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SQW

Carter Jonas

Upper Lee Valley Development Infrastructure Study

Final Report
September 2015

Transport for London

Our ref: 22763001

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1 Introduction

Background

1.1 The Upper Lee Valley Opportunity Area is one of the largest opportunity areas in London, covering 3,884 hectares. In July 2013 the Upper Lee Valley Opportunity Area Planning Framework (OAPF) was adopted by the Mayor of London. It sets out eight objectives for the area, including the delivery of 20,100 new homes and 15,000 new jobs by 2031. A number of growth areas were identified in the OAPF where this development is expected to be focused, including; Blackhorse Lane, Tottenham Hale, North Tottenham / Northumberland Park, Meridian Water, Edmonton Green, Ponders End and the A10/A1010 corridor.

1.2 Following on from the OAPF, Transport for London (TfL) and the Greater London Authority (GLA) commissioned a Development Infrastructure Funding Study (DIFS) to determine the infrastructure required to support the planned development in the Upper Lee Valley and how this can be funded.

1.3 The study has been undertaken by Steer Davies Gleave, Price Waterhouse Coopers, Carter Jonas and SQW. It has been led by a Client Steering Group including representatives from TfL, GLA and the London Boroughs of Enfield, Hackney, Haringey, and Waltham Forest.

Aims and Objectives

1.4 The study aims to identify the gap between the cost of infrastructure required in the Upper Lee Valley and the funding that is currently secured. To do so, it has sought to satisfy the following objectives:

- Understand the planned development and associated infrastructure requirements including timing and costings;
- Identify what contributions can be collected from developers in accordance with current policy;
- Develop a numerical financial model to assess the gap between the cost of infrastructure and the available funding that can be used by the Client Steering Group, to reflect different scenarios around the pace of development, updated infrastructure proposals and funding decisions; and
- Identify potential sources of additional funding to close the gap whilst ensuring development sites remain viable.

Methodology

Overview

Study Area

1.5 The study area covers 3,884 hectares within four London Boroughs; Enfield, Hackney, Haringey and Waltham Forest. The area has been extended slightly since the OAPF to include Woodberry Down and Manor House in Hackney, at the request of the borough. The study area is shown in Figure 1.1 and includes a number of growth areas as listed below:

- Ponders End
- Meridian Water
- Blackhorse Lane
- Woodberry Down
- Tottenham Hale
- North Tottenham
- Edmonton Green

1.6 The growth areas have been used to link development sites with infrastructure schemes, and help distinguish between borough wide and individual development sites, for use in analysis of the costs and funding.

1.7 The A10/1010 corridor has not been included as a growth area in the DIFS since the majority of the development planned along the corridor could also be categorised within another growth area. In addition, the length of the corridor, and the fact that it crosses through three boroughs, makes it less likely that development will come forward in a cluster together here as in other growth areas.

Study Period

1.8 The model covers the period from April 2015 until the end of 2031 in order to align with the OAPF. The start date of the modelled period was selected to ensure that the planned developments and infrastructure requirements correspond with each other as much as possible, whilst also capturing key, recent funding announcements.

1.9 Planned development in each borough is a moving target, and since the OAPF was published, both Haringey and Hackney have increased the amount of development they are planning for. This increased level of growth has subsequently made their Infrastructure Delivery Plans, a key source of information on infrastructure requirements, out-of-date. During the same period, announcements were made about funding for some of the key infrastructure schemes including the Tottenham Green Link and STAR (Stratford, Tottenham and Angel Road scheme). In order to capture the latest thinking, and funding, the decision was taken by the Steering Group to set the start date at April 2015 and accept that there may be some minor shortfalls in the assessment of infrastructure required. This was accepted to be a small enough risk, particularly as the model that has been created can be used to test further scenarios at future dates including additional infrastructure as required.

Ponders End
Edmonton Green
Meridian Water
North Tottenham
Tottenham Hale
Blackhorse Lane
Woodberry Down

Legend

Growth Areas

Upper Lee Valley Boundary

Local Authority Boundary

Upper Lee Valley DIFS

Growth Areas

steer davies gleave

Created by:	Last Updated:	Scale:
ORussell	08/09/2015	20,905

P:\Projects\227\6\30\01\GIS\MAPPING\ARCGIS\Map_Documents\Final Maps\Base Level Maps\July 2015\Upper Lee Valley Growth Areas.mxd

Capturing Planned Growth and Infrastructure

1.10 Initially, development sites and infrastructure projects were identified through a review of adopted and emerging Local Plans, Infrastructure Delivery Plans and other planning documents such as Development Policies. This was followed by meetings with each of the boroughs to check, amend and add detail regarding the projects, timescales for delivery and planned investment. Discussions were also undertaken with TfL, utility providers, the Environment Agency, the NHS and the Learning Trust regarding planned infrastructure.

1.11 The study includes only infrastructure schemes that are considered to be strategic. In other words, schemes which are required to enable groups of developments, rather than a single development site. The study is also limited to considering only capital costs; those that relate to the construction of an infrastructure project rather than the ongoing cost of operating/maintaining the infrastructure. The operating costs of additional buses is the one exception, as they are included.

1.12 The types of infrastructure considered in this study are set out in Table 1.1:. Detail on the specific schemes identified is provided in Chapters 3, 4 and 5 of this report.

Table 1.1: Infrastructure Categories

Transport Infrastructure	Social & Community Infrastructure	Utility infrastructure
Cycling	Education	Heat networks
Walking	Healthcare	Electricity
Bridges	Leisure	Gas
Highways	Community and cultural centres	Water
Railways and stations	Employment / training facilities	Broadband
Buses		Flood defences
Public Realm		Waste
Smarter Travel Initiatives		

Prioritising Infrastructure Schemes

1.13 The infrastructure schemes have been split into one of two categories to identify their importance in enabling the planned development. This is intended to assist with prioritising investment and to establish an estimate of the minimum investment required. The two categories are:

- **Priority** schemes which must be delivered in order for development to be sufficiently supported; and
- **Other** schemes which are beneficial to development in that they improve the quality of living and therefore value of the development, but without which the development could still feasibly happen.

1.14 The decision as to which category each scheme falls into is subjective and has been made with consideration of the views of the client steering group.

Estimating Costs

1.15 Where possible we have used estimates from the service provider, since they are the most informed about the nature and delivery of each individual scheme. To complete any remaining gaps we have used Spons (industry renowned published cost estimating guide - 2015) and case studies/benchmarking.

1.16 The costs included in the final model have been through several iterations of review by the client steering group and are agreed to reflect the most up-to-date information. Of course, this does not mean that these are all final scheme costs, and they will be subject to further refinement as the scheme designs progress.

1.17 The costs in the model have various base dates ranging from 2010 to 2015. The model then uses different indexation profiles for each of the different cost lines, depending on their base dates, to calculate the nominal amounts. Therefore, if a cost is quoted in 2010 prices, it has been indexed at the actual value of the Tender Price Index until 2014, and then a forecasted value of 3.50% is used for the duration of the model timeline.

1.18 When calculating the Net Present Value (NPV), the costs (and revenues) are discounted back to 2015 at a rate of 3.40%, therefore the numbers displayed on an NPV basis are in 2015 prices.

Funding Sources

1.19 Through discussions with the service providers (Boroughs, TfL, GLA, utility providers etc.) we have established where there is secured funding for planned schemes. Details of the amount and source of the funding are provided in Chapters 3, 4 and 5 of this report.

1.20 We have calculated the amount of funding the boroughs can expect to receive from the planned development in accordance with the most recent adopted, or in some cases draft, CIL charging schedules.

1.21 We have considered more innovative sources of funding, and the potential contribution they could make to fund the infrastructure required. This is covered in more detail in Chapter 7.

Higher Growth Scenarios

1.22 This study has considered two further scenarios to assess the infrastructure requirements, and the resulting funding gap, in the event that the amount of development exceeds the current plans. These two scenarios are intended to reflect the situation with the completion of four-tracking of the West Anglia Main Line (Sensitivity Test 1) and Crossrail 2 (Sensitivity Test 2), as set out in Chapters, 8, 9 and 10 of this report.

1.23 The improved rail infrastructure for both these schemes are likely to increase development values significantly and the improved services will also support increasing levels of additional growth. The potential additional value from these schemes has not been captured within the modelling as there is not currently any mechanism to capture it, nevertheless recommendations are provided within section 8.

Model

1.24 The model has been developed in order to compare the costs of the infrastructure required to support different growth scenarios and also the funding that would be available through such development. This allows comparisons to be made between the different scenarios and also test the impact of altering policy and associated funding contributions, such as adjusting the affordable housing requirement to alter viability. Full details of the model are included in Chapter 6.

1.25 The model has been provided to TfL, GLA and the four London Boroughs within the Upper Lee Valley (Hackney, Haringey, Enfield and Waltham Forest) to allow them to test further scenarios going forward.

Financial Assumptions

1.26 Financial assumptions have been made in order to set the current benchmark values used within the model. These are set out in detail in Chapter 7.

Limitations of Study

1.27 The study provides a snapshot of the situation at the present time. The housing market is a changing entity and therefore the viability assessments are based on our knowledge and experience at this time. The viability assessments are not precise valuations. Discussions with landowners have helped to verify the prices however as the information is commercially sensitive and site specific, it can be best used to provide area wide analysis rather than individual valuations.

1.28 Projecting future populations is not precise, and the GLA release a number of growth projections each year. In the last few years, population growth has been more rapid than expected and although this has been taken into account in their recent projections, reality may present a different situation to that currently predicted.

1.29 The model that has been created will allow further updates to be made by the boroughs, TfL and GLA as policies are tested and developed. Due to the incomplete engagement from utility companies, ongoing discussions led by the GLA will be required to update the model going forward.

Contents of Report

1.30 This report is divided into 11 chapters of which this is the first. The remaining chapters are:

- Chapter 2: Planned Development (Base Scenario)
- Chapter 3: Social Infrastructure (Base Scenario)
- Chapter 4: Transport Infrastructure (Base Scenario)
- Chapter 5: Utility Infrastructure (Base Scenario)
- Chapter 6: Base Scenario Funding Gap
- Chapter 7: Funding Potential
- Chapter 8: Higher Growth Scenarios Introduction
- Chapter 9: Four-track Scenario
- Chapter 10: Crossrail 2 Scenario
- Chapter 11: Summary and Conclusions

2 Planned Development – Base Scenario

Development

Overview

2.1 The OAPF set out objectives to deliver at least 20,100 new homes and 15,000 jobs in the Upper Lee Valley by 2031. As part of this study, these targets were refined by determining the location of the development sites, the amount of development per site, and to include any updates to Borough planning documents since 2013. This was established through the interrogation of Borough planning documents, databases of planning permissions and discussions with the four Boroughs. The total development anticipated across the Upper Lee Valley (ULV) is shown in Table 2.1:.

Table 2.1: Planned Growth in the Upper Lee Valley by 2031

Borough	Growth in housing units	Growth in jobs
Enfield	8,449	5,221
Hackney	6,119	2,725
Haringey	8,012	6,486
Waltham Forest	3,561	1,842
Total	**26,141**	**16,274**

2.2 The amount of residential development included in this study exceeds the targets in the OAPF by more than 5,000 homes. This is due to a number of reasons:

- The boundary of the study area has been extended to include Woodberry Down and Manor House;
- Haringey Council have published an updated Area Action Plan for Tottenham (February 2015) which predicts a higher level of growth than previous plans; and
- Hackney Council are now anticipating a higher level of growth in this area.

2.3 In each borough, known development sites have been identified and the latest estimates of development on each site have been recorded. In some cases, the total development on these identified sites is less than the growth target stated in the OAPF. In this case an additional development is included in the model (called 'All Other Development') to capture the difference. Although the location of this development is not known, its impact on infrastructure requirements and the funding expected through CIL is captured.

2.4 A full list of all development sites is included in Appendix A but a summary of development within each borough is provided overleaf.

Affordable Housing

2.5 For each site, an estimate has been made of the affordable housing percentage that can be achieved. This assumption is based on records of planning permissions from the London Development Database (LDD). An average percentage of affordable housing was established for each borough using permissions that adhere to the following constraints:

- Permission was granted in 2010 or later;
- Permission was for more than 20 housing units; and
- Permissions with less than 100% affordable housing (ruling out any schemes which were subsidised to eliminate bias caused by sites providing affordable housing only, e.g. housing associations).

2.6 The percentages set out in Table 2.2: were established using this method. In all boroughs, the average level achieved in recent permissions is significantly lower than the policy level.

Table 2.2: Percentage of affordable housing by Borough

Borough	LDD % Affordable Housing	Policy % Affordable Housing
Enfield	29%	40%
Hackney	29%	50%
Haringey	20%	50%
Waltham Forest	24%	50%

Trajectory of Development

2.7 The date at which construction of each site is anticipated to be complete was generally established through discussions with the boroughs. For a select number of sites this has also been confirmed through discussions with landowners or through existing planning permissions on the sites.

Floor Area conversions

2.8 In order to calculate CIL payments, all development has been converted to square metres. However, it is also necessary to understand the equivalent number of housing units and jobs at each site for comparison with the OAPF targets and Crossrail 2 work. Hence, a system for converting between housing units/jobs and square metres has been established.

2.9 For residential development it is assumed that there is an average of 80sqm per unit. It is also assumed that the floor areas stated in planning documents are expressed as Gross External Area, and that 75% of this is roughly equivalent to the Net Internal Area. This gives a conversion rate of 107sqm per unit. This was applied to all development sites unless site specific information was available.

2.10 Conversion between commercial floorspace and jobs was calculated using GLA assumptions as set out in Table 2.3.

Table 2.3: Conversion between floor space and jobs

Borough	Square Metres per Job				
	Offices	Retail	Industrial	Leisure	Other
Enfield	31	21	44	70	45
Hackney	29	21	39	70	45
Haringey	29	21	39	70	45
Waltham Forest	31	21	44	70	45

Enfield

2.12 Development in Enfield is primarily centred around the two growth areas; Meridian Water and Ponders End.

Meridian Water

2.13 Meridian Water is anticipated to provide 5,200 housing units and 3,134 jobs by 2029. The growth area is split into five development areas (not necessarily in single ownership): Meridian Angel & The Gateway, Meridian Central, The Islands, Canal-side West and Meridian East. Table 2.4: sets out the development at each of the five sites and expected completion dates for each. The Meridian Angel & The Gateway site is expected to be complete by 2019, delivering 1,250 homes and 505 jobs. The remaining four sites are anticipated to be complete 10 years later, by 2029.

Table 2.4: Development at Meridian Water

Site	Housing Units	Jobs	Completion Year
Meridian Angel & The Gateway	1,250	505	2019
Meridian Central	650	1,262	2029
The Islands	1,100	-	2029
Canal-side West	1,100	-	2029
Meridian East	1,100	1,367	2029
Total	**5,200**	**3,134**	

2.14 The jobs at Meridian Water are expected to result from a mixture of retail, leisure and business development. The retail development will include a mixture of large stores and local high street developments, and will be focused at Meridian Central. The commercial development is planned to be spread across Meridian Angel & The Gateway, Meridian Central and Meridian East.

2.15 Meridian Water is anticipated to deliver 20% of the jobs and homes in the ULV.

Ponders End

2.16 A total of eight sites have been identified within Ponders End which in total would deliver 334 housing units and 1,150 jobs. The sites are set out in Table 2.5:.

Table 2.5: Development at Ponders End

Site	Housing Units	Jobs	Completion Year
Electric Quarter (former Middlesex University)	160	44	2018
South Street, Alma Estate & Ponders End Station	83	20	2021
Southern Brimsdown	-	701	2018
Robbins Hall, Gardiner Close	3	-	2017
102 East Duck Lees Lane	-	104	2017
Academy Street / Dujardin Mews (gas holders site)	38	-	2016
Former Public House, 173 South Street	50	-	2017
Morson Road	-	281	2017
Total	**334**	**1150**	

2.17 Commercial development in this area is primarily warehousing or industrial development. The Southern Brimsdown site has permission for 31,552sqm of B1/B2/B8 floor space which is anticipated to result in approximately 700 jobs, and 102 East Duck Lees Lane and Morson Road also have permission for large warehousing (B8) developments.

2.18 The amount of planned residential development in this growth area is very small, amounting to only 1% of the total growth in the ULV.

Other Areas

2.19 Another 12 sites have been identified in Enfield outside of the growth areas as shown in Table 2.6:. In total these sites are expected to deliver 106 housing units and 697 jobs.

Table 2.6: Developments in Enfield outside growth areas

Site	Housing Units	Jobs	Completion Year
Kettering Hall, 69 Ordnance Road	24	-	2018
Hertford Road (EN3 6LZ)	58	-	2020
Car Park, 57 Stockingswater Lane	-	195	2017
Innova park Plot 1	-	190	2017
Mollison Avenue	-	-76	2017
Stockingswater Lane	-	195	2017
Hertford Road	-	-	2017
Jeffreys Road	-	68	2017
Gibbs Road	-	64	2017
Solar Way	24	79	2017
Edmonton Green	-	-	2026
Victoria Road	-	-18	2017
Total	**106**	**697**	

2.20 Included on this list is the Edmonton Green Masterplan for which there are currently no available forecasts of development. A Masterplan for the area is expected to be completed in Summer 2015 which will provide growth figures.

Unidentified Sites

2.21 In Enfield there are 2,383 new housing units and 240 jobs expected, for which sites are not currently identified. These are included in the model but are not allocated to a specific growth area.

Hackney

2.22 Twelve development sites have been identified across Hackney which are summarised in Table 2.7:.

Table 2.7: Development in Hackney outside of growth areas

Site	Housing Units	Jobs	Completion Year
Tower Court	129	-	2017
Wilmer Business Park	47	42	2016
ARRIVA/Stamford Hill (Bus) Garage	210	-	2023
Tram Depot, 38-40 Upper Clapton Road	75	2	2016
41-45 Stamford Hill	65	29	2021
92-94 Stamford Hill	83	29	2019
Telephone Exchange, Upper Clapton Road	28	53	2021
151 Stamford Hill	69	192	2020
Nightingale Estate	1,500	-	2018
Woodberry Down	3,544	317	2027
32 Galdeston Road		28	2018
Manor House AAP	369	251	2026
Total	**6119**	**943**	

2.23 The two largest housing developments, Woodberry Down and Nightingale Estate, are both regeneration schemes for existing housing estates. Works have already begun on Woodberry Down estate.

2.24 Most sites across Hackney are planned for mixed use, combining residential development with retail, community and educational uses. Sites are primarily focused around Stamford Hill and Upper Clapton, although neither of these is officially a growth area.

Unidentified Sites

2.25 In Hackney there are 1,781 jobs for which sites are not currently identified, but similarly are still included in the model.

Haringey

2.27 Development in Haringey is focused around two growth areas; Tottenham Hale and North Tottenham / Northumberland Park.

Tottenham Hale

2.28 There are 10 sites identified in Tottenham Hale, all of which are expected to be delivered by 2023. The sites are set out in Table 2.8:.

Table 2.8: Development in Tottenham Hale

Site	Housing Units	Jobs	Completion Year
Station Square West	676	455	2020
Ashley Road South	500	437	2023
Ashley Road North	180	214	2021
Tottenham Hale Station Interchange	190	98	2018
Tottenham Hale Retail Park	770	689	2023
Hale Village Tower & Pavilions	530	-	2021
Hale Wharf	330	186	2020
Welbourne Centre & Monument Way	175	-	2018
Fountayne & Markfield Rd	97	345	2023
Herbert Rd and Constable Rd	100	142	2021
Total	**3548**	**2566**	

North Tottenham

2.29 Four development sites have been identified in North Tottenham including two large residential led developments; the regeneration of the Northumberland Park Estate and High Road West. In addition, the Tottenham Hotspurs stadium will be replaced by a larger stadium and a mix of residential, commercial, education, community, leisure and hotel uses. Details of the four sites are given below in Table 2.9:.

Table 2.9: Development in North Tottenham

Site	Housing Units	Jobs	Completion Year
High Road East	396	87	2026
Northumberland Park Estate Renewal	1,804	127	2026
High Road West	1,400	600	2026
Tottenham Hotspur Stadium	200	370	2020
Total	**3800**	**1184**	

Other Areas

2.30 Outside of the growth areas in Haringey an additional ten sites were identified. These are listed below in Table 2.10:. The list includes a number of developments around Seven Sisters including Gourley Triangle, Apex House and Wards Corner. All are residential led mixed use schemes including either office or retail development.

Table 2.10: Development in Haringey outside of growth areas

Site	Housing Units	Jobs	Completion Year
Gourley Triangle	214	172	2021
Apex House	100	55	2018
Wards Corner	163	176	2020
Land in front of Tottenham Leisure Centre	37	-	2018
Tottenham Police Station & Reynardson Court	30	42	2021
Bruce Grove Snooker Hall & Banqueting Suite	55	48	2018
341 - 379 Seven Sisters Road	-	35	2025
105 Brantwood Road	-	82	2016
104-106 Harvest House	-	858	2023
Leabank and Lemsford Close (SA55)	65	-	2020
Total	**664**	**1468**	

Unidentified Sites

2.31 In Haringey there are 1,269 jobs for which sites are not currently identified.

Waltham Forest

2.32 Most development in Waltham Forest is focused in the growth area Blackhorse Lane.

Blackhorse Lane

2.33 There are nine sites identified within Blackhorse Lane as detailed in Table 2.11:.

Table 2.11: Development in Blackhorse Lane

Site	Housing Units	Jobs	Completion Year
Blackhorse Road Station hub and waterfront	1,000	191	2018
Billet Works, Billet Road,	344	74	2015
152/154 Blackhorse Road,	40	21	2018
Webbs Industrial Estate	252	91	2018
Car Wash Site, Forest Road	50	51	2026
BHL4 South	200	87	2018
Sutherland Road	154	65	2016
213 to 215 Blackhorse Road		84	2026
49 to 53 Sutherland Road	235	104	2026
Total	**2275**	**768**	

Other Areas

2.34 Three additional sites were identified in Waltham Forest outside of Blackhorse Lane. They are detailed below in Table 2.12:.

