments on Wallington Road which the report states would have such significant impact as to avoid building on this land.

Analysis



Above // Traffic backing up from A505/B656 junction

2.3 A507/B656 Junction

The critical highway capacity issue for future development in Baldock is the operation of the A507 (North Road/ Clothall Road)/ B656 (Royston Road/ Whitehorse Street) signal junction.

Capacity assessments undertaken to assess the current (2014) performance of the A507 (North Road/ Clothall Road)/ B656 (Royston Road/ Whitehorse Street) signal junction shows a Reserve Capacity (RC) of -7.3% in the AM peak and -7.8% in the PM peak.

Experience with RC calculations at existing junctions indicates that queuing does not become particularly noticeable until the degree of overload reaches 10% (i.e. -11% RC). This means that in 2014 the junction is operating within its design capacity in both peak periods. However, the results also show that the junction is operating close to the degree of overload where queuing could be an issue. With no land available to modify the existing arrangement to increase the capacity, it would indicate that any notable future developments would require new or amended junctions/ roads elsewhere in the local network to accommodate the additional traffic generated by them.



Above // Existing utilities infrastructure in the site area

2.4 Utilities

The AECOM Services Assessment for land at Baldock has previously identified the need for substantial reinforcement of the surrounding utilities network if future development was to come forward at Baldock. Specifically, the report highlighted requirement for a new Primary Electricity Sub-Station in the early phases of any proposed expansion of the town.

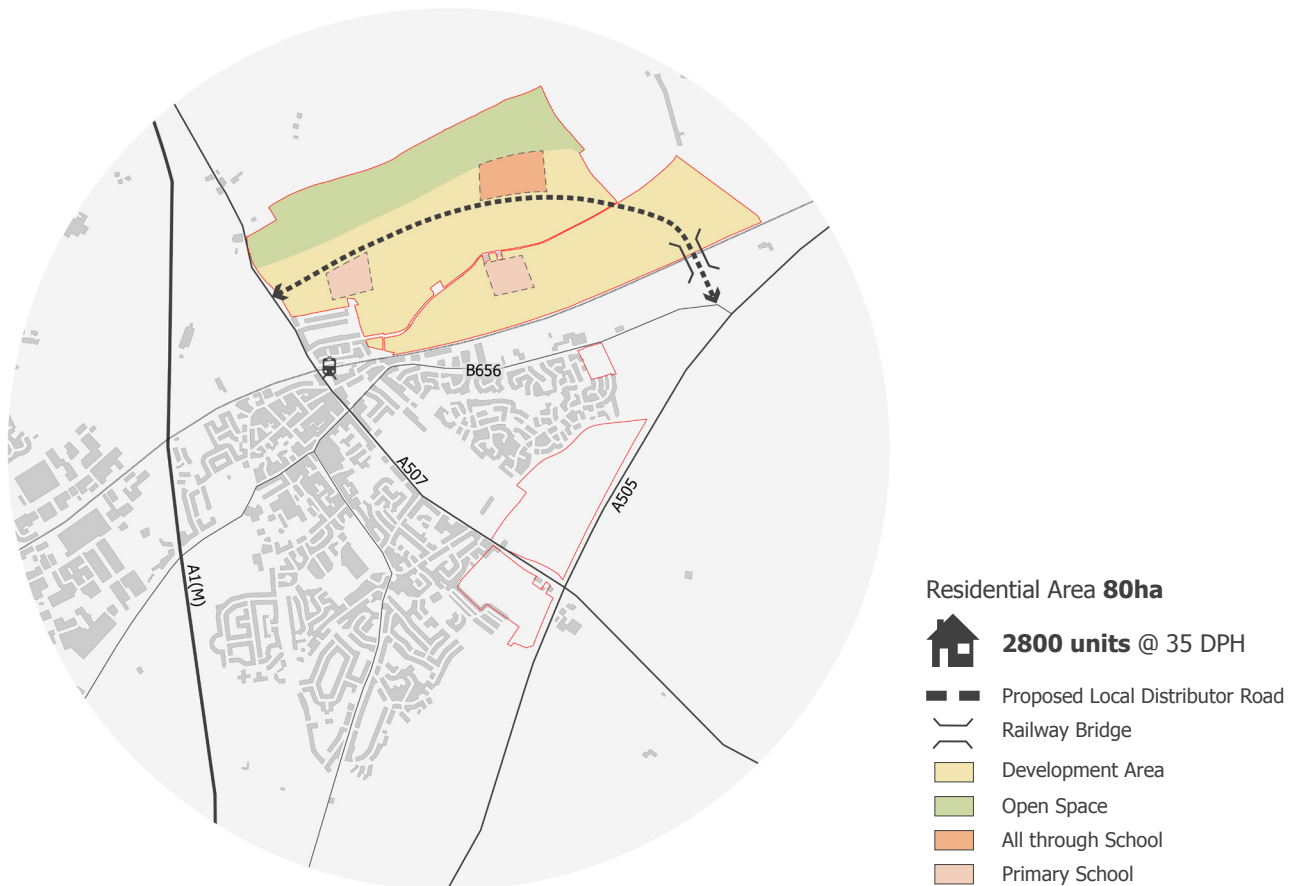
Therefore, there is a need for the Utility study to be updated to reflect the current situation, as well as to assess the impact and requirements of the proposals set out within this report. The general allowance included for the provision of a new Electrical Sub-Station within the Viability Report will need to be revised following the updated Utility Study as this requirement is likely to have significant consequence in terms of upfront infrastructure provision.

