East Herts Strategic Sites Delivery Study

Final Report September 2015

Peter Brett Associates

With:

gardiner&theobald

On behalf of East Hertfordshire District Council

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1	29/09/2015	Appendix E Transport Assessment added	Chris Heaney	EP	29/09/2015

Contents

Appendices

EXECUTIVE SUMMARY

1. This report by Peter Brett Associates (PBA) and Gardiner and Theobald sets out the findings of an exploration of the developability and deliverability of four strategic sites currently included in the Draft Preferred Options District Plan 2014. The work has followed an approach to testing developability and deliverability consistent with the terms of the Framework.

2. The following strategic sites were assessed in terms of infrastructure and viability:

   - Bishop's Stortford has been tested at 750 dwellings
   - North and East of Ware have been tested at 2,972 dwellings and at 2,000 dwellings (the latter based on generic assumptions as agreed by EHDC)
   - East of Welwyn has been tested at 1,700 dwellings
   - Gilston Area has been tested at 10,000 dwellings and at 2,500 dwellings (the latter based on generic assumptions as agreed by EHDC).

3. The final EHDC Local Plan spatial strategy will be refined following an assimilation of a number of critical studies currently underway including the recently announced Countywide COMET transport modelling and Transport Vision. Although there are references to strategic transport requirements in this study, an important caveat is that any recommendations relating to transport will be deferred to the Transport Vision 2016 and the Countywide COMET modelling.

4. This study has been informed by a considerable body of work that has been undertaken and provided by (or on behalf of) landowners and developers promoting schemes in the general locations that the Council is considering. This information and assistance has been invaluable as full consideration can only occur effectively through a collaborative process. We have independently reviewed and verified the information and provided our own professional judgement where necessary and taken account of inputs from EHDC and ATLAS (who are acting as impartial advisors on this study) to inform our assessment.

5. Inevitably large scale schemes such as those covered by this study are by their nature very complex, and the evidence to inform their developability will evolve over time as options are explored and refined. Our assessment has reflected the stage of development that the sites have reached. We have sought to ensure that there is sufficient evidence in place to provide the Local Authority with assurance that the strategic sites are developable and then to provide recommendations to support delivery considerations following adoption of the local plan.

6. On the basis of information received and reviewed and the assumptions made (and subject to the findings relating to the COMET modelling and Transport Vision), we are of the view that the North and East of Ware, East of Welwyn Garden City, and South of Bishop's Stortford are 'developable'. We do not have the same confidence to assess the Gilston Area strategic site as developable at present and consider further assessment is required in relation to the proposed sewerage infrastructure and site access options. It is likely that the lower scale of growth assessed for Gilston Area (at 2,500 units) could be found to be developable, utilising capacity over the existing bridge (to be confirmed) and existing sewerage capacity at the Rye Meads Plants (to be confirmed). This could then provide the time to explore further work on securing a suitable access and solutions to longer term sewerage infrastructure needed to support the higher growth scenario.

7. The conclusions set out recommendations to support the delivery of the strategic sites and highlight the need to present a strong evidence base on infrastructure planning and delivery. Careful consideration will need to be given as to how best to fund the delivery of strategic infrastructure to enable the planned growth to take place. The viability assessment begins to consider the options for strategic site Community Infrastructure Levy and has begun to distinguish the appropriate use of CIL and S106 payments. This list is intended as a starting point and is expected to be refined as more information becomes available about the infrastructure and sites.

1 STUDY SCOPE AND APPROACH

1.1 Introduction

1.1.1 Peter Brett Associates (PBA) and Gardiner and Theobald were commissioned in June 2014 by East Herts District Council (the Council) to assess the deliverability and viability of the strategic sites proposed in the Draft Preferred Options District Plan 2014 and informs the setting of a Community Infrastructure Levy.

1.1.2 For ease of presentation the following two inter-related reports have been prepared by PBA as part of the overall commission:

- Report one, this report, which is abbreviated in this report to the 'Delivery Study', focuses on assessing the deliverability of the four strategic sites known as the Gilston Area, North and East of Ware, East of Welwyn Garden City and South of Bishop's Stortford.
- Report two looks at the Plan Viability, Affordable Housing and Community Infrastructure Levy options to support the delivery of infrastructure and wider plan policies.

1.2 Status of this study and how it will inform the next steps

1.2.1 From an initial urgency to complete this study within two months of commission in autumn of 2014, the final preparation of this report had been delayed pending the outcome of the VISUM transport modelling. This culminated with a letter from Hertfordshire County Council (HCC) to East Hertfordshire District Council on 27th July 2015. In that letter, HCC stated that they consider that following the first five year delivery of the planned trajectory, the anticipated severe traffic congestion on the A414 arising from the scale of planned development cannot be accommodated by the existing A414 corridor in Hertford.

1.2.2 As such HCC have now commissioned work on a new Countywide Transportation Model (COMET) which will provide a platform for testing strategic mitigations to growth across the County. This will inform a Transport Vision and identify packages of transport interventions to enable growth across the county to 2050. The accommodation of East West movements (in East Hertfordshire) will be part of the consideration in this COMET and vision work.'

How does ongoing transport modelling affect this study?

1.2.3 Three of the four strategic sites assessed as part of this study are affected to varying degrees by the east-west movements referred to above. This means it is not possible to draw conclusions on the transport element of the assessment until the findings from the HCC Transport Vision are available sometime in 2016. Note that VISUM modelling is also currently ongoing. The Transport Assessment set out in Appendix E presents the current position with regards to key transport issues identified as part of this study. This study should be read with the transport issues outlined in Appendix E in mind.

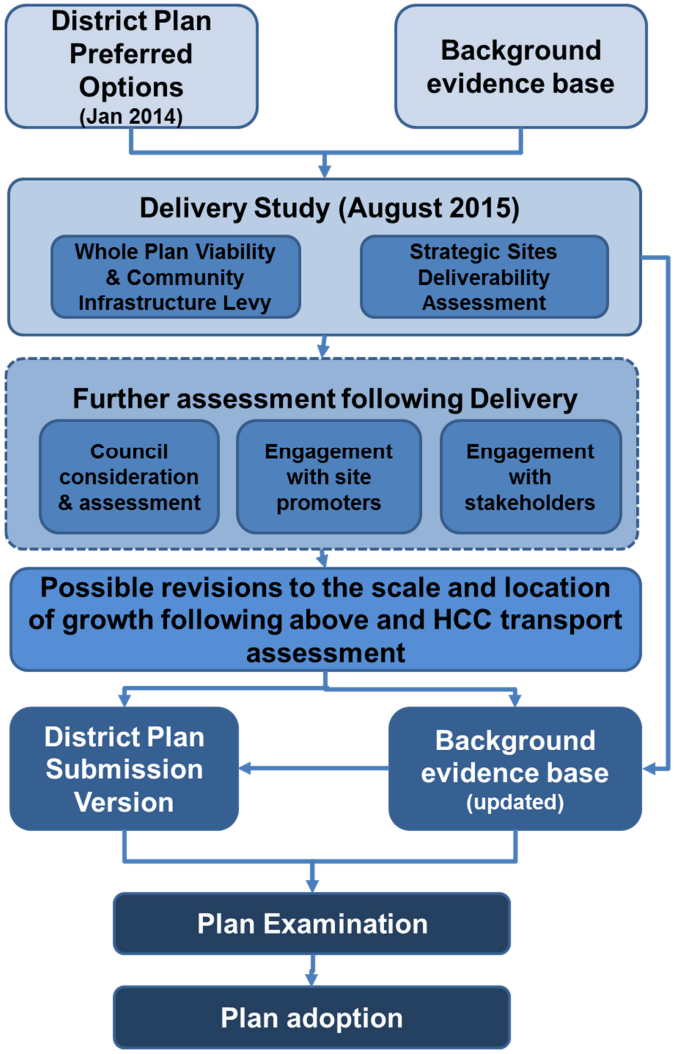
1.2.4 It has been agreed with East Herts District Council to complete this study with a proviso that there is important transport assessment work currently underway which will further inform the conclusions of this study. In the meantime, there is now an opportunity, where appropriate, to address some of the emerging recommendations from this study. Any conclusions and recommendations that are proposed in this study should be treated with caution as there could be significant changes to either the planned growth or the emerging transport solutions.

1.2.5 As timescales and evidence informing the deliverability assessment have changed, the role of this study has changed. Instead of being the final evidence base to inform the delivery and developability of the Draft Preferred Options District Plan as part of the Examination, there is

now time to adopt a more iterative approach using the finding from this study to refine some of the issues identified (whilst parallel work takes place on the transport assessment).

1.2.6 The inputs informing this study and how it will now be used to inform further refinements to the Local Plan preparation are summarised in Figure 1.1 below. This shows there will be further stages of assessment and consultation, together with possible revisions to the scale and location of growth based on the various assessments, leading up to the submission of the District Plan, and its examination and adoption.

Figure 1.1 Strategic Sites Delivery Study inputs and next steps



Source: ATLAS / PBA 2015

1.2.7 This Delivery Study has been prepared based upon the evidence and material that was available in the autumn of 2014. Already further work has overtaken the publication of this report. Strategic sites such as those covered by this study are complex and detailed delivery considerations will be constantly refined as differing levels of technical assessment work are undertaken. In some instances there are alternative approaches to providing infrastructure which may be equally appropriate.

1.2.8 This study should be used as the basis for further discussions with the relevant stakeholders, notably the promoters of each of the strategic sites involved in infrastructure planning and delivery. This study makes certain assumptions and professional judgements based upon our

knowledge of comparable situations and the evidence submitted by site promoters as it currently stands.

Identifying the strategic sites for this Delivery Study

1.2.9 The National Planning Practice Guidance states that 'evidence should be proportionate to ensure plans are underpinned by a broad understanding of viability. Greater detail may be necessary in areas of known marginal viability or where the evidence suggests that viability might be an issue – for example in relation to policies for strategic sites which require high infrastructure investment'.[1]

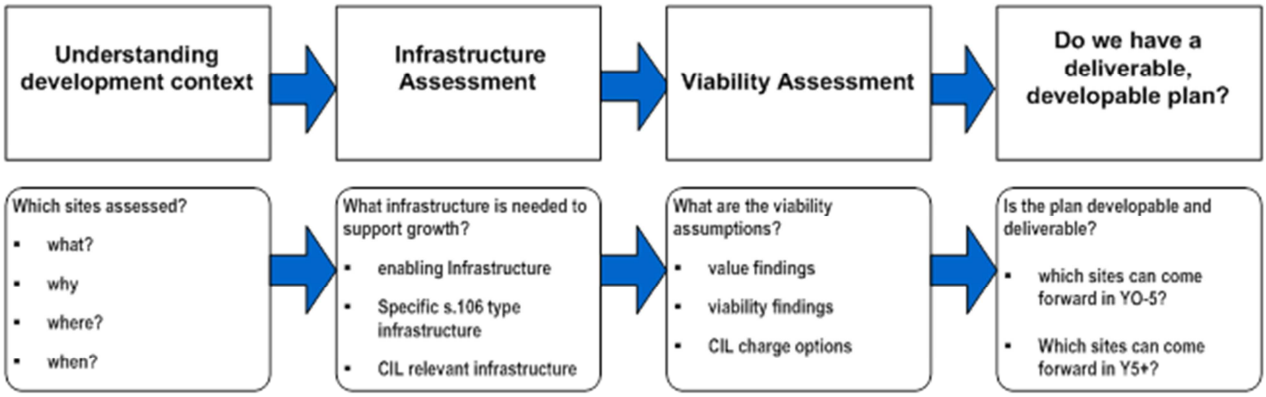
1.2.10 Various possible development sites were put forward as part of the Preferred Options within the Draft Plan. The selection of sites for consideration as part of this report was made according to a planning judgment as to the scale and complexity of each site. The following four sites were identified as 'strategic' in this sense and therefore meriting assessment as part of this study:

- **Gilston Area (5,000 to 10,000 dwellings):** selected because of the scale of on and off-site infrastructure required, including at least one secondary school and expensive crossings of the Stort Valley, sewage treatment costs, and the potential requirement for extensive transport infrastructure upgrades in the vicinity and also to the strategic road network;
- **North and East of Ware (200 to 3,000 dwellings):** selected because of the scale of on and off-site infrastructure required, including provision of a new link road and sewer between the north and east of the town, a potential new secondary school, and neighbourhood centre(s);
- **East of Welwyn Garden City (1,700 dwellings):** selected because of the cross-boundary infrastructure requirements including a secondary school, and the potential for expensive road infrastructure upgrades;
- **South of Bishop's Stortford (750-1,000 dwellings):** selected because of the possible requirement for an on-site secondary school, neighbourhood centres, and a healthcare facility;

1.3 The study approach

1.3.1 Figure 1.2 illustrates the broad approach adopted to assess the strategic sites.

Figure 1.2 Study approach process diagram



[1] NPPG Viability, Paragraph: 005 Reference ID: 10-005-20140306

1.3.2 The study approach shown in Figure 1.2 is briefly explained below.

Understanding of the development context

1.3.3 The starting point for this assessment was to establish an understanding of the wider development context and to undertake a review of various reports informing the need, supply, direction and scale of growth. These documents included the East Herts Draft District Plan 2014, the District Plan Interim Development Strategy Report January 2014, the Infrastructure Topic Paper and Transport Update and the numerous documents submitted by site promoters.

1.3.4 A 'light touch' review of the three larger site Concept Plans was undertaken at commencement of this study. The review did not assess the quality of the plans in urban design terms. Instead, the focus of the reviews was to inform the capacity of the site to accommodate the scale of growth (achievability considerations) and inform site opening up costs, including access and main spine roads, any possible abnormal features and phasing options. The findings from this review subsequently informed discussions at the developer surgeries and the viability assessments.

Stakeholder consultation

1.3.5 Stakeholder engagement has been invaluable, particularly the input provided by the site promoters at a series of structured developer surgeries, including the presence of a representative from the Advisory Team for Large Applications (ATLAS). See Appendix A for a list of promoter surgery dates and stakeholders consulted.

1.3.6 PBA has undertaken service provider interviews with representatives from Hertfordshire County Council (with regard to highways, minerals and education), Thames Water, the NHS, site promoters' specialist transport and viability teams and agents active in the area, in order to gain a view on viability assumptions. Numerous transport meetings with Highways England (formerly the Highways Agency) and HCC, and others have taken place, as well as a workshop with EHDC members.

The infrastructure assessment

1.3.7 The site promoters provided their assessment of the infrastructure requirements, including costs and likely developer contributions. The cost estimates have been reviewed by cost consultants Gardiner & Theobald (G&T), working with PBA. In general, our approach has been to accept the cost estimates provided by the promoters, but to highlight areas for further investigation and consultation with infrastructure providers at future stages if there appears any difference of opinion.

The viability assessment

1.3.8 To inform the viability assessment, we have reviewed the site commencement and delivery rate assumptions, and refined the viability assumptions provided by the site promoters and explained where we have amended these. A site viability assessment has been undertaken, including a cashflow analysis that takes into account the phasing of development and payments for key infrastructure items. The viability assessment sets out the level of financial contributions which could be sought for site specific requirements and strategic infrastructure (through a Community Infrastructure Levy).

Deliverability assessment of the strategic sites

1.3.9 The final stage in this study has been to pull together the findings from the infrastructure and viability assessment to inform the conclusions and recommendations for the study as far as is possible in the light of the current work taking place on the District wide transport modelling and particularly the assessment of how to address the challenges for the east-west transport corridors. Our conclusions cannot be finalised until the finding from the HCC Transport Vision work is completed.

2 DEVELOPMENT CONTEXT

2.1 Introduction

2.1.1 This section sets out the development context for the strategic sites, outlining our understanding of the reason for selecting the general location and scale of growth for each of the strategic sites and the wider influences that are impacting on this.

Understanding the nature of East Herts and influences on growth

2.1.2 The study area presents a unique set of challenges. Whilst the majority of the District is very rural in character, with parts serviced by single lane tracks, and poor access. There are over 100 small villages and hamlets in the District in addition to the five historic market towns of Bishop's Stortford, Buntingford, Hertford, Sawbridgeworth and Ware. The larger town centres are in Bishop's Stortford, Hertford and Ware, though the smaller settlements support a healthy number of shops and related services. The District is bordered by larger towns, with Stevenage and Welwyn Garden City to the west and Harlow to the south-east.

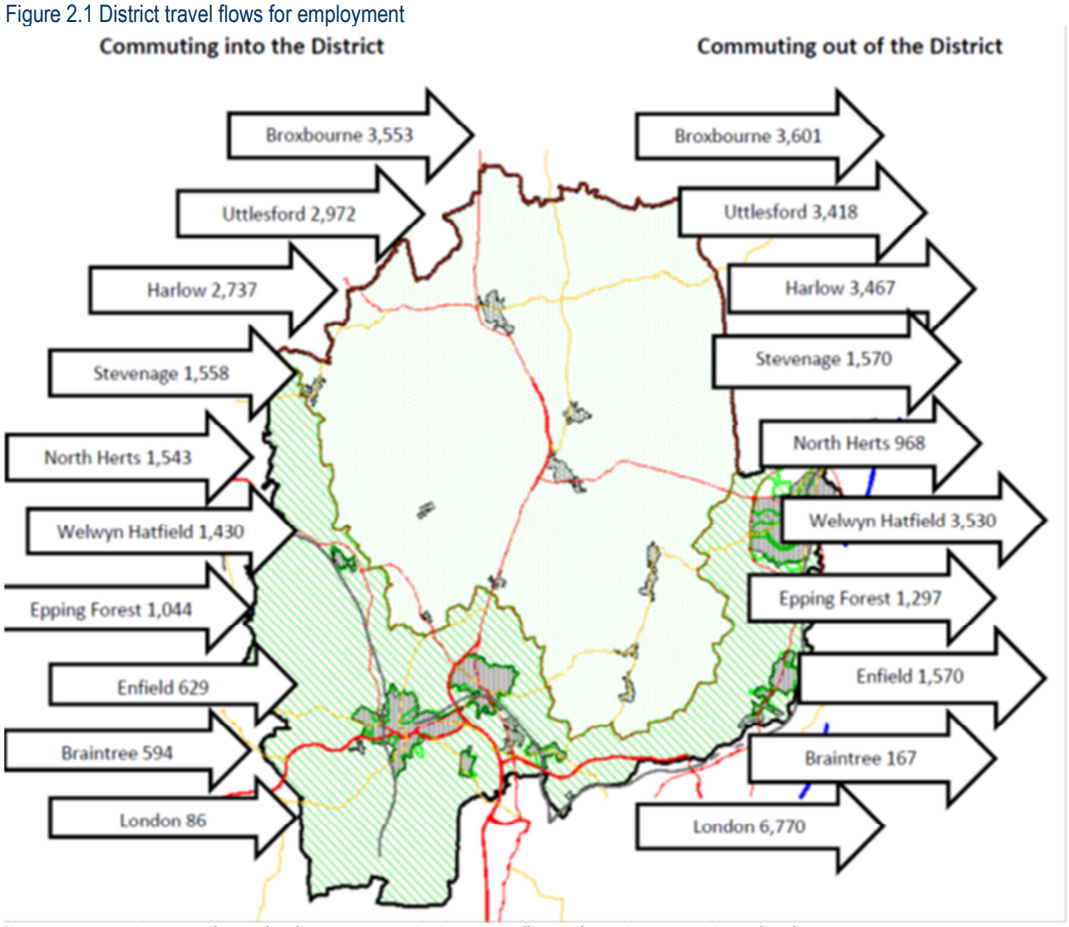
2.1.3 Much of the southern third of the District lies within the London Metropolitan Green Belt. There are numerous special landscape, natural and built heritage features including three sites of international nature conservation importance and six rivers, most notably, the river Stort.

2.1.4 Politically, the District is affected by two Local Enterprise Partnership (LEP) areas, two County Councils and seven district councils, thus bringing a range of interesting cross border 'duty to cooperate', development pressure, and cross border infrastructure influences, particularly from neighbouring towns of Harlow, Welwyn Garden City and Stevenage.

2.1.5 The District has good road and rail transport links and is well connected to the wider area. The A1 (M) and M11 run close to the western and eastern boundaries of the District respectively. In addition, the M1 and M25 are located in close proximity. Within the District, the A414 and the A10 run from west to east and north to south respectively. The District benefits from two mainline rail links into London. Stansted Airport lies adjacent to the north-eastern boundary of the District within Uttlesford. The District's excellent transport links (albeit with poor east-west connections) make it an attractive place to live and commute to work to London and Cambridge and as such continue to create pressure for new development.

2.1.6 Figure 2.1 below, shows that, although the District is a net exporter of its workforce (fifty percent of the workforce commutes out of the District for work, with the majority travelling into London and the surrounding local authority areas), there are considerable inter-dependencies with neighbouring authorities and large numbers also commute into the District for work.

Figure 2.1 District travel flows for employment



Source: EHDC Annual Monitoring Report 2013 - 2014 (based on Census 2011 data)

2.2 The Interim Development Strategy for East Herts

2.2.1 The District Plan Interim Development Strategy Report - Jan 2014 (abbreviated as the Development Strategy in this study) sets out the thinking that has informed the direction and scale of growth for the draft District Plan. We outline the reasons guiding the overarching Development Strategy in so far as it informs our assessment of infrastructure and viability.

What is the demand for growth?

2.2.2 The Preferred Options District Plan is based upon an Objectively Assessed Housing Need figure of 15,000 dwellings for the period 2011 – 2031. This figure will be refined through an update of the Strategic Housing Market Assessment. It should be noted at this stage that the figure of 15,000 dwellings does not include any additional projected need stemming from the Duty to Co-operate with neighbouring authorities. The Development Strategy identifies four main transport corridors that inform the housing market areas (HMA's), including the A10, M11, A1 (M) Stevenage and A1 (M) Welwyn Hatfield.

2.2.3 East Herts commissioned Edge Analytics to undertake an assessment of housing need at parish grouping level within the HMA's. The assessment identified demand in the following areas (numbers rounded):

- Ware and Central Southern – 4,200
- Hertford and Central South Western – 3,600
- Buntingford and Central Northern – 400

- Bishop's Stortford and North Eastern – 5,900
- Sawbridgeworth and South Eastern – 500

2.2.4 This shows that there is considerable demand in Bishop's Stortford and the North Eastern villages, presumably due to its accessibility and rail communications to London and Cambridge and access to the motorway and airport and the slightly lower sales values compared to other parts of the District.

The greatest demand is along the A414 'London commuter' corridor

2.2.5 The greatest assessed demand is along the existing settlements of Hertford, Ware, and the Central South Western and Southern Rural Settlements. This is not surprising, based on the economic geography of this demand in relation to where the greatest proportions of the District's residents travel to work for. The strong access connections provided by the A414 transport corridor to London via the A10 the A1 (M) and to railway stations at Ware, Hertford, and Welwyn Garden City is likely to be a major factor in contributing to this demand. Any growth along this 'London commuter' corridor is likely to have a high level of demand and likely to command some of the highest values in the District. The M11 and Harlow town stretch of the A414 could also perform as part of this A414 London commuter' corridor - particularly if access from the A414 to the M11 is made more direct with the proposed new M11 junction 7a.

Where is the supply for housing growth?

2.2.6 The Interim Development Strategy Report (January 2014) includes a table[2] entitled 'Need and potential supply by housing market area'. The report includes the following headline conclusions relating to the distribution of housing supply to meet the projected demand:

- **Bishop's Stortford** should meet the majority of its own housing need, with any residual need provided for by the Gilston Area which is within the same housing market area.
- **Sawbridgewort**h can provide for its own need.
- **Buntingford** should meet its own need and some of the need arising from the surrounding villages.
- Due to the physical constraints of **Hertford,** part of its housing need will need to be provided within the Broad Location at **East of Welwyn Garden City**.
- **Ware** should meet its own needs, and possibly some of the demand from villages within its hinterland, through the provision of development to the North and East of the town.
- The Interim Development Strategy Report notes that the **Rural Areas** cannot meet their own needs, and these will be met elsewhere.

2.2.7 The determination of the 'suitable location' element has been undertaken by EHDC as set out above.

The proposed housing growth and strategic sites in the Draft Preferred Options District Plan

2.2.8 East Herts District Council completed consultation on the Draft District Plan Preferred Options Consultation in May 2014. This includes the provision for 15,000 homes in the District for the Plan period 2011-2031. The quantum of housing growth is currently being reviewed, in parallel with this study. For this study, we have used the figures outlined in the Draft Preferred Options District Plan 2014.

[22] Table number 4.8 on page 40 of the Interim Development Strategy report and paragraph 4.5.15

2.2.9 Due to the limited capacity to accommodate the growth within the existing settlements, the bulk of the future housing supply is to be met through the designation of major new developments in the form of urban extensions, potentially ranging from 750 units to 10,000 units. These include the strategic sites assessed as part of this study at South of Bishop's Stortford, North and East of Ware, East of Welwyn Garden City and the Gilston Area. All of these major developments will require a change to the existing inner Green Belt boundary which is the subject of a separate study by PBA.

When are the strategic sites expected to be delivered?

2.2.10 Table 2.1 identifies when the strategic sites are expected to be delivered (this information is based on the Draft Preferred Options District Plan 2014 housing supply policy DPS3). Our independent review of estimate commencement and delivery rate is set out in section 9 and that has been used to inform the viability assessment.

Table 2.1 Timing and quantum of the strategic sites

Strategic site	Housing supply 2016 - 2021	Housing supply: up to 2031 (and beyond)	Where does the need stem from?	Employment
North and East of Ware	0	200 - 3,000	Growth stemming from Ware, but uncertainty about delivery has meant including a range of 200 – 3000 dwellings.	Appropriate levels of local retail and employment opportunities to promote self-containment and sustainability, including provision for home working
East of Welwyn Garden City	0	1,700	Unmet 1,700 dwellings stemming from Hertford demand and that of villages in the south-west of the District - location based on Duty to Co-operate assessment of shared infrastructure with Welwyn Garden City's growth at this location.	Appropriate levels of local retail and employment opportunities to promote self-containment and sustainability, including provision for home working
Gilston Area	0	3000 by 2031 (5000 – 10,000)	Demand arising from unmet need at Bishop's Stortford and the rural area. Growth beyond 2031 will help to meet future housing needs and will ensure that Green Belt boundaries will not need to be reviewed again at the end of the plan period in accordance with the NPPF.	Appropriate levels of local retail and employment opportunities to promote self-containment and sustainability, including provision for home working
South of Bishop's Stortford	500	750 – 1000	Meeting own demand. Land reserved for secondary school – if need for this is later removed scale will increase to 1,000 units.	Includes provision for an employment site of 4 -5 ha

Source: East Herts Draft District Plan Preferred Options Consultation 2014

2.3 The scale of growth assessed by this study

2.3.1 The scale of growth indicated for three of the strategic sites is presented as a range in table 2.1 and is awaiting the outcome of this study to inform the achievable scale of growth based on the tipping point assessment of infrastructure costs, thresholds and viability. Based on

confirmation with East Herts District Council, the following growth levels have been assessed in this study:

- Bishop's Stortford has been tested at 750 dwellings
- North and East of Ware have been tested at 2,972 dwellings based and at 2,000 dwellings (the later based on generic assumptions as agreed by EHDC).
- East of Welwyn has been tested at 1,700 dwellings
- Gilston Area has been tested at 10,000 dwellings and at 2,500 dwellings ((the later based on generic assumptions as agreed by EHDC).

The role and nature of the strategic sites in relation to their surroundings

2.3.2 The strategic sites South of Bishop's Stortford, North and East of Ware and East of Welwyn Garden City are identified in the Draft Preferred Options District Plan 2014 as extensions to existing settlements, and it is expected that future residents in these locations would access the wider strategic infrastructure in the respective town centres.

2.3.3 The development at the Gilston Area is described as requiring a degree of a 'self-containment' in the Draft Preferred Options District Plan 2014, but also as an urban extension to Harlow in the Development Strategy. The promoter's concept plan for just over 10,000 dwellings describes the proposal as a series of linked villages. The proposed linked 'villages' are described as being connected to Harlow, including access to Harlow town centre, Enterprise Zone (EZ) and railway station across the River Stort, with the objective of supporting the regeneration ambitions for Harlow town. As such Draft Preferred Options District Plan Policy GA1 does not include a requirement to provide any substantial level of employment at the Gilston Area apart from local opportunities to promote self-containment and sustainability.

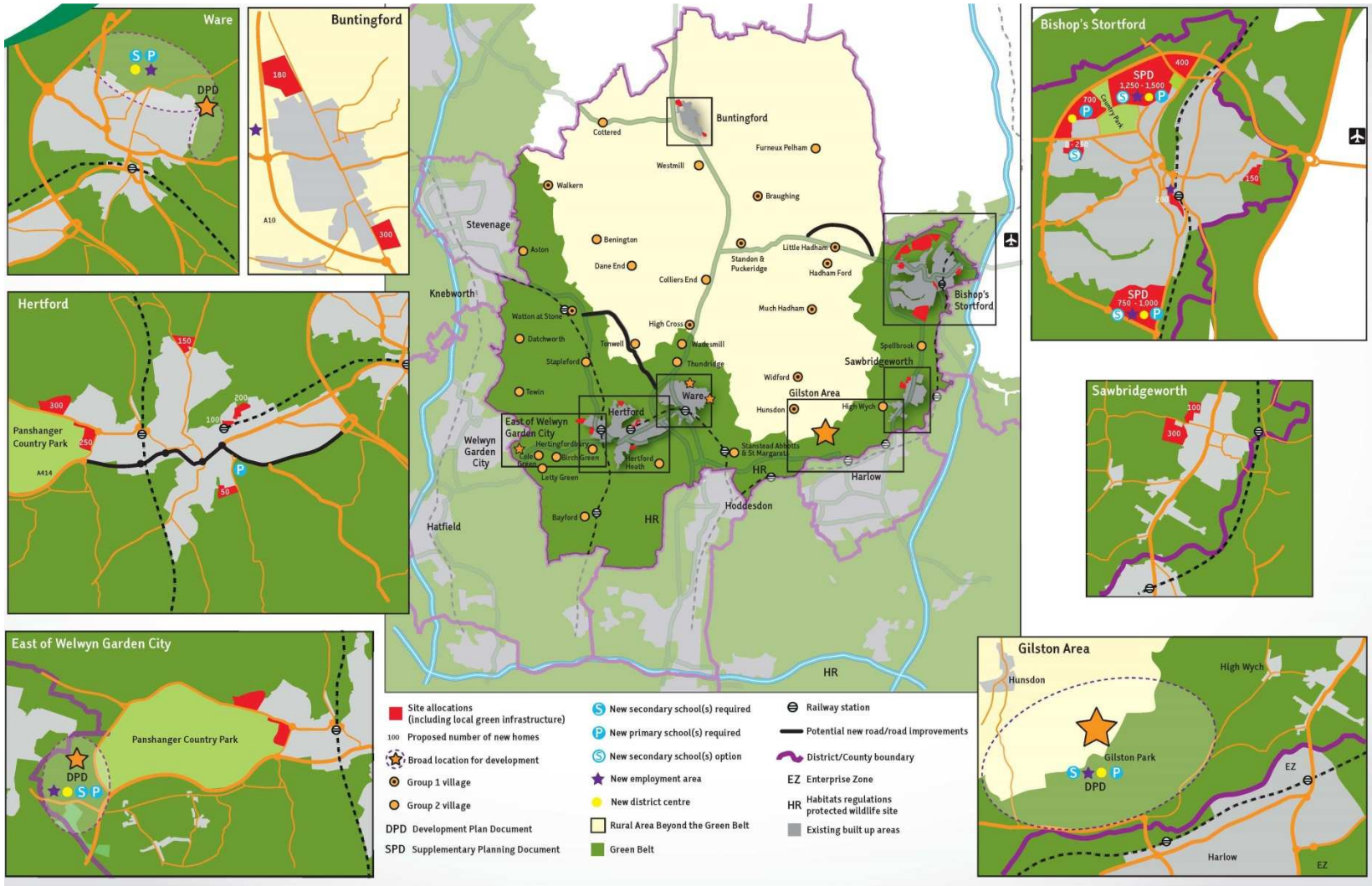
2.3.4 If however, there is an assumption that Harlow will meet the much of the employment needs for Gilston, then any assumption about EHDC's labour supply utilising Harlow's job's[3], will need to be agreed with Harlow under the Duty to Co-operate requirements and reflected in Harlow's overall job and housing numbers. If however, Harlow has a deficit in job capacity and is relying on the jobs created by the EZ to meet its own growth requirements, then EHDC cannot double count the jobs at the EZ and will need to make provision for this. So there is a possible cross boundary complication here about whose growth is being met at Gilston. In short, further consideration is needed about the scale of employment included at Gilston Area to reflect its needs based on an understanding of commuting flows. This will have an impact on land available to meet housing growth and infrastructure.

Differentiating between site allocations and broad locations

2.3.5 Figure 2.2 overleaf is an extract from the District Preferred Options Consultation Draft Plan document showing the location of the strategic sites. All but South of Bishop's Stortford have been designated as Broad Locations for Growth and are depicted by an orange star to illustrate the general location of growth. Delivery of the Broad Locations is not expected in the first five years of the Plan due to various complications such as infrastructure delivery, uncertainty over scale, cross boundary issues, physical constraints, and determining the site specific boundary. South of Bishop's Stortford is designated as a Site Allocation, and it has a clearly defined boundary and there is an expectation that part of this site will be delivered in the first five years.

[3] NPPG Housing and economic development needs assessments – should employment trends be taken in account? states any cross-boundary migration assumptions, particularly where one area decides to assume a lower internal migration figure than the housing market area figures suggest, will need to be agreed with the other relevant local planning authority under the duty to cooperate' paragraph 18.