Table 2.12: Development in Waltham Forest outside of growth areas

Site	Housing Units	Jobs	Completion Year
Chingford Mill Pumping Station	14	-	2016
Shadbolt Avenue	-	113	2026
Lowe Hall Lane depot	200	89	2026
Total	**214**	**202**	

Unidentified Sites

2.35 In Waltham Forest there are 1,702 housing units and 872 jobs for which sites are not currently identified.

Land Values

2.36 In order to determine land values in the base case, we have analysed the most recent CIL study for each of the four boroughs and then independently selected sites to consider viability in detail as case studies for the whole area.

2.37 We summarise below relevant commentary on land values extracted from each Borough's most recent CIL study , which set the context for viability across the Upper Lee Valley study area:

London Borough of Haringey[1]

2.38 "Generally, across the majority of the 'policy compliant' notional schemes identified by Haringey Council, development does not generate a positive residual land value. As such they would be considered to be unviable when compared to the indicative benchmark land values required to incentivise landowners to bring forward development."

2.39 "Our site specific assessment suggests that a reduction of the affordable housing requirement to the 40% range could result in a number of sites becoming more viable within the locations that have stronger existing value profiles. Our assessment would suggest that developments within the Finsbury Park, Highgate and Wood Green areas are likely to become more viable if requirements were in the 40% range. It is worth noting that even at this rate some of the notional developments remain below the identified benchmark land value."

2.40 "Whilst these areas become more viable, those in the north east and south east remain unviable even with a reduced contribution. A combination of modest value increases and tactical approaches to affordable housing requirements and mix of use may advance these sites towards viability."

2.41 "The Haringey CIL Viability Study adopted the following four benchmark values for the residential analysis (see Table 2.13).

[1] *Site Allocation Viability Assessment,* GVA Grimley (Feb 2015)

Table 2.13: Land Value benchmarking - Haringey

Threshold	Land Value (£ per ha)
Higher residential land benchmark	£4.04 million
Medium residential land benchmark	£2.75 million
Lower residential land benchmark	£2.05 million
Employment land benchmark	£0.75 million

2.42 "We emphasise, however that these benchmark land values are indicative and only to be used as a guide for testing purposes. No account is taken of individual site or landowner requirements or objectives."

London Borough of Hackney[2]

2.43 "The four benchmark land values (below) used in this study have been selected to provide a broad indication of likely land values across the Borough, but it is important to recognise that other site uses and values may exist on the ground. There can never be a single threshold land value at which we can say definitively that land will come forward for development, especially in urban areas.

2.44 **Benchmark Land Value 1**: This benchmark assumes higher value secondary office space on a hectare of land, with 40% site coverage and 4 storeys. The rent assumed is based on third and fourth quartile lettings of second hand offices in the Borough. We have assumed a £50 per sq. ft. allowance for refurbishment and a letting void of two and a half years. The capital value of the building would be £13.15 million, to which we have added a 20% premium, resulting in a benchmark of £15.77 million.

2.45 **Benchmark Land Value 2**: This benchmark assumes lower value secondary office space on a hectare of land, with 40% site coverage and 4 storeys. The rent assumed is based on fourth quartile lettings of second hand offices in the Borough. We have assumed a £50 per sq. ft. allowance for refurbishment and a letting void of two and a half years. The capital value of the building would be £7.54 million, to which we have added a 20% premium, resulting in a benchmark of £9.04 million.

2.46 **Benchmark Land Value 3**: This benchmark assumes lower value secondary industrial space on a hectare of land, with 60% site coverage and 1.5 storeys. The rent assumed is based on fourth quartile lettings of secondary industrial floorspace in the Borough. We have assumed a letting void of two and a half years. The capital value of the building would be £5.53 million, to which we have added a 20% premium, resulting in a benchmark of £6.63 million.

2.47 **Benchmark Land Value 4**: This benchmark assumes a community building, which could include buildings owned by the Council and other public sector bodies, and community/charity groups. We have assumed site coverage of 50% across a hectare of land, with a single storey building. The rent assumed is based on our estimate of £4.50 per sq. ft. We have assumed a letting void of one year. The capital value of the building would be £2.8 million, to which we have added a 20% premium, resulting in a benchmark of £3.36 million."

[2] *Community Infrastructure Levy: Viability Study,* BNP Paribas (Dec 2013)

London Borough of Enfield[3]

2.48 "To provide suitable context for a high level review of this nature, DSP's established practice is to consider the wide range of appraisal RLV results relative to a variety of potential land value comparisons. This allows us to consider a wide range of potential scenarios and outcomes and the viability trends across those. This approach reflects the varied land supply picture that the Council expects to see in coming years, although with former commercial land playing a key role in the overall supply. In the context of Enfield Borough we have not considered greenfield land value comparisons and that is reflected in the findings. Were those to be considered, lower land price comparisons usually come into play."

2.49 "In order to inform these land value comparisons or benchmarks we sought to find examples of recent land transactions locally. No firm evidence of such was available from the various soundings we took and sources we explored. This is not an unusual finding in our wide experience of carrying out viability studies following / during a period of market instability or uncertainty, when transaction levels are low. In any event, there are a range of understandable sensitivities around the accessing and use of actual figures, even where those are available. Instead, we rely on other well respected and well uses sources of information as far as possible. As in other cases, we reviewed data sourced from the VOA, EGi and from a range of property and land marketing web-sites. This was combined with information where available from previous research / studies / advice provided by the Council and the stakeholders' soundings that we sought."

2.50 "In summary, the main steps (comparison levels) considered across the range of scenarios are £1m/ha, £2.2m/ha and £4.15m/ha), however in practice the sums required to secure site release will vary across and potentially outside this overall range."

2.51 "We believe that care needs to be taken not to over-state or present overly fixed ideas on land value comparison levels, particularly in this type of market. Adjusted land price expectations will be necessary – as influenced by the policy climate as well as the market and wider economic backdrop. In the post-market peak conditions greater flexibility needs to be considered in terms of land values as is generally seen through the numbers and level of bids that tend to be received through any land marketing exercises. Finance availability and terms for property and development remains a constraint which is part of this picture."

London Borough of Waltham Forest[4]

2.52 "Benchmark land values, based on the current use value or alternative use value of sites are key considerations in the assessment of development economics for testing planning policies and tariffs. Clearly, there is a point where the Residual Land Value (what the landowner receives from a developer) that results from a scheme may be less than the land's current use value. Current use values can vary significantly, depending on the demand for the type of building relative to other areas. Similarly, subject to planning permission, the potential development site may be capable of being used in different ways – as a hotel rather than residential for example; or at least a different mix of uses. Current use value or alternative use

[3] *Viability Assessment – Community Infrastructure Levy,* Dixon Searle LLP (Apr 2013)

[4] *Community Infrastructure Levy: Viability Study Update,* BNP Paribas (Sept 2013)

value are effectively the 'bottom line' in a financial sense and therefore a key factor in this study."

2.53 "The benchmark land values used in this study have been selected to provide a broad indication of likely land values across the Borough, but it is important to recognise that other site uses and values may exist on the ground. There can never be a single threshold land value at which we can say definitively that land will come forward for development, especially in urban areas."

2.54 "A majority of land identified for development in the Borough is in low value industrial or warehousing use. Our calculations indicate that the capital value of a typical industrial or warehousing site would be in the region of £3.1 million, including a 20% premium to incentivise release of the site for development. This figure is also confirmed by valuations of specific sites that have been the subject of planning applications."

Summary of Benchmark Land Values

2.55 Table 2.14 below summarises the benchmark land values adopted for each Borough:

Table 2.14: Land Value Benchmarking for all Boroughs

Borough	Min. BLV	Max. BLV
Haringey	£0.75m / ha	£4.00m / ha
Hackney	£3.36m / ha	£15.77m / ha
Enfield	£1.00m / ha	£4.15m / ha
Waltham Forest	£3.00m / ha	£3.00m / ha

2.56 Clearly, there is a significant variation in benchmark land values adopted across the study area, due largely to variance in sales values and the value of existing built stock.

Viability Assessments – base scenario

2.57 In this study, we have selected 10 sites to assess viability at a high level. The sites have been selected to provide a representative sample of the whole Upper Lee Valley area. At least one site was chosen from each growth area, the sites were due to have significant development in terms of floor area and provide a mix of uses, either on site or across the different sites to ensure that a wide range of uses were included.

2.58 Our analysis is based on 'delivered affordable housing levels' based on LDD data and borough-specific viability assumptions in line with the Boroughs' recent CIL studies (referenced above).

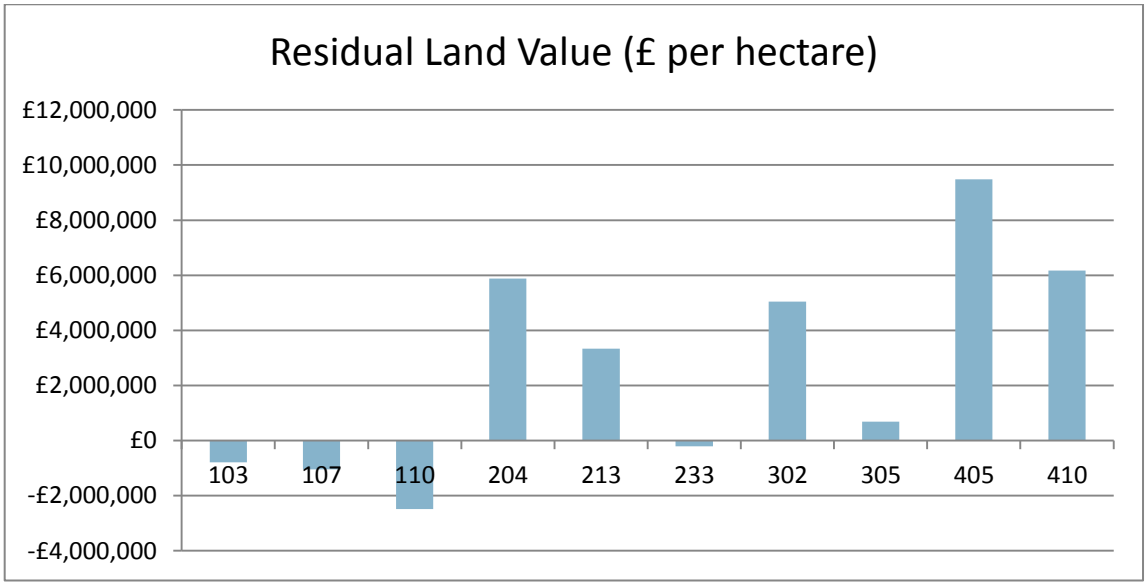
2.59 The sites selected are listed in Table 2.15.

Table 2.15: Sites selected for viability assessments

Ref	Site
103	Station Square West
107	High Road West
110	Wards Corner
204	South Street
213	Meridian East
233	Innova Park
302	Blackhorse Road
305	Billet Works
405	41-45 Stamford Hill
410	Woodberry Down

2.60 These assessments produced varied results across the study area. A chart summarising the residual land value based on scheme data provided in Figure 2.1.

Figure 2.1: Residual Land Value (LDD data & borough specific viability assumptions) - base scenario



2.61 Figure 2.1 suggests viability is challenging across the study area, even at the levels of affordable housing that LDD data shows is actually being delivered. Four sites fall below the threshold land value identified in CIL studies. This is potentially because Borough CIL studies set assumptions which are too pessimistic (high costs or low sales values, for example), or because some sites receive some form of subsidy.

2.62 We have engaged with the landowners during the study to refine our viability assumptions and project development parameters. In general, a good level of feedback was received and this was incorporated into our modelling.

2.63 We highlight, in common with the CIL studies, that area-wide viability studies are appropriate for setting policy and plan-making; however the viability of each site individually will be specifically tested during the application stage and will be subject to market conditions at that time.

3 Social Infrastructure – Base Scenario

Overview

3.1 The study considered:

- Education: pre-school, primary, secondary and tertiary education
- Healthcare: primary care, secondary care, and emergency services
- Leisure: built community facilities and open informal facilities
- Employment/training facilities

3.2 Across all social and community infrastructure types, the planned infrastructure in the baseline model is sufficient to meet the baseline scenario growth forecasts of 26,141 new homes and 16,274 new jobs. This assumption is founded by our approach to assessing planned infrastructure – i.e. the principal evidence base has been the Boroughs' Investment Delivery Plans – and/or associated Area Action Plans/masterplans – which in most cases post-date the OAPF or were prepared around the same time. Where the boroughs' documents predated the OAPF, during our consultations with borough officers we identified any additional planned infrastructure. As part of the baseline verification process, all four boroughs confirmed the approach and assumptions.

3.3 The document review confirmed our working hypotheses that the most significant social and community infrastructure (in terms of demand for additional capacity and the level of funding required to meet this demand) were ***education*** (primary and secondary); ***healthcare*** (primary care, with secondary care being provided outside ULV); ***leisure***; ***community centres***; and ***utilities*** (considered in the next section). These infrastructure types have formed the focus of our review and assessment.

3.4 Mirroring the approach adopted for the transport infrastructure assessment, the initial identification of projects was from adopted and emerging local plans and other documents. This review was followed by meetings with each of the boroughs to check, amend and add detail regarding the projects, timescales for delivery and planned investment, and where relevant (i.e. education) their approach to forecasting and meeting demand.

3.5 Where gaps in information (and in particular timing and cost details) remained following this process, the assessment used local standards and national benchmarks to estimate costs, as set out below.

Education

Estimating cost requirements for education: Pre-school and Nursery

3.6 There are no local level benchmarks for the cost of pre-schools and nurseries across three of the four boroughs. As a result the assessment has used an estimate provided by the LB Hackney of £18,095/pupil place[5].

3.7 Our document review revealed very little (around £1.5m) planned investment in pre-school provision throughout the study area. Increased demand will in part be accommodated by increased usage of existing provision, combined with investment in new and extended primary schools. However, this may need to be revisited if more parents take-up the 570 hours of free childcare for 3 – 4 year olds.

Estimating costs and funding gaps for education: Primary and Secondary

3.8 The assessment has drawn on a range of sources:

- New school and existing school expansion cost calculations (measured as a £/per pupil place) provided by LB Enfield[6] and LB Hackney[7] – these benchmark costs were used to fill cost information gaps in these respective boroughs.
- New school and existing school expansion cost calculations (again measured as a £/per pupil place) provided by LB Haringey[8]. Although the figures will be most appropriate within Haringey, the assessment has used them as the basis for our estimates in LB Waltham Forest, assuming (with guidance from planning officers at LB Haringey), that costs will be broadly similar across these boroughs.

3.9 These average capital costs per pupil place are set out in Table 3.1.

Table 3.1: Estimated land development and facility construction cost/pupil for new schools and school expansions

School and development type	Capital costs per pupil place (2010 prices)
Primary (new)	£27,381
Primary (expanded)	£13,800
Secondary (new)	£26,667 – £33,333
Secondary (expanded)	£20,700

Source: estimated through the 2010 Haringey Community Infrastructure Study

3.10 Guided by information provided by the individual London boroughs, the assessment estimated the forms of entry (FE) that each development will require, assuming that each new form of entry will have 30 pupils (based on industry standards) across seven years (primary education) and five years (secondary education).

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[5] The LB Hackney, Draft Revised Planning Contributions, Supplementary Planning Document (SPD), Jan 2014 provides benchmark costs for the expansion of primary school provision. During discussions with the borough's education department it was agreed that this was an appropriate cost benchmark for pre-school provision.

[6] (Internal) Note on school expansion build costs – final draft, February 2015

[7] LB Hackney, Draft Revised Planning Contributions, Supplementary Planning Document (SPD), Jan 2014

[8] 2010 LB Haringey Community Infrastructure Study, Appendix 1

Estimating likely funding for education

3.11 All proposed/planned expansion and new schools will seek funding from the Department for Education (DfE) Basic Needs Grant. However, the Boroughs' education officers consider that the actual costs in London exceed the DfE funding allowances by a factor of around 100% (i.e. the DfE grant often only covers around 50% of costs). This 'gap' is explained by three factors:

- the DfE's policy directive to drive efficiencies and delivery additional pupil places at the least possible cost;
- the higher/more stringent standards set by the Mayor of London regarding new educational buildings; and
- through the Education Funding Agency's framework, DfE is able to secure favourable construction build rates which are not available to local authorities wanting to expand existing schools.

3.12 A key baseline assumption is that new schools and expansions will receive DfE Basic Need Grant funding. The DfE provide average funding per pupil for inner and outer London primary and secondary schools[9] as shown in Table 3.2. Our analysis assumes that all the schools will be in outer London with the exception of schools situated in LB Hackney (inner London). The cost assessment assumes that costs per pupil for school expansion are the same as new builds. For those schemes with no known funding in place from DfE, this provides an estimate of likely funding available from this source.

Table 3.2: Estimated land development and facility construction costs per pupil - DfE funding allocations

School type	Cost/pupil – inner London (2014)	Cost/pupil – outer London (2014)
Primary	£10,500	£9,870
Secondary	£14,570	£13,630

Source: Targeting Basic Need Programme, Information on Conditions of Funding, DfE, February 2014
The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014

3.13 Table 3.3 and Table 3.4 show the funding required for currently planned primary and secondary school provision. Funding requirements for primary schools are highest in LB Haringey with new and extended provision needed in Tottenham Hale and North Tottenham/Northumberland Park. LB Hackney, also has a high level of planned investment, with new and expanded primary school provision planned across Woodbury Down, Stamford Hill, Clapton and Stoke Newington.

3.14 Planned secondary school provision is greatest in LB Haringey and Enfield. In LB Enfield new and expanded schools are planned in Meridian Water, Ponders End and on the Queensway Road. £90 million funding is required, of which over £50m is already secured, with two new schools (at Ponders End and on the Queensway Road) due to open in the next 2-3 years. In LB Haringey, planned provision mirrors that for primary schools, with focus in and around Tottenham Hale and North Tottenham/Northumberland Park.

[9] Targeting Basic Need Programme, Information on Conditions of Funding, DfE, February 2014

Table 3.3: Planned provision: primary school required funding (£ millions)

Borough	Funds required – non indexed	Secured funding - non indexed	Funding Gap
Haringey	£74.1	£27.1	£47.0
Enfield	£22.5	£10.9	£11.6
Waltham Forest	£14.4	£13.6	£0.8
Hackney	£41.8	£30.6	£11.2
TOTAL	£152.8	£82.2	£70.6

The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014

Table 3.4: Planned provision: secondary school required funding (£ millions)

Borough	Funds required () – non indexed	Secured funding – non indexed	Funding Gap
Haringey	£78.2	£40.9	£37.3
Enfield	£89.5	£72.6	£16.9
Waltham Forest	£26.2	£24.1	£2.1
Hackney	£5.9	£2.4	£3.5
TOTAL	£199.8	£139.9	£59.9

The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014

Current and planned further education (FE) provision in the ULV

3.15 There are four main FE colleges in the ULV, serving ULV residents as well as the wider London area (see Table 3.5). Significant investment in modernisation and expansion has already been committed by the College of Haringey, Enfield and North East London and Waltham Forest College.

3.16 Since the Further and Higher Education Act in 1992, FE colleges and 6th form colleges have had greater autonomy over shaping provision[10]. Colleges are expected to collect their own information on the local labour market and employer demands and respond to these through specialist courses. At the same time the allocation of capital funds has become more localised. In 2014, £120 million was allocated to London Enterprise Panel (LEP) for capital investment in the FE estate as part of London's Growth Deal. In total £55 million will be available in 2015/16 and an indicative allocation of £65million in 2016/17. In June 2015 the FE Colleges were in on-going negotiation with the LEP relating to these capital allocations, so these funds have not been included in the baseline assessment, therefore a gap is present.

[10] Choice and competition in further education (2013) Institute of Government

Table 3.5: Summary of FE and 6th form college provision in ULV

College	Profile
Hackney Community College (LB Hackney)	Number of learners (starts 2013/14): 14,360 Specialism(s): Business, construction, creative, Digital, Health and Social Care, Science and Engineering Recent capital investment: unknown Future investment: unknown
Capel Manor College (LB Enfield)	Number of learners (starts 2013/14): 6,160 Specialism(s): land-use, environmental based studies Recent capital investment: unknown Future investment: £1.3m investment committed between 2012 – 2016, all funding in place
College of Haringey, Enfield and North East London (LB Haringey)	Number of learners (starts 2013/14): 25,820 Specialism(s): Health, Science and Maths, Construction, Retail and Basic skills. Recent capital investment: £3million at Enfield Centre to complete a new Sports Centre and new Learning Resource Centre in addition to the £13million expenditure in recent years Future investment: unknown
Waltham Forest College (Waltham Forest)	Number of learners (starts 2013/14): 13,230 Specialism(s): varied offer Recent capital investment: Invested over £10 million in the first three phases of the 'Heart of the College' initiative. A further £10 million investment is being used for phase 4. Future investment: expansion of the Level 3, 16-19 offer in areas of high demand or gaps in local provision with a focus on the use of technology. College updating their property strategy (as at June 2015)

Source: College strategic plans

Healthcare

Healthcare: primary and secondary

3.17 The estimates for healthcare infrastructure requirements drew on a combination of local and national guidance and benchmarks.

General Practitioner (GP) services

3.18 The *2010 Haringey Community Infrastructure Study* indicates a typical floorspace per GP of 237 sq. m and a typical cost of £2,300 per sq. m for primary healthcare facilities, equating to a cost of £545,100 per GP.

3.19 In those instances where the planned number of GPs per practice was not known an average of 4.4 GPs per practice was used, based on research produced by The King's Fund[11]. This has been used to estimate total numbers of GPs, floorspace required and likely development costs.