Option Testing



Option Testing

Option One



3.1 Option One

Option One sees the development of 2800 units (at 35dph) on the Land North of Baldock.

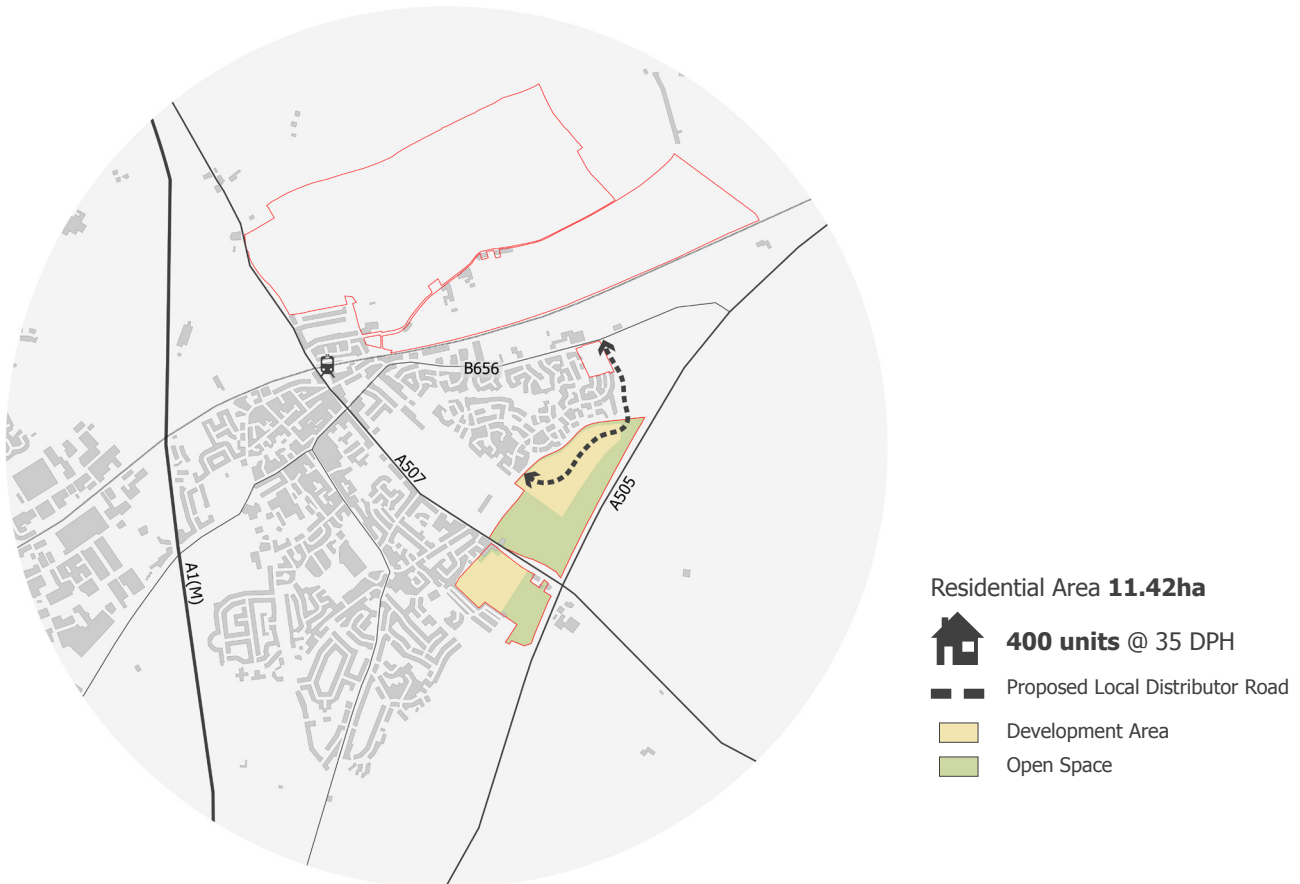
To support this development a new northern Local Distributor Road and railway bridge would have to be completed before any of the new housing was occupied.