Figure 2.2 Location of the strategic sites proposed in the District Preferred Options Consultation Draft Plan



Duty to Co-operate and impact on cross boundary infrastructure

2.3.6 As part of the Duty to Cooperate, a number of Member level meetings have taken place with neighbouring local authorities to discuss the planned growth. The various neighbouring authorities have raised a range of issues relating to the planned growth in the Draft Plan. The following sentences provide an indication of the main cross-boundary issues stemming from consultations undertaken by EHDC.

- Broxbourne Borough Council has identified that transport needs continued co-operation between the councils, particularly with regard to the A10.
- Epping Forest District Council raised concern about the impact of the Gilston Area on air quality in Epping Forest Special Area of Conservation (SAC) and the cumulative impact of traffic accessing Junction 7 of the M11.
- Harlow District Council recognised the potential benefits of growth to the north of Harlow in helping to provide critical mass and a transformation of the image of Harlow, as set out in their recent study[4]. As such Harlow Council supports the growth at the Gilston Area, provided the necessary infrastructure is in place, particularly transport infrastructure to address the cumulative impact of growth on congestion within Harlow town. For this reason a new road linking the A414 to Junction 7a of the M11 is supported to alleviate pressure on Harlow town centre, although there are uncertainties over the funding and feasibility of such a road.
- Uttlesford District Council have raised concerns about the cumulative impact on strategic roads linked to growth at Bishop's Stortford, particularly Junction 8 of the M11 which serves both Districts and Stansted Airport and there is a need for mitigation measures to increase the capacity of this.
- Welwyn Hatfield Borough Council has confirmed that an urban extension to the south and east of Welwyn Garden City is consistent with the Borough Council's identification of the area for expansion, and there is recognition that there will be cross boundary infrastructure implications requiring a joint approach.

2.3.7 Most of the above issues relate to transport infrastructure and is assumed will now be taken account of in the latest COMET work being undertaken by HCC

[4] Harlow Future Prospects Study 2013 by Nathanial Lichfield Partners

3 THE POLICY CONTEXT

3.1 Introduction

3.1.1 This section outlines the key policies relevant to this strategic sites study. The accompanying Whole Plan Viability Report provides a review of plan relevant policies which have also informed this assessment (but are not re-iterated in this report).

3.2 The importance of viability testing to ensure Draft Plan is deliverable

3.2.1 The setting of strategic priorities within the Local Plan is set out within the National Planning Policy Framework (NPPF) para 156. This advocates strategic policies to deliver the homes and jobs needed in the local authority, using broad locations[5] for strategic development as well as additional specific site allocations for promoting development (para 157).

3.2.2 In addition, the NPPF requires a proportionate evidence base to be submitted to support the plan (para 158). In particular, the NPPF requires that Local Plans pay careful attention to viability to ensure that the plan is deliverable. With regards to this, paragraph 173 of the NPPF states:

'*The sites and the scale of development identified in the plan should not be subject to such a scale of obligations and policy burdens that their ability to be developed viably is threatened. To ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing standards, infrastructure contributions or other requirements should when taking account of the normal cost of development and mitigation, provide competitive returns to a willing land owner and willing developer to enable the development to be deliverable.'*

3.3 Deliverability and developability considerations of the Plan

3.3.1 Specifically in relation to housing, NPPF (para. 47) requires local planning authorities to:

- identify and update annually a supply of specific deliverable sites sufficient to provide five years' worth of housing against their housing requirements and
- identify a supply of specific, developable sites or broad locations for growth, for years 6-10 and, where possible, for years 11-15;

3.3.2 The NPPF uses the two concepts of 'deliverability' (which applies to residential sites in Years 0-5 of the plan) and 'developability' (which applies to year 6 onwards of the plan). The NPPF defines these two terms as follows:

- To be deliverable, '*sites should be available now, offer a suitable location for development now, and be achievable, with a realistic prospect that housing will be delivered on the site within five years and in particular that development of the site is viable.*' Paragraph 47 footnote 11
- To be developable, sites expected in Year 6 onwards should be able to demonstrate a '*reasonable prospect that the site is available and could be viably developed at the point envisaged*'. Paragraph 47 footnote 12

3.3.3 The NPPF advises that a more flexible approach may be taken to the sites coming forward in the period after the first five years. Sites coming forward after Year 6 might not be viable now

[5] It is for EHDC to determine if the strategic sites currently identified as broad locations can move toward site allocations depending on what constitute 'significant uncertainties'. The strategic sites infrastructure assessment will help to inform this.

and might instead be only viable at that point in time. This recognises the impact of economic cycles and variations in values and policy changes over time.

3.3.4 The National Planning Practice Guidance (PPG) provides further guidance on viability and delivery aspects of plan making. It states that the development of plan polices should be iterative in that the draft policies tested against evidence of the likely ability to deliver the plan's policies and revised as part of a dynamic process, and that the evidence should be proportionate to ensure plans are underpinned by a broad understanding of viability. Greater detail may be necessary in areas of known marginal viability or where the evidence suggests that viability might be an issue for example in relation to policies for strategic sites which require high infrastructure investment.

3.3.5 In respect of delivering land for housing development the PPG sets out what should be considered deliverable and developable. In particular it states that assessments should identify:

- The potential type and quantity of development that could be delivered on each site/broad location;
- Reasonable estimate of build out rates;
- How any barriers to delivery could be overcome and when;
- An indicative trajectory of anticipated development and consideration of associated risks.

3.3.6 It is within the NPPF and PPG context that we assess the deliverability of the strategic sites. The 'suitable location' element of this assessment has been undertaken by EHDC (see section two of this study) as part of the 'Interim Development Strategy Report – January 2014'. This identified the sites which offer a suitable location for development together with an indicative scale or range of growth.

Other guidance reports on plan viability

3.3.7 It should also be noted that there are two other main guidance reports of relevance to viability and Local Plans. They are:

- Viability Testing in Local Plans, Advice for Planning Practitioners (LGA/HBF & Sir John Harman) June 2012, often referred to as the 'Harman Report', and
- Financial Viability in Planning, RICS guidance note, 1st edition (August 2012), often referred to as the 'RICS Guidance'.

3.3.8 Whilst not statutory or formal guidance, there is a general appreciation of the principles toward assessing viability set out in these reports and they are often quoted at Examinations, and have informed this assessment.

3.4 Infrastructure planning

3.4.1 Infrastructure planning needs to be part of the 'strategic priorities' for the Local Plan preparation. The NPPF requires authorities to demonstrate that infrastructure will be available to support development. The NPPF at paragraph 177 states:

'It is equally important to ensure that there is a reasonable prospect that planned infrastructure is deliverable in a timely fashion. To facilitate this, it is important that local planning authorities understand district-wide development costs at the time Local Plans are drawn up.'

3.4.2 It is within this context of the NPPF that we have assessed the infrastructure delivery of the strategic sites.

3.5 Mineral policy

3.5.1 The NPPF at paragraph 143 states that in preparing local plans, local planning authorities should:

'Set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place.'

3.5.2 Hertfordshire County Council (HCC) has an adopted Minerals Local Plan and Minerals Consultation Areas (MCA) Supplementary Planning Document[6]. The Minerals Local Plan includes a Mineral Sterilisation Policy. The effect of the policy is particularly important to the strategic sites as they are all within the identified MCA for sand and gravel (see Appendix B for a map of the sand and gravel belt).

3.5.3 In appropriate cases, HCC will encourage mineral extraction in an MCA area prior to other development taking place where any significant mineral resource would otherwise be sterilised, or where despoiled land would be improved following restoration. The need to extract mineral and restore a site to a suitable land form will take time and may impact on the phasing and layout of any housing delivery.

3.5.4 A desk based minerals extraction assessment should be undertaken to establish a scoping report which will consider what minerals are present and recommend next steps to assess the consequential viability for extraction prior to development.

3.5.5 In informing our assessment of the commencement date estimates, we have taken account of the possible impact of this policy and recommended early actions be taken (particularly scoping and consideration of the economic viability of extraction) by all concerned to ensure unnecessary delays to delivery are avoided.

3.6 Community infrastructure levy and strategic sites

3.6.1 The Community Infrastructure Levy (CIL) is a planning charge that became available to local authorities on 6 April 2010. The levy allows local authorities in England and Wales to raise contributions from development to help pay for infrastructure that is needed to support planned development. Local authorities who wish to charge the levy must produce a draft charging schedule setting out CIL rates for their areas.

3.6.2 The impact of higher development costs sometimes associated with strategic sites is recognised by the CIL guidance; this states that a charging authority should take development costs into account when setting its levy rates, particularly those likely to be incurred on strategic sites or brownfield land. A realistic understanding of site specific requirements for strategic sites is essential to the proper assessment of viability and charge setting. The apportionment of infrastructure to a CIL Regs 123 list or S106 will part of an on-going discussion with the site promoters, this study has made some informed assumptions about the most appropriate mechanism that might be adopted but this is expected to be refined over time and dialogue.

[6] http://www.hertsdirect.org/services/envplan/plan/hccdevplan/mlp/

4 INFRASTRUCTURE ASSESSSMENT

4.1 Introduction

4.1.1 The proposed strategic sites will require substantial investment in infrastructure to deliver the sustainable communities which are planned. It is important that the main infrastructure requirements are identified and tested in this report. EHDC is undertaking an assessment of the future infrastructure needs of the planned growth which will be informed by this study.

4.2 Approach to strategic site infrastructure assessment

Consultation with the site promoters

4.2.1 A series of joint surgeries were hosted with each of the strategic site promoters during autumn 2014 to understand the site promoters' assessment of infrastructure requirements, phasing and scale of infrastructure needed to support the delivery of each strategic site. The notes of these surgeries are available on the EHDC web site (www.eastherts.gov.uk/deliverystudy).

Review of evidence documents submitted by promoters

4.2.2 The site promoters have produced high level infrastructure schedules of varying degree of detail (see Appendix C). Where possible, the assumptions provided by the site promoters were reviewed by our cost consultants Gardiner and Theobald (G&T) and by ourselves and commentaries have been included where any variances are suggested. At this early stage of the plan making process, this type of cost estimation is to be expected and will be refined as the plan reaches closer to delivery stage.

4.2.3 Various reports have also been submitted to EHDC by the site promoters to help inform the assessment of deliverability or developability. These include concept plans incorporating phasing, green infrastructure and social infrastructure provision (including, schools, health, sports and play provision, as well as informal open space). These reports have been based on inputs from the site promoter's specialist utilities, transport, and social infrastructure teams, who in turn have assessed current capacity based on some engagement with utilities and other service providers (e.g. transport, education, Thames Water, Environment Agency etc). These reports are available on the EHDC web site (www.eastherts.gov.uk/deliverystudy).

Consultation with service providers

4.2.4 It is often the case that the supply of sewerage infrastructure can affect the timely delivery of growth and the cost of transport and education often constitute the highest percentage of the infrastructure delivery costs, whilst locally, the capacity of health (GP facilities) has been identified as a key issue from the community consultations undertaken by EHDC. Interviews with service providers responsible for these infrastructure items were undertaken by PBA to inform the infrastructure assessment (see Appendix A for a list of individuals interviewed). The findings on specific elements of infrastructure include:

- **Transport** - We have sought to understand the site specific and cumulative impact on town centres and strategic transport networks arising from the proposed growth based on documented evidence, modelling and consultation with a wide range of stakeholders and this has informed our initial inputs for each of the strategic sites. This assessment is summarised in Appendix E.

- The final transport requirements will be informed by the Transport Vision stemming from HCC's countywide transport assessment using the COMET Model, which should provide a clearer understanding of the cumulative impact of growth and proposed solutions to meet the delivery of growth will come forward through the proposed Transport Vision which is expected sometime in 2016.

- **Education** The response from HCC was that most schools in East Herts are stretched, and existing consented development sites will absorb any available capacity. The service providers are exploring options for expanding capacity at present and new growth, including the first five year delivery will need additional capacity. The initial assessment indicates this will be created through both the expansion of existing schools and the provision of new schools as part of the development of the strategic sites

- **Health** The response from the NHS Property Team was that most GP surgeries in East Herts are stretched, particularly in Bishop's Stortford and Hertford. The service providers are exploring options for expanding capacity and new growth, including the five year delivery will need additional capacity. Each of the strategic sites will require new provision on site. Work on wider health facilities by the Clinical Commissioning Group is ongoing.

- **Sewage infrastructure** The response from Thames Water was that existing capacity from unrealised growth due to the downturn in housing development and ongoing works to change the way the sewage is treated have provided foul water capacity to accommodate planned growth upto 2021 (and depending on the rate of take up of capacity, could support the planned growth up to 2026). After that time it is likely that additional infrastructure will be needed. Additional plant capacity could be provided at Rye Meads Sewage Treatment Works site without any encroachment into the adjacent SSSI. However, it is important to note that the overall impact and treatment requirement will be affected by the cumulative effects of development from all the adjacent local authority areas and so capacity impact on delivery of growth should be monitored.

Categorising infrastructure requirements to inform viability cost inputs

4.2.5 Although we are focusing on assessing infrastructure requirements and costs here, we draw on the infrastructure funding categories to help distinguish the different types of infrastructure identified by the site promoters. This will help to provide clarity in informing the viability assessment and help EHDC review their developer contributions policy and start to inform a draft CIL Regs 123 of relevant infrastructure.

4.2.6 The distinction between infrastructure categories adopted by developers is not always clear; there are some grey areas between the categories adopted. We have set out our suggested approach to categorising the infrastructure for the strategic sites based on consultation with the site promoters and used our judgement where it is not possible to be certain of the categories at this stage. Further refinements of the infrastructure assessment as sites move towards delivery will no doubt refine the categories following wider consultation with infrastructure providers and strategic site promoters. We have adopted the following categories:

- **Site enabling infrastructure costs** - this relates to those items of infrastructure required in creating fully serviced developable sites, and usually consist of utilities, drainage, SUDs, green infrastructure, open space, internal roads, and site preparation. These are costs required to prepare the site for development and it is assumed these costs will be borne by the developer to create saleable plots of land, but would typically be in excess of what could be absorbed within a typical plot externals allowance.

- **Site relevant infrastructure** (S106 costs), infrastructure items are focused on addressing the specific mitigation required by a new development. S 106 projects must be a) directly related to the proposed development, b) reasonable in scale and kind and c) necessary to make the development acceptable in planning terms. We have used these tests as a general guide to the projects which are included in this category and mindful of the pooling restriction on S106 contributions. We have generally confined this category to projects funded by a single development within the strategic sites. It is crucial to avoid any duplication between this category and the CIL Regs 123 list (the next category).

- **Strategic or cumulative infrastructure** (Community infrastructure levy Regs 123 list), relates to strategic infrastructure requirements that arise due to the cumulative impact of development such as town centre congestion and strategic transport corridors, libraries, sports centres, strategic flood defence measures, schools, parks, and strategic green infrastructure. It is possible for development to be in either the S106 or CIL 123 list – this decision will be guided by a local assessment of the infrastructure.

4.2.7 Note the strategic site promoters have included some contribution towards off site transport and other strategic infrastructure projects based on their estimate of what is considered 'appropriate'. In our appraisal model, only the developer enabling and site specific infrastructure costs are included as a 'cost input' whilst the strategic infrastructure costs are not factored into the costs and instead are treated as an 'output' in the viability appraisal, and their funding will be informed by the scale of CIL charge from the cumulative delivery of growth and not just from the strategic sites. Going forward, EHDC will assess the cost estimates for the strategic infrastructure requirements needed to support growth as part of their IDP and these will be included in their Regs 123 list. The items included as strategic infrastructure and site specific S106 infrastructure will be refined further in consultation with the various stakeholders (see para 4.3.3 below).

4.2.8 In addition to the above categorisation of infrastructure, each of the strategic sites will also be expected to accommodate a range of housing tenures to create mixed and balanced communities. This includes the provision of affordable housing and accommodation for Gypsy and Travellers and Travelling Show people. Such items have not been itemised or categorised as infrastructure for the purposes of this study, but have been considered as part of the overall viability assessment.

4.3 The infrastructure assessment will continue to evolve

4.3.1 It should be noted that each promoter is at a different stage in their assessment of infrastructure requirements. As sites progress through the planning process the level of detail will become more refined. For example some infrastructure such as utilities, transport, open space, leisure and play is an unknown quantity at this stage and the level of requirements will become more apparent during the detailed masterplanning stages, which take account of the specific mitigation and consultation with the service providers.

4.3.2 EHDC has prepared an Infrastructure Topic Paper which identifies various issues in relation to infrastructure requirements. This together with the Local Plan provides a starting point in informing the infrastructure capacity and future requirements to support planned growth. It is important to note that an Infrastructure Delivery Plan is being prepared by EHDC to inform the Local Plan. Whilst the findings of this report will inform the preparation of the IDP, it will be the IDP that will be kept up to date through the plan period to reflect changing circumstances.

4.3.3 Infrastructure planning is not static - any assessment is based on information available relating to capacity at a point in time and this will be continuously changing. Thus the IDP should be treated as a 'live document'. As such, it will be important for EHDC to continue to maintain an ongoing dialogue with service providers, to proactively manage the delivery of planned growth. Similarly this will be the place to review and refine items that are included as 'strategic infrastructure (part of the CIL Regs 123 list) or site specific infrastructure (S106 or CIL Regs 122 list).

5 WARE STRATEGIC SITE INFRASTRUCTURE ASSESSMENT

5.1 Introduction

5.1.1 The Draft Preferred Options District Plan 2014 Policy WARE 3: Land North and East of Ware[7] states:

'To meet long-term housing needs, land to the north and east of Ware is identified as a broad location for Development. East Herts Council will work with site promoters, Ware Town Council, Wareside Parish Council, Hertfordshire County Council, and other appropriate public and regulatory bodies to prepare a Development Plan Document to shape and refine opportunities for strategic scale development of between 200 and 3,000 home and supporting uses and infrastructure in accordance with Policy DPS4 (broad locations for development). Development shall not proceed until the adoption of the DPD.'

5.1.2 The outcome of this study will inform the scale of growth that can be effectively supported by the necessary infrastructure.

5.1.3 A developer surgery took place in October 2014 to provide an opportunity for PBA to discuss with the promoters the deliverability of the scheme. A considerable amount of work has been undertaken by the promoters in helping to inform the preparation of a concept plan and presentations for the developer surgery.

What quantum of growth have we assessed?

5.1.4 The developers have provided infrastructure cost information for a scheme of 2,972 units and this has informed the cost input for the viability assessment. In addition a 2,000 unit scenario has been assessed at the request from EHDC. For this scenario a generic cost assumption informed by the analysis of costs provided by the promoters for this study. This latter scale reflects the discussion set out in section two of this study relating to the scale, role and timeframes for this strategic site.

Is there clarity over scheme and landownership?

5.1.5 The two site promoters have come to a common agreement to promote a single masterplan thus addressing any concerns relating to piecemeal delivery of this site. The site promoters have carried out various site investigations to inform the preparation of a masterplan.

Initial concept plan

5.1.6 The emerging concept plan (see figure 5.1 overleaf) for an urban extension connecting the north and east of Ware by the link road has been prepared by the site promoters based on an assessment of the landscape, topography, ground conditions, listed buildings and infrastructure mitigation measures (which were identified by EHDC and other service providers at a previous meeting). The proposal will require the release of Green Belt land.

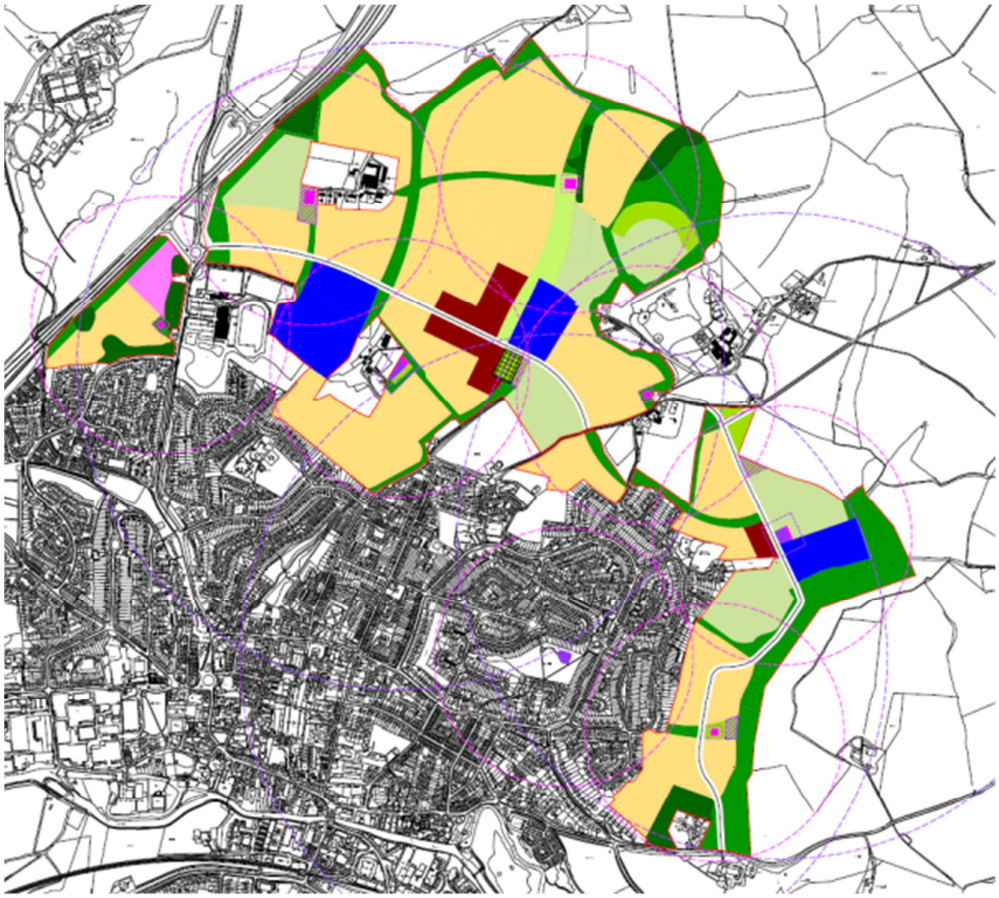
5.1.7 The concept plan is starting to define a site boundary for the scheme, but this will need further consideration by EHDC before this can be finalised and as yet remains 'indicative'. Detailed work on the merits of the layout, landscape and greenbelt assessment will be a matter for consideration by EHDC and is not part of this assessment.

5.1.8 HCC has identified this site as being within the minerals sand and gravel belt - if a mineral extraction was required it could impact on the scheme layout and commencement date.

[7] Note all references to Ware in this section relate to land north and east of Ware.

Advice from the HCC should be sought to establish a minerals scoping report which will consider the type of minerals present and recommend next steps to assess the consequential viability for extraction prior to development. A view will be required from EHDC on the economics of extraction and potential impact on delays to any housing delivery.

Figure 5.1 Indicative concept plan for 2972 homes with infrastructure



Source: Ptarmigan and Leach Homes (2014)

What are the infrastructure requirements?

5.1.9 The site promoters have submitted a high level infrastructure schedule setting out the necessary infrastructure requirements to support the planned growth, including cost estimates. These will be refined as further detailed investigations are undertaken at future stages of the planning process.

5.1.10 Table 5.1 is a summary of the infrastructure cost schedule. This highlights the developer enabling cost of approximately £59m and development infrastructure costs of approximately £60m which will be a cost input to inform the viability appraisal. The north and east of Ware cost schedule also includes an allowance of £15m towards off site strategic infrastructure costs such as library, public transport etc. As explained earlier, these will not be included as a cost input in the viability appraisal and will be assessed based on the level of CIL overage instead.

5.1.11 However, it should be noted that the final list of strategic infrastructure relevant for CIL and S106 will be refined in consultation with the developers and service providers (see section 4) if EHDC decides to adopt a CIL. If a CIL is not adopted, then some of these costs may be captured via a S106 mechanism instead.

Table 5.1 Summary of infrastructure costs for North and East of Ware

Infrastructure Type	Sum of Developer enabling works	Sum of Development specific infrastructure (S106 / s278 site specific)	Sum of Strategic infrastructure cost (CIL Regs 123 list)
Ware	**£58,826,625**	**£59,600,000**	**£15,000,000**
Community	£0	£1,000,000	£0
Education	£0	£46,000,000	£0
Green infrastructure / outdoor sport	£0	£10,000,000	£0
Health	£0	£2,000,000	£0
Site preparation	£34,147,500	£0	£0
Transport highway	£5,536,425	£600,000	£0
Transport other	£0	£0	£15,000,000
Utilities & drainage	£19,142,700	£0	£0

Source: North and east of Ware site promoters and PBA 2014

5.1.12 In addition to the above infrastructure, a cost input for the provision of accommodating 15 pitches (scale determined by EHDC) for Gypsy and Travellers and Travelling Show people has also been included as a cost input in the viability assessment.

When will the infrastructure be required, phasing and cashflow?

5.1.13 Based on our very high level assessment of when the infrastructure is likely to be required, an initial estimate has been incorporated but this is likely to change considerably as plans are refined. This identifies the following:

- Trigger points for infrastructure
- Cost estimates for the infrastructure
- Funding options for the infrastructure provision.

5.1.14 The information in table 5.2 has informed the cash flow assessment for the viability appraisal. It should be noted that this cashflow assessment is highly likely to change as plans are refined with further inputs from the site promoters and service providers. Where possible, costs have been 'pushed back' and delivery timescales extended to help with the cashflow. The CIL relevant infrastructure costs are not factored into the appraisal cashflow and an instalments policy is likely to be introduced to help support cashflow.

Table 5.2 Infrastructure requirements, costs, funding and cashflow

Project	Funding Source	Enabling works	S106 / s278	Cost start date	Cost end date	Delivery duration (years)
Ware Internal link road and associated works	Developer	£5,536,425	£0	2021	2026	6
Ware Northern Access roundabout works	S278	£0	£350,000	2018	2020	3
Ware Widbury Hill access roundabout	S278	£0	£250,000	2018	2020	3
Shared footway/cycleway between site and town centre via Fanhams Hall Road - assumed cost included in Ware scheme	S278					
Shared footway/cycleway between site and High Oak Road area - assumed cost included in Ware scheme	S278					
Ware - 1No. 6FE Secondary School based upon 3,000 units and land	S106	£0	£26,000,000	2020	2022	3
Ware - 2no. 3FE Primary Schools based upon 3,000 units and land	S106	£0	£20,000,000	2026	2031	6
Health Centre / GP Surgery @ Ware	S106	£0	£2,000,000	2030	2031	2
Ware -Community centre @ Ware	S106	£0	£1,000,000	2030	2031	2
Ware landscaping, playareas, allotments, outdoor sports, green infrastructure	S106	£0	£10,000,000	2026	2031	6
Ware on site utilities	Developer	£6,991,000	£0	2020	2030	11
Ware - New foul water connection to outfall sewer, reinforcement and pumping station. Detailed proposal awaited from TW	Developer	£5,000,000	£0	2020	2021	2
Ware off site utilities upgrades	Developer	£7,151,700	£0	2020	2021	2
Ware site preparation costs / scheme enabling costs	Developer	£34,147,500	£0	2021	2026	6
Ware off site contributions for strategic infrastructure	Developer	£0	£0	2021	2031	11

5.2 Infrastructure assessment and the deliverability of the scheme

5.2.1 Some infrastructure items are considered as necessary to enable development to take place – such as securing adequate access, utilities and drainage, and sewage infrastructure. There are other items of infrastructure that are also necessary to secure sustainable development such as education, health etc. The ability to meet these requirements will inform the deliverability or developability of the strategic sites. Here we focus on key infrastructure items that have shaped the delivery assessment of this strategic site.

5.2.2 There are three big infrastructure items required to serve this development – these are:

- **Education** - the assessed requirement, based on guidance provided by HCC is to provide for two 3 Form Entry primary schools and a 6 Form Entry secondary school (note it is likely that a secondary school on this site could serve a wider catchment). For now a cost allowance of £26m for a secondary school and £10m each for the primary schools has been included in the cost schedule. Once further details are known about the size of the scheme a more refined cost estimate which apportions costs to possibly other sites also using this secondary school will be taken account of.

- The Ware **internal link road** estimated at £5.5m is necessary to reduce the traffic routing through the town centre to reach the A10.

- **A new sewer** estimated at a cost of £6m is necessary because the diameter of the pipework in the existing network within the town centre is insufficient to accommodate the growth and the new proposed sewer would obviate the need for disruptive works to the existing main sewer under the High Street. The infrastructure schedule allows for a connection to the outfall sewer, reinforcement and pumping station based on an initial estimate cost provided by Thames Water. This will include a new pipe around the northern and eastern perimeters of the town, with a pumping station to the north to address the slight dip in the valley to the north. The site promoters are awaiting more detailed engagement with, and expecting to commission a Pre Development Report from, Thames Water.

5.2.3 The requirements for these items have been informed by the service providers and have been factored into the emerging concept plan for the site. No constraints have been identified to providing these infrastructure items in terms of physical delivery.

Strategic infrastructure considerations

5.2.4 It is likely that the growth will impact on a range of strategic off site, and often cross border transport infrastructure requirements. The precise nature of this will be informed following the HCC COMET modelling and Transport Vision in 2016. Some of the key challenges that are likely to require addressing are outlined below.

5.2.5 Given the significant levels of traffic expected to use the A10 and A414, the following infrastructure requirements are likely to be required on area-wide basis to address the cumulative impacts of development:

- Signalisation of, or other capacity improvements for, the of the Great Amwell Roundabout (A414/A1170);

- Improvements to the wider capacity of the A414 corridor;

- Enhancements to the walk, cycle and public transport networks with a focus on east west connectivity to relieve pressure on the A414 wherever possible.

- Exploration of the need or otherwise for potential improvements to A10 at Cheshunt to increase traffic flow towards M25 J25 in cooperation with Broxbourne Borough Council.

5.2.6 It should be noted that all off site strategic transport interventions need to be identified and assessed using an appropriate District or Countywide model so that proportionate impacts, as part of a wider cumulative growth impact assessment, can be identified. The final details of the offsite strategic infrastructure will be informed by the HCC Transport Vision. The above interventions are based on our understanding of the transport networks in the area and the likely impacts that would be realised from the development proposals.

5.3 Moving towards a delivery strategy beyond Examination

5.3.1 As part of the on-going dialogue with the site promoters, based on our assessment of the infrastructure, we would draw EHDC's attention to the following areas for further investigation.

5.3.2 Strategic transport requirements that will be necessary to support the delivery of the various strategic sites, their costs and how this infrastructure will be funded is currently being assessed by HCC and a response to this is expected sometime in 2016. This will form an important element for further assessment of this work to inform deliverability considerations.

5.3.3 The promoters have recognised that other strategic infrastructure such as public transport measures, libraries, recycling facilities are likely to be required and offered a contribution of £5k per unit (£15m in total) towards such strategic off site works. EHDC should compile a Regulation 123 list of strategic off site infrastructure to inform a future CIL charging schedule should the Council introduce CIL. Work on this list has been commenced by this study based on inputs such as the items provided by the site promoters for strategic infrastructure, but this will need refining.

5.3.4 A cost estimate of £10m has been included to cover a range of open space provision, including outdoor sports, parks, green space, children's play areas, and allotments as part of the on-site S106 contribution. These costs could change once more detailed masterplans are prepared and costs refined, though it is possible that some of the green spaces and woodland could be part of the drainage and site enabling costs. This will need to be clarified as the scheme progresses to planning application stage. Three long term management options are suggested for the open space infrastructure, including transferring responsibility and a commuted sum to either EHDC or the Parish Council. Alternatively, the developer would transfer all public open space to a private management company who would then levy a service charge across the site which every house would pay. The private management company would be fully responsible for all maintenance responsibilities going forward. This will need to be considered as part of the detailed masterplanning considerations beyond the Plan Examination.

5.3.5 Based on our review of the utilities infrastructure schedule it has been assumed that point of connection and indicative costs of reinforcement have been provided to the promoters by the utility companies. The estimate is accepted with caution. EHDC should seek confirmation from the promoters as to the basis for the upgrades required in arriving at their offsite utilities connection costs. The most effective way to determine capacity would be for the site promoter to make an application to the utility company to confirm the point of connection for the demand and understand any upstream network reinforcement required. This will determine whether the utility costs which have been identified in the infrastructure cost schedules are based on a realistic assessment of capacity.

6 GILSTON AREA STRATEGIC SITE INFRASTRUCTURE ASSESSMENT

6.1 Introduction

6.1.1 Policy GA1 of the Draft Preferred Options District Plan 2014 states:

6.1.2 'East Herts Council will test through a Development Plan Document (DPD) the feasibility of land in the Gilston Area to accommodate between 5,000 and 10,000 new homes (overall looking beyond this plan period) and supporting uses and infrastructure in accordance with Policy DPS4 (broad locations for development). Development shall not proceed in the Gilston Area until the adoption of the DPD'

6.1.3 A developer surgery took place in November 2014 to provide an opportunity for PBA to discuss with the promoters the deliverability of the scheme in terms of known constraints, infrastructure requirements, phasing and viability assumptions. A considerable amount of work has been undertaken by the promoters in helping to inform the presentation of a 10,000 homes scheme at the developer surgery.

Is there clarity over landownership?

6.1.4 Places for People (PFP) and City and Provincial Properties (CPP) are the two main landowners promoting development in the Gilston Area. Following a request by EHDC to consider joint working in promoting any scheme at this broad location, discussions between the two landowners have resulted in an agreement to promote a single joint concept plan. However, there are some third party land interests in relation to upgrading the existing River Stort crossing and in delivering the second river.