[11] The King's Fund (November 2012), *Data Briefing: Improving GP services in England – exploring the association between quality of care and the experience of patients.*

Primary Health Clinics / Walk-in Centres

3.20 In June 2013, Haringey Council produced a draft health infrastructure schedule using the HUDU[12] model. This indicated that primary and community healthcare services covering 1,530 sq. m would cost £3.92 million. In addition, 2013 Department for Health Guidance[13] indicates a typical floorspace of 1,928 sq. m for a primary care facility. The study assumes a cost in the order of £4.9 million for a new primary health clinic.

3.21 NHS England, in partnership with LB Haringey, commissioned a Strategic Plan for the borough to assess current and future health infrastructure requirements in 2015; the findings were not available prior to completing the Upper Lee Valley DIFS study. LB Enfield's study of infrastructure needs for Meridian Water will not be available until late summer 2015.

Dentists

3.22 A Department for Health 2010 paper on healthcare premises costs[14] states that an oral surgery facility with four dental chairs costs £1,500,800. The study has estimated the likely number of chairs needed per practice and adjusted the costs accordingly.

3.23 Overall, planned provision for GPs, community health centres and dentists is shown in Table 3.6. All four boroughs have a notable requirement for healthcare expansion with significant investment in LB Haringey (Tottenham Hale, Northumberland Park/ North Tottenham); LB Hackney (Stamford Hill and Lower Clapton); LB Enfield (Meridian Water); and LB Waltham Forest (Blackhorse Lane).

Table 3.6: Planned provision: GPs, community health centres and dentists – required funding (£ millions)

Borough	Funds required – non indexed	Secured funding - non indexed	Funding Gap
Haringey	24.4	All unsecured	24.4
Enfield	9.0	All unsecured	9.0
Waltham Forest	4.2	All unsecured	4.2
Hackney	10.7	All unsecured	10.7
TOTAL	48.4	All unsecured	48.4

The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014

Secondary healthcare

3.24 There are no hospitals currently within the ULV. NHS England are moving towards a model of community-based provision of healthcare, focused in expanded GP and community clinics. Based on their advice, no hospital schemes are included in the baseline analysis, although this is revisited in the higher growth scenarios. However, recognising the importance of secondary healthcare provision for current and future residents in ULV, the study has reviewed the

[12] LB Haringey (June 2013), Draft health infrastructure schedule update June 2013 (internal note). Available at: **http://www.haringey.gov.uk/sites/haringeygovuk/files/healthy_urban_development_unit.pdf**

[13] Department for Health (2013), *Health building Note 11-01: Facilities for primary and community care services*

[14] Department for Health (2010), *Healthcare Premises Cost Guides (HPCGs): Second Edition*

healthcare delivery policies and associated development plans for all of the main hospitals serving ULV. These hospitals are: Homerton, Whipps Cross, St Ann's, North Middlesex, Thorpe Coombe, and Chase Farm (see Table 3.7).

Table 3.7: Summary of future hospital investment in the ULV

Hospital	Profile
St Ann's Hospital, LB Haringey	St Ann's Hospital redevelopment proposals will re-provide facilities funded from the residential development of open land within the site. The refurbished / redeveloped facilities will be sufficient to meet future growth needs due to the changing pattern of delivery and flexibility of acute care provision within the wider area.
Whipps Cross University Hospital, LB Waltham Forest	The Whipps Cross site was designated as a 'Major Opportunity Site' in 2006 and as a result has had several planning applications. However, to date there are no firm development proposals
Thorpe Coombe Hospital, LB Waltham Forest	NELFT (North East London Foundation Trust) is preparing redevelopment proposals for Thorpe Coombe Hospital on Forest Road, which includes a high quality residential development and a new Health Centre.
North Middlesex University Hospital, LB Enfield	A £123m new hospital building opened in June 2010 providing; a bigger A&E department with an integrated Walk- in Centre, a dedicated 24/7 A&E for children, 8 new operating theatres for both planned day surgery and emergency surgery, 4 ultrasound units and a new mammography unit, a spacious Outpatients Department, an Intensive Care Unit, 5 new in-patient wards. In 2011, plans were in place to invest a total of £65m over the next 2 years; £22m for 120 additional acute beds to meet increased activity, £10m for enabling works and £33m for a women's and children's unit to accommodate 1,500 births/annum. All development has been completed after £200 million of investment into buildings and services over the last 5 years
Chase Farm Hospital, LB Enfield	The maternity and accident & emergency (A&E) units at Chase Farm Hospital closed in late 2013. The Royal Free London NHS Foundation Trust received approval in Dec 2014 for redevelopment to provide up to 32,000sq m of replacement hospital facilities, a 3-form entry primary school (including temporary facilities pending completion) and up to 500 residential units. The main works are planned to start in Winter 2015 and the new hospital is set to open in Spring 2018.
Homerton University Hospital, LB Hackney	Part development plans are outlined in the Strategy Plan (2013-2014) for Homerton Hospital although there is little work done on the physical development of the hospital site.

Leisure

Leisure: built community facilities and open informal facilities

3.25 The cost assumptions and benchmarks for leisure facilities (formal and informal) are based on a mix of local level and London level guidance.

Leisure Centres

3.26 The *2010 Haringey Community Infrastructure Study* suggests an average cost of £2.75 million for a four court sports hall, based on data from the Sport England Facilities Calculator. The ULV study has assumed that any new community sports / leisure centre will also be a four court sports hall.

Open space and sports facilities

The **London Infrastructure Plan 2050** encourages that the planning and managing parks, green spaces, street trees, green roofs, etc. is not simply from the perspective of physical form and aesthetics, green infrastructure but is concerned more with maximising the potential functions they can perform, the services they provide and the outcomes they can deliver.

3.27 Many of the projected costs associated with the implementation of green infrastructure in the ULV are captured (albeit not identified specifically) in the reports sections on:

- Open Space and Sports Facilities (paras 3.27 and 3.29)
- Walking and Cycling Improvements (para 4.20 onwards)
- Public Realm (para 4.42 onwards)
- Flood Defences (paras 5.1)

3.28 Green infrastructure is identified as:

> "The network of green spaces - and features such as street trees and green roofs - that is planned, designed and managed to deliver a range of benefits, including: recreation and amenity, healthy living, mitigating flooding, improving air quality, cooling the urban environment, encouraging walking and cycling, and enhancing biodiversity and ecological resilience."

3.29 There is little recent guidance available on typical costs for developing open space and sports facilities. The 2010 *Haringey Community Infrastructure Study* suggests a development cost of £100,000 per hectare of open space. The most recent benchmarks for the average size of open space developments comes from the Mayor of London and CABE's best practice guide of September 2008.[15] That gives a guideline size for 'local parks and open spaces' as being two hectares, implying a total cost of £200,000. Despite concerns that these published cost estimates appear quite low, these have been used the cost analysis, and assume that all new open facilities will also be 'local parks and open spaces.'

Library expansion

3.30 The document review identified several proposed library expansions but no published cost estimates are available. In these instances, the costs associated with previous library expansions in the opportunity area have been used as a proxy. The *2010 Haringey Community Infrastructure Study* cited that the extension and redevelopment of Tottenham Coombes Croft Library cost £794,000. The assessment has assumed that library extensions in neighbouring boroughs will be similar in terms of scale, nature, and cost.

3.31 Table 3.8 shows that over £73 million is required to fund planned provision of leisure centres, libraries, open space and sports facilities over the next ten/eleven years (2015 – 2026). LB Waltham Forest makes up over half (53%) of this provision which is due primarily to planned investment in Walthamstow Wetlands and the new Leisure Centre (formerly Waltham Forest Track and Pool). This scale of required financial investment is followed by LB Enfield, which has 20 planned investments covering leisure centres, libraries, open space and sports facilities.

[15] Mayor of London and CABE (2008), *Open Space Strategies: Best Practice Guidance – A Joint Consultation Draft by the Mayor of London and CABE Space*, p. 20

Table 3.8: Planned provision: Leisure centres, libraries, open space and sports facilities – required funding (£ millions)

Borough	Funds required – non indexed	Secured funding – non indexed	Funding Gap
Haringey	5.9	All unsecured	5.9
Enfield	22.5	0.05	22.45
Waltham Forest	38.5	20.9	17.6
Hackney	6.6	3.5	3.1
TOTAL	73.2	24.4	48.8

The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014.

3.32 A full list of social infrastructure schemes for the Base Scenario is included in Appendix B.

4 Transport Infrastructure – Base Scenario

Overview

4.1 The following types of transport infrastructure were considered:

- Cycling
- Walking
- Bridges
- Highway improvements
- Rail and station improvements
- Bus improvements
- Public realm improvements
- Smarter travel measures.

4.2 The major transport schemes within each of the categories are set out in more detail below. Any schemes that are complete have not been included in the assessment of the funding gap. Those schemes that are fully funded are included in the model, but with a net overall cost of zero as the funding income equals their costs.

4.3 The full list of transport schemes for the Base Scenario are provided in Appendix B.

Rail and Stations Improvements

4.4 There are two parallel rail lines that run through the Upper Lee Valley; The West Anglia Main Line (WAML) and the Southbury Loop. These link the area to Liverpool Street in central London, Stansted Airport and Cambridge. However, services to many stations on these lines are slow and infrequent. The main line is currently twin-tracked which restricts the number of local services that can operate without adversely affecting the faster strategic services.

STAR scheme

4.5 Improvements to the service frequency on the WAML are planned through the STAR (Stratford, Tottenham, Angel Road) scheme. This will provide a third track from Stratford to Angel Road, improving local services to 4 trains per hour all day.

4.6 The scheme is anticipated to cost a total of £124.1m (including the closure of Northumberland Park Level Crossing). The section of the STAR scheme from Tottenham Hale to Angel Road station, the part relevant to the ULV, is costed at £52.1m. This is majority funded by the London Enterprise Panel Growing Places Fund with other funding contributions from Department for Transport (DfT), Network Rail, London Borough of Haringey, London Borough of Enfield and TfL. The DfT are funding the STAR scheme section of works from Stratford to

Tottenham Hale as part of the Control Period 5 High Level Output Specification (CP5 HLOS). The cost of this is netted off in the model (i.e. funding available = costs).

4.7 More dramatic improvements to rail services in the Upper Lee Valley could be delivered through four-tracking the WAML and this is being addressed through the West Anglia Task Force (not currently funded). The impact of this scheme is considered in one of the higher growth sensitivity tests. Yet more improvements would be achieved through the introduction of Crossrail 2, which is considered as a sensitivity test.

Station Improvements

4.8 As part of the development plans at Meridian Water, the relocation of Angel Road Station south towards the Glover Drive junction with the A1055 is proposed. This would provide a third platform to enable the STAR scheme, a bus interchange outside the station, and a step free station. The cost of the scheme (excluding the third platform and lifts to platforms which are included in the cost of the STAR scheme) is approximately £10m. The scheme is fully funded through contributions from London Borough of Enfield, the Local Enterprise Partnership and Meridian Water Housing Zone.

4.9 Provision of step-free access or improvements to disabled access are proposed at a number of stations across the study area as set out in Table 4.1:.

Table 4.1: Accessibility improvements at stations

Station	Proposed Scheme	Cost	Secured Funding	Funding Gap
Brimsdown	Step-free access	£5m	-	£5m
Enfield Lock	Step-free access	£5m	-	£5m
Clapton	Access improvements	£1m	-	£1m
Stoke Newington	Access improvements	£1m	-	£1m
Blackhorse Road	Step-free access to over ground services	£1m	-	£1m
Bruce Grove	Step-free access plus improvements to the station forecourt	£6m	-	£6m
White Hart Lane	Step-free access plus a new ticket hall & gate line	£14m	£11m	£3m
Total		**£33m**	**£11m**	**£22m**

4.10 The station at Tottenham Hale is currently being redeveloped to include town centre land uses at the ground floor and provide a refurbished station, including a third platform to enable STAR. The scheme is under construction and therefore funding for the full cost of £5m has been secured. Improvements to South Tottenham Station to provide an improved entrance and gate line have already been completed by TfL.

4.11 Lea Bridge Station, on the WAML, closed in 1985. There are now proposals to re-open it as part of the redevelopment of Stratford and the Lower Lee Valley area. Funding is in place to cover the £11.6m cost of the scheme with £5.5m obtained through s106 payments, £5m provided by the London Borough of Waltham Forest and £1.1m provided by the DfT.

Hall farm curve

4.12 A restored rail connection is proposed between the West Anglia Main Line (through the Upper Lee Valley) and the East Anglia Main Line which connects Liverpool Street to Chelmsford and Colchester and Ipswich to the north east of London. Whilst this scheme falls within the study area it has little or no impact (depending on the re-instating of Lea Bridge Station) on rail connections in the area. Hence this has not been included in the assessment of funding required.

Overground Services

4.13 The electrification of the Barking to Gospel Oak Overground service was confirmed by central Government in June 2013. The scheme will replace all of the two-carriage trains with four carriage electric trains and lengthen platforms to accommodate them. The improvements will increase capacity and reduce journey times on the line.

4.14 There are only two stations on the Barking-Gospel Oak line within the study area out of a total of 12; South Tottenham and Blackhorse Road. The total anticipated cost for the scheme is £115m and it is assumed to be fully funded by TfL and Network Rail (therefore costs and funding nets to zero in the model).

Underground

4.15 Two London Underground lines run through the Upper Lee Valley; the Piccadilly Line (stopping at Manor House) and the Victoria Line (Stopping at Seven Sisters, Tottenham Hale and Blackhorse Road).

4.16 Improvements are planned to the Piccadilly Line to increase capacity by 60% by 2025. This will be achieved by increasing train frequency to 33 trains per hour and providing new rolling stock with 10% additional capacity. TfL are expected to fund the total cost of the scheme (therefore netted in the model).

Bus Improvements

4.17 The poor rail connections in the Upper Lee Valley necessitate a reliance on bus services for many of the resident and working populations. As the population grows, additional bus services will be required, perhaps altering routes to better serve the growth areas. In addition increased congestion will increase journey times, requiring a higher number of buses to maintain the existing service provision.

4.18 Details of changes to routes and areas of increased congestion are in the process of being identified by TfL. In the meantime, a total cost of £9 million per annum has been assumed to cover the cost of additional bus kilometres, and £20 million of additional infrastructure. This cost is intended to include the provision of additional bus stops and bus depots.

Walking and Cycling Improvements

4.19 A number of cycling schemes were identified through reviewing policy documents, Infrastructure Delivery Plans and successful Mini Holland bids, and discussions with the Boroughs identified a further level of detail.

4.20 All boroughs identified the need for general improvements to the cycle networks across their borough. To ensure a consistent approach across all Boroughs and to capture the cost of providing a comprehensive network, four main areas of investment were identified;

- Implementation of, or improvements to, strategic routes;
- Schemes to overcome severance;
- Network of local or 'quiet' routes; and
- Improved connections to and cycle parking provision at stations.

4.21 A total cost was identified for each investment area using the method set out in Table 4.2:.

Table 4.2: Cycle Infrastructure Methodology

Investment Area	Method
Implementation of or improvements to strategic routes	Identify list of schemes and allocate per borough based on location. Full list provided in this chapter.
Projects to overcome severance	Assumed a total cost of £5m and allocate per borough based on population growth 2015-2031.
Network of locals or 'quiet' routes	Identified length of network that would provide a mesh density of 400-500m (approx. 80km) and allocated km of network per borough. Assumed a cost of £450,000 per km.
Improved connections to and cycle parking provision at stations	Assumed a cost of £125,000 per station, 21 stations within ULV. Allocated per borough based on station location.

4.22 The cost per borough identified for each investment area is set out below in Table 4.3:.

Table 4.3: Costs of cycling schemes by type and borough (£millions)

Cycling Scheme	Enfield	Hackney	Haringey	Waltham Forest	Total
Strategic schemes	11.7	3.5	10.6	1.8	27.6
Overcoming severance	1.8	1	1	1.2	5
Local routes	15.8	6.3	7.2	6.8	36
Stations	1	0.63	0.75	0.25	2.6
Total	**30.4**	**11.4**	**19.1**	**10**	**71.3**

Numbers may contain rounding errors

Strategic Routes

Fully Funded Schemes

4.23 A number of cycling schemes within the ULV were identified but are already fully funded. These are listed below:

- Cycle Superhighway 1 - Route parallel to A10 in south of ULV area
- Quietway 2 – Clapton to Walthamstow Central
- A1010 Hertford Road / Fore Street – part of Enfield Mini Holland Scheme
- 'Quietway' route from Enfield Town to Meridian Water - part of Enfield Mini Holland Scheme
- A503 Forest Road - part of Waltham Forest Mini Holland Scheme
- A104 Lea Bridge Road - part of Waltham Forest Mini Holland Scheme
- A110 Nags Head Road / Lee Valley Road - part of Waltham Forest Mini Holland Scheme

Unfunded Schemes

4.24 The cycling schemes identified which require funding are listed below by borough. The indicative cost of each scheme is given in brackets. Except where scheme costs were provided by the borough these are based on a cost of £1m per km for segregated cycle ways (from Cycle Superhighway schemes) and £500k per km for all other routes (from Quietways schemes).

Enfield

- A1055 Mollison Avenue upgrade (£3.5m)
- A1055 Meridian Way junction/access improvements (£2.25m)
- A10 Great Cambridge Road junction/access improvements (£2.1m)
- B317 Nightingale Road / Montague Road improvements (£2.1m)
- Lee Valley Green Routes (£1.8m)

Hackney

- A503 Seven Sisters Road cyclist facilities (£1.5m)
- Hackney Downs to Warwick Reservoir (£1.5m)
- Lee Valley Green Routes (£0.45m)

Haringey

- A1010 Tottenham High Road link to CS1 (£2m)
- A503 Ferry Lane – linking with Waltham Forest Mini Holland Scheme (£1m)
- A1055 Watermead Way junction/access improvements (£1.25m)
- A10 Great Cambridge Road junction/access improvements (£0.45m)
- A109 Lordship Lane / Lansdowne Road strategic east-west connection (£2m)
- A10 Roundway / Bruce Grove cyclist facilities (£1m)
- LCN54 route – West Green to Bruce Grove to Tottenham Hale (£2.5m)
- Lee Valley Green Routes (£0.45m)
- Tottenham Green Link (£16m)

Waltham Forest

- Wetland cycle Routes (£1.3m)
- Blackhorse lane including public Realm (£1.5m)
- Lee Valley Green Routes (£1.8m)

Other specific Walking/Cycling Routes

4.25 A number of bridges and smaller walking/cycling links were identified in addition to those described above. These are mainly improvements to access into the Walthamstow Wetlands and in/around other open spaces in the study area. Given the small nature of these schemes, costs were usually undefined and details of the scheme were limited.

4.26 An indicative cost was calculated from Spon's 2015 Civil Engineering and Highway Works Price Book, with a May/June 2014 price base. Prices have been adjusted for the London area, and include allowance for Overheads and Profit, Traffic Management, Contingencies & Risk and Design and Management Costs. The following assumptions were made;

- Utility costs are assumed not to be significant for these schemes and are not included (such as footway lighting)

- Footpaths and combined footpath/cycle-ways are assumed to be 3m wide. This is consistent with the Medium/High Cycle Flow Shared Route as set out in Figure 4.17 of the TfL London Cycling Design Standards
- Similarly foot/cycle bridges are assumed to be 4m wide, allowing for the 0.5m edge effect on each side as in the footnote to Figure 4.17
- Pedestrian lighting columns are assumed every 30m along footpaths

Smarter Travel

4.27 The performance of a number of key highway junctions within the ULV is expected to deteriorate significantly with the planned growth. Hence investment in smarter travel measures, such as personalised travel planning, is essential to mitigate some of this development impact by encouraging sustainable travel modes such as walking and cycling.

4.28 Based on numerous smarter travel studies undertaken by SDG in the recent past, a cost of £12 per additional household within the growth area has been allocated to smarter travel measures.

Highway Improvements

Junction Improvements

4.29 Specific highway improvement schemes identified by the Boroughs have been included within the model as individual items. These are listed in Table 4.4:.

Table 4.4: Junction Improvement Schemes

Borough	Junction	Cost	Secured Funding	Funding Gap
Enfield	A10 / Caterhatch Lane	£0.15m	-	£0.15m
Hackney	Portland Avenue	£0.40m	-	£0.40m
	A503 Seven Sisters Road / B152 St Ann's Road	£8.00m	-	£8.00m
Waltham Forest	Blackhorse Road / Forest Road	£2.90m	£1.25m	1.65m
Total		**£11.45m**	**£1.25m**	**10.20m**

4.30 In addition, analysis undertaken during the preparation of the ULV Opportunity Area Planning Framework was used to identify junctions likely to have capacity issues. Transport modelling of the area was undertaken to assess the performance of the highway network. Whilst this analysis used a smaller level of growth than was included in the final OAPF it gives an indication of where the network is most likely to be insufficient. Initially, all junctions with a performance categorised as 'Red' or 'Amber' by this analysis (i.e. have a Degree of Saturation above 80%) were identified as requiring investment.

4.31 It is understood that, in line with current policy, the Boroughs would not support a programme of intense junction upgrades within the ULV in order to accommodate the growth in traffic. Instead, investment would be focused on improving alternatives to cars to reduce the number of highway trips. This is reflected in the model by the large proportion of costs identified to improve other modes.

4.32 However, given the existing industrial land uses within the ULV, the level of commercial development anticipated and the proximity to the M25, maintaining a functional highway network is important to the ULV.

4.33 The list of 'Red' and 'Amber' junctions has been refined for the base model to include only those that the Boroughs felt could be mitigated within the physical constraints of surrounding properties. These junctions have been grouped into a single item per borough in the model called 'Highway Junction Improvements' but are listed individually in Table 4.5:. This ensures that the model captures costs for highway improvements, but allows some flexibility on the location/s of these improvements which cannot be accurately determined from the level of detail currently available. A cost of £5m has been assumed per junction. Without more detailed modelling work of the junctions in questions it is not possible to refine this cost any further. Given the indicative nature of these schemes, no funding has been identified for them.