The development, described in detail within our previous report (Land North of Baldock Feasibility Report, May 2014), contains land provisions for one 'all-though' school and two primary schools in addition to the 80ha of residential development.

Subsequent high level viability testing (WYG, November 2014) has concluded that this development option would be deliverable in viability terms. However, the same report caveats this finding as there are potentially significant costs involved in gaining rights to cross the railway line.

Option Testing

Option Two



3.2 Option Two

Option Two sees the development of 400 units (at 35dph) on the Land South of Baldock.

To support this development a new southern Local Distributor Road would have to be completed before any of the new housing was occupied.

The importance of this option is in its potential role as an initial phase of a wider, more comprehensive, development of both northern and southern sites with the eventual provision of a northern Local Distributor Road and rail bridge.

Option Testing

Option Three



3.3 Option Three

Option Three sees the development of 250 units on the Land North of Baldock and 100 units on the Land South of Baldock site.

As with Option Two, this option could be seen as an initial phase of a wider, more comprehensive, development of both northern and southern sites with the eventual provision of a northern Local Distributor Road and rail bridge.

The development to the south is provided on an area of 2.85ha and is enabled through the provision of the southern Local Distributor Road. Development will front on to this Local Distributor Road from either side.

The residual junction capacity created by the provision of the southern Local Distributor Road enables 250 units to be developed on a site of 7.14ha.

No development can take place without a fully functional southern Local Distributor Road being in place.

Option Testing

Option Four



3.4 Option Four

Option Four sees the development of 2800 units on the Land North of Baldock and 666 units on the Land South of Baldock.

From the Transport analysis (Technical Note 4, 30/10/14) it was concluded that 2800 units could be accommodated in the north alongside 800 units in the south. However, once the site constraints were applied to the land at the south it was evident that only 666 units could be accommodated on this land.

To support this development a new southern Local Distributor Road as well as a new northern Local Distributor Road and railway bridge would both need to be developed and fully functioning.

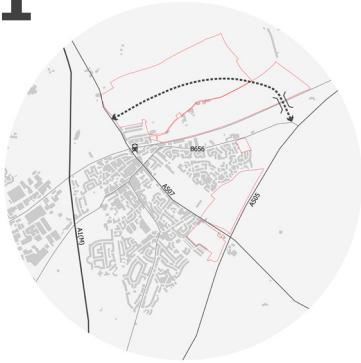
However, as outlined in Option Two and Three, opportunity exists to bring forward smaller phases of development in an effort to offset costs involved in providing key infrastructure.

Once again, high level viability testing (WYG Appraisal, Land North and South of Baldock November 2014) has concluded that this development option would be deliverable in viability terms. However, the same report caveats this finding as there are potentially significant costs involved in gaining rights to cross the railway line.

Option Testing

Phasing Scenario A

1



Upfront Costs

- Local Distributor Road: £4.3 million
- Railway Bridge: £2.2 million
- Cost of crossing railway

2



Scheme generates residual value

Option Testing

Phasing Scenario B

1



Upfront Costs

- Local Distributor Road: £1.9 million

2



Scheme generates residual value

3



Residual value provides initial funding for infrastructure costs of Northern Local Distributor Road, Railway Bridge and cost of railway crossing

4



Overall improved residual Value

Option Testing Summary

3.5 Summary

Through the previously outlined option testing exercise a number of potential avenues for bringing forward development in the land north and south of Baldock have been identified.