What quantum of growth have we assessed?

6.1.5 The infrastructure cost schedule prepared by the promoter is for 10,181 dwellings and this is the basis for the infrastructure cost estimates that have informed the PBA assessment, though the viability assessment has been undertaken for 10,000 units.

6.1.6 In addition a 2,500 unit scenario has been assessed at the request from EHDC. For this scenario a generic cost assumption informed by the analysis of costs provided by the promoters for this study. This latter scale reflects the discussion set out in section two of this study relating to the scale, role and timeframes for this strategic site.

Initial concept plan

6.1.7 The emerging concept plan as shown in figure 6.1 overleaf has been based on an assessment of the landscape, topography, ground conditions, constraints, opportunities and infrastructure mitigation measures. Some of these assessments have been informed by EHDC and other service providers at previous meetings with the promoters.

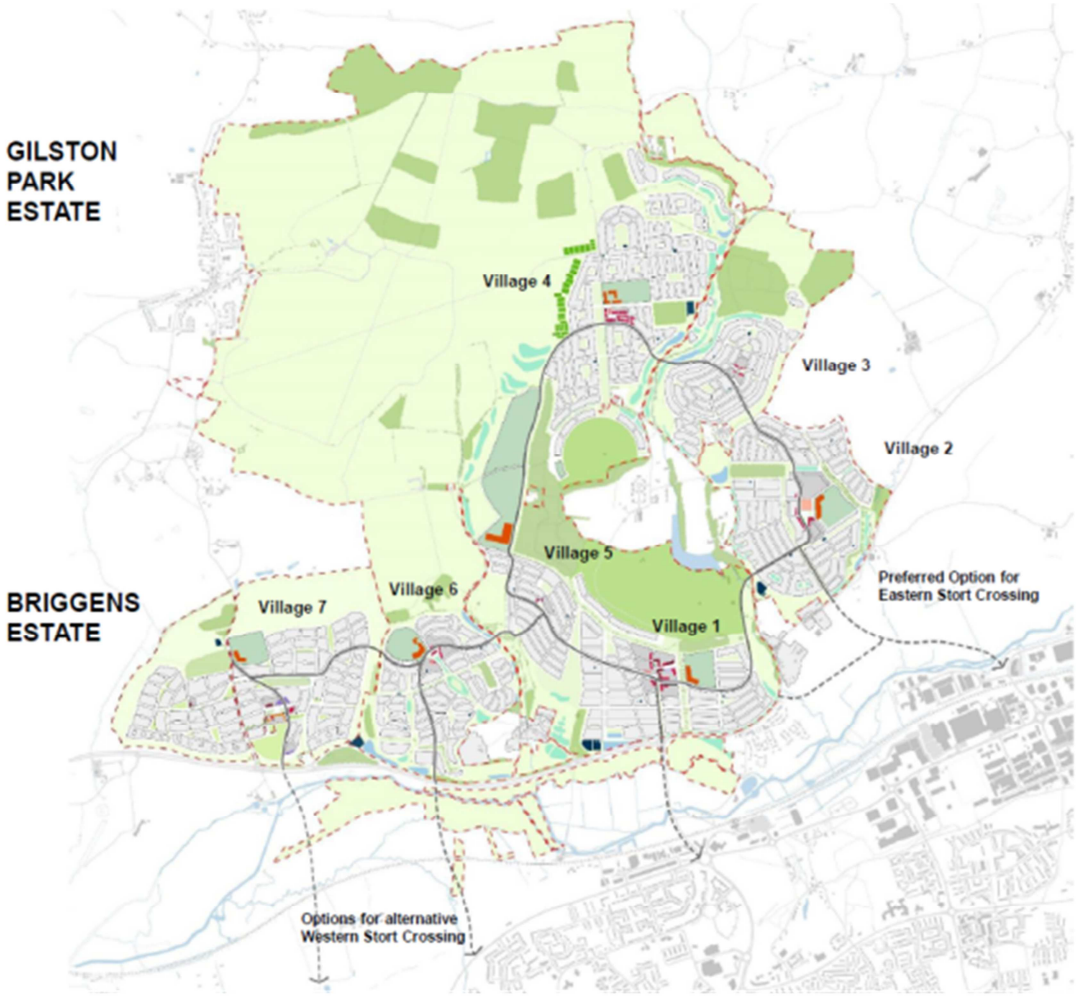
6.1.8 The concept plan is starting to define the site boundary and layout for the scheme. Work on this will be refined based on further discussions with EHDC. Detailed work on the merits of the layout, density, form, landscape and Green Belt assessments will be a matter for consideration by EHDC and is not part of this assessment. The site is shown as a series of 'linked villages'. It is not described as either an urban extension to Harlow or a new settlement within East Herts.

6.1.9 The design considerations and layout have not been assessed as part of this study. Currently a density of 47 dwellings per net hectare (dph) is proposed which does not reflect the density for village type settlements in the Draft Preferred Options District Plan. EHDC have advised us to adopt a density of 37.5 dph for this study which is similar to one of the other strategic

sites and at the upper end of what the Council is likely to consider acceptable. The final density and design considerations will be discussed in more detail with the promoters. Notwithstanding the design considerations, given the likely demand from the commuter market to London and the proximity to Harlow train station, we consider there could be a strong market for some high density flatted type development at this location. As such PBA has advised the client to be mindful of this in shaping the future design and density assumptions for this site as it could assist with creating a more mixed residential offer and support the speed of delivery at this location.

6.1.10 HCC has identified this site as being within the minerals sand and gravel belt - if a mineral extraction was required it could impact on the scheme layout and commencement date. Advice from the HCC should be sought to establish a minerals scoping report which will consider the type of minerals present and recommend next steps to assess the consequential viability for extraction prior to development. A view will be required from EHDC on the economics of extraction and potential delays to any delivery.

Figure 6.1 Concept plan for the Gilston Area



Source: PFP and CPP 2014

What are the infrastructure requirements?

6.1.11 The site promoters have submitted a high level infrastructure schedule setting out the necessary infrastructure requirements to support the planned growth, including estimate costs.

6.1.12 Table 6.1 is a summary of the infrastructure cost schedule, this highlights the developer enabling cost of approximately £228m and development infrastructure costs of approximately £287m which will be incorporated as a cost input to inform the viability appraisal. The cost schedule also includes a cost of approximately £22m towards off site strategic infrastructure costs – these costs have not been factored in as a cost input in the viability appraisal and instead will be assessed based on the CIL overage instead.

6.1.13 However, it should be noted that the final list of strategic infrastructure relevant for CIL and S106 will be refined in consultation with the developers and service providers (see section 4) if EHDC decides to adopt a CIL. If a CIL is not adopted, then some of these costs may be captured via a S106 mechanism instead.

Table 6.1 Summary of infrastructure costs for the Gilston Area

Infrastructure Type	Sum of Developer enabling works	Sum of Development specific infrastructure (S106 / s278 site specific)	Sum of Strategic infrastructure cost (CIL Regs 123 list)
Gilston	**£227,569,721**	**£286,629,339**	**£21,796,686**
Community	£0	£10,432,644	
Education	£0	£106,830,942	
Green infrastructure / outdoor sport	£0	£51,032,192	
Health	£0	£14,794,978	
Indoor sports	£0	£4,520,250	
Management & adoption	£0	£28,191,866	
Site preparation	£58,854,922	£0	£0
Transport highway	£69,046,000	£70,826,467	£12,712,654
Transport other	£0	£0	£9,084,032
Utilities & drainage	£99,668,799	£0	

Source: Gilston site promoters and PBA 2014

6.1.14 In addition to the above infrastructure, a cost input for the provision of accommodating 15 pitches (scale determined by EHDC) for Gypsy and Travellers and Travelling Show people has been included as a cost input in the viability assessment.

When is the infrastructure required, phasing and cashflow?

6.1.15 Based on our very high level assessment of when the infrastructure is likely to be required, an initial estimate has been incorporated but this is likely to change considerably as plans are refined. This identifies the following:

- Trigger points for infrastructure,
- Cost estimates for the infrastructure
- Funding options for the infrastructure provision

6.1.16 The information in table 6.2 has informed the cash flow assessment for the viability appraisal. It should be noted that this cashflow assessment is highly likely to change as plans are refined with further inputs from the site promoters and service providers. Where possible, costs have been 'pushed back' and delivery timescales extended to help with the cashflow. The CIL costs are not factored into the appraisal cashflow and an instalments policy is likely to be introduced to help support cashflow.

6.1.17 The infrastructure schedules included are based on the promoter's assessment of what is required and how this will be delivered, however service providers may have a different view on how some of this infrastructure might be delivered (see section 6.6 below).

Table 6.2 Infrastructure requirements, costs and cashflow

Project	Funding Source	Enabling works	S106 / s278	Cost start date	Cost end date	Delivery duration (years)
On Site Roads - Gilston	Developer	£69,046,000	£0	2016	2038	23
Eastern Crossing - Stort River Valley - Gilston	S278	£0	£38,212,972	2026	2031	6
Central Crossing - Stort River Valley - Gilston	S278	£0	£12,915,000	2021	2026	6
Off-site Works and Junction Improvements - Gilston	S278	£0	19,698,495	2016	2038	23
Signalisation of A1184-Station Road-West Road double-mini roundabout in Sawbridgeworth	CIL					
Highways improvements to A1184-High Wych (TBC)	CIL					
Hammarskjold/Fifth Ave/Velizy Ave 'Longabout'	CIL					
A414 dedicated left-turns at the A414/Second Avenue roundabout TBD	CIL					
Dualling of A414 towards M11 Junction 7 between A1169 Southern Way and M11 J7	CIL					
Second Ave/Velizy Ave 'Throughabout'	CIL					
Signalisation of the Great Amwell Roundabout (A414/A1170)	CIL					
Western site access roundabout off Eastwick Road west of the Eastwick Road roundabout-in	S278					
A414 (Fifth Avenue) dualling -included in Gilston S278 off site works	S278					
A414 Burnt Mill roundabout capacity improvements -included in Gilston S278 off site works	S278					
A414 Eastwick Road roundabout signalisation -included in Gilston S278 off site works	S278	£0	£0			
Proposed northern access to Harlow train station / footbridge extension	CIL					
Shared footway/cycleway over Fifth Avenue-included in Gilston S278 off site works	S278					
High-frequency bus links to town centre, Harlow rail station, employment areas (Pinnacles and London Road	S278	£0	£0	0	0	
Transport & Travel Gilston	CIL	£0				
Harlow Town Station and Adjoining Areas - Gilston	CIL	£0	£0	0	0	0
• Health Centre - Village 1 Gilston	S106	£0	£3,851,366	2022	2024	3
• Primary Care Health Centres (x2) Villages 4 and 7 Gilston	S106	£0	£4,793,612	2027	2029	3
• Primary Care Health Centres (x2) Villages 4 and 7 Gilston	S106	£0	£6,150,000	2025	2026	2
• Gilston Park North	S106	£0	£3,209,310	2019	2026	8
• Gilston Park South	S106	£0	£7,304,355	2019	2026	8
• Stort Valley River Park	S106	£0	£4,225,324	2018	2026	9
Other - open space areas - Gilston	Developer	£0	£28,005,581	2018	2038	21
• Secondary School Playing Fields - Gilston	S106	£0	£4,657,249	2022	2026	5
• Primary School Playing Fields - Gilston	S106	£0	£3,630,372	2021	2026	6
• Leisure Centre with 25m swimming pool - Gilston	S106	£0	£4,520,250	2026	2031	6
Primary School V1; 3FE (3,337m2) - Village 1 Gilston	S106	£0	£8,014,400	2016	2021	6
Primary School V2; 3FE (3,337m2) Village 2 Gilston	S106	£0	£8,014,400	2026	2031	6
Primary School V4; 3FE (3,337m2) - Village 4 Gilston	S106	£0	£8,014,400	2021	2026	6
Primary School V6; 3FE (3,337m2) - village 6 Gilston	S106	£0	£8,014,400	2033	2035	3
Primary School V7 - Village 7 Gilston	S106	£0	£9,230,000	2021	2026	6
Creches x 6 - Villages 1 - 6 Gilston	S106	£0	£892,848	2018	2029	12
Secondary School 11FE (1 Nr x 21717m2) Gilston	S106	£0	£61,547,603	2021	2038	18
Temporary Secondary School On-Site (2FE) - Gilston	S106	£0	£3,102,891	2019	2023	5
Community centre (6 Nr x 166m2) Villages 1- 6 - with creche buildings - Gilston	S106	£0	£1,457,037	2021	2038	18
Community centre Viillage 7 - Gilston	S106	£0	£1,975,000	2021	2026	6
Libraries (1 Nr @ 400m2) - Gilston	S106	£0	£704,170	2025	2026	2
Places of Worship - Gilston	S106	£0	£1,239,736	2020	2022	3
Police station (1 Nr @ 200m2) - Gilston	S106	£0	£427,709	2021	2026	6
Waste Management - Gilston	S106	£0	£2,118,867	2018	2038	21
Public Art - Gilston	S106	£0	£2,510,125	2021	2038	18
Drainage - water, foul water pumping stations and sewage treament works -Gilston	Developer	£20,889,481	£0	2016	2038	23
Utilities - on site diversions and new plant Gilston	Developer	£48,132,868	£0	2016	2038	23
• SUDS Allowances - Gilston	Developer	£9,513,635	£0	2016	2038	23
Utilities diversions in connection with road diversions - Gilston	Developer	£1,614,375	£0	2016	2038	23
Miscellaneous off-site drainage works - Gilston	Developer	£979,388	£0	2016	2038	23
Utilities Upgrades - off site Gilston	Developer	£18,539,052	£0	2016	2038	23
Strategic Earthworks - Gilston	Developer	£4,746,263	£0	2016	2026	11
Noise Mitigation - Gilston	Developer	£237,313	£0	2018	2020	3
Enabling works - Gilston	Developer	£5,706,263	£0	2016	2026	11
Section 38 Agreement - On Site Roads/Drainage Gilston	Developer	£0	£13,558,380	2024	2038	15
Section 278 Agreement - Off Site Roads/Drainage Gilston	Developer	£0	£14,633,486	2024	2038	15
Professional Fees & Survey Costs - Gilston	Developer	£48,165,084	£0	2020	2027	8

Source: Gilston site promoters and PBA 2014

6.2 Infrastructure assessment and the deliverability of the scheme

6.2.1 Some infrastructure items are considered as necessary to enable development to take place, such as securing appropriate access, utilities and drainage and sewage infrastructure. The ability to provide necessary infrastructure requirements helps to inform the developability of the strategic sites. Here we highlight a few infrastructure issues identified through the review of this assessment.

There is a need to clarify an acceptable plan for the River Stort crossings

6.2.2 Securing strong transport linkages between the development and Harlow town centre are considered critical to the delivery of this scheme, (as well as other transport linkages within East Herts, and the motorway network). As such securing an upgrade to the existing bridge and an appropriate new bridge crossing across the River Stort will be vital to the delivery of the 10,000 dwellings scheme.

6.2.3 For the 2,500 dwelling scenario a view is needed from Essex County Council as to whether there is sufficient capacity for the existing bridge to accommodate the planned growth and also a cross border view from HCC about the scale of growth and its impact on the east west corridor.

6.2.4 The infrastructure schedule (for the 10,000 dwelling scenario) includes the following cost estimates for a new bridge and upgrade of the existing:

- Upgrade of the existing central river Stort crossing - £13m
- A second new eastern crossing linking to Temple Fields employment area - £38m

6.2.5 The landownership for securing this second preferred eastern crossing is currently in third party ownership and at the developer surgery, PBA were informed that negotiations on securing this access were ongoing. We understand there may also be scope for an alternative western crossing, but it is unclear if this alternative route will be acceptable to Essex County Council (the highway authority). Any third party land ownership issues would also need to be resolved in order to secure this alternative access.

The sewage infrastructure strategy is evolving but questions remain over its delivery

6.2.6 Due to the uncertainty surrounding the timing of capacity upgrades to the Rye Meads sewerage infrastructure, the promoters have proposed to manage waste infrastructure onsite using waste water treatment plants. This would be independent of Thames Water, so the promoters will require either a water company to adopt the infrastructure, or alternatively to identify some company to own and manage this plant and works – the approach to longer term management of this onsite infrastructure will need to be detailed to inform the masterplan stage.

6.2.7 The proposed sewage infrastructure strategy is documented in a report titled Sewage Treatment and Drainage Strategy prepared by AECOM in December 2013. This identifies a solution based on four sewage treatment works and four treatment plants. Site topography has been taken into account to demonstrate this infrastructure can be accommodated. The cost assessments provided for this work appear broadly reasonable for the individual plant and works proposed, though specific details are not included. In broad terms, the identified solution to manage the sewage on site appears deliverable in terms of the technology, cost and physical capacity. However, this type of infrastructure and its discharge is severely regulated by the Environment Agency (EA) and so we need to understand how the EA might respond to this proposal.

6.2.8 Initial consultations by AECOM with the Environment Agency (EA), the licensing authority responsible for issuing permits to allow appropriate discharge into the River Stort, have been taken account of in assessing the level of phosphorus discharge into the River Stort. The promoters recognise that the discharge consents set by the EA are tight, and have acknowledged the need to mitigate for this. However, a copy of an e-mail correspondence from the EA, dated 16th Dec 2008, as part of the appendix to the Sewage Treatment and Drainage Strategy report by AECOM states the following:

‘*The Stort is a BAP Chalk Stream. Early indications from a sampling point near Burnt Mill would indicate that the current Phosphate levels are well above the current suggested levels under the Water Framework Directive limits set by UKTAG. We do not yet know what our*

policy will be on allowing further discharges into waterbodies that are not meeting "good" status. It may be that we could object to them. Ideally we would recommend that some sort of catchment Phosphorus analysis should be completed. We would like to stress that we are currently trying to reduce Phosphate in the Stort and will be carrying out ongoing investigations into how best this can be achieved.' Rachel Keen, EA Dec 2008.

6.2.9 The proposed sewage infrastructure strategy is based on treating the foul water on site and discharging into the River Stort. This will need a permit from the EA. However, the concerns highlighted above by the EA could pose a threat to the delivery of this sewage treatment option. As the advice from the EA is somewhat dated. It is recommended that EHDC should consult with the EA to confirm that a permit to discharge into the River Stort would be forthcoming if the on-site waste treatment plan option is pursued.

6.2.10 If for any reason the On-site option cannot be progressed, based on discussions with Thames Water (see para 4.2.4), it is possible that an offsite solution based on an upgraded Rye Mead Wastewater Plant could be provided, but this could pose a delay to the delivery of the proposed scheme and would need an assessment of how the connecting infrastructure would be accommodated across the Stort Valley. The option for off-site delivery was not included as part of the proposal and so has not been assessed as part of this study and will need further review to confirm it can be physically connected and delivered.

Is there upstream capacity for the utilities infrastructure?

6.2.11 On site utilities costs appear sensible at this level of estimation. Given the scale of this scheme we having not seen the correspondence from the utilities companies to inform the offsite infrastructure costs, and the estimates currently include large lump sum unit figures. There is no indication of the scale of capacity and infrastructure required. We are assuming these costs and capacities are based on consultation with the utilities companies and determined by making an application to the utility company to confirm the point of connection for the demand and understand any upstream network reinforcement required and their costs. This will verify if the costs which have been identified in the cost schedules provided by the site promoters are appropriate and that capacity can be created to meet the needs of growth. Correspondence from the utilities companies should be submitted to show this scale of growth can be met in a timely manner to inform the delivery assessment.

Off-site strategic transport infrastructure considerations

6.2.12 The site promoters have developed a microsimulation model for the site and north Harlow. This model has been provided to ECC for agreement and should, subject to ECC agreeing to its suitability, be used to understand local traffic impacts and associated suitable mitigation. This model should be aligned with the HCC COMET modelling and Transport Vision to be prepared in 2016 so that consistent scenarios and forecasts are used.

6.2.13 However, and in lieu of the COMET model being used the recent results from the ECC VISUM modelling relating to J7a of the M11 indicate where some of the key challenges that are likely to require addressing and these are outlined below:

- A414 Eastwick Road where flows are likely to increase and increase further as a result of the junction 7a scheme;
- Junctions along Gilden Way
- A414 from Eastwick to Burnt Mill
- Capacity and management of the A1184 corridor and improvements to improve traffic flow at the A1184-High Wych junction;
- A414 Second Avenue to M11 J7 although flows reduce if J7a were to be delivered.

6.2.14 Away from the immediacy of the site, it is likely that the growth will impact on a range of strategic off site, and often cross border transport infrastructure requirements. There is a need for greater understanding of the cumulative impact of traffic movements along the A414 and an assessment of potential wider mitigation measures that need to be put in place to manage this and other development along the corridor can then be explored to see how the impact of this development can be mitigated. The precise nature of this will be informed following the HCC COMET modelling and Transport Vision to be prepared in 2016 with the impacts on the A10 and through Hertford warranting consideration. From this work, all off site strategic transport interventions need to be identified and assessed.

Further work before Plan Examination

6.2.15 The issues identified above relating to the deliverability of infrastructure for the 10,000 dwellings should be reviewed further with the site promoters and infrastructure delivery providers / licensing authorities prior to Examination and cannot be left for a future DPD document as they are fundamental and affect the deliverability of the scheme.

6.2.16 We consider that a scheme of upto 2,500 dwellings is more likely to be able to overcome the issues identified above relating to sewage infrastructure and bridge crossing. The Rye Meads Waste Treatment Plant has capacity and may be able to accommodate some of the 2,500 units upto 2021 – 2026 (see paragraph 4.2.4) providing connection can be secured. It is also likely that the existing river crossing may be able to accommodate the 2,500 dwelling scenario without the need for a new second river crossing, however an impact assessment would be needed to inform this scale of growth that can be accommodated by upgrading the existing road bridge crossing to Harlow and this will inform the threshold size for this smaller scenario. Evidence of utilities network capacity should be confirmed as these have not been previously provided or confirmed via the IDP.

6.3 Moving towards a delivery strategy beyond Plan Examination

6.3.1 As part of the future on-going dialogue beyond the Plan Examination (assuming suitable solutions can be identified and the scheme is classed as developable), we would draw EHDC's attention to the following areas for further investigation:

Understanding wider transport impacts and mitigation measures

6.3.2 There is a need to explain the implications on the wider East Herts transport, particularly, highway network, especially as this scheme is with East Herts and members and residents wish to understand the impact and mitigations within the East Hertfordshire area as well as Harlow. The Gilston Area assessment should also ensure that suitable analysis of railway infrastructure capacity is undertaken to ensure that the modal shift is deliverable, particularly for a scheme of 10,000 dwellings. There is no evidence that this scale of growth has been assessed by the rail service providers.

Will the scale of secondary school be acceptable to HCC?

6.3.3 The infrastructure schedule includes the provision of a single 'super' secondary school that will be extended out to an 11FE capacity when complete, to serve all seven villages. The secondary school will be delivered in phases. The estimated cost of this secondary school is approximately £62m. Gardiner and Theobald cost consultants have estimated the build cost for this size of school at £36m. We recommend early consultation with HCC to assess the acceptability of an 11 FE secondary education school, better understand the cost differentials and the potential traffic impact of a school of this size on the local area. Consideration also needs to be given to both Primary and Secondary education provision, in terms of whether or not the planned supply would be sufficient to meet the level of demand that would be expected from such a large development.

What is the requirement for outdoor leisure infrastructure?

6.3.4 Part of the development strategy is to create three substantial parks which appear to result in 171ha of park land. This has an impact on the gross amount of land needed for this development and will affect the viability assessment of gross to net land area and the dwellings per hectare assumption, which are discussed in the viability assumptions section.

6.3.5 There is a need to fully understand the impact of such a major parkland investment – it is appreciated that this is an important part of the overall place making vision by the promoters, and has been carefully developed, and could be part of a significant feature in helping to lift the values of the development in this area and contribute to the provision of accessible open space for both Harlow, and East Herts residents. However, it will require substantial ongoing maintenance resources and how this is to be funded and managed should be considered as part of the ongoing masterplan process.

Is the indoor leisure infrastructure required?

6.3.6 The proposal includes the provision of a leisure centre with a 25m swimming pool. Clarity will be needed on whether such provision would form part of the infrastructure requirement for this scheme as part of the developer contributions or whether this would be a private facility. For now it has been assumed as part of the site infrastructure in the viability assessment. However, detailed consultation is required with EHDC leisure services team to assess whether this infrastructure is required as an 'infrastructure item' and how it will be managed. The infrastructure cost review includes some detailed comments relating to the cost assumptions which should be refined over time.

Social and community infrastructure

6.3.7 The infrastructure cost schedule includes a comprehensive list of social and community infrastructure including a library, place of worship, police stations and community centres. The detailed requirements for this will be refined as masterplan is developed, including the longer term management of some of these facilities.

Cross border infrastructure

6.3.8 The development will impact on the wider transport networks in Harlow, East Herts and the M11, (which, going forward is likely to be part funded via a CIL in the future and may need to take account of paying over CIL receipts collected by East Herts to support infrastructure needed in adjoining Harlow.

6.3.9 The cumulative impacts of development at Gilston need to be considered along with Sawbridgeworth and development at Bishops Stortford South along the A1184 and M11 J7 corridor as well as with development at Hertford, Ware and East of Welwyn in terms of the impacts on both the A414 through Hertford and the A414/A10 junction.

7 EAST OF WELWYN GARDEN CITY STRATEGIC SITE INFRASTRUCTURE ASSESSMENT

7.1 Introduction

7.1.1 Policy EWEL1 Land East of Welwyn Garden City of the Draft Preferred Options District Plan 2014, states that:

'*To meet long-term housing needs Land East of Welwyn Garden City is identified as a broad location for development. East Herts Council will test through a Development Plan Document (DPD) the feasibility of Land East of Welwyn Garden City to accommodate around 1,700 new homes and supporting infrastructure in accordance with Policy DPS4 (broad locations for development). Development shall not proceed until the adoption of the DPD*.'

7.1.2 A developer surgery took place in October 2014 to provide PBA an opportunity to discuss with the site promoters the deliverability of the scheme in terms of known constraints, infrastructure requirements, phasing and viability assumptions. A considerable amount of work has been undertaken by the promoters in helping to inform the presentation at the developer surgery.

Is there clarity over landownership?

7.1.3 This scheme considered as part of this study is being jointly promoted by Lafarge Tarmac and Gascoyne Cecil. Lafarge Tarmac stated at the developer surgery held in October 2014 that there is a memorandum of agreement between the two land owners to produce a single masterplan, thus addressing any obstacles and concerns relating to piecemeal delivery of this site. The site promoters have carried out various site investigations and as part of their proposal have submitted a number of accompanying reports (see East Herts web site).

What quantum of growth have we assessed?

7.1.4 This scheme straddles the Welwyn Hatfield and East Herts administrative boundary. In order to inform the infrastructure and viability assessment, the scheme has been divided between the two administrative areas. The development within the Welwyn Hatfield area is known as WGC5 and is estimated to include 1,400 to 1,800 dwellings – though decisions on this are pending further investigation into land condition assessments.

7.1.5 The infrastructure cost schedule that has been submitted is for 1,700 dwellings in East Herts and this is the scale of growth that has been assessed by PBA.

Initial concept plan

7.1.6 The emerging concept plan as shown in figure 7.1 has been based on an assessment of the landscape, topography, ground conditions, constraints, opportunities and infrastructure mitigation measures. These assessments have been informed by EHDC and other service providers at previous meetings with the promoters.

7.1.7 The concept plan is starting to define the site boundary and layout for the scheme. Work on this will be refined as the plan moves towards a masterplan. Detailed work on the merits of the layout, form, landscape and any Green Belt release will be a matter for consideration by EHDC and is not part of this assessment.

7.1.8 The promoters are already engaged with HCC to discuss the sand and gravel extraction strategy as the site is within the sand and gravel belt, and the emerging concept plan will be informed by the any emerging minerals extraction strategy.

Figure 7.1 Original East of Welwyn Garden City concept plan

Source: Lafarge Tarmac 2014

What are the infrastructure requirements?

7.1.9 The site promoters have submitted a high level infrastructure schedule setting out the necessary infrastructure requirements to support the planned growth, including estimate costs.

7.1.10 Table 7.1 is a summary of the infrastructure cost schedule, this highlights the developer enabling cost of approximately £32m and development infrastructure costs of approximately £30m which will be incorporated as a cost input to inform the viability appraisal. The cost schedule includes an allowance of £3.6m towards off site strategic infrastructure costs such as library, public transport etc. These have not been included as a cost input in the viability appraisal and instead will be informed by the level of CIL overage.

7.1.11 However, it should be noted that the final list of strategic infrastructure relevant for CIL and S106 will be refined in consultation with the developers and service providers (see section 4) if EHDC decides to move towards adopting a CIL. If a CIL is not adopted, then some of these costs will be captured via a S106 mechanism instead.

Table 7.1 Summary of infrastructure costs for East of Welwyn Garden City

Infrastructure Type	Sum of Developer enabling works	Sum of Development specific infrastructure (S106 / s278 site specific)	Sum of Strategic infrastructure cost (CIL Regs 123 list)
East of Welwyn	**£32,216,287**	**£30,450,088**	**£3,564,566**
Community	£0	£561,957	£286,488
Education	£0	£10,082,158	£0
Green infrastructure / outdoor sport	£0	£9,269,634	£0
Health	£0	£3,636,188	£0
Management & adoption	£0	£2,153,212	£0
Site preparation	£11,970,075	£0	£0
Transport highway	£6,803,717	£4,102,342	£0
Transport other	£0	£644,597	£3,278,078
Utilities & drainage	£13,442,495	£0	£0

Source: Lafarge Tarmac and PBA – 2014 (Note East of Welwyn = East of Welwyn Garden City)

7.1.12 In addition to the above infrastructure, a cost input for the provision of accommodating 15 pitches (scale determined by EHDC) for Gypsy and Travellers and Travelling Show people has also been included as a cost input in the viability assessment.

When is the infrastructure required?

7.1.13 An estimate of when infrastructure is likely to be required has been incorporated based on our initial assessment. This identifies the following:

- Trigger points for infrastructure
- Cost estimates for the infrastructure
- Funding categories for the infrastructure provision.

7.1.14 The information in table 7.2 has informed the cash flow assessment for the viability appraisal. It should be noted that this cashflow assessment is highly likely to change as plans are refined with further inputs from the site promoters and service providers. Where possible, costs have been 'pushed back' and delivery timescales extended to help with the cashflow. The CIL costs are not factored into the appraisal cashflow and an instalments policy is likely to be introduced to help support cashflow.

7.1.15 The infrastructure schedules included are based on the site promoter's assessment of what is required and how this will be delivered, however infrastructure service providers may have a different view on how some of this infrastructure might be delivered and this will be refined at the next round of stakeholder consultations.

Table 7.2 Infrastructure requirements, costs and cashflow

Project	Funding Source	Enabling works	S106 / s278	Cost start date	Cost end date	Delivery duration (years)
Welwyn Access/roundabout junctions into Birchall Farm that includes drainage,	S278	£0	£826,406	2018	2023	6
East of Welwyn Primary Roads (1620m x 12m)	Developer	£2,549,034	£0	2018	2023	6
East of Welwyn Secondary Roads (2704 x 12m)	Developer	£4,254,683	£0	2018	2023	6
East of Welwyn - new allignment of Birchall Lane/ Cole Green Lane (1048m x 12m)	S278	£0	£2,309,530	2018	2023	6
East of Welwyn - new alignment of A414/Holwell Lane roundabout	S278		£140,000			
East of Welwyn - new Roundabouts on Birchall/ Cole Green Lane	S278	£0	£826,406	2018	2023	6
Pedestrian and cycle linkage through the new Panshanger Country Park - assumed included in strategic site costs	S278	£0	£0			
Welwyn -Library Facilities	CIL	£0	£0	2020	2027	8
Welwyn - Bus service contribution (Annual contribution)	CIL	£0	£0			1
Welwyn - Accessibility contribution	CIL	£0	£0			1
Welwyn - Travel Plan Measures	S106	£0	£644,597	2020	2027	8
Welwyn - sports & leisure facilities	S106	£0	£1,085,347	2019	2026	8
East of Welwyn green infrastructure, openspace, sports & woodland	S106	£0	£8,184,287	2022	2027	6
Welwyn - new 2 FE Primary School (based on 2000 m2)	S106	£0	£4,517,688	2020	2027	8
Welwyn -Playing Fields - school	S106	£0	£771,313	2020	2027	8
Welwyn Servicing and delivery of site for Secondary School	S106	£0	£275,469	2020	2027	8
Welwyn - Contribution to Secondary School	S106	£0	£3,636,188	2020	2027	8
Welwyn -Nursery Education and childcare	S106	£0	£881,500	2020	2027	8
Welwyn - Contributions to Youth Facilities	S106	£0	£0	2020	2027	8
Welwyn - Health Centre	S106	£0	£3,636,188	2020	2027	8
Welwyn - Community centre	S106	£0	£451,769	2020	2027	8
Welwyn - Recycling facilities	S106	£0	£110,188	2023	2024	2
East of Welwyn on site utilities	Developer	£8,739,692	£0	2018	2023	6
East of Welwyn - off site utilities upgrades	Developer	£4,702,803	£0	2018	2023	6
East of Welwyn - drainage	Developer	£4,443,642	£0	2018	2023	6
East of Welwyn earth works	Developer	£1,254,869	£0	2018	2020	3
East of Welwyn off site drainage	Developer	£452,210	£0	2018	2020	3
Welwyn - Acoustic Barrier	Developer	£220,375	£0	2018	2020	3
Welwyn - Section 38 Agreement - applied to on-site roads Welwyn	Developer	£0	£1,526,025	2022	2030	9
Welwyn - Section 278 Agreement - applied to off-site road Welwyn	Developer	£0	£627,187	2020	2027	8
Welwyn -Professional fees and survey costs	Developer	£5,598,979	£0	2016	2038	23

Source: Lafarge Tarmac and PBA – 2014 (Note East of Welwyn and Welwyn = to East of Welwyn Garden City)

7.2 Infrastructure assessment and the deliverability of the scheme

7.2.1 Some infrastructure items are considered as necessary to enable development to take place, such as securing appropriate access, utilities, drainage and sewage infrastructure. There are other items of infrastructure that are necessary to secure sustainable development such as education, health, transport etc. The ability to provide these infrastructure requirements helps to inform the developability of the strategic sites.