Table 4.5: Other Junction Improvements Required

Borough	Junction	RAG Status	Source of performance data
Haringey	A503 Seven Sisters Road / Amhurst Park	Red	Tottenham AAP Modelling Study 2015
	A504 West Green Road / Lawrence Road	Red	Tottenham AAP Modelling Study 2015
	Ferry Lane / Broad Lane / The Hale	Red	Tottenham AAP Modelling Study 2015
Enfield	A1055 / A110 Lea Valley Road	Red	ULV Modelling Study 2012
	A10 / Southbury Road	Red	ULV Modelling Study 2012
	A10 / Bullsmoor Lane	Red	ULV Modelling Study 2012
	A1055 / A406 (at Angel Road)	Red	ULV Modelling Study 2012
	A1010 / Nags Head Road	Red	ULV Modelling Study 2012
Hackney	A10 High Road / Amhurst Park / Clapton Common	Amber	ULV Modelling Study 2012

Other Highway Schemes

4.34 A number of other highway schemes were identified in the ULV which are discussed in turn below.

4.35 The spine road through the centre of the Meridian Water Masterplan site is essential to the redevelopment of the area. The cost of the scheme is anticipated to be around £22.2m including provision of a bridge over the existing highway. This scheme remains unfunded.

4.36 There are currently a number of level crossings in Enfield which cause regular disruption to the rail and road networks and their removal is supported by Network Rail and the local Councils. The crossing at Northumberland Park will be removed as part of the STAR scheme, but the replacement of another two with either a bridge or a tunnel is also considered. This would cost in the region of £15m per crossing, although these costs will need to be refined considerably as a scheme is developed.

4.37 In Enfield the provision of an additional junction from the A1055 onto the M25 is considered. This would relieve the congested junctions leading to the existing M25 junction 25. This is known as the Northern Gateway Access Route and has been refused permission in the past due to objections from other boroughs and local councils. The cost of the scheme is expected

to be circa £25m but due to the uncertainty around delivery, is unfunded but is included within the model.

4.38 To support the Woodberry Down development in Hackney, a scheme is planned to remodel Seven Sisters Road, creating a more permeable and attractive environment for the residents of the development. The road will be reduced from six traffic lanes to four, allowing more space for cyclists and pedestrians. £8m funding has been secured through a s106 agreement within the Woodberry Down planning permission.

4.39 The removal of the Stoke Newington gyratory is proposed in order to increase the sense of place, permeability and unification of Stoke Newington town centre. A similar scheme has recently been successfully implemented at Tottenham Hale. It is anticipated that this would cost around £10m but no funding has been secured.

4.40 Three roads were identified within Hackney for 'Corridor schemes': Cazenove Road, Green Lanes and Evering Road. The schemes are focused on improving the streetscape, de-cluttering the pavements and improving the public realm, with estimated costs of £500k-£1.5m and currently unfunded.

Public Realm

4.41 There are a number of areas identified across the ULV that would benefit from improved public realm. This is a benefit to the value of development and the attraction of the area to residents and businesses. The costs assigned to each scheme are very high level, since the scope for improvements to public realm can be relatively easily adjusted to fit a given budget.

4.42 The most significant public realm schemes in terms of costs are within Haringey and Waltham Forest. Within Haringey there are three areas; Tottenham High Road, West Green Road and Bruce Grove. These are anticipated to cost £1-2m each but none have funding. In Waltham Forest the focus of public realm improvements is around Blackhorse Lane including the station, Sutherland Road, Blackhorse Lane, Ferry Road and Forest Road. As in Haringey, these schemes have no secured funding and are anticipated to cost £1.6-3m.

4.43 In Enfield the regeneration and enhancement of the frontage listed buildings on Hertford Road, known as the Crescent Regeneration Scheme, is close to completion. This scheme secured funding from London Borough of Enfield, the Tottenham Hotspurs Stadium redevelopment and the Heritage Lottery Fund. This is therefore not included in the model.

4.44 Improvements to public realm around core ULV stations has been included, where the stations are not already receiving similar work through a different scheme. These include Tottenham Hale, Northumberland Park, Ponders End and Angel Road assuming a cost of £1m at each station.

4.45 In addition, a cost for pedestrian and urban improvements to link new developments with existing centre have been included for each borough. A total cost across the ULV of £30m was assumed and split across the Boroughs based on growth in population.

5 Utility Infrastructure – Base Scenario

Flood Risk Management

Environment Agency Schemes

5.1 The Environment Agency (EA) lead the development of, and deliver, flood defence schemes across the country. These are part or wholly funded by central Government. The proportion of funding from central government is determined by the number of properties protected by the proposed scheme. Partnership funding is now encouraged, so schemes which previously fell below 100% government funding and would not have been taken forward, have an opportunity to succeed using other funding sources. As the detail of a scheme is developed its likely impact is more certain, as is the funding from central government.

5.2 There are various stages in the process of finalising a flood scheme, each more detailed than the last, and each revising the proportion of central government funding. Where a flood scheme has been assessed, the likely proportion of funding is included in the funding gap assessment. For all other schemes it is assumed that 50% of the cost of each scheme would be funded by Central Government, leaving a50% funding gap.

5.3 A summary of the schemes under consideration by the Environment Agency are outlined below.

5.4 The Flood Relief Channel (FRC) and Dagenham Brook are significant assets in managing flood risk in the ULV. The number of homes at risk from flooding does not justify an expansion of these defences, but continued maintenance and improvements are necessary. A scheme is proposed to install raised flood defences at two or three locations along Dagenham Brook. This would cost approximately £4.1m of which 40% is anticipated to be funded by central Government (subject to business case approval and detailed design). The remaining funding expected to come from developers, the local authorities or Network Rail.

5.5 Two schemes are proposed alongside the A406 at Chingford and Edmonton. Both schemes are aimed at protecting the A406 rather than development areas. The EA is likely to commence initial investigations into these schemes in the next couple of years, but an indicative cost is £1m for each.

5.6 The underground culverts of Moselle Brook are in a poor condition, particularly beneath Northumberland Park Growth Area. The failure of the culverts to manage flooding presents a large risk to the area. The culverts are jointly owned by the London Borough of Haringey (where the culvert is underneath the Highway), the EA and by landowners above the culvert. Works to improve the condition are anticipated to cost around £4.5m and central Government may contribute up to 40% (subject to business case approval and detailed design).

Borough Schemes

5.7 The boroughs, in particular Enfield, have defined some more local flood defence schemes that are likely to be required during the study period.

5.8 The following schemes were identified in Enfield;

- *Decontamination of Turkey Brook At Albany Park (T267)* – scheme to prevent overflow of Turkey Brook Pipe Crossing (£100k)
- *Preparation of flood compensation area at Meridian Water (T268)* – enabling works for development of Masterplan area (£2.14m)
- *Montagu Road (T270)* – Increase conveyance to reduce flood risk in combination with downstream flood storage areas (£200k)
- *Bullsmoor Lane (T272)* - Increased drainage capacity and storage (£300k)
- *M25 Holmesdale Tunnel drainage (T273)* – reduce flood risk to M25 tunnel (£1m)

Critical Drainage Areas

5.9 Each borough identifies Critical Drainage Areas (CDAs) where the impact of surface water run-off are likely to be most significant. Measures to improve the capacity of the CDA's is set out in their Surface Water Management Plan. However, the identification of a CDA does not automatically require action to be taken. This is judged, based on the severity of the problem and the number of homes and businesses at risk. Where the boroughs felt that CDA schemes were required as a result of the additional development these have been included in the analysis. There are only two such locations:

- Haringey & South Tottenham CDA (T138)
- Hackney CDAs (T439)

5.10 It should be noted that LB Enfield have also identified work to mitigate surface water flood risk and applied to EA RFCC funding, although this has not been included within the model as the outcome of the application is currently unknown.

Flood Relief Channel

5.11 The Flood Relief Channel (FRC) accommodates flows from within the ULV and north of it. It will require ongoing repairs and replacements of assets over the next 10-50 years and a lack of investment would put much of the ULV at risk. The section within the ULV is likely to require an investment of around £28m (2010 prices) from 2035 onwards.

Waste

5.12 The North London Waste Authority (NLWA) submitted the North London Waste Plan (NLWP) for an independent examination in February 2012. The inspector found that the NLWA had not fulfilled the legal requirement of the Duty to Co-operate under S33A of the Planning and Compulsory Purchase Act 2004 in the preparation of the NLWP and so recommended non-approval of the plan in March 2013. As such, the NLWP is currently being re-drafted and details of the likely sites, schemes and costs are not yet known.

5.13 The exception is the redevelopment of Edmonton Eco-Park. A Development Consent Order application is expected later this year proposing to replace the existing Energy from Waste (EfW) facility with an Energy Recovery Facility (ERF). This is anticipated to be linked to the Lee Valley Heat Network providing heat to properties in Enfield and Haringey. The funding

required for this project has been secured by the NLWA through loans and developer contributions, and is expected to be recouped through the charging schedule.

Decentralised Energy Systems

5.14 Haringey, Enfield and Waltham Forest are all considering implementing decentralised energy systems. These would localise the production of energy, and could enable heat to be provided to properties via heat networks transporting water or steam.

5.15 Locations and indicative costs for decentralised energy systems have been provided by the boroughs, who are leading the development of the designs. These are summarised in Table 5.1:.

Table 5.1: Decentralised Energy systems in the ULV

Borough	Location	Indicative Cost
Enfield	Enfield	£21.4m
Haringey	Northumberland Park	£12.5m
Haringey	Tottenham Hale	£12.5m
Waltham Forest	Blackhorse Lane North	£3.8m
Waltham Forest	Blackhorse Lane South	£5.1m
Total		**£55.3m**

5.16 For all the decentralised energy schemes, work is still underway to investigate feasibility, develop the design and potentially produce business cases.

Electricity

5.17 National Grid own and operate the high voltage electricity transmission system serving the Upper Lee Valley, whilst UK Power Networks (UKPN) own and operate the three power networks which distribute lower voltage electricity throughout the area and the related power transformers; the grid connectors between the high and lower voltage systems are jointly owned / managed by National Power and UK Power Networks. There is currently sufficient capacity in the high voltage transmission system in the southern Upper Lee Valley to accommodate the anticipated growth, as this was upgraded to serve the Olympics and Olympic Legacy. There is currently some capacity in the network at the northern end and National Grid have already obtained the necessary consents for network and transformer upgrades to meet future growth. This scheme is currently on hold until the demand is likely to be triggered.

5.18 UK Power Networks undertake an annual review of capacity constraints and the necessary upgrades are built into their capital programme; the next review will be published in September 2015. They have indicated that local district heating and Combined Heat and Power Networks reduce the overall level of demand for power, but the design of the distribution network and its capacity has to meet full peak demand, assuming failure of the locally supplied heat and power systems.

5.19 UK Power Networks will model and assess the capacity of the distribution system to meet future growth following more detailed analysis of the likely location, timing and load of energy requirements arising from the specific development identified in growth scenarios.

5.20 The North London Waste Authority is the UK's second largest waste disposal authority handling approximately 2.5% of the total national municipal waste stream. The NLWA is

seeking to gain a Development Consent Order for a new state-of-the-art Energy Recovery Facility (ERF). This will replace the existing Energy from Waste (EfW) facility at the Edmonton Eco-Park, built in 1970 and which has a projected remaining operational life to circa 2025. The new facility would generate in excess of 50 megawatts of energy to support the future development within the north and north east of London, as proposed within the Lee Valley Heat Network, the Upper Lee Valley OAPF and current discussions between Enfield Council, Haringey and Waltham Forest Boroughs.

Gas

5.21 UK Power Networks also operate the gas storage and distribution networks in Upper Lee Valley. They have indicated that there are no existing or envisaged capacity constraints in the network or local storage capacity to meeting current or likely future growth needs. This is on the proviso that the houses built are energy efficient with "Good" or "Excellent" BREEAM rating or similar standard, and that the proposed employment uses do not have high energy demands - either for gas (such as heavy manufacturing industry) or electricity (data centres). This preliminary analysis will need to be kept under review as the development scenarios are developed in more detail.

Water

5.22 Thames Water expect that the planned development in the Upper Lee Valley will result in capacity problems in both the fresh and waste water systems. Of particular concern is the impact on the trunk mains. Thames Water have been provided with the list of developments and locations in order to assess this development in their own capacity assessment models. The results of this work have not been provided at the time of writing this report, but the GLA are continuing the relationship established and encouraging their involvement in planning for the ULV.

5.23 Thames Water stressed the importance of managing demand by encouraging efficient use of water, and are interested in how the planning system could be used to intensify the application of new technologies in development sites.

5.24 Thames Water have been granted planning permission for a significant upgrade to Deephams Sewage works. The upgrade is a complete replacement of the current works, on a phased basis within the current site. The scheme will replace aging assets, increase the capacity of the works, reduce the odour and meet new quality standards set by the Environment Agency. This is anticipated to be funded by Thames Water and therefore the costs and funding are netted in the model.

Broadband

5.25 The current quality of Broadband has been identified as a potential disincentive to regeneration within the Upper Lee Valley.

5.26 Broadband costs are commercially sensitive and therefore have been difficult to obtain with the current level of information available about each development. Based on benchmarking of service providers, an estimate of £150-£200 per household is required for the additional infrastructure to support broadband for new development. There may be economies of scale cost savings, but these have not been disclosed by service providers.

6 Base Scenario Funding Gap

Model Purpose

6.1 The Upper Lee Valley Opportunity Area Funding and Financing Model ('the model') was developed to assess the funding gap when considering the infrastructure cost associated with growth in the Upper Lee Valley Opportunity Area and to what extent developer contributions can fund this cost. The model uses the strategic infrastructure requirements provided by the Boroughs and TfL to develop the annual funding requirement whilst also calculating the revenues generated by developer contributions from Borough CIL and s106 for the development site forecasts provided. The model assesses the funding gap between the cost of the infrastructure required and the income to be received from developers. The model will also consider some alternative funding mechanisms which could be implemented by the boroughs in order to bridge any funding gap, which will be discussed in Section 7.

6.2 The model has been used to test the three scenarios as outlined in this report, which are based on three different sets of assumptions in relation to transport enabled development. In addition to this functionality, the model also has the flexibility to include and exclude individual boroughs and at a more granular level, specific development areas.

Model Assumptions

6.3 The key assumptions fundamental to this analysis are outlined below. The Model User Guide gives more detailed information on how to use the model.

Key Infrastructure Assumptions

6.4 The infrastructure list included in the model has been developed by SDG and SQW with input from TfL, GLA and the boroughs. The cost of the infrastructure has been provided, including the price base date of this cost, construction start and end dates, any agreed funding and the borough(s) and growth area in which the infrastructure is situated.

6.5 Optimism bias has been applied to transport and utility schemes as per the categories in the table below, as there is a demonstrated systematic tendency for appraisers to be overly enthusiastic about key parameters, which results in actual scheme costs being greater than forecast. The base case optimism bias is based on WebTAG values (Table 8 of TAG Unit A1.2), with estimates for higher growth scenarios estimated. These are shown in Table 6.1.

Table 6.1: Optimism bias by category

Scheme type	Base case	Four-track scenario	Crossrail 2 scenario
Rail	66.0%	33.0%	0.0%
Highway	44.0%	22.0%	0.0%
Fixed Link	66.0%	33.0%	0.0%
Station	51.0%	25.5%	0.0%
Utility	66.0%	0.0%	0.0%

6.6 From this information, a number of simplifying assumptions have been made in order to translate this information into a useable format for modelling. Some of the key assumptions are as follows:

- Any pre-agreed grant funding on an individual project basis is subtracted from the total cost of infrastructure and is therefore excluded from the funding requirement.
- Costs are allocated evenly in the years from the construction start date to the year prior to delivery date. This is the case for all infrastructure projects as no information on phasing was provided on top of the total forecast cost. The even phasing was a simplifying assumption justified by the fact that the model is annual in nature and most of the projects, especially social infrastructure, are 1-2 years long. The majority of the longer term projects appear to be investments over a long period, which would therefore be unlikely to follow a bell curve.
- It is assumed the infrastructure is operational from 1 January in the delivery year.
- Where the delivery year and construction start date are the same, construction occurs in this period.
- Costs are indexed using the Building Cost Information Service All-in Tender Price Index (BCIS All-in TPI Index), using the actual average rate year-on-year where available, and then 3.50% p.a. from 2014 which is in line with the long run average from 1985.
- Construction cost cashflows are assumed to occur mid-year for borrowing purposes.
- Where infrastructure is not solely for the benefit of a single borough, costs are allocated based on population with weightings adjusted due to some schemes being of more benefit to some boroughs than others.

Key Development and Funding Assumptions

6.7 There are two primary means by which contributions from developers are captured; Borough CIL and s106 agreements. In order to calculate the revenue received through these channels, a list of pipeline developments within the ULV has been determined and used as the starting point for this analysis. Where the total number of units included in the individual developments was lower than the forecast aggregate amount (identified in the OAPF), a further category was included in the modelling to account for developments which are anticipated to come forward in the study period. This further development has been included in estimating CIL.

6.8 Borough CIL is calculated as the rate per square metre multiplied by the internal area of the chargeable development net of the floor area of any existing buildings on the site multiplied by the indexation factor. The indexation factor is calculated using the BCIS All-in TPI Index, with the year in which the CIL rate was agreed as the base year and the year in which planning permission was/will be granted as the year to which the rate is indexed to, as per CIL guidance.

The formula used to calculate the Borough CIL from each chargeable development is:

$$\frac{R\ x\ A\ x\ I_p}{I_c}$$

Where R = the rate charged according to the charging schedule; A = the net chargeable area; I_p= the TPI index figure for the year in which planning permission was granted; and I_c= the TPI index figure in the year in which the charging schedule took effect.

6.9 In order to estimate borough CIL contributions, the following assumptions have been made to calculate the contribution from this funding source as accurately as possible:

- CIL is indexed using the BCIS All-in TPI Index as required by CIL legislation, using the actual average rate year-on-year where available, then 3.50% p.a. from 2014 which is in line with the long run average from 1985.
- The base date for the Borough CIL rates is 2014, given the dates at which the draft charging schedules for each borough were agreed.
- According to CIL legislation, CIL is to be paid in instalments based on the amount of CIL liability (both borough and mayoral) as follows:
  - For liabilities £500,000 or less the total amount is payable within 60 days of commencement of development
  - For liabilities £500,001 or more, there are two instalments:
    - The greater of £500,000 or half the value of the total amount is payable within 60 days of commencement of development; and
    - The remainder within 240 days of commencement of development.
- For modelling purposes, when payments are to be made in two instalments, they are paid over two modelling periods (years), based on the weightings described above.
- To replicate the payment of CIL in instalments, it has been assumed that on average, cashflows are received mid-period.
- The data available for floor area has only been provided as the gross external floor area. Therefore to proxy the internal floor area, conversion factors of 90% and 95% for residential and non-residential development respectively have been used.
- A 20% contingency reduction has been applied to this funding stream in order to reflect the potential volatility in revenue receipts.

6.10 The borough CIL rates and affordable housing assumptions (paragraph 2.6)used in the base case are shown in Table 6.2, with the exception of some specific developments where affordable housing proportions have already been agreed such as in the Haringey Housing Zone bid:

Table 6.2: Borough CIL assumptions

Assumption	Haringey	Enfield	Waltham Forest	Hackney
Borough CIL rate (residential)	£15 per sqm	£40 per sqm	£70 per sqm	£55* per sqm
Affordable housing %	20%	29%	24%	29%

**One scheme is in a £190 per sqm zone*

6.11 The quantum of section 106 funding included within the model is minimal for two reasons. Firstly, for those contributions which have already been agreed, there was insufficient data available to determine whether they have been paid, and furthermore, it is likely that this will already have been attributed to a specific project and would not be available for the

infrastructure included in this study. Secondly, following the introduction of CIL, s106 requirements should now only relate to infrastructure requirements specific to a site and would not be for the 'strategic' infrastructure considered in this study. Therefore unless a s106 agreement has already been agreed but has not yet been paid, it has been assumed for the purposes of this study that CIL contributions alone will be used to fund the infrastructure discussed in this report.

Key Assumptions in calculating the Funding Gap

6.12 The funding gap has been calculated using a Net Present Value (NPV) approach. Both the cost of infrastructure and nominal revenues have been discounted to the present day (2015), using a discount rate to proxy the cost of financing. The difference between the present value of the cost of infrastructure and the present value of Borough CIL revenues represents the base case funding gap. The discount rate used represents a short term financing rate, at 3.40%.

6.13 When analysing the alternative funding schemes where it has been assumed that revenues will be ring-fenced for 25 years from 2020, a higher discount rate of 5.40% has been used in order to replicate a longer term rate of financing.

Funding Gap – All base schemes

6.14 Based on the assumptions outlined in the proceeding sections, the gross base case total funding requirement for each borough is shown in Table 6.3:

Table 6.3: Total Infrastructure cost by borough (including optimism bias)

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	249.3	289.7
Enfield	314.4	371.8
Waltham Forest	76.3	84.4
Hackney	94.6	113.2
Total	734.6	859.1

6.15 The total borough CIL forecast to be collected in each borough is outlined in Table 6.4. This has been shown both with and without the 20% contingency (reduction) assumption.

Table 6.4: Borough CIL by borough

	No contingency		Contingency at 20%	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	9.3	10.3	7.4	8.3
Enfield	7.5	8.4	6.0	6.7
Waltham Forest	13.9	15.4	11.1	12.3
Hackney	8.6	9.2	6.9	7.4
Total	39.3	43.3	31.4	34.6

6.16 Taking into account borough CIL (reduced by the 20% contingency) and s106 contributions, the total funding gap is as shown in Table 6.5. The total gap in NPV terms is £702.5m.