The importance of these options lies in demonstrating that a considered and strategic approach to infrastructure implementation will be required to deliver comprehensive development in Baldock.

Option One delivered 2800 units at 35dph, but carries with it the caveat that the northern Local Distributor Road and railway bridge would have to be fully operational before any development was occupied.

In response to this Option Two and Three sought to investigate what development could be delivered without the need of the northern Local Distributor Road and railway bridge.

Through the provision of a southern Local Distributor Road it was found that 400 units could be provided in the land south of baldock (option two) or that 250 units could be provided in the land north of baldock with 100 units in the land south of baldock (option three).

Both of these options could be seen as an initial stage of development that delay the provision of the potentially costly railway bridge and northern Local Distributor Road.

Option four outlines the development opportunity in delivering both the northern Local Distributor Road and railway bridge as well as the southern Local Distributor Road. This found that 3466 units could be accommodated across both northern and southern sites.

With regards phasing, two scenarios were presented with Scenario B allowing for smaller upfront infrastructure costs by developing to the south of Baldock in the initial phases. Once complete the residual value from the completed southern development could then be used to help fund the more costly infrastructure required in the north.

Transport Study



4. Introduction

4.1 WYG have been appointed by Hertfordshire County Council (HCC) Property Department to assist with assessing Land South of Baldock from a transport point of view.

4.2 A Masterplan Framework has previously been prepared to consider land in Baldock for HCC by Vincent and Gorbing Architects. In the Vincent and Gorbing Drawing No. 500C, HCC have indicated proposals are made for 933 dwellings and Drawing No. 500D includes for 1,233 dwellings. This has been submitted to North Hertfordshire District Council (NHDC) with a view of informing the draft Local Plan. Previous traffic assessment work by Aecom also refers to these developments as Sites 1 to 5.

4.3 In the initial Feasibility Report and Technical Note 2, WYG considered the impact of this prospective future development upon the proposed land North of Baldock site and when a new North Local Distributor Road would be required to support additional residential development in the North of the town. In Technical Note 3 WYG examined the provision of a new southern Local Distributor Road, which could accommodate residential development in land South of Baldock.

4.4 This Technical Note looks at a further set of scenarios to examine the level of residential development possible in Baldock if both a North and South Local Distributor Road were in place. It also confirms some of the previous findings for summary to support the Masterplanning Feasibility Report being prepared by WYG Urban Design for Land North and South of Baldock.

4.5 As with the previous Technical Notes, the principal traffic issue is to consider the ability of the existing A507 (North Road/ Clothall Road)/ B656 (Royston Road/ Whitehorse Street) signal junction in the centre of the town to accommodate new development traffic and the ability of the prospective Local Distributor Roads to provide alternative routes away from this junction. Capacity assessments were undertaken to assess the current (2014) performance of the A507/ B656 signal junction and this is described in full detail in WYG Technical Note

2 regarding Land North of Baldock (dated 05/09/14). The performance of the junction (using 2014 Manual Classified Count data in LINSIG) shows a Reserve Capacity (RC) of -7.3% in the AM peak and -7.8% in the PM peak. This demonstrates the junction is operating within its design capacity in both peak periods. However, the results also show that the junction is operating close to the degree of overload where queuing could be an issue.

4.6 For all development scenarios examined, the trip rates used previously in the Aecom work for the Vincent and Gorbing Masterplan and the WYG Technical Notes have been used. These are shown in Table 1 (below):

	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Vehicle Trip Rates	0.112	0.443	0.555	0.307	0.170	0.477

4.7 This Technical Note provides traffic information on the following further scenarios:

- Residential development at Land North of Baldock and Land South of Baldock. Southern Local Distributor Road provided;
- Residential development at Land North of Baldock and Land South of Baldock. Northern Local Distributor Road and Southern Local Distributor Road provided.

5. Option One – Land North of Baldock

5.1 The initial WYG Feasibility report (June 2014) and Technical Note 2 considered that a development of 3,000 residential units could be provided at Land North of Baldock, subject to the provision of a Northern Local Distributor Road. The Local Distributor Road would join the A507 North Road with the B656 Royston Road and would also require a bridge to cross the railway line.