Sewage infrastructure delivery options

7.2.2 To gain an understanding of the existing wastewater network capacity and impact of the large scale development, Lafarge Tarmac commissioned THDA, who submitted a Developer's Enquiry to Thames Water Utilities Ltd (TWU). The outcome of the enquiry, (outlined in the accompanying TWU Sewer Impact Study and File Note prepared by THDA), confirmed that whilst the existing network has insufficient capacity and there are two suitable upgrade options that could help deliver large-scale development in this location that would enable Birchall Garden Suburb to come forward in good time to facilitate an earlier delivery of the scheme. These options are as follows.

7.2.3 Option 1 to provide an additional pipe of 1200 mm diameter immediately downstream of the development site for a total length of 342m. This would provide approximately 410m3 of on-line storage. Pass-forward flows to the trunk sewer would continue to be controlled by the flow control device in the downstream network.

7.2.4 Option 2 to construct an off-line storage tank with a volume of 180m3, with an adopted return pump arrangement, connecting to the trunk sewer, near Poplars Green Lodge. The volume would need to be stored for a maximum of 3.5hrs, which is the time taken for the trunk sewer to return to dry weather flow conditions following the critical duration of 1 in 20 year return period event. The volume would then be pumped back to the trunk sewer during dry weather flow.

7.2.5 These options confirm that whilst there is an insufficient capacity in the network, two storage options are available to provide a local solution to the capacity issue in case upgrades to the waste water and sewage treatment works do not take place to facilitate the planned growth. THDA have provided cost estimates for the foul drainage infrastructure which have been included in the cost schedule. These costs may require review as more detailed information becomes available and further information is known about Thames Water's investment strategy to accommodate the planned growth.

Off-site strategic transport infrastructure considerations

7.2.6 Welwyn Hatfield Borough Council (WHBC) are currently preparing their Local Plan which considers the allocation of 12,500 new houses by 2031 the public consultation for which is due to commence in early 2015. Circa 2,500 houses are proposed on 6 sites East of Welwyn Garden city north of the A414 and west of Birchall Lane. Various infrastructure requirements are likely on area-wide basis. Some of these are outlined below.

7.2.7 The Welwyn Hatfield modelling has concluded that measures to improve Junction 3 of the A1M should be required to include signal optimisation and potential capacity improvements on the southbound off-slip. These measures should be pursued with appropriate cross-boundary cooperation between Welwyn Hatfield District Council and EHDC. The following measures have been identified:

- A1(M) Junction 3 improvements - segregated left turn lane from A414 North Orbital Road to Comet Way to provide additional signal capacity at junction; duelling of northbound carriageway along Comet Way to remove pinch point and provide additional capacity on approach to Comet Way;

- A1(M) Junction 4 improvements - satellite roundabout enlargement to accommodate HGV turns;

7.2.8 The cumulative impacts east of the site and particularly the pinch-points on the A414, will be assessed through the HCC COMET modelling and Transport Vision to be prepared in 2016. At this stage and prior to this work it is not possible to establish what strategic interventions are likely to be required but it is likely to include the following:

- Improvements to widen capacity of the A414 corridor;

- Enhancements to the walk, cycle and public transport networks with a focus on east west connectivity to relieve pressure on the A414 wherever possible.

Is there upstream capacity for the utilities infrastructure?

7.2.9 On site utilities costs appear sensible at this level of estimation. However for the offsite costs, which include large lump sum unit figures, there is no indication of the scale of capacity and infrastructure required. We are assuming these costs and capacities are based on consultation with the utilities companies. The Infrastructure Topic Paper did not confirm existing capacity. The only way to determine capacity would be to make an application to the utility company to confirm the point of connection for the demand and understand any upstream network reinforcement required. This will verify if the costs which have largely been identified in the cost schedules provided are appropriate and that capacity can be created to meet the needs of growth. Generally any costs associated with the provision of utilities will be met by the developer and the utility provider, however, as the assessments have been

undertaken it would be prudent to review the correspondence from the utilities companies to ensure they have confirmed that this scale of growth can be met in a timely manner to inform the delivery assessment.

7.3 Moving towards a delivery strategy beyond Examination

7.3.1 For the dialogue beyond the Plan Examination, the review comments in the cost schedule have included areas for further refinements and we would draw EHDC's attention to the following areas for more detailed assessment.

Education infrastructure

7.3.2 The secondary school provision will be shared with the adjoining development based within the Welwyn Hatfield area. For now the cost assessment has been based on the HCC guidance and land has also been included in the cost assumptions for the school and school playing fields. There will need to be close liaison with the neighbouring authority over the funding and timely delivery of the secondary school.

Landscaping, parks, and woodland

7.3.3 Approximately £9m has been included for various play areas, allotments, pavilion, woodland, outdoor sports and amenity green space[8]. 26 ha of land are allocated for woodland and an allowance has been included for the management of this. The majority of the open space for sports and recreation and indeed the potential playing pitches may be provided within the former landfill part of the site (i.e. on the Welwyn Hatfield side of the border). So care and pragmatism will be needed when assessing the scale of infrastructure required as each authority is likely to have different standards and the provision may be higher than might be expected. The key will be to have a strong mechanism in place for the sustainable management of the woodland and open space in place, either via a trust that has some income generating mechanism attached to support the on-going revenue liability or by local authority adoption with a commuted sum for managing it. As part of further ongoing refinements of the infrastructure schedule, it would be helpful to understand what elements of green infrastructure and outdoor sports provision has been accounted for in the infrastructure cost assessment.

Cross border issues

7.3.4 The location and funding of infrastructure such as schools, public transport, play areas, and community centre has been costed and incorporated in the viability assessment. However, as plans are refined, the approach to funding this will need to clarify which authority should secure the contribution and which funding mechanism to use. For instance, both authorities may seek S106 contributions towards the school or alternatively require the developer to build the schools. In the case of CIL funded items such as the library and possibly some of the public transport schemes, CIL may be collected by East Herts but the infrastructure may be situated in Welwyn Garden City – East Herts can contribute CIL proceeds towards the cost of infrastructure across different district boundaries, but there will need to be member agreement to fund this.

[8] With regard to the playing fields, the original costs assumed 15ha of playing pitches which is too high, we have been informed that this cost have been reduced by £2m. PBA were informed of this amendment after the cash flow model for the viability appraisal was set up and so have not included this reduction.

8 BISHOP'S STORTFORD SOUTH STRATEGIC SITE INFRASTRUCTURE ASSESSMENT

8.1 Introduction

8.1.1 Policy BISH7 South of Bishop's Stortford states that:

'As part of the mixed-use development of this area, between 750 and 1,000 homes will be provided between 2016 and 2026', Policy Bish 1

8.1.2 Land for 250 dwellings is dependent on whether land is required to meet the wider needs for secondary education infrastructure; if this need is removed the site can provide additional dwellings.

8.1.3 A developer surgery took place in October 2014 to provide PBA an opportunity to discuss with the site promoters the deliverability of the scheme in terms of known constraints, infrastructure requirements, phasing and viability assumptions. The promoters are preparing to submit a planning application imminently and have prepared a briefing note to inform the developer surgery.

Clarity over land ownership, site boundary and size of scheme assessed

8.1.4 The site is being promoted by Countryside Properties figure 8.1, for a mixed use scheme including 750 residential units, employment, and neighbourhood centre and community infrastructure. The scheme is required to safeguard land for a secondary school. If after an agreed timescale, the school site is no longer required, then the land can be released for a further 250 units. PBA have assessed the 750 unit scheme for this study.

Figure 8.1 South of Bishop's Stortford Concept plan

Source: Countryside Properties (2014)

What are the infrastructure requirements?

8.1.5 An infrastructure cost schedule has not been provided by the site promoter for this scheme, though some information setting out the onsite enabling cost and contributions towards specific infrastructure items have been provided. Therefore a review of the cost assumptions relating to individual infrastructure items has not been undertaken, though some commentary is provided on the costs provided by the promoter.

8.1.6 Table 8.1 is a summary of the infrastructure cost schedule based on the information provided. This highlights the developer enabling cost of approximately £28m and development infrastructure costs of approximately £11m. The cost schedule includes an allowance of £1m towards off site strategic infrastructure costs such as library and public transport – these have not been included as a cost input in the viability appraisal and instead will be assessed based on the level of CIL overage instead.

8.1.7 However, it should be noted that the final list of strategic infrastructure relevant for CIL and S106 will be refined in consultation with the developers and service providers (see section 4) if EHDC decides to move towards adopting a CIL. If a CIL is not adopted, then some of these costs will be captured via a S106 mechanism instead.

Table 8.1 Summary of infrastructure costs for Bishop's Stortford South

Infrastructure Type	Sum of Developer enabling works	Sum of Development specific infrastructure (S106 / s278 site specific)	Sum of Strategic infrastructure cost (CIL Regs 123 list)
South of Bishops Stortford	**£27,700,000**	**£11,160,000**	**£910,000**
Community	£0	£700,000	£220,000
Education	£0	£8,160,000	£0
Health	£0	£500,000	£0
Transport highway	£23,000,000	£1,800,000	£0
Transport other	£0	£0	£690,000
Utilities & drainage	£4,700,000	£0	£0

Source: South of Bishop's Stortford site promoters and PBA 2014

8.1.8 In addition to the above infrastructure, a cost input for the provision of accommodating seven pitches (scale determined by EHDC) for Gypsy and Travellers and Travelling Show people has been included as a cost input in the viability assessment.

South of Bishop's Stortford site enabling costs revised for this study

8.1.9 In all but the South of Bishop's Stortford infrastructure cost summary (table 8.1), the developer enabling costs are within a range of £19k to £22k per unit (this includes Gilston and Ware which have some high site specific infrastructure requirements). At South of Bishop's Stortford we estimate the cost per unit at approximately £37k per unit for onsite enabling costs, which is considered unusually high (based on what we currently know about the site as we are not aware of the need for any major link road or sewer to service this site which would account for the unusually high onsite enabling costs). No further details are provided by the promoter as to the assumptions informing these cost estimates.

8.1.10 For the purpose of informing the viability assessment we have adjusted the transport highway costs to approximately half the cost quoted above, this has the effect of bringing the overall site enabling cost to approximately £20k per unit instead of the £37k per unit (this is within the Harman range for strategic infrastructure costs). No change is proposed to the S106 costs, which remain at just under £15k per unit giving a total on site cost allowance £36k per unit. As work progresses in refining the detailed masterplan and cost estimates, there should be further discussion with the site promoter to better understand the basis for the cost estimates and the viability inputs can be adjusted accordingly.

When is the infrastructure required?

8.1.11 An initial estimate of when infrastructure is likely to be required has been incorporated based on our initial assessment of when the infrastructure is likely to be required. This identifies the following:

- Trigger points for infrastructure
- Cost estimates for the infrastructure
- Funding categories for the infrastructure provision.

8.1.12 The information in table 8.3 has informed the cash flow assessment for the viability appraisal. It should be noted that this cashflow assessment is highly likely to change as plans are refined with further inputs from the site promoters and service providers. Where possible, costs have been 'pushed back' and delivery timescales extended to help with the cashflow. The CIL costs are not factored into the appraisal cashflow and an instalments policy is likely to be introduced to help support cashflow.

Table 8.3 Infrastructure requirements, costs and cashflow

Project	Funding Source	Enabling works	S106 / s278	Cost start date	Cost end date	Delivery duration (years)
Bishop's Stortford South onsite transport /SUDs / green spaces	Developer	£23,000,000	£0	2018	2023	6
Works on Whittington Way and parking management works on London Road Bish South	CIL	£0	£0	2018	2023	6
Bish South Libraries	CIL	£0	£0	2018	2023	6
Education - secondary schools (HCC Toolkit 2008 rounded and indexed)	S106	£0	£3,500,000	2018	2023	6
Education - primary schools (HCC Toolkit 2008 rounded and indexed)	S106	£0	£4,200,000	2018	2023	6
Education - other - early years (HCC Toolkit 2008 rounded and indexed)	S106	£0	£460,000	2018	2023	6
GP Surgery and other wrap around care (Countryside estimate)	S106	£0	£500,000	2018	2023	6
Bish SS Community centre (Countryside estimate)	S106	£0	£700,000	2018	2023	6
Bishop's Stortford South onsite - utilities	Developer	£4,700,000	£0	2017	2019	3

8.2 Infrastructure assessment and the deliverability of the scheme

8.2.1 Some infrastructure items are considered as necessary to enable development to take place, such as securing appropriate access, utilities, drainage and sewage infrastructure. There are other items of infrastructure that are necessary to secure sustainable development such as education, health, and transport. The ability to provide these infrastructure requirements helps to inform the developability of the strategic sites.

8.2.2 The promoters have appointed consultants to undertake a drainage assessment and further investigations are ongoing regarding off site works relating to the ditch / culvert under London Road. Surface water drainage will be attenuated on-site at greenfield runoff rates, plus 30% for climate change, again indicating that no major investment is required for onsite drainage infrastructure.

8.2.3 Thames Water have stated that the East Herts area and neighbouring districts area served by the Rye Meads Sewage Treatment Works. The Water Cycle Study that was undertaken in 2008/9 forecast growth and the consequential impact on Rye Meads Sewage Treatment Works. However, the planned growth has not realised due to the downturn in housing development, hence there is capacity in terms of sewage infrastructure to serve this site up to a period between 2021 – 2026 (depending on rate of take-up), though this will need to be kept under review.

8.2.4 It was confirmed that Triconnex have reviewed the availability of services and utilities on behalf of Countryside Properties and their work demonstrates that all key services are available and that there is scope to upgrade connections, where necessary – thus supporting the deliverability of the site should this need to come forward in the first five years of the Plan.

Transport infrastructure considerations

8.2.5 The site has previously been subject of a Planning Appeal decision where an Inspector declared the site was suitable to accommodate two relocated secondary schools. This appeal decision has been used by the current site promotors to justify supporting transport infrastructure.

8.2.6 The final determination of the offsite impacts of the site and its contribution to cumulative impact will be established through the HCC COMET modelling and Transport Vision to be prepared in 2016. However, and in lieu of the COMET model being used the recent results from the ECC VISUM modelling relating to J7a of the M11 indicate where some of the key challenges that are likely to require addressing and these are outlined below:

- Capacity constraints along the Bishop's Stortford Bypass;
- Growth of traffic within Bishops Stortford Town Centre;
- Growth in traffic within Sawbridgeworth;
- Traffic growth along the A120 Hadham Road;
- Traffic flow increases through M11 Junction 8.

8.2.7 However, the results of the Junction 7a VISUM modelling indicate that some substantial benefits are likely to be realised with improvements to Junction 7a – this seems to have benefits on Bishop's Stortford town centre as traffic does not then use Bishop's Stortford to get to junction 8 of the M11.

8.3 Moving towards a delivery strategy beyond Examination

8.3.1 As part of this on-going dialogue, the review comments in the cost schedule have included areas for further refinements and we would draw EHDC's attention to the following areas for more detailed assessment.

The need for health and education infrastructure on site

8.3.2 Due to the lack of existing capacity in the area, NHS England has stated that a GP surgery facility will be required on site. A cost contribution for a GP surgery and other wrap around care has been included in the cost assumptions for the site specific infrastructure cost assessment. The site promoters confirmed at the developer surgery that this facility can be accommodated in the neighbourhood centre.

8.3.3 Land has been reserved on this site to provide a secondary school - should the need arise, in the longer term, to serve a wider catchment area. For now the assumption is that this site will make a S106 contribution towards the cost of secondary school[9] places based on the HCC toolkit. A primary school and early year's provision will be provided on site.

Site layout and transportation

8.3.4 The site offers potential to contribute to more sustainable travel within the town and the detail design and layout of the masterplan should reflect this. The location of the site inside of the Bishops Stortford bypass is positive in accessibility terms, and offers opportunity to create real modal choice. The masterplanning should reflect this location with sustainable linkages being provided and prioritised towards the town centre (aligning the accesses so that there is a bias towards walk and cycle and public transport connections towards town and cars are directed towards the bypass.

[9] As the planning application is expected to come in before a CIL will be in place.

8.3.5 Further consideration may be needed on the layout with regard to landscape quality assessment and a re-think about how to treat the Hertfordshire Way may be needed; we draw attention to the Nene Way which goes through the centre of a development in Upton in Northampton as an example for consideration. This could assist in reducing land take and improve overall site design and layout as well as viability. Given the importance of the treatment of this and the previous Inspector's report for this site, it is recommended that the site promoters and EHDC may consider submitting this scheme for a Design Review Panel consideration prior to detailed masterplanning.

9 SITE COMMENCEMENT AND DELIVERY RATE

9.1 Introduction

9.1.1 Reviewing delivery rates and commencement dates is important in informing the cash flow elements of the viability appraisal and informing the Local Plan trajectory. This section sets out a revised commencement date and delivery rate to that included in the Draft Preferred Options District Plan 2014 (as set out in the trajectory included in section two of this study.

9.1.2 Clean, ready to assemble sites with little in the way infrastructure constraints, can generally commence much more swiftly, and depending on the number of access points / outlets at any one time, the rate of delivery can be increased. However this will be influenced by the scale of 'effective demand' and number of other sites on the market at any point in time.

9.1.3 A range of factors will affect the commencement date and estimates of the delivery rates at the strategic sites, including the number of outlets (builders involved on a site at any point in time), market demand and supply of sites at any point in time, the economy, the complexity in the delivery of infrastructure, site conditions, the impact of the mineral extraction policy, pre-application and developer contribution negotiations.

9.2 Research into delivery rates of strategic sites

9.2.1 ATLAS undertook research[10] on build out rates to inform the EHDC Interim Strategy Report. Table 9.1 below is an extract of the ATLAS research showing the total capacity, average build out rates and highest sales rates achieved. This shows that the average delivery ranges from 77 units per annum to 358 per annum.

Table 9.1 Research by ATLAS showing average per annum delivery rates for strategic sites

Local Authority	Site Name	Capacity	Average pa	Highest pa
Thurrock UA	Chalford Hundred	5307	205	677
Peterborough	Hampton – Southern Township	5200	321	548
Bedford	Wixams	4500	265	496
Milton Keynes	Broughton Gate & Brocklands	4000	281	439
Colchester	Highwoods	3910	77	257
Basildon	The Wick, Wickford	3555	93	306
Harlow	Church Langley	3528	167	513
South Cambridge	Cambourne	3300	234	620
Suffolk Coastal	Grange Farm	3150	83	146
South Glos	Emersons Green Village Area	2870	358	564
Broadland	Thorpe Marriot	2854	79	279
Stevenage	Great Ashby	2191	184	319
Braintree	Great Notley Garden Village	1766	131	282
Huntingdonshire	Lowes Farm, St Neots	1400	215	336
Ipswich	Ravenswood	1200	136	226
Aylesbury	Fairford Leys (Coldharbour)	1200	133	349

Source: ATLAS July 2014

[10] ATLAS Notes on build out rates for strategic sites (July 2014) undertaken for EHDC

9.2.2 The ATLAS research assessment note states 'Our experience indicates that developers and promoters often tend to overstate trajectories and underestimate the timescales required to bring sites forward. Forecasts could be based upon an ambitious "best case scenario" and/or presented in a positive way to fit to Local Authority land/housing supply needs and aspirations. Care is needed to independently verify whether forecast trajectories would be realistic'.

9.2.3 We have reviewed research[11] on delivery rates since 1980 which indicates that the rate of development historically achieved for strategic sites in the vicinity of East Herts is approximately 200 dwellings per annum for individual sites, whilst the average time between application submission and first build year is about five years.

9.2.4 To ensure that EHDC's revised housing trajectory reflects a realistic housing delivery rate and commencement period, we have reviewed and adjusted some of the assumptions proposed by the strategic site promoters based on our assessment of the likely impacts of the minerals extraction policy, complexity of infrastructure requirements, market supply, and general feedback from developers on delivery rates. We acknowledge that these are estimates at a very early stage and various factors could affect the commencement and delivery rates.

9.2.5 It is sensible to assume a minimum time lag of about three to five years between approval of detailed application and commencement for providing strategic infrastructure. This will of course vary between sites depending on the scale, capacity of existing infrastructure, ease of connections to utilities and sewage infrastructure, and the need for any accompanying permits.

9.3 Effect of mineral assessment and extraction on commencement

9.3.1 We understand from the Minerals authority that all of the strategic sites, apart from South of Bishop's Stortford will need to assess the scope of possible mineral extraction on site prior to development. Most of the promoters (apart from East of Welwyn Garden City) are in the process of undertaking minerals assessments to inform any sand and gravel mineral extractions that may be needed.

9.3.2 If extraction is deemed to be economically viable (which often in these situations it is not otherwise the market would have already identified this opportunity), it could take anything from three years to much more depending on the extent of reserves and the extraction plan agreed with HCC. More complicated sites with high upfront infrastructure requirements and or greater mineral deposits could take considerably longer to deliver than the three to five years and account of this has been factored into our estimates.

9.3.3 To expedite matters and reduce uncertainty over timescales, we recommend that HCC and EHDC should work with the site promoters to establish a scoping report based on determining the site boundary and desk research on what minerals are present. This should also recommend next steps to assess the consequential viability for extraction prior to development. A decision will then be required, balancing the trade-offs between the economic viability of possible mineral extraction, impact on sensitive areas of landscape, the time delay this might add to the housing delivery and the effect of this on the housing trajectory.

A consolidation of national developers could impact on delivery rates

9.3.4 There has also been a consolidation of house builders nationally and whereas it would have been sensible to assume 5 - 6 developers operating on a large site at any one time, it is more realistic to expect 2 – 4 national developers operating at any one site and this is what we have assumed. We are informed that each housebuilder is currently selling between 3 – 4 units per month, resulting in annual sales of between 70 to 200 market dwellings per site, which is within the rates identified in the previous research.

[11] Research based on information supplied by East of England Local Authorities since 1980 to 2005 – Housing Delivery of Strategic Sites – Research Study by Collin Buchannan on behalf of Countryside Properties (2005)

9.3.5 Although we do not rule out higher delivery rates than this, indeed the ATLAS evidence does suggest some sites delivering an average above 200 units, for now we have adopted a cautious approach which can be reviewed through the annual monitoring report process.

9.3.6 Based on the above assumptions, table 9.2 sets out our estimated commencement date and average delivery per annum assumptions for each of the strategic sites. This has been informed by our understanding of the complexity of infrastructure, mineral sterilisation policy and general planned supply in the area.

Table 9.2 PBA estimate commencement date and delivery rate for the strategic sites

Site	Masterplan	Est planning app	Est start date	No of outlets	Aver delivery pa
South Bishop's Stortford	2015 - 2016	2017	2018 - 2019	2	75 - 100
PBA assumptions only, no indication from site promoter, though they have said they are working up towards submitting a planning application soon.					
East of Welwyn Garden City	2015 - 2017	2017	2022 - 2023	2 – 3	150 - 175
The PBA assumptions on delivery rate in line with the feedback from Savills on behalf of the site promoter. We are informed by EHDC, that having undertaken a minerals assessment, Lafarge Tarmac have estimated the need to allow 5.5 years for minerals extraction before any commencement can take place. They have indicated a start date in year 7 of the plan – which is realistic, especially as infrastructure delivery is not complicated, but approach to cross boundary delivery needs to be developed.					
Gilston Area	2015 – 2020	2020	2021 – 2030+	3 - 4	200 - 250
We note that the promoter considers a start date in the first five years of the plan and has suggested a delivery rate of 500 unit's pa. PBA considers this start date and delivery rate as very optimistic given the range of uncertainties over infrastructure delivery, wider strategic infrastructure capacity, mineral sterilisation policy, density and design, wider landscape considerations and the overall scale of development proposed at this location. PBA view is that the commencement date for Gilston is more likely to be around the mid to later part of the plan. It is difficult at this stage to be more precise until further details on infrastructure and minerals extraction are ascertained as part of the masterplanning work. Given the difference in start date and delivery rates between the PBA estimates and the site promoters' forecasts, it would be helpful to better understand the plans in place by the promoters in resolving the infrastructure delivery issues identified in this study to inform start date and delivery rate.					
Ware	2015 - 2018	2018	2020 - 2025	2-3	150 - 175
PBA assumptions are similar to the site promoters for Ware, though a more cautious approach is taken to the annual delivery rate to allow for the number of strategic sites coming forward. Initial delivery is based on existing capacity of infrastructure; however, concerted project management will be needed to maintain the trajectory on track after this capacity is absorbed. Further refinements may be needed once the findings of the minerals assessment are known.					

Source PBA 2014

9.3.7 The commencement dates and delivery rates set out in table 9.2 have been used to provide a very broad estimate of the timing of infrastructure in the previous section and cash flow to inform the viability assessment in the next stage of this study. Please note the assumptions informing these delivery rates will be continuously refined as more evidence is established and cyclical changes in market demand take effect. This will need to be updated prior to Examination once further information is available on some to the issues identified in this section and after discussion with the infrastructure providers and site promoters.

10 VIABILITY ASSESSMENT

10.1 Introduction

10.1.1 This section sets out the approach to development viability appraisals, a commentary on the market assessment and value zones, and the appraisal assumptions and appraisal findings.

10.1.2 The viability appraisals have been prepared in line with RICS valuation guidance. However, it is first and foremost a supporting document to inform the District Plan evidence base and planning policy.

10.1.3 As per Professional Standards 1 of the RICS Valuation Standards – Global and UK Edition[12], the advice expressly given in the preparation for, or during the course of negotiations or possible litigation does not form part of a formal "Red Book" valuation and should not be relied upon as such. No responsibility whatsoever is accepted to any third party who may seek to rely on the content of the report for such purposes.

Approach to development viability appraisal

10.1.4 The PBA development viability models for residential development use the residual approach to development viability. The approach takes the difference between the development values and costs and compares the 'residual land value' with a threshold (or benchmark) land value to determine the balance that could be available to support strategic infrastructure cost and policy contributions.

10.1.5 In the case of the strategic sites, the model has been adapted to test for a range of different infrastructure requirements and when they are likely to be required. This is then built into the cashflow modelling to assess viability through the lifetime of the development, where costs and returns will be flowing through the development cycle.

10.2 Viability assumptions

10.2.1 As there has been little delivery of a major strategic site of the scales being considered by this study, and because we are still assessing at concept plan stage and expect much of the detail will be refined as the schemes are developed through to masterplan stage, it is not possible to have a perfect fit between the site profile and cost / revenue assumptions.

10.2.2 The site promoters have informed the viability assumptions for this assessment, these were reviewed by PBA and where appropriate adjustments have been amended to reflect a degree of consistency between the sites, local plan policies, wider stakeholder consultations, and desk based research by PBA, including previous viability assessment for the area[13]. The threshold land values adopted for this study have been informed by ATLAS and EHDC and have taken account of the threshold land values being adopted for viability work underway at neighbouring Welwyn Garden City. It is important to note that the viability assumptions will be refined as the concept plans for these strategic sites move closer to detailed masterplans and further discussions on these are expected to takes place between the site promoters and EHDC following the publication of this report.

Sales value zones

10.2.3 An important determinant of viability of a site is its location and accompanying value zone, particularly for residential use. This feeds through into house prices and land values and thus site viability. So the starting point is to articulate the market value zones affecting the bulk of

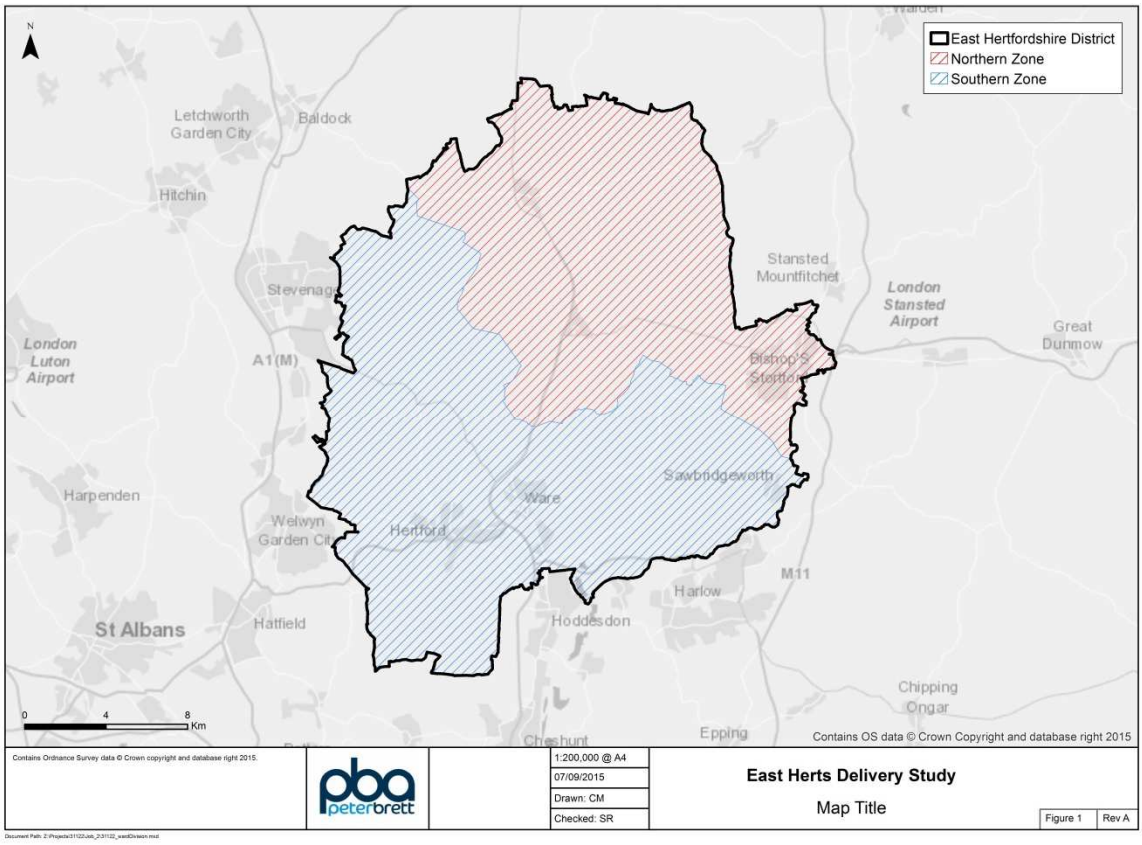
[12] RICS (January 2014) Valuation Professional Standards, PS1 Compliance with standards and practice statements where a written valuation is provided

[13] Assessing Viability by Lambert Smith Hampton – December 2012

the development. The value zones are based on 'appropriate available evidence' available from a range of sources.

10.2.4 Sales values are a reasonable, though imperfect proxy for value zones. An average house value range may be broadly correct however, it is possible to have some individual house price variations. Even between areas with different average prices, the prices of similar houses in different areas may considerably overlap. Therefore, to keep the process simple, account is taken of the likely future patterns of growth, and where appropriate broader value zones are merged. Figure 10.1 shows the value zone areas and values adopted for this study.

Figure 10.1 East Herts Value Zones for Residential Development



Source: PBA 2014 /15

10.2.5 The Whole Plan Viability report provides a summary of recent sales values for new properties being transacted. Based on this, stakeholder consultations and a review of background information relating to values and viability studies in the area we have adopted the following value zones have been adopted for whole plan viability study and this study:

- Northern zone consisting of Buntingford, Central rural villages and Bishop's Stortford @ £3,500 per sq. m
- Southern zone consisting of Ware, Hertford and western rural villages @ £3,700 per sq.m

10.2.6 It is important to highlight that these are approximations of values aimed at creating a simplified approach at this plan level assessment - however we acknowledge there are considerable variations which will be picked up at planning application stage. The research did identify some exclusive developments for very large, expensive properties in the central rural villages in the northern zone, however given the scale of development proposed in these

locations, it is suggested this area is best grouped with the northern zone in order to avoid complexity.

10.2.7 The table 10.1 below sets out the values that the strategic site promoters have suggested, and the generic value zones adopted by PBA.

Table 10.1 Sales values for the strategic sites

Strategic site	Promoter sales value	PBA values used
East of Welwyn Garden City	£3,767sq.m	£3,700 sq.m
North and East of Ware	£3444 sq.m	£3,700 sq.m
Gilston Area	£3,401 sq.m	£3,700sq.m
South of Bishop's Stortford	Not specified	£3,500 sq.m

Source: Site promoters and PBA 2014 / 15

10.2.8 The sales values proposed for the strategic sites adopt the PBA Whole Plan Viability assessment value zones. As can be seen from table 10.1 these sales values vary from the assumptions provided by the site promoters. The PBA assessment is based on the recent sites on the market and agent interviews. PBA is of the view that the strategic sites at North and East of Ware and Gilston Area will be affected by place making value zones and will be well connected for train stations serving a wider employment market, including London and Cambridge markets. For this reason, and as also noted by LSH (in their viability study for this area), values in this area are likely to be higher than those for Harlow.