Table 6.5: Total funding (gap)/ surplus

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	(241.6)	(281.2)
Enfield	(308.4)	(365.1)
Waltham Forest	(65.2)	(72.1)
Hackney	(87.3)	(105.5)
Total	(702.5)	(823.9)

6.17 Given the scale of the optimism bias on the transport infrastructure schemes, a sensitivity has been run to demonstrate the effect of a 50% reduction in the level of optimism bias on the funding gap. It is worth highlighting that removing optimism bias entirely would not be prudent, given historical forecasting of costs and the varying stages of scheme development. The results of the 50% reduction in optimism bias is shown in Table 6.6.

Table 6.6: Optimism bias sensitivity inputs

Scheme type	Base case - Full OB	Sensitivity - Half OB
Rail	66.0%	33.0%
Highway	44.0%	22.0%
Fixed Link	66.0%	33.0%
Station	51.0%	25.5%
Utility	66.0%	33.0%

6.18 Using half the level of optimism bias, the total funding gap in NPV terms reduces to £644.2m. In removing optimism bias completely, this cuts the funding gap to £585.9m. It should be noted that optimism bias is only on transport and not social infrastructure schemes which is why the reduction is not as large as may be expected. The full results on a borough by borough basis are shown in Table 6.7.

Table 6.7: Total funding (gap)/surplus for optimism bias sensitivities (NPV basis)

Scheme type	Base case - Full OB (£m)	Sensitivity - Half OB (£m)
Haringey	(241.6)	(224.8)
Enfield	(308.4)	(275.2)
Waltham Forest	(65.2)	(60.9)
Hackney	(87.3)	(83.3)
Total	(702.5)	(644.2)

Prioritisation of Schemes

6.19 The analysis above includes all schemes that the boroughs and TfL have suggested. Subsequently, schemes have been prioritised in agreement with TfL and GLA to ensure that only the infrastructure improvements that are considered essential to facilitate the development have been included within the base case.

6.20 With respect to social infrastructure the judgement was that all education and healthcare provision should be prioritised as 'essential'. As a result, the difference in costs between the baseline scenario and the schemes deemed essential is a relatively modest £24 million (approximately 6% of the total cost of all schemes - £475m). The majority of these costs are associated with new built leisure and community facilities across the four boroughs.

Funding Gap – Priority Schemes only

6.21 The base scenario has been run for a second time, including only those schemes which are deemed a 'priority' scheme, as discussed in the section above, whilst assuming full optimism bias. Table 6.8 outlines the funding gap including only the priority schemes. When removing non priority schemes, the total funding gap reduces by £264.2m on an NPV basis, with a significant reduction of £161.3m to the funding gap in Enfield.

Table 6.8: The funding (gap)/ surplus with priority schemes only (with 20% contingency on borough CIL applied)

	NPV (£m)	Change from base case	Nominal (£m)	Change from base case
Haringey	(213.8)	27.9	(247.0)	34.2
Enfield	(147.1)	161.3	(164.7)	200.4
Waltham Forest	(38.4)	26.8	(40.0)	32.1
Hackney	(39.2)	48.2	(47.9)	57.6
Total	(438.4)	264.2	(499.6)	324.3

6.22 It is important to note that the scale of funding gap identified is not unusual for a major opportunity area. It is likely to reflect a worst case estimate, for the following reasons:

- Further prioritisation of schemes Is likely to take place
- It assumes no uplifts in land values. Part of any demonstrable uplifts could be captured through a periodic review of CIL rates (noting that the GLA are intending to review Mayoral CIL every 2 years)
- The majority, if not all, of the costs of providing additional schools and health facilities are likely to be met by Central Government
- The majority, if not all, of the costs of providing additional utilities infrastructure are likely to be met by the utility providers.

7 Funding Potential

Potential Funding Sources

7.1 In order to assess which funding streams may be suitable for the Upper Lee Valley, eight funding options were developed using examples of mechanisms used to fund other infrastructure schemes, primarily in the UK, as set out below. These supplement traditional sources of funding such as Central Government grant funding for health and education. From this extensive list, five alternative sources which capture the value unlocked by the new infrastructure were modelled; Mayoral CIL, Tax Increment Financing (TIF) for business rates, New Homes Bonus, Stamp Duty Land Tax (SDLT), and council tax.

7.2 A summary of the research conducted and rationale behind the selection of the funding mechanisms to model is outlined in this section. The modelling provides an indicative estimation of the quantum of funds which could potentially be raised for each mechanism based on agreed assumptions. If it is decided to consider any of these mechanisms in greater detail, significantly more work will need to be undertaken.

Mayoral CIL

7.3 Under London Plan Policy 8.2B, the Mayor introduced a CIL charging schedule to enable him to use the Levy to fund strategically important infrastructure. Mayoral CIL is currently being used to fund Crossrail. The Regulations restrict the Mayor to use of the CIL to fund "roads or other transport facilities, including, in particular, for the purposes of, or in connection with, scheduled works within the meaning of Schedule 1 to the Crossrail Act 2008" (Community Infrastructure Levy Regulations 2010 59(2)).

7.4 In the Crossrail 2 Funding and Financing Study[16], following the repayment of the Crossrail 1 loan, Mayoral CIL contributions have been assumed to become available to fund the Crossrail 2 project. Under the scenario where Crossrail 2 does not go ahead, Mayoral CIL could theoretically be used to fund transport infrastructure in the Upper Lee Valley.

7.5 However, Mayoral CIL has been excluded from the base scenario as it is unlikely that ULV infrastructure would be considered strategic to London as a whole. Furthermore, the levy can only be used for transport infrastructure. The potential contribution from Mayoral CIL on new development in the Upper Lee Valley has been modelled to provide an indication of the revenue that this mechanism could generate however at present this is not seen as a viable funding option for the ULV. (Refer to para 7.49).

[16] PwC, 'Crossrail 2 Funding and financing study', 27 November 2014 (See **http://crossrail2.co.uk/funding/** for the full report)

Tax Increment Financing (TIF)

7.6 TIF attempts to isolate the increase in certain specific tax revenues which arise as a consequence of a project. This additional tax can be captured and used to make a funding contribution to a given project. TIF has been used extensively for a wide range of infrastructure projects internationally and recently within the UK on the Northern Line Extension. The Northern Line Extension funding sources included an Enterprise Zone to capture incremental business rates income (IBRI). Borough CIL and S106 contributions arising from new developments were also included as separate funding streams.

7.7 A key benefit of an IBRI TIF is that it uses sources of taxation that already exist: it would neither require tax rate increases to be made, nor new taxes to be levied. Given that an IBRI TIF is a mechanism already used for other projects it is seen as a potentially obtainable value capture mechanism.

7.8 However, the nature of the development will have a substantial impact on the effectiveness of IBRI as a potential funding mechanism. The level of IBRI will be maximised in schemes which include high levels of commercial development. Given that the envisaged development in the ULV is primarily residential in nature the level of IBRI may be limited.

7.9 One of the challenges of an IBRI TIF mechanism is that in order to isolate the increase in tax revenues resulting from a specific project, a baseline business rate income level must be established – the business rates revenue generated if the infrastructure investment did not go ahead. Once the baseline is established, any business rate income above this level is set aside as an additional source of funding.

7.10 Analysis for this study provides an estimate of the level of commercial development which could take place over the period of the scheme, however it has not been possible to determine whether or not this development is truly incremental. This is because it is difficult to prove whether the additional commercial development is genuinely due to the planned infrastructure investment or whether the growth would have occurred anyway in the absence of any additional investment.

7.11 Due to a lack of available data, estimating the level of existing business rate income which may be lost due to those businesses being moved, replaced or discontinued as a result of the scheme has not been possible. If IBRI is identified as a viable funding stream then further, more extensive modelling work will be required to calculate and test the potential income stream.

7.12 For modelling purposes, it has been assumed that the commercial development which has been included within the financial model is net additional floor space. As stated in the previous two paragraphs this assumption has its limitations and is likely to overstate the revenues directly attributable to the new infrastructure. As a result of this a reduction of 50% has been applied to IBRI revenues in order to reflect the uncertainty around the figures. As well as this, commercial floor area relating to some of the larger developments such as Tottenham Hotspur Stadium and Tottenham Hale Retail Park has not been included in the IBRI calculations as it was judged that these developments would go ahead with or without the infrastructure investment and were therefore not truly incremental. (Refer to para 7.49).

Contributions from Council Tax

7.13 Council tax has been considered under two alternatives; a borough-wide levy and using a proportion of the council tax revenue from the new homes.

7.14 Firstly, an additional borough-wide Levy could be raised on council tax that is set aside for the Upper Lee Valley Opportunity Area, if this was set up as an Authority. Similar levies are already paid as part of the council tax bill, for instance to the North London Waste Authority and to the Lee Valley Regional Park Authority. An increase in council tax is likely to be politically challenging for the boroughs and may require a local ballot to be held. In recent discussions with TfL regarding the funding of transport projects it was mentioned that when a similar scheme was proposed for the Bakerloo line extension (i.e. at the local level as opposed to the London wide Olympic precept) this did not prove popular with the GLA. For these reasons, a borough-wide levy has not been modelled as part of the study.

7.15 An alternative to this is to ring-fence a proportion of the council tax on the new homes to fund investment. Where 100% of the increased council tax revenue is not needed to provide additional services for the increased population, this could be used to fund the required infrastructure investment. Given the political challenges associated with council tax and the already stretched authority budgets, using this mechanism in practise is likely to be difficult. However, we have included the total council tax generated from the new homes within the model. The primary reason for this is to highlight the additional revenue which will be generated through the development. From this, it can be determined whether any of this additional revenue could be used to fund the required infrastructure or alternatively, whether it could be used in any negotiations with the boroughs on obtaining potential grant funding. (Refer to para 7.49).

New Homes Bonus

7.16 Under the New Homes Bonus scheme, the Government matches the council tax raised on each new home (previously empty or entirely new build) for six years as a form of grant funding. Affordable homes obtain an additional £350 per unit. As a result of this measure, local authorities get an automatic, six-year, 100 per cent increase in the amount of revenue derived from each new house built in their area. Providing this scheme continues, local authorities will have flexibility on how to spend the grant and this grant funding could therefore potentially be ring-fenced to fund new infrastructure. In London, 100 per cent of the grant goes to the London borough as opposed to GLA. For the c. 26,000 new homes proposed in the Upper Lee Valley, the grant funding from the New Homes Bonus could be used to pay for some of the strategic infrastructure needed, providing it is not needed to fund gaps in the budget for core services in the area.

7.17 There are two main challenges with using this mechanism. Firstly, there is the possibility that the grant may not continue in its current form which would mean this funding may not be available once the properties in the DIFS are built. Secondly, given the stretched local authority budgets, local authorities may be intending to use the grant for delivering key services in the local area. Despite this, given the flexibility the local authorities have in spending this funding and the fact that there is no immediate indication that the scheme will end in the near future, this revenue stream has been included in the financial model. (Refer to para 7.49).

Contributions from Stamp Duty, Land Tax (SDLT)

7.18 The building of c. 26,000 new homes will generate substantial SDLT income. At present SDLT receipts are not devolved to London or its local authorities so this income would not be a local funding source and would instead benefit Her Majesty's Treasury (HMT). However the potential income from SDLT has been included in the model, primarily as a means by which to

highlight the additional revenue the scheme is likely to generate for central government. The analysis could potentially be used as a negotiation tool in trying to obtain grant funding for the scheme from central government. This approach has also been used by TfL for the Crossrail 2 Financial Case as part of the Strategic Outline Business Case submission to DfT. (Refer to para 7.49).

Local Levy

7.19 A local levy is added to all council tax bills within the Thames River catchment area. This provides approximately £10.5m funding per year, the spending of which is controlled by a committee with representatives from the Local Authorities and Environment Agency. Little of the available funding has been spent within London boroughs in the past few years, so proposals within London may be received favourably. This is a potential source of funding for drainage and flood defence schemes within the ULV however this has not been included in the model.

Workplace Parking Levy (WPL)

7.20 A WPL is a charge on employers who provide workplace parking. The Transport Act 2000 (Part III) put the legislation in place to allow local authorities to implement congestion charging zones or workplace parking levies.

7.21 The scheme introduced by Nottingham City Council is the first of its kind. It was introduced to tackle problems associated with traffic congestion by both providing funding for local transport and by acting as an incentive for employers to manage and potentially reduce their workplace parking. In 2013/14 the scheme raised £7.6m net of expenses. The revenue is ring fenced for investment in improving public transport in Nottingham. Money raised from the WPL is to fund an extension to the existing tram system, the redevelopment of Nottingham Railway Station and supporting the Link bus network.

7.22 It is understood that Oxford City Council are planning to introduce a similar WPL in 2017.

7.23 A WPL was not included in the modelling for ULV as it was concluded that it was unlikely to generate significant revenues given that the Opportunity Area is not a large enough commercial centre and a substantial portion of Londoners use the extensive public transport system. Further to this, implementing the levy in such a small area may cause businesses to relocate to other office or industrial units where they would not be liable to pay for the levy, to the detriment of the local workforce.

Business Improvement District (BID)

7.24 The mechanism of a Business Improvement District (BID) works by applying a small levy on non-domestic rate payers in a defined area. Its objective is to provide additional services and investment over and above the baseline provided by statutory bodies. The businesses who pay are the ones who benefit from the new activities.

7.25 Although BIDs have typically been used for city centre tourism related activities and other city centre services, such as street cleaning projects, Sheffield City Council has developed a BID to fund flood defence infrastructure in the Lower Don Valley. Over 90% of the cost of the project is to be financed by public funds, with a contribution of £1.4 million from the private sector raised through the BID.

7.26 Given that businesses in the ULV already pay the Business Rates Supplement put in place for Crossrail it would probably be challenging to obtain a successful outcome from a ballot of local

businesses which is required under legislation. There are already BIDs in place in London, for instance in Southwark, however this is not for the provision of infrastructure. A strong evidence base would need to exist which shows that the new infrastructure proposed would significantly benefit the businesses that would be responsible for paying the levy. Similar to the WPL, forming a BID may cause businesses to relocate outside of the district where they would not be liable to pay for the levy, to the detriment of the local workforce. For these reasons, a BID has not been modelled as part of this study.

Structures to facilitate the delivery of infrastructure

7.27 In addition to finding the funding to pay for the infrastructure needed to facilitate future development, it should be considered whether a vehicle needs to be established in order to manage the funds generated and facilitate the investment. From the examples of delivery vehicles that were looked at the Mayoral Development Corporation was seen as the most relevant to this project. Other delivery structures researched included infrastructure funds such as the Greater Manchester Transport Fund.

Mayoral Development Corporations (MDCs)

7.28 The Localism Act 2011 granted the Mayor of London the ability to establish MDCs. As defined in the Act, the purpose of MDCs is to ensure the regeneration of an area. Examples of MDCs in London include the Olympic Park Legacy Corporation (OLPC) which was converted into an MDC in 2012 and the Old Oak and Park Royal Development Corporation (OPDC) which was launched on 1 April 2015 to transform the area which is to benefit substantially from investment in HS2 and Crossrail.

7.29 Within the boundaries of its jurisdiction, an MDC has the power to:

- Purchase land;
- Reclassify land;
- Apply development levies; and
- Allow the densification of an area in order to help maximise the value of developments.

7.30 In the Upper Lee Valley, an MDC could be created as a vehicle including each separate development site. The MDC would have the ultimate responsibility to ensure that utility, transport and social infrastructure was provided to the developments as appropriate.

7.31 There are two methods to consider in capturing greater value from developers using the MDC approach:

- Applying an MDC specific CIL to MDC areas; and
- The MDC taking an active role in development of land in the MDC areas.

7.32 An MDC has planning and CIL-levying powers which are similar to a borough's. Therefore Borough CIL would not apply in an MDC. Instead the MDC can apply an MDC- specific CIL ('MDC CIL').

7.33 Depending on the viability of the developments, theoretically an MDC CIL could be set at a higher rate than borough CIL as creating an MDC allows for setting CIL at an independent level. Higher CIL charges are likely to be viable because of the change in the value of land due to changes in planning status and density within an MDC area. The CIL would need to be set at a rate which does not discourage development, but by the same token does not lead to excessive profits for landowners.

7.34 An alternative option which is available to an MDC is a more interventionist approach, where the MDC would purchase the land, and take risk on its disposal value. The concept is similar to the precedent set by the Olympic Park Legacy Company (OPLC).

7.35 The benefit of this approach compared with MDC CIL is that the value captured is related to the specific rise in the value of specific land areas within the MDC. However, this approach has the additional challenges of funding land purchase and the potential risk of claims for additional compensation from previous landowners who would not benefit from the increase in land value.

7.36 Forecasting the amount that could be raised by such developments requires a significant number of assumptions, many of which are highly volatile – for example the annual rate of house price increases in London. Considerations need to be given to when developers will be expected to contribute within the development timetable.

7.37 Preliminary modelling for the Crossrail 2 Funding and Financing study indicated that achieving a contribution from development on brownfield sites is likely to be difficult, and will be highly sensitive to:

- the level of house price increases;
- the cost of land purchase (which will depend on its current use); and
- the cost of land remediation (which can be significant for brownfield sites).

7.38 The Mayor has recently announced proposals to transform Old Oak and Park Royal into an MDC. This is clearly a model which is being seen as a means by which to regenerate areas where there is significant opportunity for development, with transport infrastructure as the catalyst. This model is likely to be most appropriate under the scenario where Crossrail 2 goes ahead.

7.39 Establishing an MDC structure is likely to take a significant amount of time which would be challenging given the timeline for this project. It is also the case that individual boroughs have already started procuring development partners for some of the individual developments within this study, which would make the establishment of an MDC more complicated.

7.40 Although an MDC could be considered to be a viable structure to use in the regeneration of the Upper Lee Valley Opportunity Area, given the challenges mentioned in the paragraph above and the difficulty in obtaining the required data to test this structure, it has not been considered as part of the modelling.

Affordable Housing Tests

7.41 Since April 2015, the ability to collect pooled contributions towards infrastructure through Section 106 agreements is limited. Community Infrastructure Levy is intended to be the principal method of collecting contributions towards infrastructure. CIL rates are set in a charging schedule which should be updated regularly to reflect changing market conditions. It should be noted however that CIL rates are set for a geographical area rather than on a site by site basis and therefore viability of sites may have slight variations across that area.

7.42 CIL is set at a level which is tested to show the theoretical maximum which is viable, typically less a buffer to allow for site specific variations and short term movements in the market. Therefore, it is unlikely that any increase in CIL rates could be shown to be viable, subject to an updated study on CIL viability.

7.43 With this in mind, our brief included the request for a test be carried out to consider potential additional value created by reducing affordable housing obligations which may be captured to fund infrastructure requirements. We note that we have not assessed the policy changes required for this to take place.

7.44 This has been tested by varying our 'base scenario' viability tests by converting affordable housing units to private units to reflect affordable housing provision at 50% of the policy level.

7.45 We then compared the residual land value of the reduced affordable housing appraisal to the baseline. We assume this difference, the 'delta', is shared with landowners on an equal basis (50/50). We then extrapolate this across all development sites to determine a potential 'additional pool' of funding across the study area.

7.46 The delta on the 10 selected sites is approximately £28m, or between £33,000 to £155,000 per affordable housing unit that is converted.

7.47 Across the whole study area, for projected development in the base scenario, this pool could be around £86m, however this will depend on how contributions are collected.

7.48 It is important to note the balance between affordable housing provision and financial contributions. The Mayor of London recognises this and has a Housing Supplementary Planning Guide and Affordable Housing Toolkit. This was updated in May 2015 and is intended to inform the process of maximising affordable housing while encouraging rather than restraining housing development as a whole. It is designed to provide an easy to use way of assessing the financial viability of individual development proposals and to help in the development of Local Plan policy.

Funding Mechanism Modelling Assumptions and Revenues

7.49 Five additional funding mechanisms have been modelled; Mayoral CIL, IBRI, New Homes Bonus, council tax and SDLT. This section outlines the assumptions underpinning their impact on the funding gap.

Mayoral CIL

Assumptions

7.50 The modelling of Mayoral CIL replicates the modelling of Borough CIL. Any assumptions where there is a difference between the two are listed below:

- It is assumed that Mayoral CIL will only be available from 2020, which marks the end of the period when the revenues from the levy are being collected for the purpose of Crossrail 1.
- The base date for the Borough CIL rates is 2012, given the date at which the draft charging schedule for Mayoral CIL was agreed.
- A 20% contingency has been applied to this revenue stream, consistent with borough CIL.
- To calculate the net present value, the short-term funding rate of 3.40% has been used as a discount rate.

Revenue generated

7.51 Using the assumptions outlined above Table 7.1, the total amount of Mayoral CIL generated is c. £9.9m in present value terms. To reiterate what has been highlighted previously, it is not expected that this revenue will be available for the Upper Lee Valley given the infrastructure included in the study is unlikely to be considered strategic to London as a whole. Mayoral CIL

has not been taken into account in assessing the impact on the funding gap as this is not seen as a mechanism available for this purpose.

Table 7.1: Total Mayoral CIL revenue generated split by borough

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	2.6	3.3
Enfield	6.0	7.3
Waltham Forest	0.7	1.0
Hackney	0.5	0.6
Total	**9.9**	**12.3**

Incremental Business Rates Income

Assumptions

7.52 In order to evaluate the potential funding contribution that can be derived from additional commercial development, this has been calculated as the total number of square metres from the new development, multiplied by the rateable value assumption per square metre and the business rates multiplier. In reality, there are also numerous relief mechanisms such as those available for small businesses, but for simplification purposes these have not been considered. The assumptions used are outlined below:

- The business rates multiplier for 2015/16 is 49.3p as per the Valuation Office Agency (VOA) website.
- The revenues are indexed by RPI, which has been forecast at 2.70% where actual figures are unavailable. This is consistent with the assumption used in the Crossrail 2 Funding and Financing Study.
- The period in which revenue receipts can be collected is from the start of the study period to 25 years from the end of the study period, to December 2044. This is consistent with the period of the Enterprise Zone in the Northern Line Extension.
- Revenues are assumed to be earned from the year following the completion of each development.
- In the absence of information surrounding existing commercial properties, it has been assumed that all commercial floor area included in the model is net additional to the current baseline. Also the calculation does not take into account any reliefs or collection costs, therefore a 50% contingency has been applied to this revenue stream.
- Commercial floor area relating to some of the larger developments such as Tottenham Hotspur Stadium and Tottenham Hale Retail Park has not been included in the IBRI calculations as it was judged that these developments would go ahead with or without the infrastructure investment and were therefore not truly incremental.
- To calculate the net present value, the long-term funding rate of 5.40% has been used as a discount rate.