5.2 It is concluded that the existing road network has insufficient capacity to accommodate any units on the Land North of Baldock site without highway

improvements and therefore this scenario would require the Northern Local Distributor Road and bridge to be built prior to any occupancy on the site.

6. Option Two – Land South of Baldock

6.1 From the LINSIG analysis undertaken to support Technical Note 3 (23/10/14), it was concluded that 400 units is the maximum number which could be built at land South of Baldock if a Southern Local Distributor Road is in place to relieve the A507/ B656 junction.

6.2 With 400 units and a Southern Local Distributor Road the junction works marginally worse than the 2014 base scenario, with the junction operating at –11% RC in the PM peak which is the point at which the design capacity is reached. On crossing detection could be provided for pedestrians, meaning that the signal timings could be adjusted to slightly improve the junction Reserve Capacity.

6.3 Outputs of the LINSIG runs are contained in Appendix A, with the results summarised as:

- Scenario 15 (2014 baseline data + reassignment for Southern Local Distributor Road + 400 units South of Baldock AM peak): RC = 1.5%
- Scenario 16 (2014 baseline data + reassignment for Southern Local Distributor Road + 400 units South of Baldock PM peak): RC = –11%.

7. Option Three – Land North of Baldock & Land South of Baldock with Southern Local Distributor Road

7.1 Work carried out in Technical Note 3 to assess the Southern Local Distributor Road has been re-examined to see what levels of development could be accommodated at Land North and South of Baldock. An advantage of this approach may be that the North development could be commenced without the Northern Local Distributor Road/ bridge being required until a later stage in the building of the development.

7.2 Various numbers of units were tested on land North of Baldock and land South of Baldock. Trips were assigned from both sites (for inbound and outbound flows) as follows based upon the 2007 cordon counts carried out for the previous Aecom transport studies:

- A507 Station Road = 15% of development trips
- B656 Whitehorse Street = 30% of development trips
- B656 Royston Road (East of South of Baldock development rather than at signal junction) = 15% of development trips
- South Road = 22% of development trips
- A507 Clothall Road = 14% of development trips.

7.3 From the LINSIG analysis it is concluded that 250 units at land North of Baldock and 100 units at land South of Baldock are the maximum numbers of residential dwellings which could be accommodated if the Southern Local Distributor Road is in place to relieve the A507/ B656 junction. With this scenario the junction works marginally worse than the 2014 base scenario, with the junction operating at – 9.8% RC in the PM peak.

7.4 Outputs of the LINSIG runs are contained in Appendix A, with the results summarised as:

- Scenario 19 (2014 baseline data + reassignment for Southern Local Distributor Road + 250 units North of Baldock + 100 units South of Baldock AM peak): RC = –6.3%
- Scenario 20 (2014 baseline data + reassignment for Southern Local Distributor Road + 250 units North of Baldock + 100 units South of Baldock PM peak): RC = –9.8%.

8. Option Four – Land North and South of Baldock

8.1 Option four considers the likely maximum level of development in Baldock at the North and South sites if a Northern Local Distributor Road and Southern Local Distributor Road are both in place. A summary of the traffic flows used to assess the development scenarios and the traffic reassignment assumed once both Local Distributor Roads are in place is provided in Appendix B.

8.2 To examine the impact of both developments with both Local Distributor Roads, the following steps were undertaken:

a) Land North of Baldock – Reassignment of development flows at A507/ B656 junction for North and Southern Local Distributor Road:

- Station Road to Clothall Road – all movements diverted onto Local Distributor Roads;
- Clothall Road to Station Road – all movements diverted onto Local Distributor Roads;
- Station Road to Whitehorse Street – 50% of movements diverted onto Local Distributor Roads;
- Whitehorse Street to Station Road – 50% of movements diverted onto Local Distributor Roads.

b) Land South of Baldock – Reassignment of development flows at A507/ B656 junction for North and Southern Local Distributor Road:

- Station Road to Whitehorse Street – 50% of movements diverted onto Local Distributor Roads;
- Whitehorse Street to Station Road – 50% of movements diverted onto Local Distributor Roads.