Scale, site density and land coverage

10.2.9 The scenarios tested for the viability assessment have been informed by EHDC. For South of Bishop's Stortford 750 housing scheme was assessed, and for East of Welwyn Garden City a scenario of 1,700 housing scheme was assessed. For the remaining two strategic sites, two scenarios were tested as the Draft Preferred Options District Plan 2014 includes a range of growth for the broad allocation. So for North and East of Ware, a scheme of 2972 dwellings was tested based on inputs provided by the site promoter and a generic scheme of 2,000 dwellings was tested based on a generic cost input reflecting development of this scale. Similarly for the Gilston Area, a scheme of 10,000 dwellings was tested and a generic scheme of 2,500 dwellings was tested based on a generic cost input reflecting development of this scale.

10.2.10 Policy HOU2 on housing density in the Draft Preferred Options District Plan 2014 notes that densities will vary according to the relative accessibility and character of locations. This density policy has informed the net developable area required to accommodate the scale of units proposed. For now we have made some revisions to the proposed land take and density assumptions proposed by the site promoters to reflect the density policy and EHDC clarification.

10.2.11 These revisions will be subject to more detailed discussions between the site promoters and EHDC to reflect the housing market and vision for the strategic site. It is possible at masterplan stage that average densities might be increased, or the percentage of net developable land to gross land might be increased or alternatively the overall number of units might be amended. These decisions will be informed at the Master planning stage based on a review of the landscape and wider design considerations.

10.2.12 The density, gross area, net developable areas and number of units adopted for this study are shown in table 10.2.

Table10.2 Summary of the planned growth, land take and density assumptions

Site	Gross area (ha)	Net Area (Ha)	% of Gross area	Number of dwellings	Density (net ha) Policy / EHDC input
South of Bishop's Stortford	50	25	60%	750	30+
PBA/EHDC classification: Development classed as 'edge of settlement'. No change is proposed to the density for 30+ dph, but refinements expected once actual developable area is known.					
East of Welwyn Garden City	91	45.5	60%	1700	37.5
PBA/EHDC classification: Development classed as 'edge of settlement', Policy density is for 30 dph, 37.5 dph is considered at the upper end of the what EHDC may consider acceptable, so no change proposed, but will need to demonstrate how this will be acceptable at in masterplan and layout stage.					
North and East of Ware	184	93	60%	2972	32
North and East of Ware generic	104	62.5	60%	2000	32
PBA/EHDC classification: Development classed as 'edge of settlement', hence the density is for 30 dph, no change is proposed to the 32 dph, but will need to demonstrate how this will be acceptable at in masterplan and layout stage.					
Gilston Area	444	267	60%	10,000	37.5
Gilston Area generic	111	67	60%	2,500	37.5
This site is promoted as a series of linked rural villages. The submitted concept plan is based on a density of 47 dph (net). However, for now, EHDC have confirmed that a density of 37.5 dph should be adopted for the viability assessment as 47 dph is much higher than the policy for either a rural or edge of settlement development. Further discussions will be required following the publication of this report to assess the suitability of the higher density. From a market perspective, the higher density reflecting the inclusion of apartment style developments, could work well in this location given the easy commute to London as it would widen the new property offer which would help increase the rate of delivery. From our review of the previous housing assessment analysis commissioned by EHDC, the greatest shortage in supply was in the southern rural settlements, and so from a market perspective, creating a series of linked 'villages' is likely to be attractive to the market. However, we have not assessed this scheme from a design perspective, and how it fits within the landscape and other constraints and opportunities identified by the promoters at this stage in the study.					

Source PBA 2014

10.2.13 Table 10.2 shows that the main change proposed is the reduction in density from 47 dph to 37.5 dph (net) for the Gilston Area and this is accompanied with a corresponding amendment to the land area assumptions to accommodate the scale of planned growth. Further work is clearly needed to assess the acceptable density for this site, which does not reflect the policy designations very well. The PBA response above is provided from a market and delivery perspective only. EHDC will need to come to a view on the overall capacity of the site when further design and layout considerations are taken into account.

Build costs

10.2.14 The sources used for typical development costs include the Build Cost Information Service (BCIS) data from new builds which is published by the Royal Institution of Chartered Surveyors (RICS). The tender price data is rebased to East Herts prices using BCIS defined adjustments.

10.2.15 We note that at there are a variety of developers operating in the East Herts housing delivery market. It is widely considered that national developers are generally building at lower than BCIS cost rates, whilst local developers may not have the same economies of scale benefits and are more likely to be closer to the BCIS rates.

10.2.16 Approximations to represent the average over a range of scheme types have been used for costs such as external works, fees, finance and developers' profit margins. The development costs associated with the strategic sites are summarised in table 10.3.

Table 10.3 Cost summary

Type of cost	Assumption	Unit
Build cost (BCIS Dec 2014 Median rebased for East Herts)	£1036	Sq.m
Externals cost allowance	10%	Of build cost
Contingency allowance	5%	Of build costs & externals
Finance costs	7%	On net costs monthly cashflow
Professional fees	10%	Of build costs
Sales costs	3%	GDV
Developers' profit – market units	20%	GDV
Developers' profit – affordable units	6%	GDV

Source: PBA 2014

10.3 Plan policy costs

10.3.1 The review of the local plan polices for the whole plan viability assessment has informed the assessment of policy costs arising from the draft plan. Going forward developers will need to factor in policy and infrastructure costs in the value offered to purchase land.

Affordable housing policy

10.3.2 One of the most significant items that impact on viability is the requirement to provide affordable housing. For all the strategic sites, 40% of affordable housing provision has been assumed in the viability assessment as a cost input. Different percentages of affordable housing have been tested to enable the EHDC to understand the effect of affordable housing on viability and the overage available to fund strategic infrastructure.

Gypsy and Travellers and Travelling Show people pitches

10.3.3 There is an emerging requirement for the strategic sites to provide for Gypsy and Travellers and Travelling Show people pitches. It is anticipated that each pitch will on average be around 0.05 net hectares, this is based on general design guidance on pitch provision. This includes space for turning vehicles, storage and sufficient room for the average number of caravans per pitch (one and two caravans per pitch). The capital cost assumed for providing a serviced and 'ready to go' plot is estimated at £100,000 per pitch. Note this is a broad level estimate, and based on consultations and cost estimates undertaken by PBA in the Kent and Guildford area where there was a similar policy requirement. The actual costs could vary depending on site conditions, pitch and plot size. However, at this stage, the cost estimate provides a sensible assumption and is in keeping with the Harman guidance.

10.3.4 We have assumed that the pitches will be accommodated through sensitive masterplanning and phasing of delivery so as not to impact on general sales values of market housing. It is assumed that there will be no value in the transfer of the land for Gypsy and Travellers and Travelling Show people pitches to a public sector provider, whether that is a local authority or a registered provider. It is also assumed that the land will be made over as a serviced plot with land preparation, including access and hard standings and utilities all provided. Based on guidance from EHDC, a cost allowance of 15 pitches has been added to the three larger strategic site appraisals and 7 pitches for the South of Bishop's Stortford site. The final scale of pitches will be determined at the masterplan stage.

Water efficiency measures

10.3.5 The Government has stated that in water stressed areas, it is possible to request additional water efficiency measures. As East Herts is in such a water stressed area, the Draft Preferred Options District Plan 2014 includes a policy (WAT 3) to seek a higher water efficiency standard.

10.3.6 Housing Standards Review[14] includes cost estimates based on Government assessment of water efficiency measure. These cost estimates have been applied to this appraisal based on an additional cost of £68 for a house and £43 for a flat to reach a water efficiency standard of 110 litres per day / per person.

Decentralised or District Heating system / low carbon heating

10.3.7 Draft Preferred Options District Plan 2014 required all the strategic sites to provide a decentralised or District Heating system, or other low carbon heating system for residential and commercial use throughout the development, using locally sourced fuel. As part of the developer surgeries, all four strategic site promoters stated that they would not be providing any other form of low carbon heating system, or other low carbon measures beyond what is required in the Building Regulations.

Approach to infrastructure costs and site opening costs

10.3.8 The approach to infrastructure costs matters as some infrastructure costs (such as site enabling costs and site specific infrastructure costs) are treated as a cost input in the PBA

[14]DCLG Housing Standards Review – Illustrative Technical Standards Developed by the Working Groups August 2013 – Standard 4: Water Efficiency pages 87 – 92

viability model, whilst other costs such as strategic costs commonly funded by the community infrastructure have not been included as a cost input in the PBA viability appraisal and instead will be assessed based on the level of CIL overage instead.

10.3.9 However, it should be noted that the final list of strategic infrastructure relevant for CIL and S106 will be refined in consultation with the developers and service providers (see section 4) and is dependent on EHDC deciding to move towards adopting a CIL (a decision on this has not been confirmed). If a CIL is not adopted, then some of these costs will be captured via a S106 mechanism instead.

10.3.10 The site promoters have produced high level infrastructure assessments to inform their concept plans reflecting development enabling and S106/ S278 costs for creating fully serviced sites. For now, most of the costs provided by the site promoters have been factored into the viability assessment as a cost input for the strategic sites, apart from the estimates provided by South of Bishop's Stortford[15]. It is assumed that ongoing discussions with the site promoters will help to refine the infrastructure cost assumptions as further details emerge and the plan progresses to masterplanning stage.

10.3.11 For the two generic scenarios at North and East of Ware 2,000 dwellings and Gilston area 2,500 dwellings PBA have assumed a site opening cost allowance of £20,000 per dwelling and a developer contribution allowance for S106 infrastructure of £20,000 per dwelling. This was based on a review of the range of costs and scale of development provided by the site promoters.

10.3.12 Going forward, if EHDC adopts a CIL, then in order to be compliant with the CIL regulations, the Council will prepare a CIL Regs 123 list and future contributions towards the cost of strategic infrastructure will be assessed based on viability and not on the scale of impact attributable to the site (though note there is scope to use S106 instead providing it is compliant with the clearly identified legislation). Duplication in developer contributions will be avoided by having a clearly defined Regs 123 list.

Approach to threshold land values

10.3.13 There are two land values that are important to informing viability, the 'residual' land value and the 'threshold' land value. If the residual land value exceeds the threshold land value, the development is viable and can support a CIL charge. The distinction between the two is explained as follows:

- The residual land value is the value generated by a scheme, assuming that affordable housing and other policy costs are paid, and the developer makes a target profit after deducting development costs;

- The threshold land value is the price that a landowner will require to supply the land. For an unserviced site, as in the case of the strategic sites, without planning permission, a landowner will receive considerably less for the site, in order to allow the master developer / promoter to first service the site and fund the initial promotion costs to secure the planning consent to a fully serviced state.

10.3.14 The appraisal model assumes threshold land value based on an uplift from the existing use value (EUV) for the strategic sites that require greater opening up costs. A consistent approach has been applied to the threshold land values. Thus for all four strategic sites a threshold land value of £150k per gross acre has been applied, this value was provided by EHDC and ATLAS to reflect sites of this nature and ensure a competitive return to a willing landowner. It is important to appreciate that assumptions on threshold land values can only be broad approximations, subject to wide variations. This is taken account of in drawing conclusions and recommendations on whether sites are viable and overage and buffer to pay for any CIL relevant infrastructure costs.

[15] See paragraph 8.24 and 8.25 in section eight for the approach to South of Bishop's Stortford.

10.4 Strategic site appraisal outputs

10.4.1 Part of the purpose of this assessment is to inform a possible CIL charge that the strategic sites can contribute towards the cost of strategic infrastructure. The PBA appraisal model has been set up to factor in the higher site enabling and S106 costs relating to the strategic sites, however, any infrastructure items judged in our opinion to be CIL relevant has not been included as a cost input in the viability assessment, instead these will be informed by the appraisal output and subsequent Regulation 123 list of CIL relevant infrastructure. A summary of the viability appraisal for each site based on 40% affordable housing is included at Appendix D.

10.4.2 The following is an explanation of how to interpret the information contained in the summary appraisal table 10.4 and 10.5. Reading the tables from left to right, successive columns are as follows:

- Site typology
- The value zone area the strategic site is in.
- Yield – the number of estimated dwellings assumed for the viability appraisal.
- The threshold land value is then deducted from the residual land value to arrive at the CIL balance or 'overage' available to contribute towards any infrastructure costs. The CIL balance is an estimate of the 'maximum theoretical CIL' i.e. the maximum CIL that could be charged consistent with the development being financially viable. Given the variations surrounding strategic viability appraisals, we consider this maximum as an approximate indicator, and as such we seek to have a considerable buffer between the overage and any CIL charge. It is not recommended that this theoretical maximum be directly translated into a CIL charge

10.4.3 Note that the CIL overage is not a direct calculation of deducting the threshold value from the residual land value. As affordable housing is not liable to CIL charge, an allowance for this is included in the analysis. The CIL overage / or CIL liable figure is calculated from the CIL chargeable floor area (total GIA minus GIA of the affordable units).

The viability findings

10.4.4 The appraisal output tables 10.4 summarises the impact of the full policy cost of 40% affordable housing, gypsy and traveller sites, water efficiency, estimated S106 and developer enabling costs. This shows that at 40% affordable housing and at the assumed threshold land values, all the schemes are viable. Most of the strategic sites (apart from Gilston Area) can contribute up to £100 - £150 per sq.m towards the cost of strategic infrastructure costs in the form of a CIL charge.

Table 10.4 Viability appraisal summary based on affordable housing at 40%

Site typology	Dwellings	Affordable housing	Net site area	Total floorspace	chargeable floorspace	Residual land value	Threshold land value	Headroom	
	No.	%	Ha	Sqm	Sqm	Per Ha	Per Ha	Per Ha	CIL liable
North and East of Ware	2,972	40%	92.88	258,564	169,404	£1,396,614	£617,775	£778,839	£427
North and East of Ware - generic 2000	2,000	40%	62.50	174,000	114,000	£1,484,391	£617,775	£866,616	£475
East of Welwyn Garden City	1,700	40%	45.33	147,900	96,900	£2,111,553	£617,775	£1,493,778	£699
Gilston Area	10,000	40%	266.67	870,000	570,000	£723,250	£617,775	£105,475	£49
Gilston Area generic 2,500	2,500	40%	66.67	217,500	142,500	£1,658,114	£617,775	£1,040,339	£487
South of Bishop's Stortford	750	40%	23.44	65,250	42,750	£1,183,545	£617,775	£565,770	£310

Source: PBA 2015

10.4.5 Aside from the cost impact of affordable housing on scheme delivery, a very high proportion of affordable housing (say over 30%) on large strategic sites can lead to community cohesion

challenges due to the very large concentration of low income residents and this should be taken into account when considering the affordable housing policy for large strategic sites.

10.4.6 The appraisal output tables 10.5 summarises the impact of 30% affordable housing, gypsy and traveller sites, water efficiency, estimated S106 and developer enabling costs. This shows that at 30% affordable housing and at the assumed threshold land values and adopted threshold land values, all the schemes are viable. Most of the strategic sites (apart from Gilston Area) can contribute up to £150 - £200 per sq.m towards the cost of strategic infrastructure costs in the form of a CIL charge and still have a considerable buffer to reflect variations in assumption inputs. For an average house, scale of CIL charge equates to approximately £14,000 to £19,000 CIL contribution per dwelling.

Table 10.5 Viability appraisal summary based on affordable housing at 30%

Site typology	Dwellings	Affordable housing	Net site area	Total floorspace	chargeable floorspace	Residual land value	Threshold land value	Headroom	
	No.	%	Ha	Sqm	Sqm	Per Ha	Per Ha	Per Ha	CIL liable
North and East of Ware	2,972	30%	92.88	264,508	197,638	£1,649,729	£617,775	£1,031,954	£485
North and East of Ware - generic 2000	2,000	30%	62.50	178,000	133,000	£1,746,470	£617,775	£1,128,695	£530
East of Welwyn Garden City	1,700	30%	45.33	151,300	113,050	£2,410,932	£617,775	£1,793,157	£719
Gilston Area	10,000	30%	266.67	890,000	665,000	£1,020,393	£617,775	£402,618	£161
Gilston Area generic 2,500	2,500	30%	66.67	222,500	166,250	£1,955,818	£617,775	£1,338,043	£537
South of Bishop's Stortford	750	30%	23.44	66,750	49,875	£1,412,189	£617,775	£794,414	£373

10.4.7 The capacity for the Gilston Area (10,000) scheme to contribute to a CIL charge at 30% affordable is about £50 per sq.m, given the scale of development this would equate to something in the region of £47.5m. The reason for the lower overage for this scheme is due to the substantial site opening costs and wide range of onsite infrastructure included to create a development of this scale.

10.4.8 The East of Welwyn Garden City has lower on site infrastructure cost and this is reflected in the higher overage available. The cost allowance relating to the Bishop's Stortford South scheme appear to be high for a 'clean greenfield site' of this nature and it would be worth exploring the scheme further with the site promoter. The scheme also includes a lower density assumption which will affect the viability.

10.4.9 The two generic scenarios assessed are shown to be viable but it should be noted that they are based on generic cost assumptions. In the case of North and East of Ware generic scenarios, our costs assumptions have allowed for £80m towards developers enabling and S106 costs. However, further work will be needed with the site promoter and service provider to come to a view on the actual site costs for this scale of growth, and whether the £80m is sufficient to cover. We expect it is likely that other sites sharing the education facilities provided at this site will need to contribute towards the cost of this facility and some variations to the density and open space assumptions maybe required to ensure the scheme is able to meet any costs above the allowance assumed.

10.4.10 The Gilston Area 10,000 scheme scenario has some of the highest on site infrastructure requirements (due to the wider range of infrastructure being provided on site) and so has the lowest headroom to contribute as much towards strategic infrastructure costs in the form of a CIL contribution. This will be an important consideration at masterplanning stage, as the impact of the development on the wider transport network in particular is likely to be considerable and measure to fund upgrades will be an essential part of the consideration of deliverability. The Gilston Area generic 2,500 scenario includes an allowance of £100m towards the cost of developer enabling and site specific (S106) infrastructure and there is a healthy overage to support a CIL charge in line with the other sites. At this stage, this cost allowance is based on our review of the per unit costs of a number of similar schemes, however, further review of infrastructure for this scheme would be necessary to refine this cost estimates.

10.4.11 The viability assessment, based on our initial assessment of the likely build rates and infrastructure requirements suggests that there will be a considerably long lead time, before

any positive revenue is generated. It will be important at the masterplanning stage to work with the site promoters to understand what measures are to be in place to manage the long period, when there is no income coming in, and high costs are being incurred, and how EHDC can support this by possibly reviewing the timeframes when policy requirements and S106 contributions are paid.

10.5 Strategic site CIL charge options

10.5.1 The CIL Regulations allow the charging authority to introduce charge variations by strategic sites. Given these are strategic sites are at an early stage in the planning process, we tend to allow for a buffer from the overage to reflect the potential for unknown costs that could arise at detail masterplanning stage. On the basis of an assessment of costs and values informing the appraisals, our findings suggest the CIL charge range options as summarised in Table 10.6 below.

Table 10.6 CIL charge options

Strategic site	% Affordable	CIL range per sq.m
All other strategic sites	40%	£100 to £150
Gilston Area	40%	£0
All other strategic sites	30%	£150 - £200
Gilston Area	30%	£50

Source: PBA 2014/15

10.5.2 Given the large unknowns in costs for strategic sites, we have sought to include a significant buffer from the maximum possible CIL charge, and to adopt a simple approach to the CIL charging schedule.

11 A DEVELOPABLE AND DELIVERABLE PLAN

11.1 Introduction

11.1.1 This section sets out conclusions on whether the strategic sites are developable and outlines where further work is required to inform this. Some site specific actions are set out here to inform deliverability, whilst the next section outlines recommendations that are common to all the strategic sites.

11.2 Are the strategic sites developable?

11.2.1 On the basis of information received and reviewed and the assumptions made (and subject to the findings relating the COMET modelling and Transport Vision), we are of the view that the North and East of Ware, East of Welwyn Garden City, and South of Bishop's Stortford are 'developable'. We do not have the same confidence to assess the Gilston Area strategic site as developable at present and consider further assessment is required in relation to the proposed sewerage infrastructure and site access options. Based on the now dated response from the Environment Agency (EA) it is not clear that the chosen option for the sewerage infrastructure will receive the discharge consents from the EA. Some further testing and engagement with the EA is needed or an alternative off site option needs to be explored, possibly linked to the Rye Meads Plant. Secondly for a scheme of 10,000 dwellings, to be considered as developable, it is necessary to have greater clarity about the route to access the site in terms of the river crossing and certainty over land ownership. These two aspects of infrastructure will require further analysis.

11.2.2 For Gilston area, we were also asked by EHDC to assess a 2,500 dwelling generic scenario. This smaller scale development may be easier to resolve in terms of site access. Although at a generic level this is found to be as viable, further work is needed to determine the capacity of the existing River Stort crossing to accommodate this scale of growth without necessitating the need for a second river bridge crossing, and how sewerage, utilities and other social infrastructure will be provided.

Progressing the strategic sites towards delivery

11.2.3 Each strategic site has been assessed in respect of its prospect to come forward over the plan period in terms of infrastructure requirements, viability and policy contributions. This section draws together the findings and makes suggestions for progressing work on delivery for each of the strategic sites based on the findings from our assessment.

11.3 North and East of Ware

11.3.1 A scheme of 2,972 dwellings has been assessed with infrastructure costings provided by the site promoter and a generic scheme of 2,000 dwellings has been appraised for viability based on high level cost assumptions. The land ownership is in place and we are informed that there is an agreement in place between the two site promoters to develop a single masterplan for the scheme. There are no known third party land ownership constraints impacting on the delivery of any critical infrastructure.

11.3.2 Deliverable solutions to critical infrastructure (particularly sewage, utilities, site access and provision of a secondary education) needed to enable the development to take place have been identified and shown to be achievable for the larger scheme.

11.3.3 Strategic transport requirements (before the findings from the Transport Vision are known) include improvements to the A10/A1170 roundabout as well as the provision of a new link road between this junction and the Widbury Hill area to provide a northern bypass of the development to distribute traffic away from the town centre and between the site and the strategic road network.

11.3.4 The scheme viability appraisal has factored in costs of infrastructure, policy requirements including S106/S278 infrastructure, affordable housing and other policies and at this stage is considered to be viable over the lifetime of the development. Strategic infrastructure requirements have not been factored into the viability assessment as a cost input and will instead be informed by a CIL charge. Current viability assessment suggests that if a CIL mechanism to delivery strategic infrastructure was adopted by EHDC, then a CIL charge of around £150 per sq.m may be possible depending on the scale of affordable housing policy and viability assumptions adopted. Further discussion should take place with the promoters and infrastructure providers to consider the most suitable infrastructure funding mechanism.

11.3.5 Tipping point viability assessment to inform the minimum scale of units to support the same scale of infrastructure suggests that the scheme can be reduced to 2000 units. For the 2,000 unit generic scheme, an allowance of £80m has been factored into the appraisal to support site opening and infrastructure costs. However, further infrastructure planning work is required, working with the site promoters and service providers to assess the cost of infrastructure needed to support this reduced scheme. Although broadly it looks viable, it may require other developments to contribute to the cost of some of the major infrastructure such as the secondary school and some flexibility on the development density and affordable housing policy.

11.3.6 Both scheme scenarios are in our opinion is considered to be developable, though more detailed assessment will be needed on the scale of infrastructure required for the 2,000 dwelling scenario. The scheme as the potential to move to deliverable status with concerted effort from all stakeholders, then building work could perhaps commence in 2020 The early scheme delivery is predicated on utilising existing capacity of critical infrastructure; however, a strong project management of infrastructure delivery will be needed to ensure the annual delivery remains on track.

11.4 East of Welwyn Garden City

11.4.1 The site in our opinion is developable and could move towards ‘deliverable’ status with concerted action, however, feedback from the site promoter suggests that commencement is likely to take place in year seven and so this site will remain as having ‘developable’ status.

11.4.2 The overall scheme straddles across the boundary of the two adjoining local authorities of Welwyn Hatfield Borough and East Hertfordshire District Council. This assessment has focused on the element relating to East Hertfordshire for 1,700 units. The land ownership is in place and we are informed that there is a formal agreement between the two site promoters to develop a single masterplan for the scheme. There are no known third party land ownership constraints impacting on the delivery of any critical infrastructure.

11.4.3 Deliverable solutions to critical infrastructure, particularly sewage, utilities, site access and secondary education[16], needed to enable the development to take place have been identified and shown to be achievable. A mineral extraction assessment has been undertaken and this has informed the concept plan and delivery trajectory.

11.4.4 Strategic transport infrastructure requirements include improvements to both Junctions 3 and 4 of the A1M to provide additional junction capacity including signalisation, carriageway dualling and realignment measures. Other roundabout improvements are required to the A414 junctions with Holwell and Birchall Lane to provide additional capacity between Welwyn Garden City and Hertford. However, further details will come from the COMET modelling and Transport Vision work currently underway.

11.4.5 The appraisal has factored in the costs of infrastructure and policy requirements, including S106 infrastructure and affordable housing and at this stage the scheme is considered to be viable over the lifetime of the development. Strategic infrastructure requirements across both

[16] Currently included in the Welwyn Hatfield element of the concept plan but the details will be refined at masterplan stage.

local authority areas have not been factored into the viability assessment as a cost input and will instead be informed by a CIL charge. Current viability assessment suggests that if a CIL mechanism to delivery strategic infrastructure was adopted by EHDC, then a CIL charge of around £150 to £200 per sq.m may be possible depending on the scale of affordable housing policy and viability assumptions adopted. Further discussion should take place with the promoters and infrastructure providers to consider the most suitable infrastructure funding mechanism.

11.4.6 There are a number of cross boundary infrastructure matters, relating to transport, education, open space and green infrastructure which will require a joint delivery strategy between East Herts Council, Welwyn Hatfield Council and HCC - particularly the delivery of upgrades to transport in Welwyn Garden City town centre. The creation of the major public open spaces as part of the place shaping and the reclamation of former minerals extraction and landfill sites will also need collaborative work between the two adjoining authorities. This work will need to consider how to maximise connectivity into existing centres and how the long term management of the strategic open spaces will be funded.

11.5 Gilston Area

11.5.1 A scheme for 10,000 dwellings (for delivery in part beyond the plan period) and a further generic scheme of 2,500 dwellings were assessed for the Gilston Area scheme. Land ownership for the development currently being promoted is in place and we are informed that there is an agreement between the two site promoters to develop a single masterplan for the scheme.

11.5.2 The Gilston Area scheme (10,000) is assessed as having the potential to become 'developable' but is not there yet as satisfactory solutions need to be identified to the delivery of sewage infrastructure and suitable crossings across the River Stort.

11.5.3 It is likely that the lower scale of growth assessed for this site at 2,500 units is more likely to be found as developable, utilising capacity over the existing bridge (to be confirmed) and existing sewage infrastructure capacity at the Rye Meads Plants (to be confirmed). This could then provide the time and space to explore further work on securing a suitable access and solutions to longer term sewage infrastructure needed to support the higher growth scenario.

11.5.4 EHDC has suggested that these infrastructure items are not likely to be required for at least ten years or more (for the 10,000 dwelling scenario), hence having less clarity is to be expected and there is time to work up solutions possibly through the preparation of a further DPD[17]. We have considerable reservations about this possible approach and we are concerned at the uncertainties created by the gap in the evidence on the deliverability of essential infrastructure. We do not think that decisions on the infrastructure needed to make the scheme work and an assessment of the deliverability of this infrastructure can be expected to be left until after the Examination of the District Plan.

11.5.5 Further work is needed to address the following issues before the Gilston Area (10,000) scheme is considered as developable:

a) In respect of the on-site sewage treatment infrastructure, confirmation is needed that any discharge permits into the River Stort will be forthcoming from the Environment Agency (EA). If the solution currently presented by the promoters cannot be delivered, an alternative solution should be identified. We understand that there is likely to be an alternative off-site solution based on the Thames Water plant at Rye Meads. If the off-site solution is adopted, some assessment should be included on how connecting infrastructure can be brought to the site given the various landscape designations. In providing a general view, we consider a solution to the sewage infrastructure ought to be found, but it could impact on cost and timing, which will need to be further reviewed.

[17] We do not recommend the preparation of a future DPD as the way forward in helping to progress this scheme towards delivery (see recommended next steps section).

b) With regard to securing the eastern crossing over the River Stort, (the preferred location by Essex County Council), confirmation is yet to be provided that access to the land to provide the crossing is in place. PBA have been informed that negotiations on securing this access continue. We understand there may also be scope for an alternative western crossing, but it is unclear if this alternative route will be acceptable to Essex County Council, or whether all relevant land ownerships are in place to secure this alternative access. Confirmation of an acceptable River Stort crossing solution and is needed together with an assessment of the impact on viability of the provision of this solution.

11.5.6 If suitable solutions are identified to enable the scheme to be assessed as 'developable', then as part of developing a masterplan we recommend discussions should take place with the site promoters to explore the following considerations as the site moves towards delivery:

a) Clarify the design concept and acceptable density assumptions; this will inform the overall land take (the net to gross land take required). The viability assessment has highlighted the importance of agreeing the approach to development density that would be acceptable to EHDC. This site is promoted as a series of linked rural villages. The submitted concept plan is based on a density of 47 dph (net). However, for now, EHDC have confirmed that a density of 37.5 dph should be adopted for the viability assessment as 47 dph is much higher than the policy for either a rural or edge of settlement development. Further discussions will be required following the publication of this report to assess the suitability of the higher density. From a market perspective, the higher density reflecting the inclusion of apartment style developments, could work well in this location given the easy commute to London as it would widen the new property offer which would help increase the rate of delivery. From our review of the previous housing assessment analysis commissioned by EHDC, the greatest shortage in supply was in the southern rural settlements, and so from a market perspective, creating a series of linked 'villages' is likely to be attractive to the market. However, we have not assessed this scheme from a design perspective, and according to whether it is conceived and promoted as either an urban extension to Harlow or a stand alone settlement.

b) Explore the optimal connectivity, access and long term management of the three major parks proposed as part of the place making strategy and consider whether the scale of parkland proposed is actually required for this development. This will impact on the gross to net land area and overall viability assessment.

c) Revisions to the site boundary based on a review of the landscape character and determine the appropriate location for the community infrastructure, scale and location of employment.

d) A single very large secondary school is proposed to serve the development and the acceptability of this in terms of scale, cost, location and transport impacts needs consultation with the various stakeholders. Our cost team have suggested a significant cost difference between the cost provided by the site promoters and that considered by Gardiner and Theobald. A service provider input is needed to inform the scale and cost consideration. If there is to be a single large secondary school, the impact this will have on local transport movements (given its scale) should be understood in broad terms.

e) There are various cross boundary infrastructure requirements in particular transport, regeneration, affordable housing, and green infrastructure delivery which would benefit from a joint delivery strategy between EHDC, Harlow Council (HC), HCC and ECC.

f) Parallel to the infrastructure strategy there should be further work on viability and the cash flow strategy, refining the appraisal to demonstrate how delivery of infrastructure will be supported, particularly given the scale of enabling infrastructure, phasing strategy and timescale of delivery.

g) The critical piece of transport infrastructure that is required for both the scheme and wider cumulative growth is the new Junction 7a of the M11 as well as associated and major capacity improvements at Junction 7 of the M11. In addition to strategic road access, the cumulative pressures and site specific pressures on the A414 need consideration and the strengthening

of non-car based strategies along this corridor need exploration. The site promoters are aware of the need to bridge the River Stort at an additional location to the existing Fifth Avenue Bridge and have been committed to exploring a location east of this existing crossing. However, further details on transport will come from the COMET modelling and Transport Vision work currently underway.

h) A scheme of this scale will need take account of the capacity of the existing rail infrastructure particularly at Harlow station, and planned upgrades to accommodate this growth.

i) The scheme viability appraisal has factored in costs for the enabling infrastructure, and policy requirements including S106 infrastructure, on the basis of current expectations and best estimates. At this stage the scheme is considered to be viable at 30% affordable housing, but marginal with a policy requirement for 40% affordable housing.

j) Various strategic infrastructure requirements across both Harlow and East Hertfordshire have not been factored into the viability assessment as a cost input and these will instead be informed by a CIL charge. Though further discussion on the assumptions adopted and the most suitable infrastructure funding mechanism will need to take place with the various stakeholders following the publication of this study. Current viability assessment suggests that a CIL charge of up to £50 per sq.m may be possible depending on the scale of affordable housing policy.

k) The generic 2,500 dwelling scenario has been assessed based on a cost input of £40k per dwelling for all enabling and developer requirements. Going forward this will need to be informed by an infrastructure assessment for this scale of growth and could be affected by the cost of secondary education and securing sewage infrastructure at this location.

l) For the offsite utilities infrastructure assessment it is assumed that the site promoters will have already made an application to the utility company to confirm the point of connection for the demand and off site reinforcement requirements have informed their cost schedule. However, given the scale and general location of this development, EHDC should seek to see evidence of confirmation from the utility companies to ensure that any upstream network reinforcements required can be delivered and the costs already factored into the assessment are an accurate reflection of the likely costs.

11.6 South of Bishop's Stortford

11.6.1 The proposal at South of Bishop's Stortford is in our opinion developable and could readily move towards 'deliverable' status.