7.53 The rateable value assumptions have been used to provide the values shown in Table 7.2.

Table 7.2: Rateable value by property type

Rateable value	£ per sqm or per room (hotel only)
Office	215
Retail	269
Industrial	90
Leisure	129
Community	129
Hotel	600

Revenue generated

7.54 In light of the assumptions outlined and the limitations caused by a lack of data on the existing baseline of commercial and industrial properties, the estimated amount of revenue generated through business rates is c. £215.2m over the 25 year period in present value terms (see Table 7.3).

7.55 The study does not take into account potential full devolution of business rates as this is not currently government policy. It does look at the potential for an Enterprise Zone to be set up in the area, which would allow the borough to retain 100% of incremental business rates for a period of up to 25 years. This mechanism has been used in the Vauxhall, Nine Elms, and Battersea Enterprise Zone to fund the Northern Line Extension. The £215.2m figure is a high level estimate which takes into account the full incremental business rate income generated by new commercial development and therefore does not make a distinction between what the borough would be entitled to under existing legislation (30%) and under an Enterprise Zone arrangement (100%). In order to take into account factors such as reliefs a 50% contingency has been applied to all incremental business rate income (see section 7.50 bullet point 5).

7.56 In order to further understand and properly quantify the potential revenue that could be raised through this mechanism, a significantly more detailed analysis would need to be undertaken which was not part of the scope of this study. However, as seen with the Northern Line Extension (NLE), given its relatively stable nature this is potentially an income stream which can be borrowed against. Therefore, while the numbers provided below are very high level estimations, they have been included to illustrate the potential impact on the funding gap.

Table 7.3: Total IBRI revenue generated split by borough

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	111.3	313.0
Enfield	46.9	120.5
Waltham Forest	27.1	79.7
Hackney	29.9	86.8
Total	**215.2**	**599.8**

Stamp Duty Land Tax

Assumptions

7.57 To calculate the additional stamp duty revenue which would be generated from the new development, a number of simplifying assumptions have been made. Using the total number of homes forecast, the unit mix has been derived by Carter Jonas based on the policies in each borough. In estimating the value obtained through SDLT, only market housing and not affordable housing has been considered. The unit mix assumption for market housing is outlined in Table 7.4.

Table 7.4: Market housing unit mix assumptions by borough (Source: Borough Policies)

Borough	1 bed	2 bed	3 bed	4 bed
Haringey	12%	25%	37%	26%
Enfield	20%	15%	45%	20%
Waltham Forest	20%	30%	40%	10%
Hackney	22%	45%	33%	0%

7.58 Based on average unit sizes and average sales prices by borough, Carter Jonas have calculated the stamp duty charges per property set out in Table 7.5.

Table 7.5: Stamp duty paid by property size and borough

Borough	1 bed	2 bed	3 bed	4 bed
Haringey	£1,300	£2,480	£6,150	£7,950
Enfield	£1,800	£4,100	£8,000	£10,350
Waltham Forest	£1,940	£4,550	£8,850	£11,000
Hackney	£6,800	£12,050	£18,600	£21,800

7.59 In addition to estimating these amounts, in order to forecast the revenue generated over time, additional assumptions need to be made, such as:

- The lower and upper stamp duty bounds will rise with house price inflation, meaning that income from stamp duty over time will remain the same in real terms.
- House price inflation has been assumed at 4.7%, 2% above RPI, which mirrors the assumption used in the Crossrail 2 Funding and Financing Study.
- The homes are sold in the year of completion therefore all the income generated from this revenue stream will have been received by 2031.
- To calculate the net present value, the short-term funding rate of 3.40% has been used as a discount rate.

Revenue generated

7.60 From the first sale of homes, the total amount of SDLT expected to be raised through the new homes built is c. £131.3m as set out in Table 7.6. However, this revenue is currently not devolved to local authorities and will be collected by HMT to spend centrally. The amount quoted is an estimation of the full amount of SDLT that could potentially be raised on the first sale of new properties. It may be the case that this figure could be used, along with other evidence, as part of any negotiations with central government around grant funding for the scheme. However, this cannot be used as a funding stream to borrow against at this stage and has therefore not been taken into account in assessing the impact on the funding gap.

Table 7.6: Total SDLT revenue generated split by borough

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	34.7	47.0
Enfield	41.3	64.3
Waltham Forest	19.2	26.2
Hackney	63.9	88.8
Total	131.3	226.4

Council tax

Assumptions

7.61 To calculate the additional revenue generated through council tax requires estimating how many properties will be in each council tax band. The same unit mix as for SDLT has been assumed for private homes, with the mix assumed for affordable homes as set out in Table 7.7.

Table 7.7: Affordable housing unit mix assumption by borough

Borough	1 bed	2 bed	3 bed	4 bed
Haringey	56%	11%	15%	18%
Enfield	20%	20%	30%	30%
Waltham Forest	20%	34%	36%	10%
Hackney	55%	17%	28%	0%

7.62 Using the current number of homes in each band as a basis. Table 7.8 sets out the assumptions on Council Tax bands for each borough.

Table 7.8: Council tax paid per property size / band by borough

Borough	1 bed (Band C)	2 bed (Band D)	3 bed (Band E)	4 bed (Band E)
Haringey	£1,053.73	£1,184.32	£1,447.39	£1,447.39
Enfield	£978.08	£1,100.34	£1,344.86	£1,344.86
Waltham Forest	£1,024.18	£1,152.21	£1,408.26	£1,408.26
Hackney	£887.51	£998.45	£1,220.33	£1,220.33

7.63 Similar to the other income streams, the other key assumptions include:

- The indexation of council tax has been forecast at RPI -1% (1.70%). The rationale for this assumption is that many local authorities are currently not increasing council tax, therefore it has been assumed that although council tax will need to increase in the long term, it will do so at a lower rate than RPI.
- The period in which revenue receipts can be collected is assumed to be from the start of the study period to 25 years from the end of the study period (December 2044). This is consistent with the period of the IBRI TIF.
- Revenues are assumed to be earned from the year following the completion of each development.
- To calculate the net present value, the long-term funding rate of 5.40% has been used as a discount rate.

Revenue generated

7.64 Table 7.9 estimates the total amount of council tax raised through the new homes built is c. £396.4m. It is highly likely that all of this revenue will be needed to provide core services delivered by the local authorities. However, it is possible that a portion of this income may be available to be used for investment in the strategic infrastructure. The amount quoted is the estimated full amount of council tax which could be raised by the new homes in the area over a 25 year period. It will be necessary to work with the local authorities to determine whether, given the scale of additional income and extent of investment needed, the local authorities may be able to use some of this income for infrastructure investment. Given the uncertainty surrounding the availability of any funds from council tax at this stage, this cannot be used as a funding stream to borrow against and has not been taken into account in assessing the impact on the funding gap.

Table 7.9: Total council tax revenue generated split by borough

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	143.5	511.2
Enfield	102.9	404.0
Waltham Forest	65.1	220.4
Hackney	84.8	304.5
Total	396.4	1,440.1

New Homes Bonus

Assumptions

7.65 The revenue generated from the new homes bonus has been calculated in a similar way to the calculations for council tax shown above. The key differences being that the grant is calculated from the national average council tax per band, as opposed to the individual council tax rates in each borough. Therefore, the council tax amounts used for this purpose have been obtained from the New Homes Bonus Calculator provided by the Department for Communities and Local Government. The rates are as of 2014/15 and are shown in Table 7.10.

Table 7.10: National average council tax paid by band (2014/15)

Council Tax Band	Average amount paid per band (2014/15)
Band C	£1,305
Band D	£1,468
Band E	£1,794

The unit mixes and band assumptions have been replicated from the council tax modelling. The following additional assumptions have also been used:

- For any affordable homes, an additional £350 is received by the local authority as per the scheme.
- The grant is payable for 6 years following the completion of a development, in line with how the grant is currently being paid.
- The indexation of the New Homes Bonus has been forecast at RPI -1% (1.70%), the same as the assumption used for council tax. The only variation is that the base year for the council tax amounts for the New Homes Bonus is one year earlier therefore the indexation profile is slightly different.

- Revenues are assumed to be earned from the year following the completion of each development.
- To calculate the net present value, the short-term funding rate of 3.40% has been used as a discount rate.

Revenue generated

7.66 In addition to the council tax raised, the local authorities will also receive income from the New Homes Bonus, estimated at c. £208.0m over 6 years in present value terms (see Table 7.11). Given that there are no restrictions on what a local authority can spend this additional income on, it could potentially be used to fund the infrastructure needed to facilitate the development which generates this income. This income has therefore been included in assessing the impact on the funding gap.

Table 7.11: Total New Homes Bonus revenue generated split by borough

	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	67.9	102.1
Enfield	60.8	104.6
Waltham Forest	30.3	44.7
Hackney	49.0	75.4
Total	208.0	326.7

Impact on ULV Funding Gap

7.67 When assessing the effect of the additional revenue sources on the funding gap, as well as the borough CIL and s106 mechanisms, only contributions from the New Homes Bonus and IBRI have been included. The rationale for this selection is that at present, these mechanisms are deemed the most likely to be implementable. Notably, SDLT has not been included as this would require devolution from central government, and using a proportion of council tax has not been included as this would require a significant reallocation of local authority resources which is unlikely to be possible given the need to fund core council services.

7.68 This analysis has been carried out on the base case scenario using all schemes, and also considering priority schemes only. Table 7.12 shows that including the New Homes Bonus and IBRI in the base case scenario reduces the funding gap by £423.2m to £279.3m on an NPV basis. The borough which has the most significant reduction in of its funding deficit is Haringey.

Table 7.12: The funding (gap)/surplus under the base scenario by borough

	Borough CIL, s106, IBRI and New Homes Bonus		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	(62.4)	133.9	179.2	415.0
Enfield	(200.7)	(140.0)	107.7	225.0
Waltham Forest	(7.8)	52.2	57.4	124.3
Hackney	(8.4)	56.7	79.0	162.2
Total	**(279.3)**	**102.7**	**423.2**	**926.6**

7.69 When only the priority infrastructure schemes are considered, the change from the base case priority scheme scenario is the same as under the base scenario, as the number of developments is unaffected by the reduction in the requirement for infrastructure. Under this scenario, Table 7.13 shows that the funding gap significantly reduces to £15.2m on an NPV basis, with Waltham Forest and Hackney both having a funding surplus.

Table 7.13: The funding (gap)/surplus with priority schemes only by borough

	Borough CIL, s106, IBRI and New Homes Bonus		Change from base case priority scheme scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	(34.5)	168.1	179.2	415.0
Enfield	(39.4)	60.3	107.7	225.0
Waltham Forest	19.0	84.3	57.4	124.3
Hackney	39.8	114.2	79.0	162.2
Total	**(15.2)**	**427.0**	**423.2**	**926.6**

Funding Constraints - Mayoral Area Plans

7.70 The Department for Communities and Local Government have the ability to devolve powers to local Mayors in terms of strategic planning, transport, employment services, and economic development, to bring forward Mayoral Area Plans to encourage development.

7.71 Currently the restrictions on s106 contributions are such that a maximum of five developments can contribute to one transport or infrastructure scheme in an area, and therefore pooling resources to deliver a wider strategy is very difficult. The viability demonstrated through our analysis is such that it would be helpful for this limit to be removed to provide greater flexibility for such areas to encourage and allow a more strategic approach.

8 Higher Growth Scenarios – General Approach

Overview

8.1 The Upper Lee Valley has been identified as a major growth area, and in order to facilitate the maximising of this growth, two rail infrastructure projects are being investigated by TfL and Network Rail: four-tracking, and also Crossrail 2.

8.2 Four-tracking is the first higher growth scenario and would support a higher level of growth than the base due to the improved public transport accessibility level. It comprises of upgrading the current double-track rail arrangement through Upper Lee Valley to four-track, to facilitate more services and allow for more stopping services as the faster through trains such as the Stansted Express could bypass these services.

8.3 Crossrail 2, would provide higher growth than four-tracking due to the additional linkages through to central and south west London. It is at feasibility stage but would link through to Central London in new tunnels to south west London (options to be determined).

8.4 Both projects are at feasibility stage but these have been modelled as two higher growth scenario tests as described below.

Methodology

Development

8.5 TfL, in conjunction with Network Rail have analysed the quantum of potential development that could be unlocked through rail improvements for two scenarios: Crossrail 2 and Four-tracking.

8.6 The methodology used to develop the growth rates uses three variables:

- transport scenario inputs derived from train service specifications of different upgrade scenarios;
- different development sites; and
- alternative planning scenarios, namely ‘Baseline’ and ‘New Policy’ approaches.

8.7 These variables allowed an assessment to be made of how the opportunities for development would change under different levels of transport provision and the subsequent changes in market and policy response would have on the development potential along the WAML corridor.

Transport inputs

8.8 The transport inputs for the higher growth scenarios including the accessibility assumptions for each station and for 1km around each station, including:

- **Train capacity**: Additional trains per hour and additional capacity in the 3 hour AM peak;
- **Access to Employment**: based on Railplan model outputs of number of jobs accessible from each station (as the origin) within 5 minute increments to 90 minutes.
- **Travel time differences**: between the baseline and different scenarios based on Railplan model outputs from each station (as the origin) to destinations including the Central Activities Zone.

8.9 An assessment of the change in Public Transport Accessibility Level (PTAL) assessment was also undertaken.

Development sites

8.10 The assessment captured a number of potential development sites that have the potential to come forward as a result upgrades to the WAML and Crossrail 2. Development sites within 1km of the stations along the WAML route were determined from a number of sources, including:

- **Strategic Housing Land Study** – details of approved and allocated development sites: identified in the GLA SHLAA and outside London Borough or District SHLAAs;
- **Employment sites** – identified in Opportunity Area Planning Frameworks (OAPFs), Local Plans, Site Allocations Development Plan Documents and Area Action Plans;
- **Anticipated Land Use changes** – including planned housing renewal projects; and
- **Additional sites within 1km** – identified from station site visits.

8.11 Further to this, additional development sites beyond the WAML route were added, which for the purposes of this assessment includes sites around additional connector stations within the WAML corridor. Additional development opportunities associated with the intensification of densities within existing residential areas around each of these stations were also applied.

Planning Scenarios

8.12 Two planning policy scenarios were used to determine the potential for development at the identified sites in response to the changes in transport services. These were:

- **Baseline** – considered the development that would be facilitated by current land use planning policy and the current London Plan Density sustainable residential quality (SRQ) matrix relationship of PTAL, setting and density.
- **New Policy** – considered the development that would be facilitated through pro-active masterplanning, optimising development related to the revised PTAL and density relationship, allowing a higher rate of industrial land release but still within the limits of the London Plan Density SRQ and seeks to identify potential for additional housing renewal opportunities and standard assumptions for housing densification.

Application to different scenarios

8.13 For the purposes of this assessment and to present a consistent picture of growth, the growth associated with four-tracking and Crossrail 2 are considered in the context of a 'New Policy' approach.

8.14 In isolation, it is likely that only some elements of a 'New Policy' policy scenario would be used in a four-tracking scenario (in advance of Crossrail 2) as considered appropriate by individual local planning authorities.

Uplift in Development Values

8.15 In addition to greater quantum of development or unlocking additional sites, which results in an increase in CIL receipts, the growth scenarios may benefit the sales values achievable in existing developments.

8.16 CIL is a relatively new mechanism for collecting contributions to infrastructure from developers. In the growth scenarios, we have considered the potential additional residual value generated by higher residential sales values. This is essentially a pool of value that may potentially be captured, through CIL or another mechanism, to contribute towards infrastructure. Assuming all other things remain equal, we calculate the additional value under a "Crossrail 2" growth scenario and a "Four tracking" growth scenario. CIL rates are set by each Borough and should be regularly reviewed to take into account changing market conditions including but not limited to sales values, construction costs, land values, development finance, and planning policy. We note that our findings are indicative only and CIL rates may not correlate directly with sales values. This has not been captured within the model, as there is no policy as yet to capture all of this increase through CIL, but annual reviews could be used to start to capture this.

Crossrail 2 scenario

8.17 Work done to support the Crossrail 2 business case indicates that the potential additional growth in sales values associated with the scheme could be in the region of 37% over normal market growth by 2040. This equates to an average of 1.27% per annum, assuming consistent compounded growth. This concurs positively with the uplift in sales values achieved by Crossrail.

8.18 We have adjusted our base scenario models, applying this additional growth to the private residential sales values, to identify potential additional value created, assuming affordable housing provision remains constant. This equates to around £107m across the 10 sample sites above the baseline. Extrapolated across the study area, the additional value which may be created by Crossrail 2 is expected to be around £650m, all other things being equal. Due to the effects of compounded growth, sites subsequently identified for later delivery will have a greater impact on this figure.

8.19 This has not been included in the model as there is, at present, no policy for extracting this additional value. However if a mechanism were to be established, then this would significantly reduce the funding gap, as discussed in Chapter 9.

Four-tracking scenario

8.20 The increase in land value as a result of four tracking is more difficult to quantify empirically and, to our knowledge, no study specifically tests this. We have therefore used our judgment based on the projected additional train frequency and capacity, and reduced journey times. We have adopted the projected Crossrail 2 growth assumption multiplied by a factor of 0.25, or circa 0.32% per annum compounded.

8.21 We have adjusted our base scenario models, applying this additional growth to the private residential sales values, to identify potential additional value, assuming affordable housing

provision remains constant. This equates to around £20m across the 10 sample sites above the baseline. Extrapolated across the study area, the additional value which may be created by four tracking is expected to be around £82m, all other things being equal. Due to the effects of compounded growth, sites subsequently identified for later delivery will have a greater impact on this figure.

8.22 Similarly with the Crossrail 2 scenario, this has not been included in the model as there is, at present, no policy for extracting this additional value. However, if a mechanism were to be established then this would significantly reduce the funding gap as discussed in Chapter 10.

Social Infrastructure

8.23 The process for estimating the net population increase for the higher growth scenarios was as follows:

- Subtracted the forecast residential units by development site for each scenario from the baseline – *this provided the net increase in residential development*
- Used the proportion of private and social housing by borough provided for each scenario and applied this to the assumed unit mix by tenure type provided by Carter Jonas (see Table 8.1) (noting that the GLA population yield calculator treats intermediate housing as 'market' for the purposes of estimating population).
- Inputted the residential unit mix into the GLA population yield calculator using the 'population per dwelling size' averages for the 'north sub-region' – this provided an estimate of the net population yield by age for each development (see Table 8.2 and Table 8.3)
- Applied an adjustment factor to the additional 0 – 9 year olds in order to arrive at an estimate for primary age children (see Table 8.2 and Table 8.3)
- Applied an adjustment factor to the additional 10 – 18 year olds to estimate numbers for children/young people of a) secondary and b) 6th form age (see Table 8.2 and Table 8.3)
- As can be observed, with the exception of three sites in Waltham Forest, the additional development from both higher growth scenarios will be in Haringey and Enfield. This reflects the geographical locations where four-tracking and Crossrail 2 are forecast to have the largest effect.
- Used the same benchmarks applied to address gaps in costs for the baseline scenario (see chapter 3) to estimate the quantum and costs of social infrastructure for: primary and secondary education, pre-school, GPs surgeries and community health centres, leisure facilities and open space
- For each development, a qualitative assessment was made of whether new increased demand for services will would be (i) be met by current provision; (ii) require expansion of provision; or (iii) require new infrastructure
- On the assumption that the planned infrastructure is sufficient, and only sufficient, to meet forecast demand under the baseline, only in instances of very low increased requirements (e.g. less than 0.5 of a GP, or less than one new form of school entry) the assessment assumes that demand can be met by baseline provision.
- Moreover, these small incremental infrastructure requirements were aggregated for each borough to assess whether cumulatively they trigger a requirement for new infrastructure.
- Using the GLA population yield calculator to estimate the 10 – 18 age group, the assessment estimates demand and costs for 6th form provision by including 16-18 year olds in the secondary school calculations. However, it is important to note that in reality a

reasonable proportion of secondary schools will not provide 6th form provision, this being offset by increased FE provision in and around the ULV. As discussed in the baseline chapter, this FE provision will be designed to serve demand from both ULV residents and residents from elsewhere.

- A key assumption is that new school provision will meet community space needs, through dual-use of facilities; therefore the study has not estimated the quantum or cost associated with community space, the assumption being that new school provision will meet community space needs.