c) 2014 Base Flows – Reassignment of flows at A507/ B656 junction for North and Southern Local Distributor Roads:

- Station Road to Clothall Road – 50% of existing movements diverted onto Local Distributor Roads;
- Station Road to Royston Road – 50% of existing movements diverted onto Local Distributor Roads;
- Station Road to Whitehorse Street – 50% of existing movements diverted onto Local Distributor Roads;
- Royston Road to Station Road – 50% of existing movements diverted onto Local Distributor Roads;
- Royston Road to Clothall Road – 50% of existing movements diverted onto Local Distributor Roads;
- Clothall Road to Royston Road – 50% of existing movements diverted onto Local Distributor Roads;
- Clothall Road to Station Road – 50% of existing movements diverted onto Local Distributor Roads;
- Whitehorse Street to Station Road – 50% of existing movements diverted onto Local Distributor Roads.

8.3 From the LINSIG analysis of the resulting flows it is concluded that if a Northern Local Distributor Road and Southern Local Distributor Road are both in place, 3,000 residential units can be provided on land North of Baldock and up to 800 residential units can be provided at land South of Baldock. With this scenario the A507/ B656 junction works marginally worse than the 2014 base scenario, with the junction operating at -10.5% RC in the AM peak.

8.4 Outputs of the LINSIG runs are contained in Appendix A, with the results summarised as:

- Scenario 21 (2014 baseline data + reassignment for Northern Local Distributor Road + reassignment for Southern Local Distributor Road + 3,000 units North of Baldock + 800 units South of Baldock AM peak): RC = -10.5%
- Scenario 22 (2014 baseline data + reassignment for Northern Local Distributor Road + reassignment for Southern Local Distributor Road + 3,000 units North of Baldock + 800 units South of Baldock PM peak): RC = -3.0%.

8.5 The other test for this 'maximum' development scenario is to consider if the Northern Local Distributor Road (as designed in WYG's Feasibility report, June 2014 and Technical Note 2) has sufficient capacity to accommodate the additional traffic associated with having development on land North and South of Baldock, as well as further reassignment of traffic onto the Northern Local Distributor Road due to a Southern Local Distributor Road also being in place.

8.6 The preliminary design of the Northern Local Distributor Road had a capacity of 1,590 vehicles per hour in the busiest direction to meet Design Manual for Roads and Bridges (DMRB) guidance. Technical Note 2 assigned 2014 baseline traffic, development traffic and 3,000 homes at land North of Baldock and showed a maximum one way flow of 1,132 (1,742 two way) in the AM peak on the Local Distributor Road and 962 one way (1,357 two way) in the PM peak.

8.7 Accounting for the reassignment of background and development trips associated with 3,000 homes at land North of Baldock, 800 homes at land South of Baldock and a Northern Local Distributor Road and Southern Local Distributor Road results in a maximum one way flow of 1,488 (2,665 two way) in the AM peak on the Local Distributor Road and 1,373 one way (2,054 two way) in the PM peak. It is therefore concluded that a 7.3m wide, two way single carriageway road is still suitable.

8.8 With regards to the southern Local Distributor Road considering the two developments and reassignment for Local Distributor Roads results in a maximum one way flow of 812 in the PM peak. Therefore a 7.3m wide, two way single carriageway road is a suitable arrangement for the southern Local Distributor Road also.

9. Conclusions

9.1 This high level traffic assessment concludes that:

- Option One – 3,000 residential units can be accommodated at Land North of Baldock with the Northern Local Distributor Road in place;
- Option Two – 400 residential units can be accommodated at Land South of Baldock with the Southern Local Distributor Road in place;
- Option Three – 250 residential units can be accommodated at Land North of Baldock and 100 residential units can be accommodated at Land South of Baldock with the Southern Local Distributor Road in place;
- Option Four – 3,000 residential units can be accommodated at Land North of Baldock and 800 residential units can be accommodated at Land South of Baldock with the Northern Local Distributor Road and Southern Local Distributor Road in place.
- A 7.3m wide, two way single carriageway North Link road has sufficient design capacity to accommodate the levels of development indicated in Option Four.
- A 7.3m wide, two way single carriageway South Link road has sufficient design capacity to accommodate the levels of development indicated in Option Four.