11.6.2 A proposal for 750 units has been assessed on the basis that land has been reserved for a possible future secondary school to serve the wider area. Land ownership is in place and we are informed that the promoter intends to submit a planning application imminently. There are no known third party land ownership issues impacting on the delivery of any critical infrastructure. The promoters have confirmed that deliverable solutions to critical infrastructure needed to enable the development to take place can be delivered.

11.6.3 The scheme appraisal has factored in revised costs of infrastructure, policy requirements including S106 infrastructure, affordable housing and other policies and at this stage is considered viable at 40% affordable housing. Strategic infrastructure requirements have not been factored into the viability assessment as a cost input and will instead be informed by a possible CIL charge. The current viability assessment suggests that if a CIL mechanism to deliver strategic infrastructure was adopted by EHDC, then a CIL charge of up to a maximum of £150 per sq.m may be possible depending on the scale of affordable housing policy and viability assumptions adopted. Further discussion should take place with the promoters and infrastructure providers to consider the most suitable infrastructure funding mechanism.

11.6.4 In moving towards deliverability, further consideration should be given to the treatment of the Hertfordshire Way[18] and land safeguarded for a possible secondary school. Further thought on how to treat the Hertfordshire Way may be appropriate, so that the route does not sever the overall site into two.

[18] We note the example of the Nene Way, which goes through the centre of the Upton development in Northampton and has incorporated an 'urban design' treatment of a national right of way within the development so as not to sever the development.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 General conclusions

12.1.1 This report has set out the findings of an exploration of the developability and deliverability of four strategic sites currently envisaged by East Herts District Council as forming a major part of the planned provision included in the Draft Preferred Options District Plan 2014. The work has followed an approach to testing developability and deliverability consistent with the terms of the Framework and hence reflecting the way a planning inspector examining the soundness of the submitted plan might be expected to address the matter.

12.1.2 The study has been informed by a considerable body of work that has been undertaken and provided by landowners and developers promoting schemes in the general locations that the Council is considering. This information and assistance has been invaluable. We have independently reviewed and verified the information, provided our own professional judgement where necessary and taken account of input from EHDC and ATLAS (who are acting as impartial advisors on this study).

12.1.3 At this stage whilst the Council has put forward proposals for a spatial strategy as part of its programme of community and stakeholder engagement in preparing the plan, it has not finalised its proposals. There is further work to do in establishing the level of development it is seeking to provide through the plan; as well as related studies that will have an influence upon which locations and sites will ultimately come forward; not least the Countywide COMET transport modelling and Transport Vision, a review of the Green Belt, and the wider strategic infrastructure planning.

12.1.4 Inevitably large scale schemes such as those covered by this study are by their nature complex, and the evidence to inform their developability will evolve over time as options are explored, appraised and refined. Our assessment has reflected the stage of development that the sites have reached and limited to reviewing the options to meeting strategic infrastructure requirement that have been submitted by the site promoters. We have sought to ensure that there is sufficient evidence in place to provide the Local Authority with assurance that the strategic sites are developable, and then to provide recommendations to support delivery considerations following adoption of the local plan.

12.1.5 There has been some delay in preparing this report due in part to various other transport modelling. In the mean time, we are aware that some of the issues identified in this study are already being actioned by the Council and promoters and some information that might be reported in this study may have moved on.

12.1.6 On the basis of information received and reviewed and the assumptions made (and subject to the findings relating to the COMET modelling and Transport Vision), we are of the view that the North and East of Ware, East of Welwyn Garden City, and South of Bishop's Stortford are 'developable'. We do not have the same confidence to assess the Gilston Area strategic site as developable at present and consider further assessment is required in relation to the proposed sewerage infrastructure and site access options. It is likely that the lower scale of growth assessed for Gilston Area at 2,500 units could be found to be developable, utilising capacity over the existing bridge (to be confirmed) and existing sewerage capacity at the Rye Meads Plants (to be confirmed). This could then provide the time to explore further work on securing a suitable access and solutions to longer term sewerage infrastructure needed to support the higher growth scenario.

12.2 Important caveats

12.2.1 Although a considerable amount of effort has been placed in engaging with various stakeholders and gaining a detailed understanding of the findings of the various transport models that have been commissioned to date which inform current deficit and future transport

infrastructure requirements, and challenges (which included inputs from HCC), the findings from this study cannot pre-empt the findings from the recently commissioned Countywide COMET transport modelling and Transport Vision work by HCC which is expected in 2016. This will form the basis for informing the strategic transport requirements to enable the planned growth to take place. Therefore, although reference is made to some strategic transport requirements, an important caveat to this study is that any recommendations relating to transport will be deferred to the Transport Vision 2016 and the Countywide COMET modelling.

12.2.2 Similarly a number of the strategic sites are affected by parallel work undertaken by PBA on the Green Belt review. Any recommendations in the delivery study relating to development on sites within the Green Belt do not override the study findings of the Green Belt review and it will be for the Council to determine where sites might be acceptable within the Green Belt based on a consideration of all the evidence. It will be for the Council to continue to develop its proposals on the location, scale and form of development to be part of its overall spatial development strategy in the Plan after taking account of the findings from these various studies.

12.3 Recommended next steps

12.3.1 It will be for the Council to take a view on the findings of this study, especially with regard to critical infrastructure necessary to enable the development to take place, and engage with the site promoters and key stakeholders to progress the assessment of any constraints in informing the developability of the strategic sites proposed in the District Plan.

12.3.2 We cannot see the additional value to be gained from developing a further Development Plan Document for the Broad Locations, as considerable work in shaping the site strategy has been undertaken as part of the concept plans prepared by the three affected strategic site promoters in informing this study. Council resources might instead be invested in a proactive delivery mechanism intended to help support the delivery of the strategic sites. With this in mind, EHDC should consider establishing a Planning Performance Agreement[19] (PPA) or similar approach to the delivery of each of these sites. The PPA should include engagement with key service providers and establish an approach to community consultation and also the early engagement of a Design Review Panel to inform the scheme design.

12.3.3 Following publication of this study we recommend that the site promoters and EHDC jointly review the viability and infrastructure assumptions adopted in this study. Further consideration should be given to the most suitable infrastructure funding mechanism to help deliver the range of strategic and cross border infrastructure requirements (many of which are still to be identified through the Transport Vision work). Consideration should also be given to how to support the delivery of the strategic sites in terms of helping with cash flow for upfront strategic infrastructure investment. It is recommended that the assumptions and conclusions of this study are used as the basis for further discussions with the relevant service providers involved in infrastructure planning and delivery to ensure the emerging infrastructure proposed is of the right scale, to review estimated costs, and where necessary suggest possible refinements.

12.3.4 We also recommend that a more detailed Infrastructure Delivery Plan (IDP) be prepared by EHDC building on work done as part of this study. We know from experience that Examiners place great store in understanding the infrastructure needs and how such requirements are to be delivered and funded. This should be kept as a 'live document' and will include an assessment of the strategic infrastructure needed to support growth, cost estimates and an assessment of how this will be funded.

[19] A planning performance agreement is a project management tool which the local planning authorities and applicants can use to agree timescales, actions and resources for handling particular applications. It should cover the pre-application and application stages. See http://planningguidance.planningportal.gov.uk/blog/guidance/before-submitting-an-application/planning-performance-agreements/ for further details.

12.3.5 The IDP will need to be accompanied with a delivery mechanism that is responsible for prioritising and managing the delivery of infrastructure and coordination and regular engagement with various infrastructure service providers. As part of this IDP delivery mechanism, there should be a detailed consideration of the best approach to the use of S106 and/or CIL for all items of infrastructure, drawing on stakeholder views and reviewing the initial proposals set out in this study. The Council will also need to consider whether it will implement a CIL charging regime and if so, which items it will include within a Regulation 123 list.

12.3.6 Once the findings from the revised transport modelling are known, there will need to be a credible infrastructure funding package identified to support the delivery of the strategic infrastructure to support the planned growth, and a robust mechanism put in place for collecting developer contributions to part fund the strategic infrastructure.

12.3.7 EHDC may wish to revisit and update this Delivery Study prior to Examination to ensure that it provides an up to date and agreed position on site deliverability, viability and infrastructure delivery approach. Ideally any such update would incorporate the views and further evidence derived from direct engagement with promoters and infrastructure providers following publication of this study. Such an approach would assist to demonstrate that a thorough, robust and collaborative approach had been adopted by the Council to the issue of deliverability, and to build confidence in the Council's submitted plan.

12.3.8 EHDC should work with the HCC minerals team to prepare a minerals assessment scoping note for North and East of Ware and Gilston Area based on the emerging concept plan for these sites. EHDC should work with the site promoters to determine whether any mineral extraction in these locations could be considered as economically viable propositions taking account of the impact on delivery timescales for housing.

12.3.9 The policies in the Draft Preferred Options District Plan 2014 were reviewed to assess the cost implication of policies included in the plan. As such, any additional costs stemming from plan policies have been factored into the viability assessment and EHDC have been informed of areas where the plan policies should be aligned with the national building regulation standards in order to avoid adding any additional policy cost to delivery. If going forward any plan policies are revised then the cost implications on viability should be reviewed.

Appendix A Stakeholder consultations

A.1.1 Telephone interviews were held with the following infrastructure service providers:

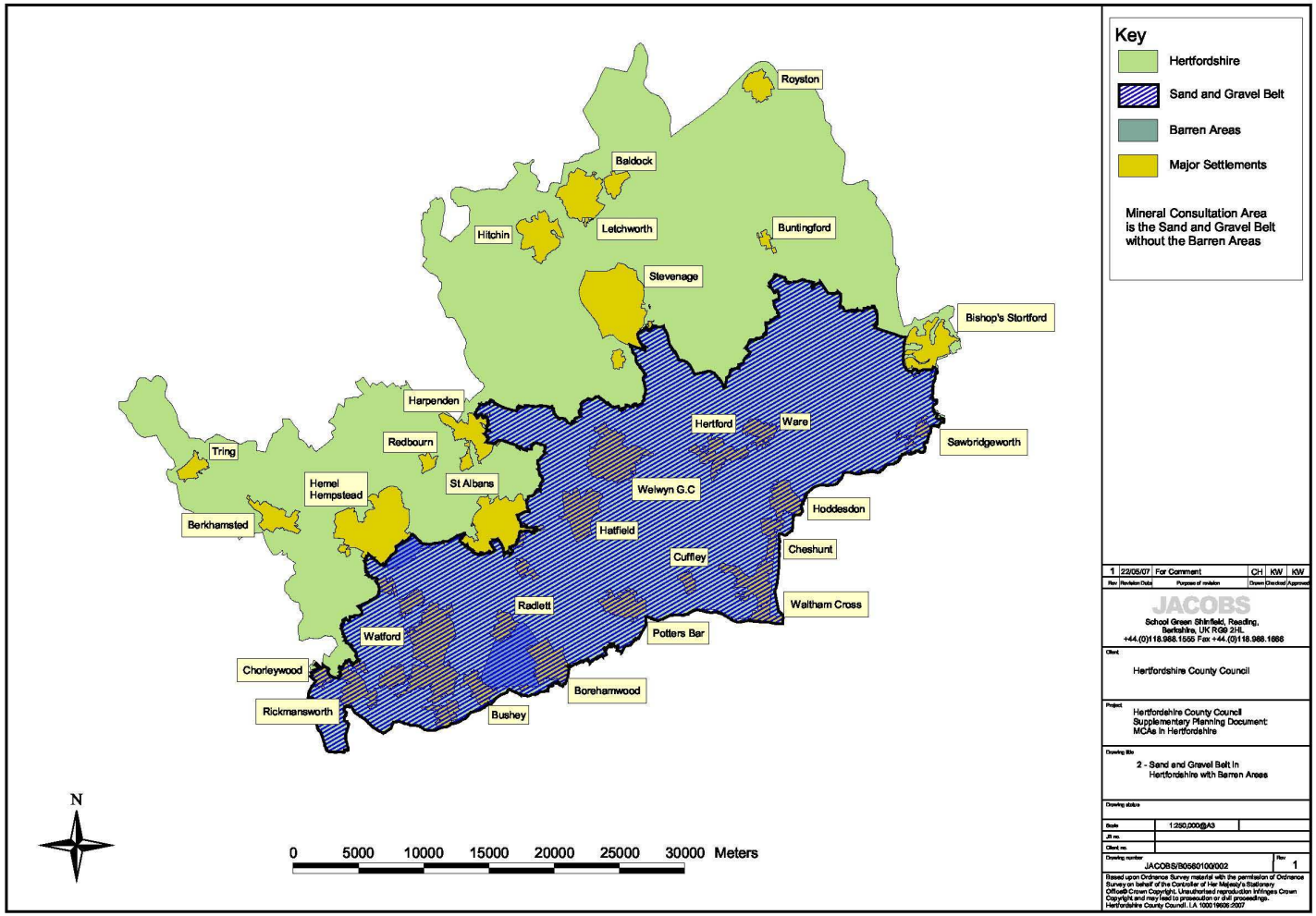
- Richard Reeves of Thames Water (sewage infrastructure) held on 23rd September 2014
- Andrea Gilmour of HCC (education infrastructure) held on 26th September 2014
- Laura Griggs, Lin Dalton and James Gleed (health infrastructure) held on 13th October 2014
- Joan Hancock Hertfordshire LEP held on 9th December 2014

A.1.2 Dates of promoter surgeries, transport meetings and Parish Council meetings:

- Bishop's Stortford Neighbourhood Plan Group (13 November 2014)
- Gilston Area - Places for People/City and Provincial Properties (3 November 2014)
- East of Welwyn Garden City - Lafarge Tarmac Ltd (8 October 2014)
- South of Bishop's Stortford - Countryside Properties (8 October 2014)
- Viability Developer Workshop (9 October 2014)
- Transport meeting on M11 Junction 8 assessment/modelling (27 August, 13 November 2014)
- Initial transport workshop with adjoining Local Planning Authorities, Highways Agency, and Hertfordshire County Council (9 September 2014)
- Transport meeting with Hertfordshire County Council (10 October, 24 November 2014)
- East Herts Association of Parish and Town Councils (6 November 2014)

A.1.3 The notes of these meetings have been posted to East Herts Council's website at: www.eastherts.gov.uk/deliverystudy

Appendix B Sand and gravel belt map



Appendix C Infrastructure assumptions

C.1 Summary of Infrastructure Costs

C.1.1 Table C1.1 is a summary by infrastructure costs. This shows that the total costs identified to date for the strategic sites comes to approximately £775m.

C.1.2 The site enabling costs (i.e. costs incurred by the developer in opening up the site), are just under 45% of the total costs. Whilst the site specific infrastructure costs, relating to costs to support the residents such as schools, crèche facilities, health, community centres, leisure facilities and open space account for 50% of the total cost.

C.1.3 Contributions towards off site strategic infrastructure such as those arising from the cumulative impacts of growth such as on wider strategic and local transport networks, public transport, cycleways, green infrastructure, cultural and community facilities, town centre congestion, etc currently account for 5% (£41m of the total costs).

C.1.4 The assessment of the off-site strategic infrastructure costs is currently being assessed by EHDC and will also be informed by further work on cumulative transport infrastructure assessment. For now, this assessment is based on the cost information provided by the strategic promoters and relates to those costs identified by the promoters as a 'contribution towards libraries, or generic off site infrastructure.' This element will be refined as further work on cumulative off-site infrastructure is undertaken by EHDC.

General comments on infrastructure assessment

C.1.5 The site enabling costs (i.e. costs incurred by the developer in opening up the site), are just under 45% of the total costs. Whilst the site specific infrastructure costs, relating to costs to support the residents such as schools, crèche facilities, health, community centres, leisure facilities and open space account for 50% of the total cost.

C.1.6 Due to the location and scale of development proposed at Gilston and Ware, both schemes have particularly challenging requirements to provide site specific infrastructure in terms of foul water and transport infrastructure as part of their site opening costs. Due to their scale, they also have a requirement to provide secondary school provision on site.

C.1.7 Contributions towards off strategic infrastructure such as those arising from the cumulative impacts of growth such as on wider strategic and local transport networks, public transport, cycleways, green infrastructure, cultural and community facilities, town centre congestion, etc currently account for 5% (£41m of the total costs).

Table C1.1 Summary of infrastructure costs for the strategic

Strategic Site	Sum of Funded by developer enabling works	Sum of Funding by developer S106 / s278 site specific contributions	Sum of Strategic infrastructure cost - CIL
East of Welwyn	**£32,216,287**	**£30,450,088**	**£3,564,566**
Community	£0	£561,957	£286,488
Education	£0	£10,082,158	£0
Green infrastructure / outdoor spo	£0	£9,269,634	£0
Health	£0	£3,636,188	£0
Management & adoption	£0	£2,153,212	£0
Site preparation	£11,970,075	£0	£0
Transport highway	£6,803,717	£4,102,342	£0
Transport other	£0	£644,597	£3,278,078
Utilities & drainage	£13,442,495	£0	£0
Gilston	**£227,569,721**	**£286,629,339**	**£21,796,686**
Community	£0	£10,432,644	
Education	£0	£106,830,942	
Green infrastructure / outdoor spo	£0	£51,032,192	
Health	£0	£14,794,978	
Indoor sports	£0	£4,520,250	
Management & adoption	£0	£28,191,866	
Site preparation	£58,854,922	£0	£0
Transport highway	£69,046,000	£70,826,467	£12,712,654
Transport other	£0	£0	£9,084,032
Utilities & drainage	£99,668,799	£0	
South of Bishops Stortford	**£27,700,000**	**£11,160,000**	**£910,000**
Community	£0	£700,000	£220,000
Education	£0	£8,160,000	£0
Health	£0	£500,000	£0
Transport highway	£23,000,000	£1,800,000	£0
Transport other	£0	£0	£690,000
Utilities & drainage	£4,700,000	£0	£0
Ware	**£58,826,625**	**£59,600,000**	**£15,000,000**
Community	£0	£1,000,000	£0
Education	£0	£46,000,000	£0
Green infrastructure / outdoor spo	£0	£10,000,000	£0
Health	£0	£2,000,000	£0
Site preparation	£34,147,500	£0	£0
Transport highway	£5,536,425	£600,000	£0
Transport other	£0	£0	£15,000,000
Utilities & drainage	£19,142,700	£0	£0
Grand Total	**£346,312,633**	**£387,839,427**	**£41,271,252**

C.1.8 The costs in table C1.1 clearly illustrate that the strategic sites will require considerable 'developer enabling works' in preparing substantial areas of land for development, incorporating drainage, utilities and landscaping to create the 'place making attractive environments' that help to establish the site values.

Comparison of development costs

C.1.9 Due to the location and scale of development proposed at Gilston and Ware, both scheme have particularly challenging requirements to provide site specific infrastructure in terms of foul water and transport infrastructure as part of their site opening costs. Due to their scale, they also have a requirement to provide secondary school provision on site.

C.1.10 Table C1.2 provides a summary of the infrastructure costs for the four strategic sites.

Table C1.2 Comparison of costs on a per unit and per hectare basis

Gilston	Site units / area (Ha)	Developer enabling works	Developer s106/ s278 site specific works per unit/ Ha	comparison of CIL strategic works psqm
Total cost		£227,569,721	£286,629,339	£21,796,686
Per unit cost	10,181	£22,352.39	£28,153.36	£2,141
Per gross ha	427	£532,950.17	£671,263.09	
per net ha	226	£1,006,946	£1,268,271	

Ware	Site units / area (Ha)	Developer enabling works	Developer s106/ s278 site specific works per unit/ Ha	comparison of CIL strategic works psqm
Total cost		£58,826,625	£59,600,000	£15,000,000
Per unit cost	2,972	£19,794	£20,054	5,047
Per gross ha	480	£122,555	£124,167	
per net ha	228	£258,012	£261,404	

East of Welwyn	Site units / area (Ha)	Developer enabling works	Developer s106/ s278 site specific works per unit/ Ha	comparison of CIL strategic works psqm
Total cost		£32,216,287	£30,450,088	£3,564,566
Per unit cost	1,700	£18,951	£17,912	£2,097
Per gross ha	99	£325,417	£307,577	
per net ha	48	£671,173	£634,377	

South of Bishop's Stortford	Site units / area (Ha)	Developer enabling works	Developer s106/ s278 site specific works per unit/ Ha	comparison of CIL strategic works psqm
Total cost		£27,700,000	£9,360,000	£2,710,000
Per unit cost	750	£36,933	£12,480	£36
Per gross ha	51	£543,137	£183,529	
per net ha				

South of Bishop's Stortford	Site units / area (Ha)	Developer enabling works	Developer s106/ s278 site specific works per unit/ Ha	comparison of CIL strategic works psqm
Total cost		£27,700,000	£11,160,000	£910,000
Per unit cost	750	£36,933	£14,880	£1,213
Per gross ha	50	£554,000	£223,200	
per net ha	25	£1,108,000	£446,400	

Site specific infrastructure costs

C.1.11 The site specific infrastructure costs are a reflection of the provision of additional site specific infrastructure. Gilston has the highest S106 / S278 cost at £28k per unit. As can be seen from table C1.2 the main contributors to this cost are education, transport, green infrastructure and management and adoption costs. We have raised a query relating to the assessment of secondary school space and cost estimates included in the promoters cost schedule. It would be helpful to discuss this with HCC as the education authority to further understand the requirement and any possible cost savings.

Strategic infrastructure cost contributions

C.1.12 It is important to note that the items identified in the strategic infrastructure category (to be funded by CIL) have not been included in the viability appraisal as a cost input. In compliance with CIL regulation, the assessment of any CIL contribution will be based on viability, and so the actual CIL levy will be an outcome of the viability appraisal. For now we acknowledge the contribution being proposed by the site promoters towards the strategic off site infrastructure, in the emerging Regs 123 List.

C.1.13 CIL contributions towards strategic infrastructure costs will be based on viability evidence and so costs have not been factored into the appraisals. However, we have sought to calculate the scale of contributions towards CIL related infrastructure currently included in the site promoters cost schedules. Converting the contributions to a per sq.m charge shows that all four promoters have currently allowed for a CIL contribution of between £20psqm to £50 sq.m.

An analysis of some of the big kit infrastructure items

C.1.14 The following tables provide a snap shot of some of the 'big kit' infrastructure items required to support the planned growth.

Education

Strategic Site	Sum of Funded by developer enabling works	Sum of Funding by developer S106 / s278 site specific contributions	Sum of Strategic infrastructure cost - CIL
East of Welwyn	**£0**	**£10,082,158**	**£0**
Education	£0	£10,082,158	£0
Gilston	**£0**	**£106,830,942**	
Education	£0	£106,830,942	
South of Bishops Stortford	**£0**	**£8,160,000**	**£0**
Education	£0	£8,160,000	£0
Ware	**£0**	**£46,000,000**	**£0**
Education	£0	£46,000,000	£0
Grand Total	**£0**	**£171,073,100**	**£0**

Transport

Strategic Site	Sum of Funded by developer enabling works	Sum of Funding by developer S106 / s278 site specific contributions	Sum of Strategic infrastructure cost - CIL
East of Welwyn	**£6,803,717**	**£4,746,939**	**£3,278,078**
Transport highway	£6,803,717	£4,102,342	£0
Transport other	£0	£644,597	£3,278,078
Gilston	**£69,046,000**	**£70,826,467**	**£21,796,686**
Transport highway	£69,046,000	£70,826,467	£12,712,654
Transport other	£0	£0	£9,084,032
South of Bishops Stortford	**£23,000,000**	**£1,800,000**	**£690,000**
Transport highway	£23,000,000	£1,800,000	£0
Transport other	£0	£0	£690,000
Ware	**£5,536,425**	**£600,000**	**£15,000,000**
Transport highway	£5,536,425	£600,000	£0
Transport other	£0	£0	£15,000,000
Grand Total	**£104,386,142**	**£77,973,406**	**£40,764,764**

C.1.15 Transport accounts for £223m of the total cost of the development, which is just slightly above the cost of education infrastructure at £171m.

C.1.16 Note the South of Bishop's Stortford transport highway figure of £23k also includes an allowance for SUDs and green spaces and we have already questioned the amount.

Site preparation, utilities and landscaping

Strategic Site	Sum of Funded by developer enabling works	Sum of Funding by developer S106 / s278 site specific contributions	Sum of Strategic infrastructure cost - CIL
East of Welwyn	**£25,412,570**	**£11,422,846**	**£0**
Green infrastructure / outdoor sport	£0	£9,269,634	£0
Management & adoption	£0	£2,153,212	£0
Site preparation	£11,970,075	£0	£0
Utilities & drainage	£13,442,495	£0	£0
Gilston	**£158,523,721**	**£79,224,058**	**£0**
Green infrastructure / outdoor sport	£0	£51,032,192	
Management & adoption	£0	£28,191,866	
Site preparation	£58,854,922	£0	£0
Utilities & drainage	£99,668,799	£0	
South of Bishops Stortford	**£4,700,000**	**£0**	**£0**
Utilities & drainage	£4,700,000	£0	£0
Ware	**£53,290,200**	**£10,000,000**	**£0**
Green infrastructure / outdoor sport	£0	£10,000,000	£0
Site preparation	£34,147,500	£0	£0
Utilities & drainage	£19,142,700	£0	£0
Grand Total	**£241,926,491**	**£100,646,904**	**£0**

C.1.17 It is often difficult to completely separate out landscaping and open space costs from site preparation as these are frequently included in the same categories. For simplicity, the table above brings together the various costs involved in 'opening up the site' including site preparation, utilities and drainage and green infrastructure. The combined cost of this element is £343m.

C.1.18 Note the cost for Bishop's Stortford is light on this as a cost breakdown was not provided. Instead all site opening costs were merged into a single category for transport highway, SUDs and green infrastructure and is captured in the transport table above.

Non developable land should be reviewed as it impacts on land values

C.1.19 There are substantial place making costs involved in creating the setting for the new developments such as parks and green infrastructure. This impact on the price paid for land; incur upfront costs in their creation and then longer term management and adoption costs. There may be scope for refining these costs, particularly relating to the scale of open space and woodland /parkland infrastructure being created. The service providers responsible for the adoption of open space at EHDC and the landscape and design team need to engage in a detailed assessment of the emerging masterplan to inform the scale of provision 'required' and the promoters will also have a view on what they consider is necessary as part of the 'place making' vision.

Utility infrastructure cost reduction measures to be explored

C.1.20 The delivery of utilities and energy infrastructure in the land development sector traditionally focusses on connection and supply as a cost burden, and does not ordinarily recognise the end value of the energy market. The planning, phasing and delivering of energy infrastructure is often considered as a burden on development viability.

C.1.21 However, the strategic sites will establish a large new energy market that has a long term intrinsic value. Assuming each home has an energy bill of approximately £500 a year (typical of a modern energy efficient home) the development of 15,500 homes will generate an annual income of just under £8,000,000 a year. This makes it an attractive proposition to energy suppliers and investors.

C.1.22 Typically, a proportion of the costs of a heat network could be picked up by the developer, and the remainder of the cost could be met by an energy supplier (such as a multi utilities

company - MUSCO), similarly some costs towards telecommunications infrastructure will be met by providers such as BT Openreach. Thus although we have factored in the cost of utilities (including energy and telecommunications infrastructure) as a cost input, it will be worth working with the strategic developers to consider how these costs can be reduced in order to support the delivery of wider strategic infrastructure.

Appendix D Viability appraisal summaries

D.1 East of Welwyn Garden City

East of Welwyn Garden City		1,700 Units					
		11.33					
ITEM							
Net Site Area	45.33		Residual Value £2,410,932	per net ha	Technical Checks:		
					Sqm/ha	151,300	
					Dwgs/ha	37.50	
			60%	40%	Units/pa	149	
	Private	Affordable	Affordable rent	Intermediate	GDV=Total costs	-	
Nr of units	1190.00	510.00	306.00	204.00			
1.0	**Development Value**						
1.1	**Private units**		**No. of units**	**Size sq.m**	**Total sq.m**	**£psm**	**Total Value**
			1,190	95	113,050	£3,700	£418,285,000
			1,190		113050		
1.2	**Affordable rent**		**No. of units**	**Size sq.m**	**Total sq.m**	**£psm**	**Total Value**
			306	75	22,950	£1,850	£42,457,500
			306		22950		
1.3	**Intermediate**		**No. of units**	**Size sq.m**	**Total sq.m**	**£psm**	**Total Value**
			204	75	15,300	£2,405	£36,796,500
			204		15300		
	Gross Development value				**151,300**		**£497,539,000**
2.0	**Development Cost**						
2.1	**Site Acquisition**					Total RLV net of costs	**£109,295,580**
					assume 11 phasing of land drawdown	5.75%	
2.1.1	Site value (residual land value)						£115,580,076
							£115,580,076
2.2	**Build Costs**						
2.2.1	**Private units**		**No. of units**	**Size sq.m**	**Total sq.m**	**Cost per sq.m**	**Total Costs**
			1190.00	95	113,050	£1,036	£117,119,800
			1190.00		113050		
2.2.2	**Affordable units**		**No. of units**	**Size sq.m**	**Total sq.m**	**Cost per sq.m**	**Total Costs**
		Affordable rent	306.00	75	22,950	£1,036	£23,776,200
		Intermediate	204.00	75	15,300	£1,036	£15,850,800
			510.00		38250		
			1700.00		**151,300**		**£156,746,800**
2.3	**Extra over construction costs**						
2.3.1	Externals			10%	on build cost		£15,674,680.00
							£15,674,680
2.5	**Site specific costs**						
2.5.1	Transport highway			£10,766,059			£10,766,059
2.5.2	Transport other			£0			£0
2.5.3	Education			£10,082,158			£10,082,158
2.5.4	Health			£3,636,188			£3,636,188
2.5.5	Community			£628,070			£628,070
2.5.6	Utilities & drainage			£13,442,495			£13,442,495
2.5.7	Management & adoption			£2,153,212			£2,153,212
2.5.8	Site preparation			£11,970,075			£11,970,075
2.5.9	Green infrastructure / outdoor sport			£1,085,347			£1,085,347
2.5.10	Indoor sports			£0			£0
							£53,763,604
2.4	**Professional Fees**						
2.4.1				10%	on build costs		£15,674,680
2.4.2	developer has already included some professional fees in 2.5 above sum deducted to avoid double counting			£5,598,979	minus		£10,075,701
							£10,075,701
2.5	**Contingency**						
2.5.1				5%	on build costs (incl: externals)		£8,621,074
							£8,621,074
2.6	**Developer contributions**						
2.6.1	Water efficiency			£68	per unit		£115,600
2.6.2	Section 106 standard typologies			£0	per unit		**£0**
2.6.3	G&T pitch			£100,000	per pitch	No. of pitches 15	£1,500,000
							£1,615,600
2.7	**Sale cost**						
2.7.1	**Private units only**			3.00%	on OM GDV		£12,548,550
							£12,548,550
	TOTAL DEVELOPMENT COSTS (including land)						**£374,626,085**
3.0	**Developer's Profit**						
3.1	Private units			20%	on OM GDV	Total scheme profit	£83,657,000
3.2	Affordable units			6%	on Affordable GDV		£5,230,764
				11 tranches paid at end of phase			
							£88,887,764
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						**£463,513,849**
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£34,025,151
4.0	**Finance Costs**						
				APR		PCM	
4.1	Finance			7.00%	on net costs	0.565%	-£34,025,151
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						**£497,539,000**

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D.2 North and East of Ware

North and East of Ware		2,972 Units						
		20						
ITEM								
			Residual Value				Technical Checks:	
Net Site Area	92.88		£1,649,729	per net ha			Sqm/ha	264,508
							Dwge/ha	32
			60%	40%			Units/pa	152
	Private	Affordable	Affordable rent	Intermediate			GDV=Total costs	-
Nr of units	2080.40	891.60	534.96	356.64				
1.0	Development Value							
1.1	Private units		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			2080.40	95	197,638	£3,700	£731,260,600	
			2080.40		197638			
1.2	Affordable rent		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			534.96	75	40,122	£1,850	£74,225,700	
			534.96		40122			
1.3	Intermediate		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			356.64	75	26,748	£2,405	£64,328,940	
			356.64		26748			
	Gross Development value				264508		£869,815,240	
2.0	Development Cost							
2.1	Site Acquisition							
2.1.1	Site value (residual land value)					Total RLV net of costs	£153,218,617	
						assume 20 phasing of land drawdown	5.75%	
							£162,028,687	
							£162,028,687	
2.2	Build Costs							
2.2.1	Private units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs	
			2080.40	95	197,638	£1,036	£204,752,968	
			2080.40		197638			
2.2.2	Affordable units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs	
		Affordable rent	534.96	75	40,122	£1,036	£41,566,392.00	
		Intermediate	356.64	75	26,748	£1,036	£27,710,928.00	
			891.60		66870			
			2972.00		264508.00		£274,030,288	
2.3	Extra over construction costs							
2.3.1	Externals			10%	on build cost		£27,403,028.80	
							£27,403,029	
2.5	Site specific costs							
2.5.1	Transport highway			£6,136,425			£6,136,425	
2.5.2	Transport other			£0			£0	
2.5.3	Education			£46,000,000			£46,000,000	
2.5.4	Health			£2,000,000			£2,000,000	
2.5.5	Community			£1,000,000			£1,000,000	
2.5.6	Utilities & drainage			£19,142,700			£19,142,700	
2.5.7	Management & adoption			£0			£0	
2.5.8	Site preparation			£34,147,500			£34,147,500	
2.5.9	Green infrastructure / outdoor sport			£10,000,000			£10,000,000	
2.5.10	Indoor sports			£0			£0	
							£118,426,625	
2.4	Professional Fees							
2.4.1				10%	on build costs		£27,403,028.80	
							£27,403,029	
2.5	Contingency							
2.5.1				5%	on build costs (incl: externals)		£15,071,666	
							£15,071,666	
2.6	Developer contributions							
2.6.1	Water efficiency			£68	per unit		£202,096	
2.6.2	Section 106 Strategic sites			£0	per unit		£0	
2.6.4	G&T pitch			£100,000	per pitch	No. of pitches 15	£1,500,000	
							£1,702,096	
2.7	Sale cost							
2.7.1	Private units only			3.00%	on OM GDV		£21,937,818	
							£21,937,818	
	TOTAL DEVELOPMENT COSTS (including land)						£648,003,238	
3.0	Developer's Profit							
3.1	Private units			20%	on OM GDV	Total scheme profit	£146,252,120	
3.2	Affordable units			6%	on Affordable GDV		£9,144,606	
				20 tranches paid at end of phase				
							£155,396,726	
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						£803,399,964	
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£66,415,276	
4.0	Finance Costs							
				APR		PCM		
4.1	Finance			7.00%	on net costs	0.565%	-£66,415,276	
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						£869,815,240	