Table 8.1: Assumed unit mix by tenure type

Borough	Market housing				Affordable – social rented			
	1bed	2bed	3bed	4bed	1bed	2bed	3bed	4bed
Haringey	12%	25%	37%	26%	65%	6%	11%	17%
Enfield	20%	15%	45%	20%	20%	20%	30%	30%
Waltham Forest	20%	30%	40%	10%	20%	30%	40%	10%
Hackney	22%	45%	33%		59%	5%	36%	

Source: Carter Jonas LLP

Table 8.2: Estimated net new population from the 4 Track scenario

Development	Borough	4 – 9 year olds	11 – 18 year olds	Total population
Linden / Roseberry Works	Haringey	21	14	139
Rectangle of land with car park to east	Haringey	42	28	278
Willoughby Lane	Haringey	21	14	139
Millmead and Ashley Road Extension	Haringey	190	124	1,249
Tottenham Hale Bus Station	Haringey	42	28	278
N17 Studios 784-788 High Road	Haringey	42	28	278
Tottenham Hale retail site	Haringey	42	28	278
Bilton Way	Enfield	127	105	776
Unit 7 & 8 Morson Road	Enfield	152	125	931
Electric Quarter (extension of D202)	Enfield	152	125	931
Montagu Industrial Area	Enfield	457	376	2,793
Meridian Central (extension of D210)	Enfield	786	648	4,810
Rays Road Vacant Land	Enfield	152	125	931
Meridian Angel (extension of D208)	Enfield	583	481	3,569
TOTAL		2,812	2,248	17,377

Table 8.3: Estimated net new population from Crossrail 2 scenario

Development	Borough	4 – 9 year olds	11 – 18 year olds	Total population
Low grade - low density - industrial land (North of Northumberland Park station between rail line and River Lee Navigation)	Haringey	952	620	6,246
105 Brantwood Road (extension of D121)	Haringey	1,270	827	8,328
Linden / Roseberry Works	Haringey	42	28	278
Rectangle of land with car park to east	Haringey	85	55	555
Marsh Lane bus depot	Haringey	63	41	416
Willoughby Lane	Haringey	42	28	278
Tottenham Hale Retail Park (TH8) (extension of D106)	Haringey	444	289	2,915
Suburban intensification	Haringey	42	28	278
Millmead and Ashley Road Extension	Haringey	296	193	1,943
Tottenham Hale Bus Station	Haringey	63	41	416
N17 Studios 784-788 High Road	Haringey	63	41	416
Tottenham Hale retail site	Haringey	63	41	416
Industrial Area South West of Station	Enfield	381	314	2,327
Bilton Way	Enfield	228	188	1,396
Brancroft Way	Enfield	1,015	836	6,206
Ponders End Waterfront (SHLAA), now Large Brimsdown Site	Enfield	1,065	878	6,516
Unit 7 & 8 Morson Road	Enfield	279	230	1,707
Land East of Ponders End Station	Enfield	178	146	1,086
Electric Quarter (extension of D202)	Enfield	254	209	1,552
Montagu Industrial Area	Enfield	736	606	4,499
Meridian East (extension of D213)	Enfield	279	230	1,707
Meridian Central (extension of D210)	Enfield	1,268	1,045	7,758
Canal Side West (extension of D212)	Enfield	330	272	2,017
Rays Road Vacant Land	Enfield	254	209	1,552
Meridian Angel (extension of D208)	Enfield	964	795	5,896
Industrial Area West of Angel Rd Station	Enfield	178	146	1,086
Blackhorse Lane SIL	Waltham Forest	9	6	57
Blackhorse Lane Employment Land (no designation)	Waltham Forest	23	14	142
Blackhorse Lane Borough Employment Area	Waltham Forest	5	3	28
TOTAL		10,873	8,360	68,017

A note on secondary healthcare

8.24 There are no hospitals currently within the ULV. NHS England are moving towards a model of community- based provision of healthcare, focused in expanded GP and community clinics. Based on their advice, no hospital schemes are included in the baseline analysis and this situation is unlikely to change in either the medium or long term. However, the scale of the increased population forecast under the Crossrail 2 scenario would suggest that this may need to be revisited, alongside a wider appraisal of provision across north, and northeast London, if and when the proposals for Crossrail 2 become more developed.

Transport Infrastructure

8.25 The following paragraphs set out the assumptions and methodology used to derive the costs for four-tracking and Crossrail 2.

Stations/Rail

8.26 It has been assumed that the costs for the development of either of the two schemes (four-tracking or Crossrail 2) will be paid for by DfT/Network Rail (four-track) and central government (Crossrail 2). In reality some of the funding for these may come from the developments in the ULV however, this will simply increase the funding gap for other infrastructure. For simplicity therefore the costs of both schemes have not been included in the modelling.

Buses

8.27 For improvements to bus services in the area for either of the scenarios, we have included the additional costs on a per head basis following discussions with TfL Buses. As services will need to be provided in proportion to the development, this method allows proportional increase in costs for the two schemes to be modelled.

8.28 We used the same assumptions as the Baseline scenario, i.e. a cost of £5,164 per household for additional bus kms (this is the total across all 15 years rather than per annum) and £765 per household for infrastructure. These costs can be multiplied by the number of households anticipated in each borough for each scenario to get a cost.

*Highw*ays

8.29 From the base case scenario highway schemes identified by the Boroughs, only the priority schemes required to facilitate the base development were included in the base case. In the two higher growth scenarios, schemes were added that were judged to be required should the additional development occur, with more schemes required to support Crossrail 2 than four-tracking.

8.30 Highway schemes were identified as being priority for the higher growth scenarios through an assessment process using a combination of those junctions within the OAPF identified as nearing capacity as well as other locations identified by local boroughs.

Cycling

8.31 Improvements for walking and cycling have been identified by TfL for each of the boroughs to support four functions; strategic routes, overcoming severance, network of quiet routes and improved connections/cycle provision at stations. Against each borough cycle improvements were prioritised into priority and 'other'. Improvements to overcome severance, and network of quiet routes are split based on the number of additional household compared to the

existing number of households. This calculation was re-run for the two higher growth scenarios.

Public Realm and Walking

8.32 Following discussions with the boroughs and TfL and because public realm improvements can be tailored relatively easy to available budgets, we included a total of £30m across the four boroughs for pedestrian/urban realm improvements linking new developments with existing centres. This cost was then apportioned per household (existing population) and then factored up by household for the two higher growth scenarios. This therefore increased the cost to £33m for the four-tracking scenario and £44m for the Crossrail 2 scenario. These figures do not include any growth on existing development sites so that we are reflecting the impact of additional sites rather than higher density.

Sustainable Measures

8.33 In the base, the cost of sustainable measures, which include behaviour change campaigns to encourage walking, cycling and public transport, such as personalised travel planning are calculated as £12 per additional household. The same formula has been applied to the higher growth scenarios, factored up by the number of households each scenario supports.

Utilities Infrastructure

8.34 Information regarding utilities infrastructure is commercially sensitive in many aspects, particularly due to the lack of guarantee that an initial investment in infrastructure achieves revenue from the end user in many cases. In addition, the level of information required by utilities companies in order to derive the infrastructure required including tenure mix and phasing was not available during the time of the study. As this information is becoming more developed, the GLA will take the relationship forward and continue to work with utilities to test growth scenarios in their models.

9 Four-Tracking Scenario

Development

9.1 The methodology for determining the additional development that the four-tracking scenario could support is detailed in Chapter 8.

9.2 The additional development for the four track scenario is 5,700 additional homes, on top of the base case development delivering 26,141 homes.

Social Infrastructure

9.3 Table 9.1 provides the estimated net new infrastructure required under the Four-Track scenario along with the associated cost. The metrics in the table relate to the infrastructure needed to support a net increase of 5,700 residential units when compared to the base scenario (i.e. a 22% uplift).

9.4 The cost estimates for meeting the total social and community infrastructure need under this growth scenario are £141 million. New infrastructure requirements are centred on two growth areas of Tottenham Hale (in Haringey) and Meridian Water (in Enfield), although there are additional requirements in both Northumberland Park/North Tottenham and Ponders End. Specific sites with the highest levels of social infrastructure requirements are:

- Millmead and Ashley Road Extension – *in Haringey*
- Meridian Central – *Enfield*
- Meridian Angel – *Enfield*

Table 9.1: Estimated net infrastructure under the Four-Track scenario with associated cost

Borough	Infrastructure Type	Additional infrastructure required	Cost (million)
Haringey	Pre-school	Provision for c60 infants	£0.52
	Primary schools	1.9 new forms of entry	£5.5
	Secondary schools	1.2 new forms of entry	£5.4
	6th Form places	Included in secondary provision	(£1.5 – included in above)
	GP/health centres	2.6 GPs	£1.4
	Open space	60,829 sq. m	£0.5
	Indoor sports facilities	none	n/a
Enfield	Pre-school	Provision for c344 infants	£3.1
	Primary	11.5 new forms of entry	£57.0
	Secondary	9.5 new forms of entry	£51.2
	6th Form places	Included in secondary provision	(£14.6 included in above)
	GP/health centres	14.7 GPs	£10.8
	Open space	380,905 sq. m	£3.8
	Indoor sports facilities	637 sq. m	£2.1
TOTAL			£141.3

The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014

Transport Infrastructure

9.5 Additional development initiated and facilitated by four-tracking will require additional transport infrastructure. The methodology to calculate these has been outlined in Chapter 8, with additional improvements summarised below:

- Buses – Additional bus services are represented in additional bus kilometres, with costs represented for 15 years rather than per annum (£5,164 per household) and also additional infrastructure (£765 per household). These costs have been multiplied by the number of households anticipated in each borough to generate the costs.
- Highways – Additional highway costs have been identified by adding additional highway schemes identified through discussions with the Boroughs that have been now classified as a priority to support the four-tracking scenario as they are judged to be essential to support the level of development, including replacement of level crossings with bridges or subways within Enfield and upgrade of the A503 Seven Sisters Road / B152 St Ann's Road junction to replace existing railway bridge, change the road layout for improved traffic flow, pedestrian and cycling facilities, and public realm.
- Cycling – Additional schemes to support the development have been added as well as increasing the cost of existing schemes (due to extensions required) when compared to the base scenario. The costs have been derived in proportion to the number of households.
- Walking & Public Realm – Public Realm schemes can vary in cost significantly, TfL have estimated a likely expenditure for the area based on the base case scenario, which has then been divided by household and multiplied up to four-tracking volume scenario.

These could be refined to add or de-scope as required, however as a proportion of the overall cost, the changes are not considered significant.

- Sustainable Measures – Based on local benchmarking, these have been estimated to cost £12 per household, so this has been applied to the additional growth predicted.

Funding Gap

9.6 Under the four tracking scenario, there is a significant increase in the cost of infrastructure of £150.9m on an NPV basis, see Table 9.2. The majority of this increase is in Enfield, taking their funding requirement to £451.9m. There is no change in requirement for either Waltham Forest or Hackney. As mentioned in section 8, the potential uplift in property values and the potential for increased CIL contributions has not been included within the model.

Table 9.2: The total infrastructure cost under the four-tracking scenario (including optimism bias)

	Four tracking scenario		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	262.7	307.9	13.4	18.1
Enfield	451.9	591.0	137.5	219.3
Waltham Forest	76.3	84.4	0.0	0.0
Hackney	94.6	113.2	0.0	0.0
Total	885.5	1,096.5	150.9	237.4

9.7 Relative to the change in infrastructure cost, the increase in borough CIL revenue is insignificant at £2.0m on an NPV basis. Proportionally, borough CIL is still able to fund around 4% of the total infrastructure cost (see Table 9.3).

Table 9.3: Total borough CIL under the four-tracking scenario (including 20% contingency)

	Four tracking scenario		Change from base scenario	
	NPV (£m)	**Nominal excl. financing costs (£m)**	**NPV (£m)**	**Nominal excl. financing costs (£m)**
Haringey	8.2	9.4	0.8	1.1
Enfield	7.2	8.5	1.2	1.9
Waltham Forest	11.1	12.3	0.0	0.0
Hackney	6.9	7.4	0.0	0.0
Total	**33.4**	**37.6**	**2.0**	**3.0**

9.8 No additional s106 funding has been modelled, therefore combining only the additional infrastructure and additional borough CIL revenue as outlined above, the funding gap increases by £148.9m on an NPV basis. £142.8m of this widening of the funding gap is in Enfield, with no change to the gap in Waltham Forest and Hackney (see Table 9.4).

Table 9.4: The funding (gap)/surplus under the four-tracking scenario

	Four tracking scenario		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	(254.3)	(298.2)	(12.6)	(17.0)
Enfield	(444.7)	(582.5)	(136.3)	(217.4)
Waltham Forest	(65.2)	(72.1)	0.0	0.0
Hackney	(87.3)	(105.5)	0.0	0.0
Total	(851.5)	(1,058.3)	(148.9)	(234.4)

9.9 It is important to note that the scale of funding gap identified is not unusual for a major opportunity area. It is likely to reflect a worst case estimate, for the following reasons:

- Further prioritisation of schemes Is likely to take place
- It assumes no uplifts in land values. Part of any demonstrable uplifts could be captured through a periodic review of CIL rates (noting that the GLA are intending to review Mayoral CIL every 2 years)
- The majority, if not all, of the costs of providing additional schools and health facilities are likely to be met by Central Government
- The majority, if not all, of the costs of providing additional utilities infrastructure is likely to be met by the utility providers.

10 Crossrail 2 Scenario

Development

10.1 The methodology for determining the additional development that the Crossrail 2 scenario could support is detailed in Chapter 8.

10.2 The additional development that may be supported by Crossrail 2 is 22,750 further new homes, in addition to the base case of 26,141 homes.

Social Infrastructure

10.3 The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014.

10.4 Table 10.1: provides the estimated net new infrastructure required under the Crossrail 2 scenario and the associated cost. The metrics in the table relate to the infrastructure needed to support a net increase of 22,750 residential units when compared to the base scenario (i.e. an 87% uplift).

10.5 The social infrastructure requirements under this scenario total £589m. This is £114 million higher than the requirement under the base scenario (of £475m), equivalent to 124% of the total base scenario costs. This disproportionate increase (i.e. 87% uplift in housing units versus 124% uplift in costs) results from:

- a notable proportion of forecast demand for educational infrastructure in the baseline scenario will be met by existing capacity, without the need for further investment
- the most practical and cost-effective expansions of schools are complete/underway, and future school expansions are estimated to cost a similar amount per pupil as the construction of new schools
- the baseline scenario included minimal planned investment in both pre-school and FE provision whereas the growth scenarios including estimates for both 6th form provision as an overall proxy for the 6th form /FE requirements and for pre-school provision –Taken together, these two components account for £77 million under the Crossrail 2 scenario
- The capital costs and secured funding shown are as reported by the ULV boroughs and have different base dates – the PwC model applied indexing to these figures to provide constant costs at 2014.

Table 10.1: Estimated net infrastructure under the Crossrail 2 scenario with associated cost

Borough	Infrastructure type	Additional Infrastructure required	Cost (£m)
Haringey	Pre-school	Provision for c490 infants	£4.4
	Primary schools	16.3 new forms of entry	£89.8
	Secondary schools	10.6 new forms of entry	£59.6
	6th Form places	Included in secondary school FE	£17 (included in above)
	GP/health centres	22.5 GPs	£20.5
	Open space	566,185 sq. m	£5.7
	Indoor sports facilities	1,108 sq. m	£3.6
Enfield	Pre-school	Provision for c1,058 infants	£9.6
	Primary schools	35.3 new forms of entry	£175.1
	Secondary schools	29.6 new forms of entry	£160
	6th Form placed	Included in secondary FE	(£45.7 included in above)
	GP/health centres	45.3 GPs	£42.2
	Open space	1,170,783 sq. m	£11.7
	Indoor sports facilities	2,008 sq. m	£6.5
Waltham Forest	Open space	2,339 sq. m	£0.02m
TOTAL			£588.8

10.6 New infrastructure requirements are centred on the four growth areas of Tottenham Hale, Northumberland Park/North Tottenham in Haringey and Ponders End and Meridian Water in Enfield. Specific sites with the highest levels of social infrastructure requirements are:

- Low grade, low density - industrial land (North of Northumberland Park station between rail line and River Lee Navigation) – *Haringey*
- 105 Brantwood Road – *Haringey*
- Brancroft Way – *Enfield*
- Ponders End Waterfront (SHLAA), now Large Brimsdown Site – *Enfield*
- Montagu Industrial Area – *Enfield*
- Meridian East – *Enfield*
- Meridian Central – *Enfield*
- Meridian Angel – *Enfield*

Transport Infrastructure

10.7 Additional development initiated and facilitated by Crossrail 2 will require additional transport infrastructure. The methodology to calculate these has been outlined in Chapter 8, with additional improvements summarised below:

- Buses – Additional bus services are represented in additional bus kilometres, with costs represented for 15 years rather than per annum (£5,164 per household) and also additional infrastructure (£765 per household). These costs have been multiplied by the number of households anticipated in each borough to generate the costs.
- Highways – Additional highway costs have been identified by adding additional highway schemes identified through discussions with the Boroughs that have been now classified as a priority to support the Crossrail 2 scenario as they are judged to be essential to support the level of development, including the upgrade of the A10 High Road / Amhurst Park / Clapton Common junction.
- Cycling – Additional schemes to support the development have been added as well as increasing the cost of existing schemes (due to extensions required) when compared to the base scenario. The costs have been derived in proportion to the number of households.
- Walking & Public Realm – Public Realm schemes can vary in cost significantly, TfL have estimated a likely expenditure for the area based on the base case scenario, which has then been divided by household and multiplied up to Crossrail 2 volume scenario. These could be refined to add or de-scope as required, however as a proportion of the overall cost, the changes are not considered significant.
- Sustainable Measures – Based on local benchmarking, these have been estimated to cost £12 per household, so this has been applied to the additional growth predicted.

Funding Gap

10.8 Under the Crossrail 2 scenario, the total infrastructure cost rises by £647.3m on an NPV basis versus the base case scenario, see Table 10.2. Similarly to the four-tracking scenario, the requirement in Enfield increases substantially. However, in addition to this, Haringey also requires an additional £211.5m on an NPV basis (see Table 10.2).

Table 10.2: The total infrastructure cost under the Crossrail 2 scenario (including optimism bias)

	Crossrail 2 scenario		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	460.8	626.4	211.5	336.7
Enfield	752.0	1,045.0	437.6	673.3
Waltham Forest	75.4	83.2	(0.9)	(1.2)
Hackney	93.7	112.0	(0.9)	(1.2)
Total	1,381.9	1,866.8	647.3	1,007.6

10.9 The total borough CIL raised through additional development increases by £16.6m on an NPV basis, the majority of which is raised in Enfield. The total borough CIL raised in this scenario is £48m on an NPV basis (see Table 10.3).

Table 10.3: Total borough CIL under the Crossrail 2 scenario (including 20% contingency)

	Crossrail 2 scenario		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	13.6	18.1	6.2	9.8
Enfield	16.2	21.3	10.2	14.6
Waltham Forest	11.3	12.6	0.2	0.3
Hackney	6.9	7.4	0.0	0.0
Total	**48.0**	**59.4**	**16.6**	**24.7**

10.10 Combining the additional infrastructure requirement with the increase in borough CIL revenue, the total funding gap increases by £630.7m to £1,333.3m on an NPV basis. This widening of the funding gap relates only to the boroughs of Haringey and Enfield who gain almost all of the new development and subsequently require all of the new infrastructure (see Table 10.4).

Table 10.4: The funding (gap)/surplus under the Crossrail 2 scenario

	Crossrail 2 scenario		Change from base scenario	
	NPV (£m)	Nominal excl. financing costs (£m)	NPV (£m)	Nominal excl. financing costs (£m)
Haringey	(447.0)	(608.1)	(205.3)	(326.9)
Enfield	(735.7)	(1,023.7)	(427.4)	(658.6)
Waltham Forest	(64.1)	(70.6)	1.1	1.5
Hackney	(86.5)	(104.3)	0.9	1.2
Total	(1,333.3)	(1,806.8)	(630.7)	(982.9)

10.11 It is important to note that the scale of funding gap identified is not unusual for a major opportunity area. It is likely to reflect a worst case estimate, for the following reasons:

- Further prioritisation of schemes Is likely to take place
- It assumes no uplifts in land values. Part of any demonstrable uplifts could be captured through a periodic review of CIL rates (noting that the GLA are intending to review Mayoral CIL every 2 years)
- The majority, if not all, of the costs of providing additional schools and health facilities are likely to be met by Central Government
- The majority, if not all, of the costs of providing additional utilities infrastructure is likely to be met by the utility providers.

11 Summary and Conclusions

Summary

11.1 The Upper Lee Valley Opportunity Area is one of the largest opportunity areas in London, covering 3,884 hectares. In July 2013 the Upper Lee Valley Opportunity Area Planning Framework (OAPF) was adopted by the Mayor of London. It sets out eight objectives for the area, including the delivery of 20,100 new homes and 15,000 new jobs by 2031. A number of growth areas were identified in the OAPF where this development is expected to be focused, including: Blackhorse Lane; Tottenham Hale; North Tottenham / Northumberland Park; Meridian Water; Edmonton Green; Ponders End and the A10/A1010 corridor.

11.2 This report summarises the work Steer Davies Gleave, Price Waterhouse Coopers, Carter Jonas and SQW have undertaken to determine the infrastructure required to support the planned development in the Upper Lee Valley and how this can be funded. The analysis has been undertaken working closely with TfL, GLA, London Boroughs of Enfield, Hackney, Haringey, and Waltham Forest.

11.3 The report has investigated the infrastructure required for the base scenario (with no major rail infrastructure capacity improvements), as well as two higher growth scenarios with WAML four-tracking and Crossrail 2 providing significant additional capacity through the Upper Lee Valley. This has included the following key elements:

- Understanding the planned development and associated infrastructure requirements including timing and costings;
- Identifying what contributions can be collected from developers in accordance with current policy;
- Developing a numerical model to assess the gap between the cost of infrastructure and the available funding; and
- Identifying potential sources of additional funding to close the gap whilst ensuring development sites remain viable.

11.4 Working with the four boroughs and TfL we have identified the infrastructure schemes that would be required to support and unlock development within the Upper Lee Valley Opportunity Growth Area. This includes the transport, utilities and social infrastructure required to support the additional 26,141 homes and 16,274 jobs by 2031.

11.5 The Base Scenario has been developed by identifying development sites and infrastructure projects adopted and emerging Local Plans, Infrastructure Delivery Plans and other planning documents such as Development Policies. These were refined and agreed with the boroughs as well as TfL, utility providers, the Environment Agency, the NHS and the Learning Trust regarding planned infrastructure.

11.6 The study includes only infrastructure schemes that are considered to be strategic. In other words, schemes which are required to enable groups of developments, rather than a single development site. The study is also limited to considering only capital costs; those that relate to the construction of an infrastructure project rather than the ongoing cost of operating/maintaining the infrastructure.