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D.3 North and East of Ware – Generic 2,000

North and East of Ware - generic 2000		2,000 Units					
		13					
ITEM							
			Residual Value			Technical Checks:	
Net Site Area	62.50		£1,746,470	per net ha		Sqm/ha	178,000
						Dwgs/ha	32
			60%	40%		Units/pa	152
	Private	Affordable	Affordable rent	Intermediate		GDV=Total costs	-
Nr of units	1400.00	600.00	360.00	240.00			
1.0	Development Value						
1.1	Private units		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			1400.00	95	133,000	£3,700	£492,100,000
			1400.00		133000		
1.2	Affordable rent		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			360.00	75	27,000	£1,850	£49,950,000
			360.00		27000		
1.3	Intermediate		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			240.00	75	18,000	£2,405	£43,290,000
			240.00		18000		
	Gross Development value				178000		£585,340,000
2.0	Development Cost						
2.1	Site Acquisition						
2.1.1	Site value (residual land value)						
						Total RLV net of costs	£109,154,398
						assume 20 phasing of land drawdown	5.75%
							£115,430,776
							£115,430,776
2.2	Build Costs						
2.2.1	Private units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs
			1400.00	95	133,000	£1,036	£137,788,000
			1400.00		133000		
2.2.2	Affordable units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs
		Affordable rent	360.00	75	27,000	£1,036	£27,972,000.00
		Intermediate	240.00	75	18,000	£1,036	£18,648,000.00
			600.00		45000		
			2000.00		178000.00		£184,408,000
2.3	Extra over construction costs						
2.3.1	Externals			10%	on build cost		£18,440,800.00
							£18,440,800
2.5	Site specific costs						
2.5.1	Site opening up costs			£20,000	per unit		£40,000,000
							£40,000,000
2.4	Professional Fees						
2.4.1				10%	on build costs		£18,440,800.00
							£18,440,800
2.5	Contingency						
2.5.1				5%	on build costs (incl: externals)		£10,142,440
							£10,142,440
2.6	Developer contributions						
2.6.1	Water efficiency			£68	per unit		£136,000
2.6.2	Section 106 Strategic sites			£20,000	per unit		£40,000,000
						No. of pitches	
2.6.4	G&T pitch			£100,000	per pitch	15	£1,500,000
							£41,636,000
2.7	Sale cost						
2.7.1	Private units only			3.00%	on OM GDV		£14,763,000
							£14,763,000
	TOTAL DEVELOPMENT COSTS (including land)						£443,261,816
3.0	Developer's Profit						
3.1	Private units			20%	on OM GDV	Total scheme profit	£98,420,000
3.2	Affordable units			6%	on Affordable GDV		£6,153,840
				13 tranches paid at end of phase			
							£104,573,840
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						£547,835,656
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£37,504,344
4.0	Finance Costs						
				APR		PCM	
4.1	Finance			7.00%	on net costs	0.565%	-£37,504,344
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						£585,340,000

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D.4 South of Bishop's Stortford

South of Bishop's Stortford		750 Units						
		10						
ITEM								
Net Site Area	23.44		Residual Value				Technical Checks:	
			£1,412,189	per net ha			Sqm/ha	66,750
							Dwge/ha	32
			60%	40%			Units/pa	76
	Private	Affordable	Affordable rent	Intermediate			GDV=Total costs	-
Nr of units	525.00	225.00	135.00	90.00				
1.0	Development Value							
1.1	Private units		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			525.00	95	49,875	£3,500	£174,562,500	
			525.00		49875			
1.2	Affordable rent		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			135.00	75	10,125	£1,750	£17,718,750	
			135.00		10125			
1.3	Intermediate		No. of units	Size sq.m	Total sq.m	£psm	Total Value	
			90.00	75	6,750	£2,275	£15,356,250	
			90.00		6750			
	Gross Development value				66750		£207,637,500	
2.0	Development Cost							
2.1	Site Acquisition					Total RLV net of costs	£33,098,182.83	
						assume 10 phasing of land drawdown	5.75%	
2.1.1	Site value (residual land value)						£35,001,328	
							£35,001,328	
2.2	Build Costs							
2.2.1	Private units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs	
			525.00	95	49,875	£1,036	£51,670,500	
			525.00		49875			
2.2.2	Affordable units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs	
	Affordable rent		135.00	75	10,125	£1,036	£10,489,500	
	Intermediate		90.00	75	6,750	£1,036	£6,993,000	
			225.00		16875			
			750		66750		£69,153,000	
2.3	Extra over construction costs							
2.3.1	Externals			10%	on build cost		£6,915,300.00	
							£6,915,300	
2.5	Site specific costs							
				developers			PBA adjusted	
2.5.1	Transport highway			£24,800,000	infrastructure costs are high PBA hasreduced figure		£12,400,000	
2.5.2	Transport other			£0			£0	
2.5.3	Education			£8,160,000			£8,160,000	
2.5.4	Health			£500,000			£500,000	
2.5.5	Community			£700,000			£700,000	
2.5.6	Utilities & drainage			£4,700,000			£4,700,000	
2.5.7	Management & adoption			£0			£0	
2.5.8	Site preparation			£0			£0	
2.5.9	Green infrastructure / outdoor sport			£0			£0	
2.5.10	Indoor sports			£0			£0	
				£38,860,000			£26,460,000	
2.4	Professional Fees							
2.4.1				10%	on build costs		£6,915,300	
							£6,915,300	
2.5	Contingency							
2.5.1				5%	on build costs (incl: externals)		£3,803,415	
							£3,803,415	
2.6	Developer contributions							
2.6.1	Water efficiency			£68	per unit		£51,000	
2.6.2	Section 106 standard typologies			£0	per unit		£0	
						No. of pitches		
2.6.3	G&T pitch			£100,000	per pitch	7	£700,000	
							£751,000	
2.7	Sale cost							
2.7.1	Private units only			3.00%	on OM GDV		£5,236,875	
							£5,236,875	
	TOTAL DEVELOPMENT COSTS (including land)						£154,236,218	
3.0	Developer's Profit							
3.1	Private units			20%	on OM GDV	Total scheme profit	£34,912,500	
3.2	Affordable units			6%	on Affordable GDV		£2,182,950	
				10 tranches paid at end of phase				
							£37,095,450	
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						£191,331,668	
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£16,305,832	
4.0	Finance Costs							
				APR		PCM		
4.1	Finance			7.00%	on net costs	0.565%	-£16,305,832	
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						£207,637,500	

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D.5 Gilston Area

Gilston Area		10,000 Units					
		40					
ITEM							
Net Site Area	267		Residual Value £1,020,392.77 per net ha			Technical Checks:	
						Sqm/ha	890,000
						Dwgs/ha	38
						Units/pa	254
	Private	Affordable	60% Affordable rent	40% Intermediate		GDV=Total costs	0
Nr of units	7000	3000	1800	1200			
1.0	**Development Value**						
1.1	Private units		No. of units 7000.00 / 7000.00	Size sq.m 95	Total sq.m 665,000 / 665,000	£psm £3,700	Total Value £2,460,500,000
1.2	Affordable rent		No. of units 1800.00 / 1800.00	Size sq.m 75	Total sq.m 135,000 / 135,000	£psm £1,850	Total Value £249,750,000
1.3	Intermediate		No. of units 1200.00 / 1200.00	Size sq.m 75	Total sq.m 90,000 / 90,000	£psm £2,405	Total Value £216,450,000
	Gross Development value				**890,000**		**£2,926,700,000**
2.0	**Development Cost**						
2.1	**Site Acquisition**						
2.1.1	Site value (residual land value)				Total RLV net of costs assume 40 phasing of land drawdown RLV plus costs		**£272,104,740** 5.75% £287,750,762
							£287,750,762
2.2	**Build Costs**						
2.2.1	Private units		No. of units 7000.00 / 7000.00	Size sq.m 95	Total sq.m 665000 / 665000	Cost per sq.m £1,036	Total Costs £688,940,000
2.2.2	Affordable units	Affordable rent	No. of units 1800.00	Size sq.m 75	Total sq.m 135000	Cost per sq.m £1,036	Total Costs £139,860,000
		Intermediate	1200.00	75	90000	£1,036	£93,240,000
			3000.00		225000		
			10000.00		**890000**		**£922,040,000**
2.3	**Extra over construction costs**						
2.3.1	Externals			10%	on build cost		£92,204,000.00
							£92,204,000
2.5	**Site specific costs**						
2.5.1	Transport highway			£139,550,929			£139,550,929
2.5.2	Transport other			£997,119			£997,119
2.5.3	Education			£106,630,942			£106,630,942
2.5.4	Health			£14,794,978			£14,794,978
2.5.5	Community			£10,432,644			£10,432,644
2.5.6	Utilities & drainage			£99,668,799			£99,668,799
2.5.7	Management & adoption			£28,191,866			£28,191,866
2.5.8	Site preparation			£58,854,922			£58,854,922
2.5.9	Green infrastructure / outdoor sport			£51,032,192			£51,032,192
2.5.10	Indoor sports			£4,520,250			£4,520,250
							£514,874,641
2.4	**Professional Fees**						
2.4.1				10%	on build costs		£92,204,000
2.4.2	developer has already included some professional fees in 2.5 above sum deducted to avoid double counting			£43,495,084	minus		£48,708,916
							£48,708,916
2.5	**Contingency**						
2.5.1				5%	on build costs (incl. externals)		£50,712,200
							£50,712,200
2.6	**Developer contributions**						
2.6.1	Water efficiency			£68	per unit		£680,000
2.6.2	Section 106 standard typologies			£0	per unit		£0
2.6.3	G&T pitch			£100,000	per pitch	No. of pitches 15	£1,500,000
							£2,180,000
2.7	**Sale cost**						
2.7.1	Private units only			3.00%	on OM GDV		£73,815,000
							£73,815,000
	TOTAL DEVELOPMENT COSTS (including land)						**£1,992,285,519**
3.0	**Developer's Profit**						
3.1	Private units			20%	on OM GDV	Total scheme profit	£492,100,000
3.2	Affordable units			6%	on Affordable GDV		£30,769,200
				40 tranches paid at end of phase			
							£522,869,200
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						**£2,515,154,719**
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£411,545,281
4.0	**Finance Costs**						
4.1	Finance			APR 7.00%	on net costs	PCM 0.565%	-£411,545,281
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						**£2,926,700,000**

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D.6 Gilston Area – Generic 2,500

Gilston Area generic 2,500		2,500 Units					
		17					
ITEM							
Net Site Area	66.67		Residual Value £1,955,818 per net ha			Technical Checks:	
						Sqm/ha	222,500
						Dwgs/ha	38
						Units/pa	152
	Private	Affordable	60%	40%		GDV=Total costs	-
Nr of units	1750.00	750.00	Affordable rent 450.00	Intermediate 300.00			
1.0	Development Value						
1.1	Private units		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			1750.00	95	166,250	£3,700	£615,125,000
			1750.00		166250		
1.2	Affordable rent		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			450.00	75	33,750	£1,850	£62,437,500
			450.00		33750		
1.3	Intermediate		No. of units	Size sq.m	Total sq.m	£psm	Total Value
			300.00	75	22,500	£2,405	£54,112,500
			300.00		22500		
	Gross Development value				222500		£731,676,000
2.0	Development Cost						
2.1	Site Acquisition						
2.1.1	Site value (residual land value)						
						Total RLV net of costs	£130,387,835
						assume 17 phasing of land drawdown	5.75%
							£137,885,135
							£137,885,135
2.2	Build Costs						
2.2.1	Private units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs
			1750.00	95	166,250	£1,036	£172,235,000
			1750.00		166250		
2.2.2	Affordable units		No. of units	Size sq.m	Total sq.m	Cost per sq.m	Total Costs
		Affordable rent	450.00	75	33,750	£1,036	£34,965,000.00
		Intermediate	300.00	75	22,500	£1,036	£23,310,000.00
			750.00		56250		
			2500.00		222500.00		£230,510,000
2.3	Extra over construction costs						
2.3.1	Externals			10%	on build cost		£23,051,000.00
							£23,051,000
2.5	Site specific costs						
2.5.1	Site opening up costs			£20,000	per unit		£50,000,000
							£50,000,000
2.4	Professional Fees						
2.4.1				10%	on build costs		£23,051,000.00
							£23,051,000
2.5	Contingency						
2.5.1				5%	on build costs (incl: externals)		£12,678,050
							£12,678,050
2.6	Developer contributions						
2.6.1	Water efficiency			£68	per unit		£170,000
2.6.2	Section 106 Strategic sites			£20,000	per unit		£50,000,000
						No. of pitches	
2.6.4	G&T pitch			£100,000	per pitch	15	£1,500,000
							£61,670,000
2.7	Sale cost						
2.7.1	Private units only			3.00%	on OM GDV		£18,453,750
							£18,453,750
	TOTAL DEVELOPMENT COSTS (including land)						£647,298,935
3.0	Developer's Profit						
3.1	Private units			20%	on OM GDV	Total scheme profit	£123,025,000
3.2	Affordable units			6%	on Affordable GDV		£7,692,300
				17 tranches paid at end of phase			
							£130,717,300
	TOTAL PROJECT COSTS [EXCLUDING INTEREST]						£678,016,235
	TOTAL INCOME - TOTAL COSTS [EXCLUDING INTEREST]						£53,658,765
4.0	Finance Costs						
				APR		PCM	
4.1	Finance			7.00%	on net costs	0.565%	-£53,658,765
	TOTAL PROJECT COSTS [INCLUDING INTEREST]						£731,676,000

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Appendix E Transport assessment

E.1 Introduction

E.1.1 The intention of this appendix is to provide detail of the methodology and approach to the transport requirements included in the Delivery Study. It is intended to supplement the main document and therefore is focussed on providing additional detail on the method to determine the infrastructure requirements based on existing transport assessments and consultation.

E.1.2 However, countywide transport modelling is currently being undertaken by HCC and this will provide a more comprehensive assessment of future capacity and solutions to facilitate the planned growth and ultimately provide the comprehensive evidence base upon which cumulative impact in particular can be judged. This appendix is written in advance of this evidence base.

E.2 National transport policy and guidance

Department for Transport (DfT) Planning Practice Guidance update

E.2.1 Due reference has been made to the Department for Transport (DfT) Planning Practice Guidance update (October 2014) entitled 'Transport evidence bases in plan making'. This guidance was issued to help local planning authorities assess strategic transport needs to reflect and, where appropriate, mitigate these in their Local Plan.

E.2.2 Of particular relevance is Paragraph 003 which recommends that a number of "key issues" be considered in developing a transport evidence base in support of a Local Plan, including the need to:

- 'assess the existing situation and likely generation of trips over time by all modes and the impact on the locality in economic, social and environmental terms;
- assess the opportunities to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport;
- highlight and promote opportunities to reduce the need for travel where appropriate;
- identify opportunities to prioritise the use of alternative modes in both existing and new development locations if appropriate;
- consider the cumulative impacts of existing and proposed development on transport networks;
- assess the quality and capacity of transport infrastructure and its ability to meet forecast demands; and
- Identify the short, medium and long-term transport proposals across all modes.'

E.2.3 The emphasis given in the above is to prioritise sustainable modes of travel and mode shift in assessing the transport impacts of growth is noted.

National Planning Policy Framework and cross boundary coordination

E.2.4 A number of the infrastructure projects referenced within this Study extend beyond the District boundaries of East Herts and therefore require a degree of cross-boundary cooperation between EHDC and its neighbouring authorities.

E.2.5 National Planning Policy Framework (NPPF, paragraph 179) states that *'*Local planning authorities should work collaboratively with other bodies to ensure that strategic priorities across local boundaries are properly coordinated and clearly reflected in individual Local Plans… as part of this process, they should consider producing joint infrastructure and investment plans*.'*

E.2.6 In keeping with this, there are a number of existing partnership and joint-working organisations within Hertfordshire of which East Herts is a member which ensure collaboration and the joint-planning of strategic transport infrastructure for East Herts.

E.2.7 One such organisation is the Hertfordshire Local Transport Body (LTB) which has been set up and will ensure collaboration and joint planning of local major transport schemes including local authority large projects, Highways England projects and Network Rail projects when the Department for Transport (DfT) devolves funding for local major transport schemes from April 2015. The Hertfordshire LTB is a voluntary partnership led by Hertfordshire County Council, as the Local Transport Authority, and includes all local planning authorities in Hertfordshire, the Herefordshire Local Enterprise Partnership and potentially other organisations.

E.2.8 The Uttlesford Local Plan was submitted for independent examination by the Secretary of State for Communities and Local Government via the Planning Inspectorate on 4 July 2014 and includes a number of major developments up to 2031 including development at Elsenham (2,607 units) and Great Dunmow (2,951 units). In order to ensure the cumulative cross-boundary impact of Uttlesford and East Herts joint-working has been conducted for some time between the relevant District Councils (Uttlesford and East Herts), County Councils (Hertfordshire and Essex) and Highways England to ensure that the impacts on the local and strategic transport networks at Junction 8 of the M11 in particular are managed appropriately.

E.2.9 Broxbourne Borough Council (BBC) cross-boundary cooperation with East Herts DC is already underway to discuss the key strategic impacts of combined local plan growth and necessary mitigation. These include impacts at Junction 25 of the M25 which have been discussed in meetings with Broxbourne Borough Council.

E.2.10 All conclusions drawn within this report therefore relate to the context of this cross boundary coordination.

National policy on the 'severity test'

E.2.11 Consideration has been given to the definition of the 'severity test' for assessing the residual cumulative impacts of growth as follows:

- **NPPF** - the National Planning Policy Framework paragraph 32 states that "development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe"; and

- **NPPG** - the Department for Communities and Local Government issued revised guidance on 10 October 2014 within the National Planning Practice Guidance (NPPG) entitled 'Transport evidence bases in plan making' on 10 October 2014 (paragraph 003) which highlighted the need for Local Plan transport evidence bases to "consider the cumulative impacts of existing and proposed development on transport networks."

E.3 Highways England protocol 'Supporting Development and Facilitating Growth'

E.3.1 Highways England, as part of their protocol to Supporting Development and Facilitating Growth strive to ensure that within the parameters of the planning system *'*developments close to or affecting the Strategic Road Network (SRN) can take place while making sure that it continues to operate safely and efficiently for all road users*.'*

E.3.2 As part of this remit Highways England commits to support the principle of the NPPF by encouraging and supporting co-ordinated working across boundaries and with other infrastructure providers to establish the strategic priorities for the networks for which they control.

E.3.3 The protocol goes on to state that 'in the first instance, local planning authorities should do what they can to minimise the need for changes to the strategic road network by taking opportunities to reduce the need to travel, especially by private car, and by maximising access to development sites by public transport.'

E.3.4 In many cases, it is likely that additional capacity to parts of the strategic road network will be identified as necessary to support the delivery of local plans. NPPF requires that there should be a reasonable prospect that planned infrastructure will be deliverable in a timely fashion. The HE commits to work with the relevant authorities to help develop sufficiently detailed policies and plans for the additional infrastructure and to ensure that these are reflected in planning for their network. Policies and plans should normally identify:

- What type of improvement is needed, and an early range estimate of the likely cost;
- At what point the improvement becomes necessary; and
- How the improvement is to be funded and delivered.

E.4 The Traffic Management Act 2004

E.4.1 This report also seeks to set out the timing of when the infrastructure requirements should be delivered. The Traffic Management Act 2004 imposed a duty on Councils as local traffic authorities to secure the expeditious movement of traffic on the local road networks, but this does not impose any criteria on level of 'stress' or timescales for acceptable levels of congestion. These are political judgements to inform the location of growth.

E.5 Regional policy and other key documents

E.5.1 In addition, a number of key local and regional policy documentation has also been consulted in the preparation of this assessment including:

- **Hertfordshire County Council Local Transport Plan (LTP) 3 (2011-2031)** – this key document sets out the schemes that the HCC and its partners intend to deliver over 20 year period;
- **Hertford and Ware Urban Transport Plan 3 (2010)** – this is a 'daughter 'document to HCC LTP3 that identifies a detailed implementation strategy for transport schemes for Herford and Ware. At the time of writing, an implementation strategy is lacking for the Bishop's Stortford-Sawbridgeworth corridor as the corresponding UTP for this area has yet to be published;
- **Hertfordshire County Council Inter Urban Route Strategy (2013)** – this is a 'daughter 'document to HCC LTP3 that seeks to address the cross-boundary and cumulative pressures on the strategic transport network;
- **Hertfordshire County Council Transport Response (2014)** – HCC response to the proposed East Herts District Council Draft District Plan Preferred Options Consultation paper;
- **Hertfordshire County Council A414 Study (2014)** – options testing by HCC of a number of highways improvements schemes along A414 through Hertford;
- **Hertfordshire County Council Rail and Bus Strategies (2010 & 2011)** – set out HCC's aspirations for the development of the rail and bus network in Hertfordshire; and

- **London and South East Route Utilisation Strategy (2011)** – sets out Network Rail's priorities for capacity planning up to 2031 for rail routes into London.

E.6 PBA consultation

E.6.1 As part of this study, PBA has worked closely with a number of the key local authorities and stakeholder groups in order to better understand the key transport issues and needs in the District of East Herts, including East Herts District Council, Hertfordshire County Council, Essex County Council, the Homes and Communities Agency, the Highway Agency, Network Rail, the East Herts Association of Town and Parish Councils (EHAPTC), neighbouring local authorities and various Site Promoters.

E.6.2 This has included the facilitation of and attendance at a number of consultation and workshop events which have informed the Delivery Study findings, including:

- Essex County Council Transport Modelling Review Meeting;
- Transport challenges workshop;
- Site promoter Developer surgeries;
- Hertfordshire County Council Transport Review Meeting;
- Town and Parish Council Meeting; and
- Transport Workshop.

E.7 East Herts Transport context

E.7.1 East Herts comprises approximately one-third of the geographical area of the County of Hertfordshire.

E.7.2 It is a predominantly rural district with strong cross border connections to a number of major settlements outside its borders including the three New Towns of Stevenage, Harlow and Welwyn Garden City. There are also substantial cross-boundary influences from to the north and Essex to the east. The historical evolution of the transport networks is similar to other districts in that settlements have been developed over time around radial routes that lead to London.

E.7.3 East Herts has a dispersed settlement pattern that includes the five larger market towns of Bishop's Stortford, Buntingford, Hertford, Sawbridgeworth and Ware surrounded by a number of smaller, rural villages. In keeping with the dispersed nature of the District, the transport network between these settlements, especially along an east – west axis is heavily reliant on the private car.

E.7.4 The town centres (which are considered further in the later sub-sections of this report) are generally historic and have been retro-fitted to accommodate the private car. As car use and ownership has increased these town centres have suffered as a result. This coupled with a lack of public transport investment (in comparison to road building) has resulted in certain existing infrastructure strains becoming apparent both within the centres and the more links that connect them.

E.7.5 However, the District is well-placed for access to the strategic road and rail network, which includes the M11 to the east, the West Anglia Main Line between London and Cambridge also to the east and the A1(M) and East Coast Main Line to the west. The M25 London Orbital Motorway lies further to the south.

E.7.6 The proximity to London inevitably creates large commuting flows. The 2011 Census demonstrated that East Herts has high levels of daily out-commuting flows of 26,358 trips with corresponding daily in-commuting flows of 16,146 trips. Net outward daily commuting flows therefore total 10,212 trips per day with the 32% of flows (8,340 trips) commuting to Greater London. This is summarised in Figure 2.1 in section 2.

E.7.7 The car represents the preferred mode of choice for 42% of East Herts commuters and traffic flows on the East Herts road network increased by 3.4% between 2012 and 2013. However, this growth is trending downwards and should be compared alongside an upward trend during the same period in rail travel, which is a strong second favourite mode of choices for East Herts commuters representing a 9.4% mode share although the impact of these rail connections on the town centres needs to be considered in the context of car trips to the stations.

E.7.8 Journey distances are also favourable to mode shift towards bicycle use for commuter trips. Approximately 54% of all commuting trips across all modes are less than 5 miles in distance whilst only 0.9% of East Herts residents currently travel to work by bicycle.

The strategic transport network - highways

E.7.9 East Herts has excellent links to the strategic road network being in close proximity to the A1 (M) at junction 4, the M11 at junctions 7 and 8 and the M25 at junction 25. The A414 is a semi-strategic route that provides for east-west connectivity across the District linking the A1M and the M11. The A120 also runs east-west from the A10 at Puckeridge to Bishop's Stortford and beyond and the A602 links the A10 from Ware with the A1(M) in Stevenage. The A10, which splits the District roughly in half in a north-south direction, is a semi-strategic connection that connects London to Cambridge.

E.7.10 In keeping with typical peak hour conditions in the U.K and in particular the South East of England, much of the strategic of road network suffer from localised congestion, although there are a number of major schemes planned that will increase capacity on the nearby motorway network.

E.7.11 Peak hour congestion and delay is experienced along a number of the key strategic corridors within and close to the District including:

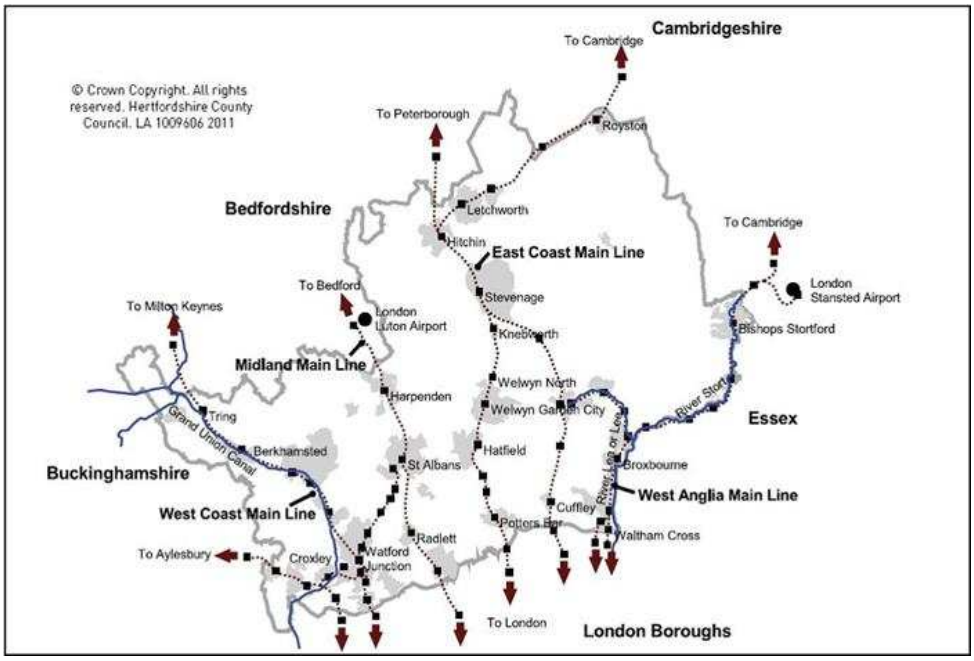
- The Eastern Corridor which contains the M11 sees peak hour congestion at Junctions 7 and 8 of the M11.
- The Western Corridor includes the A1M and this becomes stressed north of Welwyn and at its junction (4) with the A414.

The strategic transport network - rail

E.7.12 There are five railway stations within East Herts served by two major railway lines running through the District as follows.

- West Anglia Mainline (WAML) - The West Anglia Line is a major north-south line which serves the settlements of Bishop's Stortford and Sawbridgeworth. Services to Hertford East and Ware also available via the Hertford East Branch Line connection although passengers wanting to travel between the two separate branches are required to change at Broxbourne. This route provides services between a number of key destination including Stansted Airport and London Liverpool Street.
- East Coast Mainline (ECML) - The East Coast Main Line is a major north-south route serving Hertford North station and providing services between London Kings Cross station. There is no connection between the ECML and the WAML routes with any passengers wanting to make this journey required to take local bus services or walk between Hertford North (ECML) and Hertford East (WAML).

Figure E1 - Rail Network in Hertfordshire

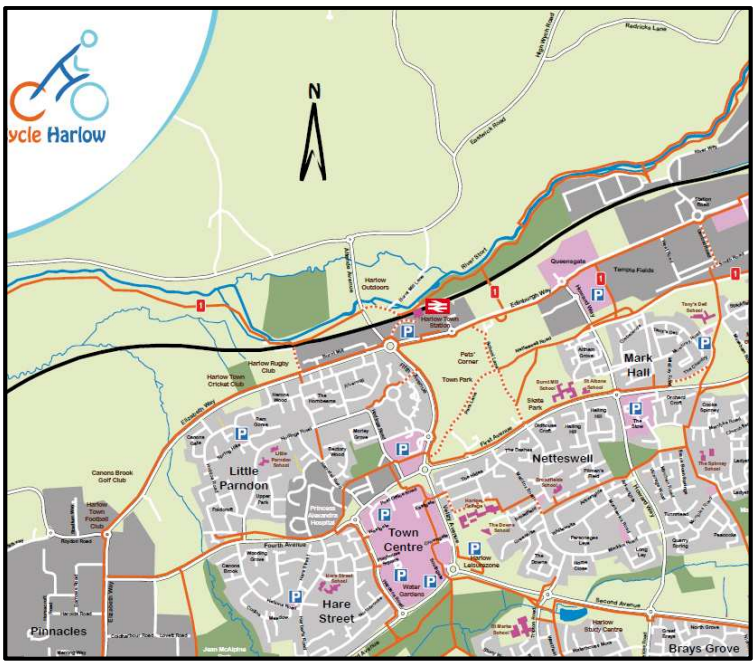


Strategic Cycling Routes and Connections

E.7.13 There are three existing strategic cycle routes that operate within the National Cycle Network (NCN) and which offer direct and continuous routes to, from and within various settlements within East Herts.

E.7.14 NCN1 – Runs south of the A414 into Harlow town centre and east towards Chelmsford. As regards western routes, connections are provided towards Roydon with NCN1 connecting with NCN61 approximately 6km west of Harlow.

Figure E2 – Proximity of NCN61 to Gilston Area (Harlow Cycle Map)



E.7.15 NCN61 – Connects with NCN1 as mentioned above and offers connections south towards Hoddesdon, Broxbourne and Cheshunt as well as continuous routes north to Stanstead Abbotts, Ware, Hertford and Welwyn Garden City'; and

E.7.16 NCN16 – This provides an eastern cycle route from Birchanger north of Bishops's Stortford towards Great Dunmow and Braintree.

E.8 Local Transport Network

E.8.1 Whilst the primary focus of this study is the requirement for strategic infrastructure to support Local Plan growth, in accordance with Planning Practice Guidance, all modes need to be considered and therefore there is, by definition, a need to also consider the local transport networks.

Highways

E.8.2 In keeping with typical peak hour conditions in the U.K and in the South East of England, several parts of the local road network suffer from localised congestion which is based upon both Hertfordshire County Council's assessment of the levels of traffic congestion experienced in various sections of the local and strategic road network and the appreciation of the network that PBA has now established through key stakeholder engagement.

E.8.3 A summary of the existing road network hotspots are summarised below and relate to the key corridors within the study area:

- The Eastern Corridor which contains the M11 and A1184 sees peak hour congestion at Junctions 7 and 8 of the M11 and at a number of junctions along the A1184.
- The Central Corridor experiences less delay and congestion with the A10 operating within capacity for much of its length although at its junction with the A414, queuing and delay can be significant with queuing back from the slip road back towards the A10 can be experienced although it should be noted that this is only a peak hour occurrence.
- The Western Corridor includes the A1M and this becomes stressed north of Welwyn and at its junction (4) with the A414.
- The East –West Corridor includes the A414 and this indicates that junction delay and capacity is experienced in a number of locations some of which have been set out above. However, and in addition to these previously discussed junctions, the A414 also suffers from delay and congestion at the Gascoyne Way/ A119 Roundabout, the Gascoyne Way/ Hale Road Roundabout and the Gascoyne Way/ North Road Roundabout. Cumulatively these junctions in close proximity to one another limit the throughput of traffic along the A414 at peak times.

E.8.4 As well as the strategic and semi-strategic corridors congestion is also experienced in town centres where radial routes from the residential hinterlands converge and where people use the internal road network to avoid delays on more strategic routes. PBA has been made aware of traffic congestion and delay in the following District Town Centres:

- Bishops Stortford
- Sawbridgeworth
- Ware
- Hertford
- Buntingford

E.8.5 In addition to the larger market towns, 'rat-running' through rural villages and along rural roads and lanes has been brought to our attention as becoming increasingly problematic as congestion and delay on the strategic and semi-strategic network increases. We have been made aware of the following rural routes and settlements that are currently impacted by traffic using these parts of the local highway network to get to more strategic destinations:

- Aston - rat-running to avoid congestion on the A602
- Hertingfordbury / Letty / Cole / Birch / Staines Green - Rat-running occurs on a number of rural roads through small villages to avoid congestion on the A414 including through Letty, Cole, Birch and Staines Green and Hertingfordbury.
- Standon - Traffic uses Standon High Street as a short-cut to avoid delays on the A10.

Public Transport

E.8.6 The local public transport network in East Herts is bus based. The bus network reflects the dispersed settlement patterns across the District, with a number of core services operating along a series of inter-urban routes providing connectivity between a number of larger settlements, with more limited provision operating between the rural villages.

E.8.7 The key inter-urban bus corridors in East Herts are:

- A414 – Ware-Hertford-Welwyn Garden City;
- A1184 – Bishop's Stortford – Sawbridgeworth – Gilston – Eastwick; and
- A10 – Buntingford – Puckeridge - Ware.

E.8.8 Buntingford in particular has been highlighted during the consultation on this Delivery Study as an area in particular need of improved inter-urban connectivity as well as improved evening time services and this will be explored, along with other rural locations for growth, as part of this Study.

Cycling

E.8.9 There are a number of local cycle routes within East Herts. The relationship of these connections to the strategic sites is assessed in further detail in the site-by-site analysis that follows.

E.9 Main Areas Affected by Growth

E.9.1 As this study has progressed and through consultation with a number of groups and stakeholders, PBA has been made aware of general transport infrastructure concerns around the cumulative impact on growth on the existing town centres within the District. In general terms, there is a perception that traffic congestion is already at unacceptable levels and that delays being caused to residents and workers alike will only worsen as a result of the growth allocations in the District Plan. This sub-Section of the report therefore provides a context for each of these centres to allow commentary on the impacts in the later sections of the report to be made.

Bishops Stortford

E.9.2 Bishops Stortford is typified by a network of historic streets and its proximity to the M11 at junction 8 and the town is a frequent stop-off point for passengers or people picking passengers up from nearby Stansted Airport. The Airport itself can be accessed via rail or bus between there and the town.

E.9.3 Bishop's Stortford is well serviced by all forms of transport in that Bishop's Stortford station is on the WAML and London Liverpool Street can be accessed 40 minutes.. Epping tube station is around12 miles (19 km) away from Bishop's Stortford which means some residents use London Underground services rather than the main line station at Bishop's Stortford.

E.9.4 Bishops Stortford benefits from a western ring road that is formed of the A1184 to the south and the A120 to the north. This route provides access to junction 8 of the M11. However, and despite the availability of the bypass, and in part because of delays along its length, the town still suffers from through traffic using local roads to access more strategic destinations. The 2006 Steer Davies Gleave (SDG) Town Centre Study concluded that 41% of traffic in the town centre was in fact through traffic.

E.9.5 There are a number of further key transport observations, shortcomings and/ or bottlenecks identified within the town which compromise its overall performance as a place and its ability to provide access to transport networks and these are as follows:

- There are a number of significant car parks within the town centre, including parking associated with the station and these, along with the through traffic using the town, contribute the peak hour pressures and congestion.
- Car parking costs are relatively low and therefore attractive for both shoppers and workers
- Frequency of rail services in comparison to other stations on the line results in some passengers ‘railheading’.
- Poor pedestrian and cyclist connectivity over the Station Road Bridge as carriageway space is dedicated to two lanes of traffic heading west.
- One way routes to maximise vehicular throughput are to the detriment of pedestrians and cyclists and severe and fragment parts of the town centre.
- The Hockerill Junction is a significant town centre bottleneck with queues on all arms during peak periods. The physical road layout is constrained by surrounding buildings and there is not therefore scope to improve capacity via localised widening. We understand that the performance of this junction has been the subject of various transport studies over recent years, but these have not established any appropriate solutions. The only easily deliverable options for releasing capacity at the junction involve the banning of certain turning movements. The right turn from London Road to Dunmow Road would deliver the most benefit, however the results of this and any other turning bans would result in significant re-routing of traffic with potentially unacceptable impacts on surrounding routes. The limit on capacity does however constrain future demand and make the route less attractive for through traffic.
- Whilst the A1184/A120 bypass provides good access to the M11 junction 8 outside of peak periods, during the peaks, delays and congestion occur and this in part encourages through traffic to use the town centre.
- The land uses along the A1250 Dunmow Road include two schools and significant employment uses. These land uses have good access to the strategic highway network but can cause delays during the AM peak as opposed turns block traffic on route to the centre.
- Despite having a Central Railway hub, the interchange facilities and environment are poor.
- No bus priority exists on any corridors into the town.

Sawbridgeworth

E.9.6 Sawbridgeworth is four miles south of Bishop's Stortford, and lies on the A1184. The town has a railway station that links to Liverpool Street although services are less frequent than from Bishops Stortford.

E.9.7 The linear nature of the settlement results in limited route choice, and its relationship to Bishops Stortford, Harlow and the strategic M11 means that through traffic uses the town to access these settlements and destinations and as such delays can occur during peak periods on the A1184 at the Station Road / West Road junction, Brook Road junction and in particular long delays at the A1184 / High Wych Road junction.

E.9.8 The lack of any bus priority means that the aforementioned congestion can have impact on the existing bus network causing delays to this important bus corridor between Harlow, Bishops Stortford and Stansted Airport beyond.

Ware

E.9.9 Ware benefits from the A10 to the west and the A414 to the south. The configuration of these networks mean that strategic through traffic is not an issue for the town centre. However, the lack of any inner orbital connection and the traditional radial routes which lead to Baldock Street/ Wadesmill Road/ Westmill Road result in pressure being placed on the town centre High Street from traffic originating or terminating in Ware. This situation is worsened by the general high street friction that occurs due to kerbside activity (parking, servicing, pick-ups and drops offs etc).

E.9.10 Ware benefits from a station at the Southern end of the town centre which provides access to Hertford and London Liverpool Street although faster and more frequent services can be accessed from Broxbourne. Frequent bus services travel between Ware town centre and Hertford along the A119 although no bus priority exists and delays occur during peak periods at the Hertford end of the journey in particular.

Hertford

E.9.11 Hertford has an extensive Conservation Area, which covers a large proportion of the town and includes areas with varying characteristics. The town centre itself retains much of its medieval core, including many listed buildings of historic significance, and has high townscape quality. This presents an attractive environment but presents challenges in transport terms.

E.9.12 However, despite the challenges the town boasts good transport connections, including a bus station which provides access to both local and long-distance destinations, and two railway stations, which offer services into London via Liverpool Street and Kings Cross/Moorgate. Hertford's close proximity to the A1, M25 and M11 enable good regional transport links; however, the town suffers from peak time congestion in both the town centre and along the A414, which bisects the town. This congestion causes air pollution and an Air Quality Management Area (AQMA) has been declared in the Gascoyne Way area.

E.9.13 As set out previously in this report, the A414 Hertford is a semi-strategic east-west route across the District. Analysis conducted by AECOM on behalf of HCC in November 2014 found that a "significant number of vehicles using the A414 travel all the way through the Hertford Corridor" in the AM and PM peaks, with 40% of westbound traffic in the AM peak constituting through traffic movements. The road is currently operating close to capacity, with the A414 roundabouts at Hale Road / Parliament Square and Ware Road / London Road / Fore Street (Bluecoats) junction in particular, having capacity issues. These areas form critical parts of the local bus network and would have significant issues for local bus operators in terms of service provision and the viability of services.

E.10 Assessment of Local Plan and cross boundary growth impacts

'Severity test'

E.10.1 As is required by policy, consideration has also been given to the 'severity test' for assessing the residual cumulative impacts of growth as follows:

- **NPPF** - the National Planning Policy Framework paragraph 32 states that "development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe"; and

- **NPPG** - the Department for Communities and Local Government issued revised guidance on 10 October 2014 within the National Planning Practice Guidance (NPPG) entitled *'Transport evidence bases in plan making'* paragraph 003 highlighted the need for Local Plan transport evidence bases to "*consider the cumulative impacts of existing and proposed development on transport networks."*

E.10.2 Consultation with stakeholders, including the Advisory Team for Large Applications (ATLAS), has also been undertaken to inform our interpretation of 'severity'. Whilst it was established that there is no accepted definition of what a 'severe' transport impact constitutes at present, it is acknowledged that the cumulative impacts of growth up to 2031 in East Herts should be fully assessed on all key strategic road networks, particularly the M11, A1 (M), and cumulative impacts through the centres of Hertford (A414), Bishop's Stortford, Ware and Sawbridgeworth as well as and local networks such as the A414 and A10 and A120.

E.10.3 The HE and HCC have both however indicated that any delay and associated queue that queues back from a junction onto the mainline strategic or semi strategic network could be considered to compromise highway safety and this could be construed as being a 'severe' impact. Therefore for the purpose of the Delivery Study, PBA consider a 'severe impact' will be something where Highway's England objects to the scale of proposed growth on the grounds of unacceptable safety impact on the strategic highway network.

E.10.4 It should be borne in mind that the Traffic Management Act 2004 imposed a duty on Councils as local traffic authorities to secure the expeditious movement of traffic on the local road networks. However, this does not impose any criteria on level of 'stress' or timescales for acceptable levels of congestion and these should therefore remain as 'political' judgements to be determined by elected Members to inform the location of the proposed District Plan growth.

E.10.5 Therefore, the decision whether or not it is acceptable to allow further stress on the local highway and over what timescale rests with the appropriate Highway governing bodies and elected members. During the course of this study, it appears that the HCC are likely to adopt a similar test of severity as the HE and are likely to object where highway safety is compromised due to congestion.

E.10.6 HCC's position on what would constitute 'severe' is further clarified by a letter from HCC to East Herts, dated 27th July 2015 regarding East Herts Local Plan Issues. Within this letter which is appended to this report and in the main to advise that a Countywide Transport Model is to be developed to provide a basis for testing of growth along the A414, provides the following indicators of the Severity test in application.

E.10.7 "Severe traffic congestion from our studies on the A414 beyond this level of growth include:

- Regular instances of traffic blocking key junctions and queuing back on the current free flowing lanes of the A10.

- Significant increases in delays were also predicted on the wider local road network that would resulting in:

    - subsequent impacts on key public transport routes,

- inappropriate routing of traffic through the town centre and residential roads (including villages)

- The likely expansion of the existing traffic related air quality management area (AQMA)."

E.11 Transport modelling and other evidence

E.11.1 The modelling evidence base in the District is fragmented. A variety of different model types and geographical extents exist and therefore a consistent evidence base upon which to base conclusions, particularly in regard to cumulative impacts, has been a key challenge in this study.

E.11.2 HCC acknowledge this evidence gap and as such have now commissioned work on a new Countywide Transportation Model (COMET) to be developed, and this will provide a platform for testing strategic mitigations to growth across the County. This technical work is already underway, and is considered by HCC to be the logical next step to progress the evidence base, and seek the necessary approvals to progress strategic transport improvements in Hertfordshire.

E.11.3 We have been advised that it is currently anticipated that the COMET will become available to test scenarios in early 2016 and the HCC Transport Vision work which will be informed by the modelling will be presented to members for approval in the summer of 2016, following a round of public and stakeholder consultations. Once adopted, this document will set out Hertfordshire's approach to dealing with strategic transport and will include a prioritised list of interventions. These will then subsequently be developed to Strategic Business Case level to enable funding bids to be put forward to the LTB, LEP and DfT. It will also be a key document in supporting the transport evidence base for Local Plans.

E.11.4 That said, a significant amount of testing and assessment has been undertaken by both the Highways Authorities, HCC and also the site promotors and the status of this evidence are summarised below in Table E1:

Table E1 – Transport Modelling Evidence & Status

Model Type/ Name	Description	Status
DIAMOND spreadsheet modelling	Diamond or Spreadsheet modelling has been undertaken by both HCC and ECC as a means to establish the impact of District Plan growth on the Districts of Uttlesford and East Herts. The ECC tests have been used to assign flows to M11 junctions 7 and 8.	This work remains valid although will be superseded by future modelling
LinSig.	LinSig models have been prepared for Junctions 7 & 8 of the M11	These models are considered acceptable by the HE with flows being derived from VISUM modelling being undertaken in parallel.
Harlow Stansted Gateway Transport Model (HSTGM).	HSGTM was prepared to assist the process in identifying locations where highway improvements were needed. There are concerns over the models validation and calibration given that only around 60% of links have a GEH value of 5% or less.	This model is superseded by the VISUM model being prepared by ECC and the COMET Modelling being prepared by HCC
VISUM modelling.	This is a strategic tool that includes variable demand and covers a geographical output area similar to the HSGTM. It will be fully WebTag compliant	Whilst some interim District Plan tests could be undertaken, HCC consider the model to not be suitably detailed in Hertford to allow robust cumulative tests to be undertaken

Countywide Transportation Model (COMET)	This will provide a platform for testing strategic mitigations to growth across the County. This technical work is already underway, and is considered to be the logical next step to progress the evidence base, and seek the necessary approvals to progress strategic transport improvements in Hertfordshire.	It is currently anticipated that COMET will become available to test scenarios in early 2016 and the Transport Vision work will be presented to our members for approval in the summer of 2016, following a round of public and stakeholder consultations.
PARAMICS modelling	A414 Hertford Corridor Study: Aecom on behalf of HCC have prepared a PARAMICS Micro-simulation model that covers the Hertford A414 corridor	Being used to test online solutions. Does not yet have benefit of a strategic model underpinning assignment, distribution or variable demand. PBA consider suitable for determining network capacity but needs to be considered in context of strategic cumulative tests in COMET
	Developer Gilston Model	Base not yet signed off by ECC
	Developer Ware Model	Base not yet signed off by HCC
Welwyn Hatfield 'WHaSH' Model	AECOM has been commissioned by Welwyn Hatfield Borough Council (WHBC) to develop a Strategic Saturn model to test Local Plan Growth in Welwyn and Hatfield.	The HE recognise that "the WHaSH model enhancement appears to have addressed a number of the issues previously raised. The Base Year model may be suitable for use as a basis from which to assess the potential impacts of development in the Welwyn-Hatfield area, with greater confidence in the AM compared to the PM."
London and South East Route Utilisation Strategy	Industry Standard documents that establish forecast passenger demand and associated network and service changes to accommodate demand	PBA Consider suitable for determining network capacity

E.11.5 PBA advise that Inspectors acknowledge that not all the modelling evidence will necessarily be available at the time of the Plan preparation, as long as there is sufficient information to inform the five year supply and there is a process in place for managing future impact then that should be sufficient to move forward. However, for any major scheme, some assessment should be provided to provide sufficient indication that the infrastructure to support the development can be delivered. It is accepted by the Planning Inspectorate that, for later years of the District Plan, providing a comprehensive picture of infrastructure requirements becomes increasingly difficult and a more generalised approach is needed. It is in this context that these impacts are assessed.

E.12 Stakeholder Consultation

E.12.1 This review has been informed by stakeholder discussions that have including dialogue with the major site promoters, HE, HCC, ECC, neighbouring authorities, Town and Parish Councils, rail operators and EHDC. A summary of the key issues for each is shown below:

- HE – strategic impacts on the motorway network – M11, A1(M) and M25;
- HCC/ ECC – local impacts on the A414, A10 and need to fully appraise the cumulative impact of all the growth proposed;
- Town and Parish Councils – local impacts on town centres and 'rat-running' through residential streets and constrained villages; and

- Site Promoters – seeking to better understand all transport impacts of proposed growth and likely mitigation required.
- Uttlesford, East of Welwyn, Broxbourne and Harlow council officers – ensuring cross border impacts are incorporated in any assessment.

E.13 Corridor-Based Strategic Assessment

E.13.1 Assessment of the transport impacts of the proposed District Plan and cross-boundary growth has been undertaken across the following 4 strategic transport corridors This analysis therefore summarises the key 'high-level' impacts on a transport corridor basis as follows:

- Eastern Corridor (M11 and WAML);
- Central Corridor (A10);
- Western Corridor (A1M and ECML); and
- East – West Corridor (A414).

Eastern Corridor

Junction 7a

E.13.2 ECC are currently engaged in a public consultation exercise for a new junction of the M11 (7a) north of Harlow which will significantly improve capacity along the M11 corridor at junctions 7 and 8.

E.13.3 The ECC VISUM work is not yet complete but when available will provide insight on the benefits to Junction 7 and 8 and the performance of 7a itself. At this stage the growth that can be accommodated as a result of the delivery of 7a is relative to the performance of junctions 7 and 8 considered above and below respectively.

Junction 7

E.13.4 Base model runs by ECC show that Junction 7 currently operates at 101% capacity in the AM peak and significantly exceeds capacity when Local Plan growth is added. The changes proposed have been modelled in LinSig up to a 2031 future year scenario, and include all committed schemes and Local Plan growth. These changes have demonstrated that junction 7 would operate within capacity until 2022. To date, the HE have indicated that they are broadly supportive of the proposed network changes at Junction 7 and are satisfied that the LinSig models are robust and fit for purpose.

E.13.5 The delivery of Junction 7a ensures that Junction 7, in 2022, would operate within capacity on all arms in the AM peak and on all arms except the northbound off slip in the PM peak. However, the VISUM tests undertaken for 7a indicate that by 2036 the junction would again be over capacity either with or without 7a and that major improvement which would may see a grade separated connection from the A414 to the M11(s) are currently being reviewed by Highways England.

Junction 8

E.13.6 Base model LinSig runs by Essex County Council (ECC) showed that M11 Junction 8 currently operates at 90% capacity.

E.13.7 The changes proposed have been modelled in LinSig up to a 2031 future year scenario, and included all committed schemes and Local Plan growth. These changes have demonstrated that junction 8 would operate within capacity until approximately the mid-2020s.

E.13.8 The addition of north facing slips would ensure that the junction would operate within capacity, well beyond the plan period.

E.13.9 To date, the HE have indicated that they are broadly supportive of the proposed network changes at Junction 8 and are satisfied that the LinSig models are robust and fit for purpose. It should however be noted that all tests and conclusions set out above for Junction 8 will be updated once the ECC VISUM work is complete as this will provide different demands to the DIAMOND modelling previously undertaken.

The A120 / A1250 Stansted Road

E.13.10 ECC's modelling of the A120/ A1250 has indicated that by 2031 the junction would be significantly over capacity by 2031 in both the AM and PM peak periods.

E.13.11 Therefore the changes which incorporate changing the junction from a roundabout into a signalised crossroads junction would result in the junction operating within capacity in 2031.

The A120 / B1383 Stansted Road

E.13.12 ECC modelling indicates that the junction of the A120 / B1383 Stansted Road would be over capacity by 2031 despite the changes proposed by the Bishops Stortford North scheme. However, the further changes ensure that the junction would work within capacity up to 2031 although in the AM peak there would be no practical reserve capacity with the overall junction operating at 100%.

The A1184 / West Road

E.13.13 Further testing is required to establish the cumulative impacts of growth at A1184 / West Road. The VISUM testing reported to date indicates that some small reductions in flow may occur as a result of Junction 7a when compared to the Do Minimum scenario.

A1184 / High Wych Road junction

E.13.14 Further testing is required to establish the cumulative impacts of growth at A1184 / High Wych Road Junction. The initial VISUM model testing indicates that some small reductions in flow may occur as a result of Junction 7a when compared to the Do Minimum scenario.

The A1184 / A414

E.13.15 Further testing is required to establish the cumulative impacts of growth at the A1184 / A414 junction. A Paramics model is being developed by the Gilston Area site promoters to bridge this gap in evidence coupled with the subsequent COMET testing.

West Anglia Mainline

E.13.16 As stated in Section 4 of this report, the RUS concludes that the additional capacity provided by committed schemes across the line delivers a peak hour capacity of 18,500 meaning a 97% Demand / Utilisation ratio is achieved when forecast growth up to 2031 is considered. Based on a planning capacity of 85% there is an identified capacity 'gap' of 2,300 passengers.

E.13.17 However, through the implementation of the previous RUS recommended schemes which includes lengthening all peak hour inner London services on the West Anglia line to 8 carriages and lengthening carriages on Harlow Town Line to 12 carriages, the shortfall for the outer suburban area becomes 0 which is based on a metric of seats. It is acknowledged that there remains a capacity gap on the Inner Suburban section of the line.

Eastern Corridor Summary

- Strategic junctions relating to the M11 are being redesigned and modelled for District Plan growth. To date in capacity solutions have been demonstrated for the first 5 years of the Plan.
- After the first 5 years of the Plan Junction 7 requires significant improvement or requires Junction 7a to provide capacity relief.
- Junction 8 has a number of schemes that provide capacity until mid-2020's after which point north facing slips may be required.
- Capacity at key junctions along the A120 has been demonstrated until 2031.
- There are a number of critical junctions along the A1184 that have not yet been shown to have effective mitigations developed although full impacts of Junction 7a are not yet known.
- The WAML has planned capacity up to 2031
- Local Bus services will be adversely affected along A1184 if delays worsen and these need to be designed for as part of a corridor based strategy.

Central Corridor

A10

E.13.18 Previously HCC Diamond modelling showed that 3,000 dwellings can be accommodated at Ware without any capacity issues arising along the A10 corridor. This testing was undertaken with mitigation and assumed the provision of a new link road between the A10 / A1170 junction and the Widbury Hill area.

E.13.19 The A10 performance including the proposed growth at Buntingford (500 units) also showed that this could be accommodated on the existing road network and, indeed, that growth at Buntingford up to 1,000 units could be accommodated before capacity impacts would be realised on the A10 southbound carriageway.

E.13.20 As such, testing along the A10 within East Herts has shown that all proposed District Plan growth can be accommodated without any severe capacity concerns arising.

E.13.21 However, further testing is required fusing a district wide model and the site promoter-led Paramics model which will assess corridor performance along the A10. From this work it is necessary to establish the performance of the junction of the A10 with the A1170 and the A602 with the A10/ Westmill Road which to date has not been established.

E.13.22 The within capacity performance of the A10 means that the parallel route of Ermine Street is not currently blighted by rat running through traffic and the important bus routes that connect Buntingford, Puckeridge and Ware are unaffected.

East Coast Mainline

E.13.23 As stated, as a result of the Thameslink ECML proposals and the shared track running of both Thameslink and Great Northern services, increases in capacity are realised meaning that a peak hour capacity of 16,300 is achieved meaning an 80% Demand / Utilisation ratio would occur in 2031. However, further consultation and assessment is needed to understand whether the proposed growth plans for this area have been fully factored into the capacity assessments by Thameslink.

Central Corridor Summary

- Modelling to date has demonstrated that A10 can accommodate District Plan Growth.
- Further assessment awaited with regard to key junction interaction at Ware.
- Local bus services between settlements will not be affected adversely.
- The addition of Thameslink services and associated infrastructure increases rail capacity and accommodates passenger growth but requires greater understanding of the scale of growth assessed.

Western Corridor

E.13.24 The WHaSH modelling inputs included all committed growth, proposed local plan growth in WHBC, cross-boundary local plan growth including East Herts with forecasting conducted up to 2031. A summary of the transport impacts on Junctions 3 and 4 are summarised below and include additional mitigation proposed at each junction.

Junction 3

E.13.25 WHaSH has tested the improvements as set in Section 4 and concluded that Signal optimisation significantly reduces delay but the actual scheme design does little in reducing delay. It is concluded that the main issue at this junction is the A1 (M) southbound off-slip and no capacity improvements are provided here as part of this mitigation measure.

E.13.26 PBA understands that further more detailed assessment will be undertaken at this junction to further reduce delays and to this end Welwyn Hatfield expect to publish the 2031 Forecasting Report shortly.

E.13.27 PBA consider that some further work is required to establish whether delays can be further reduced at this junction and how much growth can be accommodated through signal optimisation alone. However, given its relative distance from the majority of the East Herts major site allocations, except for Land East of Welwyn Garden City, it is considered that at this stage Junction 3 of the A1M is not a constraint for the first five years of East Herts District Plan growth. Beyond the first 5 years further evidence is required to determine whether appropriate mitigation has been established and demonstrated as being suitable.

Junction 4 and A414 between Mill Green and Tesco, the Jack Oldings Signalised Roundabout and the A414 Hertford Road / A1000 Hertford Road

E.13.28 WHaSH has tested a satellite roundabout enlargement to accommodate HGV turns. This modelling has demonstrated that the changes proposed result in no noticeable change in delays and in fact delay is increased as a result of downstream capacity increases that see more traffic arriving at the junction.

E.13.29 Given the relationship between this junction and the A414 between Mill Green and Tesco, the Jack Oldings Signalised Roundabout and the A414 Hertford Road / A1000 Hertford Road Junction, a micro-simulation model is being developed. PBA understands that to date the modelling undertaken has not demonstrated any benefit of the scheme changes.

E.13.30 At this stage PBA consider that no appropriate mitigation has been developed to accommodate growth at these interrelated junctions and that further evidence is required to demonstrate appropriate levels of growth.

Junction 6

E.13.31 The segregated left hand turn at the Clock roundabout segregates conflicting flows travelling south from Great North Road and Codicote Road. However, a capacity issue remains on A1000 between the two roundabouts (single lane) and a third lane at the approach provides little capacity relief. As such it has been recommended that due to the nature of this junction, microsimulation is required to fully understand the flows and interaction of movements that occur here.

E.13.32 PBA consider that further work is required to establish whether delays can be further reduced at this junction to establish how much growth can be accommodated given its relationship to the land east of Welwyn Garden City.

Western Corridor Summary

- Modelling to date has demonstrated that some junctions along A1M require further more detailed assessment before suitable mitigation can be determined. However, in advance of this more detailed work further WHaSH forecast tests are expected to clarify performance of the network.
- At this stage it is considered that the constraints, in conjunction with the committed schemes, do not currently pose a risk to the first five years of District Plan growth but further mitigation is required beyond this point.

East-West Corridor

E.13.33 Diamond testing has previously been undertaken assessing the cumulative impacts of all District Plan growth on the A414 corridor through Hertford and showed significant highway impacts along the A414 Gascoyne Way corridor.

E.13.34 The A414 through Hertford is already running close to capacity during peak periods, and further technical analysis was undertaken by HCC in September 2014 in the form of an A414 Corridor Study in September 2014 to test a series of junction capacity improvements.

E.13.35 This used an extension of the existing Paramics model, and included all proposed District Plan growth to test a number of junction improvements along the A414 between the A10 and Hale Road. The results have shown that A414 corridor performance could be potentially improved with these initial measures with limited additional capacity provided.

E.13.36 Therefore, HCC have advised in their letter dated 27th July 2015, that ‘whilst the full Plan growth is undeliverable without a strategic intervention at Hertford, the assessment we have undertaken indicates that the traffic growth associated with the sites in your current first 5 year housing trajectory (up to 2021) is likely to be acceptable in terms of traffic impact on the A414. However, further detailed localised traffic assessments will need to be undertaken, and mitigation measures developed, as part of the planning process.’

E.13.37 Therefore and in order to inform further strategic interventions that may be necessary further testing is to be undertaken by HCC using the soon to be developed COMET model and therefore our initial conclusions are that, prior to mitigation being considered, the cumulative impacts of District Plan growth result in a significant impact on highway capacity along the A414 through Hertford.

E.13.38 Modelling undertaken by Welwyn Hatfield Borough Council in November 2014 also tested the proposed East Herts District Plan growth as well as the proposed WHBC proposed local plan growth in full and showed that without mitigation, there were significant impacts eastbound in the AM peak along the A414 on the approach to the Holwell Lane roundabout but otherwise, that A414 performance between both districts was satisfactory.

E.13.39 8,000 units at Gilston have been tested in Diamond whilst 10,000 have been tested in the Harlow Stansted Gateway Transport Model. The testing in HSGTM has showed that significant highway impacts at the A414/Eastwick Road roundabout north of Harlow and along the A414 between Eastwick and Burnt Mill which would need addressing as part of any proposed growth at Gilston.

East –West Corridor Summary

- The A414 corridor is stressed during peak periods. The sections within Hertford and north of Harlow are currently identified as areas that require focussed mitigation and a number of schemes have already been developed. Whilst these have been shown to have some effect in accommodating increased traffic throughput further work is still required and is ongoing.
- Particular concern has been raised with regard to traffic queuing back from Gascoyne Way in a westbound direction in the AM peak to the junction with the A10 and onto the A10 itself. This has been identified by HCC as a potential 'severe' impact and as such Gascoyne Way capacity solutions, alongside more sustainable measures are an integral part of this Study.
- At this stage and prior to the further work that is currently being undertaken for the A414 Hertford it is considered that the constraints, in conjunction with the committed schemes, currently pose a risk to EHDC District Plan delivery beyond the first five years of District Plan growth.

E.14 Town Centre Impacts

Bishop's Stortford

E.14.1 Diamond and Paramics modelling undertaken to date and conducted by HCC has demonstrated that all District Plan growth in Bishop's Stortford can be accommodated with only a "limited impact" on Bishop's Stortford town prior to inclusion of the 1,000 units at Bishop's Stortford South and prior to any mitigation being considered.

E.14.2 With the addition of these 1,000 units, capacity and congestion concerns are manifest along the London Road corridor between Pig Lane and Thorley Hill, with further impacts at the Hockerill Street junction and Stansted Road corridor north of this.

E.14.3 However, PBA consider that the 'true' impacts need to considered once the COMET modelling becomes available and the network can be modelled in conjunction with capacity increases along the A120 and in the context of Junction 7a as both of these interventions may reduce the volume of traffic passing through Bishops Stortford to access the strategic network at Junction 8. Given the availability the ECC VISUM model, interim runs could be undertaken for this part of the network given that sufficient model detail is likely to exist. A lack of consistency with the COMET model may however be a concern.

E.14.4 In general, PBA does not consider highway capacity based solutions are appropriate for Bishops Stortford town centre which will inevitably attract more traffic into the town to take advantage of reduced journey times. Instead sensible town centre management coupled with investment in sustainable measures and targeted highway capacity on preferred routes external to the settlement are more appropriate. Measures that look to reflect this approach are outlined in Section 6 of this report.

Ware

E.14.5 The nature of Ware's road network means that traffic wanting to access the A10 is required to do so by using the Baldock Street/High Street corridor. Diamond modelling conducted by HCC and included the 3,000 units proposed at the broad location at Ware showed significant

highway impacts on the A1170 north and south of Ware and through the town centre, A119 up to London Road/Viaduct Road roundabout and along the Baldock Street/High Street.

E.14.6 PBA consider it important that improved eastern orbital connections are developed to facilitate growth and to provide alternative routes for the existing population and therefore masterplanning that provides these connections is supported.

E.14.7 The development of the Ware town centre Paramics model will be an important tool in understanding whether the impacts of growth can be mitigated along the High Street and how much semi-strategic traffic can make use of this western orbital connection.

Hertford

E.14.8 Hertford town centre and the impacts of growth need to be considered in the context of the A414 and as such, we would refer to our previous assessment undertaken as above within the "A414/ east – west corridor" sub-section. Though the work undertaken to date has indicated that the A414 corridor performance between the A10 and Hale Road can potentially be improved by the combination of individual junction improvement options, the potential release of latent demand is likely to lead to pinch points elsewhere along the corridor.

E.14.9 Given that the measures tested to date would not free up enough capacity to accommodate large volumes of additional development, the impact of increased traffic and congestion on the A414 could potentially result in impacts on the wider town centre as traffic rat runs and there is an increase in queues as traffic waits to access the corridor.

E.14.10 However, PBA consider that the 'true' impacts need to be considered once the COMET modelling becomes available and the network can be modelled in conjunction with variable demand allowing people to change mode or the time of their journey.

E.14.11 It is considered that whilst the maximising of traffic throughput along the A414 remains an important strategic objective and this is reflected in the infrastructure schedule contained in Section 6, further more sustainable and improved accessibility based measures should also be developed for the wider town centre and between settlements along the East-West corridor and these are also set out in Section 6.

Sawbridgeworth

E.14.12 The linear nature of Sawbridgeworth, the geographical relationship to Harlow and Bishops Stortford and the lack of route choice available for travel means that any increase in traffic resulting from either population growth or car usage will have an impact on the town centre.

E.14.13 The effect of Junction 7a on Sawbridgeworth has yet to be fully demonstrated and some traffic relief may be achieved or scope for junction improvements may be increased.

E.14.14 PBA consider that growth in this location may have an adverse impact on the potential to deliver more strategic and larger growth sites in Bishops Stortford and Gilston given that any development in Sawbridgeworth will have a direct impact on this sensitive corridor.

E.15 Conclusion – Evidence Gaps

E.15.1 It is clear from our review of available modelling evidence that additional work needs to be undertaken with particular regard to cumulative impacts across the District.

E.15.2 The information produced and modelling undertaken by the site promoters has generally (and understandably) been developed to reflect the impact of their growth on the immediate surrounding area but there is a lack of a consistent district wide evidence base to assess the cumulative impact of all the proposed planned growth at the broad locations (beyond the timescale of the plan), and including growth from neighbouring areas on the cumulative impact on transport. This gap will however be filled by the now commissioned COMET model

currently being developed by HCC and is set to be available in spring 2016 for Local Plan testing.

E.15.3 In conclusion, there is therefore a gap in the assessment on the cumulative impact of District Plan and cross-boundary growth that will be required to be evidenced. This will be assessed further and final conclusions drawn at this point, and as such, the impacts assessed and conclusions drawn in this Section should be viewed as 'interim' conclusions only.

E.15.4 It should also be noted that the decision whether or not it is acceptable to allow further stress on the local highway and over what timescale, rests with the appropriate Highway governing bodies and elected members. The timing of infrastructure delivery should therefore be viewed objectively and with this in mind.