11.7 The viability of schemes have been assessed through reviewing local CIL policies as well as benchmarking, in detail, ten individual schemes. Our analysis has demonstrated that both the policy compliant levels of affordable housing, and the levels of affordable housing actually delivered (according to the London Development Database), would be unviable to bring forward the required and desired level of growth within the Upper Lee Valley. Therefore, policy alterations or exceptions may be required in order to deliver this growth.

11.8 Table 11.1 summarises the results from the base scenario, including the scenario where priority infrastructure only is included. In addition to borough CIL and s106, the additional funding sources that have been modelled are Incremental Business Rates (IBRI), New Homes Bonus, Mayoral CIL, Stamp Duty Land Tax (SDLT) and council tax. Of these sources, only IBRI and the New Homes Bonus have been included in the modelling scenarios as these are the two mechanisms that are currently supported by policy. For the base case scenario considering all schemes, the inclusion of these additional mechanisms reduces the funding gap in NPV terms from £702.5m to £279.3m. It should be noted that these funding mechanisms are not currently available and discussions with the Boroughs and central Government would be required before they could realistically be taken forward.

Table 11.1: Total funding (gap)/ surplus by scenario

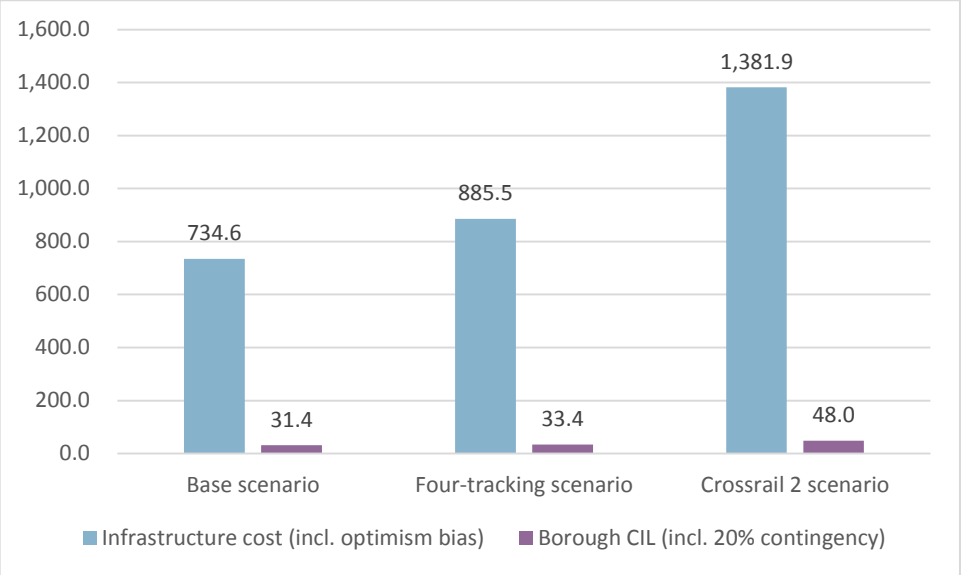
	NPV (£m)	Nominal excl. financing costs (£m)
Base case *(borough CIL and s106 only)*	(702.5)	(823.9)
Base case *(borough CIL, s106, IBRI and New Homes Bonus)*	(279.3)	102.7
Priority schemes *(borough CIL and s106 only)*	(438.4)	(499.6)
Priority schemes *(borough CIL, s106, IBRI and New Homes Bonus)*	(15.2)	427.0

11.9 In addition to the base scenario, two higher growth scenarios have been modelled to assess the impact of two major rail infrastructure capacity schemes: four-tracking and Crossrail 2. These have been included in the modelling in such a way as to increase the number of homes delivered and associated contributions, however, the costs of delivering the rail schemes have been assumed to be paid for by DfT/Network Rail (four-tracking) and Central Government (Crossrail 2). Although in reality, the development growth is likely to part fund the schemes and therefore this assumption will underestimate the funding gap, we have used this methodology for a number of reasons. With the current uncertainty regarding the mechanisms to fund Crossrail 2 (and its cost), this provides a clean base from which to understand the funding gap. As discussions progress regarding the funding required for Crossrail 2 and how this might be achieved, the model could be updated, however at this stage, it provides what we believe to be a sensible baseline. If development funded these transport schemes there would be less funding for other improvements such as walking & cycling schemes or social infrastructure.

11.10 Assessing the growth and associated funding provided for four-tracking and Crossrail 2, the funding gap for the two schemes is estimated at £833.55m (Net Present Value) and £1,333.28m (NPV) for four-tracking and Crossrail 2 respectively.

11.11 Figure 11.1 shows graphically the increase in infrastructure requirement and borough CIL collected for the four boroughs combined. This may underestimate the potential funding that could be available if potential increases in land values as a result of the four-tracking and Crossrail 2 infrastructure could also be captured.

Figure 11.1: The total infrastructure requirement and borough CIL generated in each growth scenario (£ millions on an NPV basis)



11.12 It is important to note that the scale of funding gap identified is not unusual for a major opportunity area. It is likely to reflect a worst case estimate, for the following reasons:

- Further prioritisation of schemes Is likely to take place
- It assumes no uplifts in land values. Part of any demonstrable uplifts could be captured through a periodic review of CIL rates (noting that the GLA are intending to review Mayoral CIL every 2 years)
- The majority, if not all, of the costs of providing additional schools and health facilities are likely to be met by Central Government
- The majority, if not all, of the costs of providing additional utilities infrastructure is likely to be met by the utility providers.

11.13 As well as reviewing the affordable housing policy, it is suggested that regulations regarding s106 contributions should be explored to facilitate more than five developments contributing to an infrastructure scheme. This would allow greater flexibility for such areas to encourage and allow a more strategic approach to development and infrastructure.

11.14 Although this study has limitations, in providing a snapshot of the situation at the present time as well as requiring additional consultation with utility providers by the GLA going forward, it has presented the development potential of the three scenarios, the infrastructure required and the potential funding mechanisms that can be explored to reduce the gap. It has also provided TfL, GLA and the four Upper Lee Valley Boroughs with a model that can be used in the future to test the impact of growth development, policies and funding mechanisms.

Further Work

11.15 In order to further develop this study to inform those developing policies for the area, future studies that may be of interest to those developing policies for the area include:

- Regular CIL reviews in order to capture additional land values whilst ensuring development comes forward.
- Further prioritisation of and refinement of schemes.
- Additional detail on the utility infrastructure required to support the higher growth scenarios for the 'masterplan' areas.
- Ongoing maintenance of the model.
- More detailed modelling of some of the additional potential funding streams to more closely define the extent to which they can assist with overcoming the funding gap.

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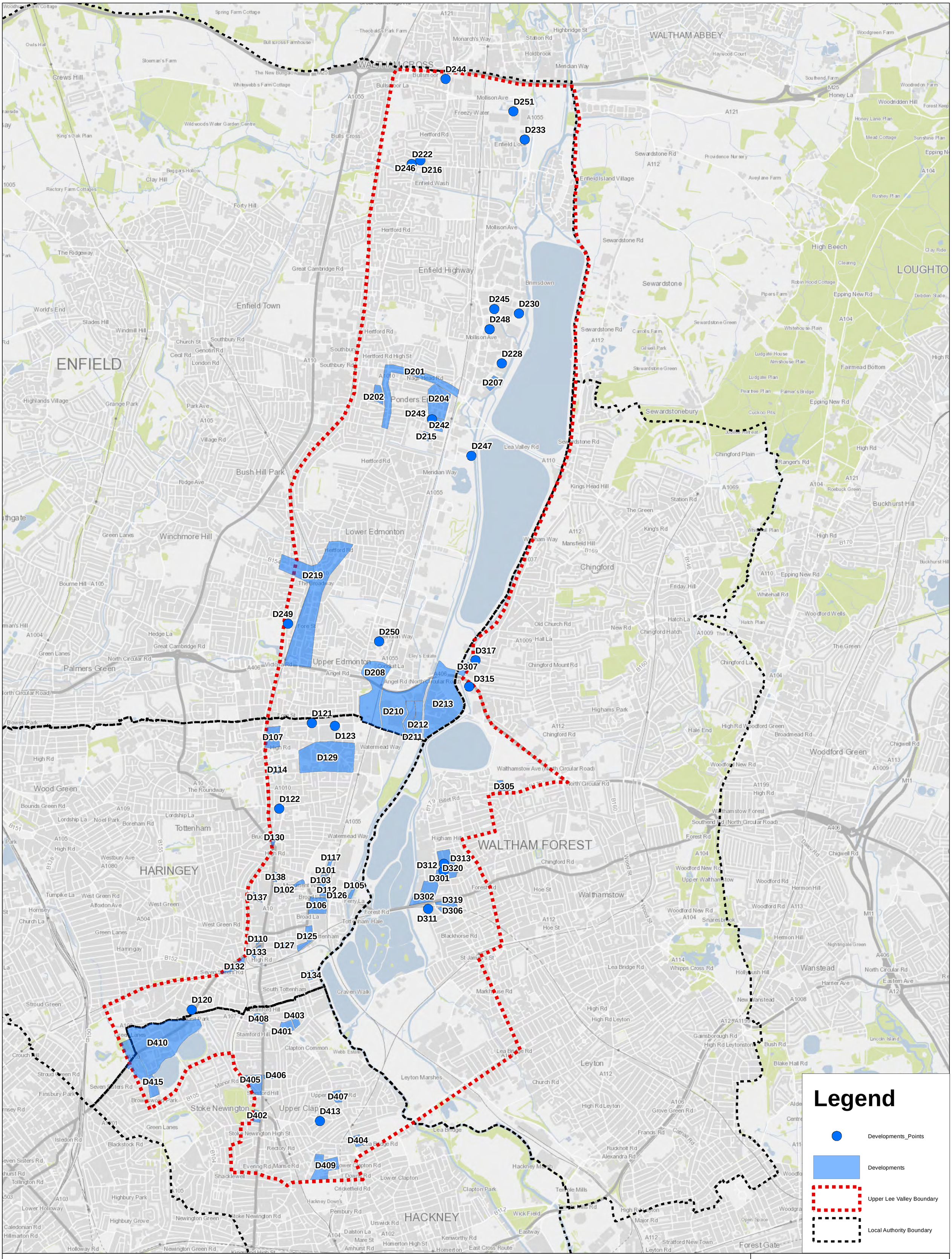
Appendices

A Development Schemes – Base Scenario

Upper Lee Valley DIFS

Developments



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orussell	02/09/2015	20,892

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Development for Base Scenario																
Development	Unique ID	Area	Planning permission year	Construction Year	Completion year	Resi. Units	Commercial floor area (sqm)	Retail Floor Area (sqm)	Hotel (beds)	Industrial Employ. (Sqm)	Jobs	Student Units	Community floor area (sqm)	Cultural Centre (sqm)	Leisure Use (sqm)
Haringey															
Gourley Triangle (SS2)	132	Totteham Green	2017	2018	2021	214	4,976				172				
Apex House (SS3)	133	Tottenham Green	2015	2016	2018	100	1,600				55				
Wards Corner (SS5)	110	Tottenham Green	2014	2015	2020	163		3,700			176				
Land front of Tottenham Leisure Centre (TG1)	137	Tottenham Green	2016	2017	2018	37					-		857		
Tottenham Police Station & Reynardson Court (TG3)	138	Tottenham Green	2018	2019	2021	30	1,225				42				
High Road East (NT1)	122	Northumberland Park	2022	2023	2026	396	340	340			87				
Northumberland Park Estate Renewal (NT2)	129	Northumberland Park	2017	2018	2026	1804	1,550	1,550			127				
High Road West (NT3)	107	Northumberland Park	2016	2017	2026	1400	11,661				600		14,000		
Tottenham Hotspur Stadium (NT5)	114	Northumberland Park	2014	2015	2020	200	9,250	28,221	150		370				85,000
Bruce Grove Snooker Hall & Banqueting Suite (BG1)	130	Bruce Grove	2015	2016	2018	55		1,000			48				
Station Square West (TH1)	103	Tottenham Hale	2015	2016	2020	676	6,000	5,200			455		4,700		
Ashley Road South (TH2)	101	Tottenham Hale	2018	2019	2023	500	7,700	3,600			437		4,700		
Ashley Road North (TH3)	117	Tottenham Hale	2018	2019	2021	180	6,200				214		4,300		
Tottenham Hale Station Interchange (TH4)	112	Tottenham Hale	2015	2016	2018	190	7,000	2,400			98		1,600		
Tottenham Hale Retail Park (TH5)	106	Tottenham Hale	2016	2017	2023	770	19,000	29,000			689		14,000		
Hale Village Tower & Pavillions (TH6)	126	Tottenham Hale	2018	2019	2021	530					-				
Hale Wharf (TH7)	105	Tottenham Hale	2014	2015	2020	330		1,000			186		1,300		
Welbourne Centre & Monument Way (TH8)	102	Tottenham Hale	2014	2015	2018	175					-		1,500		
Fountayne & Markfield Rd (TH9)	125	Tottenham Hale	2017	2018	2023	97	10,000				345				
Herbert Rd and Constable Rd (TH10)	127	Tottenham Hale	2017	2018	2021	100	4,116				142				
341 - 379 Seven Sisters Road	120	N15 6SE	2022	2023	2025		1,015				35				
105 Brantwood Road	121	N17 0DX	2013	2014	2016		1,113				82				
104-106 Harvest House	123	N17 0XW	2020	2021	2023		37,656				858				
Leabank and Lemsford Close (SA55)	134	Seven Sisters	2013	2014	2020	65					-				
Low grade - low density - industrial land (North od Northumber	145	N17 9RJ	2015	2016	2031	0	36,805				1,269				
Enfield															
Electric Quarter (former Middlesex University)	202	Ponders End	2015	2016	2018	160	2000				44		1000		
South Street, Alma Estate & Ponders End Station	204	Ponders End	2015	2016	2021	83		900			20		550		375
Southern Brimsdown	207	Ponders End	2016	2017	2018	0				31,552	701				
Meridian Angel & The Gateway	208	Meridian Water	2016	2017	2019	1250	24330				505				
Meridian Central	210	Meridian Water	2019	2020	2029	650	18270	42525			1,262				
The Islands	211	Meridian Water	2019	2020	2029	1100					-				
Canal-side West	212	Meridian Water	2019	2020	2029	1100					-				
Meridian East	213	Meridian Water	2019	2020	2029	1100	65820				1,367				
Robbins Hall, Gardiner Close	215		2014	2015	2017	3					-				
Kettering Hall, 69 Ordnance Road	216		2015	2016	2018	24					-				
Edmonton Green	219		2023	2024	2026						-				
Hertford Road (EN3 6LZ)	222	EN3 6LZ	2017	2018	2020	58					-				
102 East Duck Lees Lane	228	EN3 7UH	2011	2015	2017					4,670	104				
Car Park, 57 Stockingswater Lane	230	EN3 7PH	2012	2015	2017					8,778	195				
Innova park Plot 1	233		2014	2015	2017		8,564				190				
Academy Street / Dujardin Mews (gas holders site)	242		2013	2015	2016	38					-				
Former Public House, 173 South Street	243	EN3 4PZ	2012	2015	2017	50					-				
Mollison Avenue	244	EN8 7RU	2014	2015	2017		4197			-7,621	- 76				
Stockingswater Lane	245	EN3 7PH	2014	2015	2017					8,778	195				
Hertford Road	246	EN3 6ND	2014	2015	2017						-		985		
Morson Road	247	EN3 4NQ	2014	2015	2017		6333			6333	281				
Jeffreys Road	248	EN3 7PW	2014	2015	2017		3058				68		2020		

Development	Unique ID	Area	Planning permission year	Construction Year	Completion year	Resi. Units	Commercial floor area (sqm)	Retail Floor Area (sqm)	Hotel (beds)	Industrial Employ. (Sqm)	Jobs	Student Units	Community floor area (sqm)	Cultural Centre (sqm)	Leisure Use (sqm)
Victoria Road	249	N9 9SU	2014	2015	2017			-820			- 18		1392		
Gibbs Road	250	N18 3PU	2014	2015	2017		2860				64				
Solar Way	251	EN3 7XY	2014	2015	2017		284			3,255	79				
Industrial Area South West of Station	252	Enfield Lock, EN3 7ER	2015	2016	2031	1833	7,436				240				
Waltham Forest															
Blackhorse Road Station hub and waterfront (Forest Road / Blackhorse Lane, W'stow E17 (BHL1)	302	Blackhorse Lane	2015	2016	2018	1,000	1,500	3,000			191				
Billet Works, Billet Road, E17 (BHL7)	305	Blackhorse Lane	2012	2013	2015	344	1119	787			74		496		
152/154 Blackhorse Road, E17 (BHL8)	306	Blackhorse Lane	2013	2016	2018	40	650				21				
Webbs Industrial Estate, 108 Blackhorse Lane & 47 Sutherland Road, E17 (BHL6)	313	Blackhorse Lane	2015	2016	2018	252	786	1099			91				
Car Wash Site, Forest Road (BHL2)	319	Blackhorse Lane	2019	2020	2026	50	1300	200			51				
BHL4 South	320	Blackhorse Lane	2015	2016	2018	200	2700				87				
Chingford Mill Pumping Station, 35 Lower Hall Lane, E4 (SSA17)	307	Lower Hall Lane	2013	2015	2016	14					-				
Sutherland Road (47-79 Sutherland Road, E17) BHL4	301	Blackhorse Lane	2013	2014	2016	154	2,000				65				
213 TO 215 BLACKHORSE ROAD	311	E17 6ND	2023	2024	2026		2,604				84				
49 TO 53 SUTHERLAND ROAD	312	E17 6BH	2023	2024	2026	235	786	1099			104				
Shadbolt Avenue	315	E4 8PZ	2023	2024	2026			2351		52	113				
Lowe Hall Lane depot, South Access Road, E10	317	E4 8JB	2023	2024	2026	200				700	89				
Blackhorse Lane SIL	341	Waltham Forest	2015	2016	2031	1,072	27,032				872				
Hackney															
Tower Court, Clapton Common, E5	401	Clapton Common	2015	2016	2017	129					-				
Wilmer Business Park, Wilmer Place, Stoke Newington, N16 0LH	402	Wilmer Park	2013	2015	2016	47		1,525			42		166		
ARRIVA/Stamford Hill (Bus) Garage, Rookwood Road, N16 6SS	403	Stamford Hill	2020	2021	2023	210					-		1,000		
Tram Depot, 38-40 Upper Clapton Road, E5 8BQ	404	Upper Clapton Road	2010	2015	2016	75		37			2				
41-45 Stamford Hill, N16 5SR	405	Stamford Hill	2018	2019	2021	65	3,680	500			29		500		500
92-94 Stamford Hill, N16 8XS	406	Stamford Hill	2014	2017	2019	83	384				29				
Telephone Exchange, Upper Clapton Road, E5 9JZ	407	Upper Clapton Road	2018	2019	2021	28	1,549				53				
151 Stamford Hill, N16 5LG	408	Stamford Hill	2017	2018	2020	69	1,874	2,681			192				
Nightingale Estate	409	Downs Road, E5 8LB	2014	2015	2018	1,500					-				
Woodberry Down, Seven Sisters Road, N4 1DH (2013/3223)	410	Woodberry Down	2013	2005	2027	3,544	3,080	4,420			317		17,712		10,010
32 Galdeston Road	413	E5 8RJ	2015	2016	2018						28				
Manor House AAP	415		2016	2017	2026	369	2,400	3,541			251				8,580
All Other Development	440	Hackney	2015	2016	2031	-					1,781				

B Social Infrastructure Schemes – Base Scenario

Social and Community Infrastructure

Scheme	Area	Infrastructure type	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date
Haringey								
Greater Ashley Road	Tottenham Hale	Education	Primary	£8,500,000	2010	£2,072,700	2015	2016
Northumberland Park	Tottenham	Education	Primary	£5,796,000	2010	£5,796,000	2018	2020
White Hart Lane Recreation ground	Tottenham	Leisure	Built community facilities	£2,750,000	2010		2015	2015
Northumberland Park	Tottenham	Education	Secondary	£6,210,000	2010	£4,089,000.00	2018	2020
Haringey	Haringey	Education	Pre-school	£470,470	2014	£120,396	2015	2015
Tottenham Hale	Tottenham Hale	Education	Primary	£11,500,000	2010	4,145,400	2015	2016
Haringey	Haringey	Education	Primary	£5,796,000	2010		2018	2020
Haringey	Haringey	Education	Secondary	£31,999,920	2010	16,356,000	2016	2019
Tottenham Hale	Tottenham Hale	Healthcare	GP	£2,180,400	2010		2015	2016
LB Haringey	LB Haringey	Education	Primary	£1,500,000	2010	592,220	2018	2020
High Road West	Tottenham	Healthcare	GP	£2,180,400	2010		2023	2025
Hale Village Tower	Tottenham	Education	Primary	£11,500,000	2010	4,145,400	2015	2015
Hale Village Tower	Tottenham	Education	Pre-school	£470,470	2014	£120,396	2015	2015
Hale Village Tower	Tottenham	Healthcare	Community Hospitals/walk in centres	£4,939,968	2013		2016	2018
Northumberland Park	North Tottenham	Healthcare	Community Hospitals/walk in centres	£15,125,307	2013		2018	2020
Tottenham Hale	Tottenham Hale	Education	Primary	£8,500,000	2010	£2,072,700	2015	2017
Northumberland Park	Tottenham	Education	Primary	£21,000,000	2010	£8,290,800	2018	2020
Northumberland Park	Tottenham	Education	Secondary	£40,000,000	2010	£20,445,000	2018	2020
High Road West	Tottenham	Education	Pre-school	£470,470	2014	£120,396	2018	2020
Enfield								
Picketts Lock	Meridian Water	Leisure		£2,750,000	2010		2017	2019

Scheme	Area	Infrastructure type	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date
South Central edge of masterplan area (east of Ikea site)	Meridian Water	Education	Primary	£9,930,000	2014	£4,145,400	2016	2019
South Central edge of masterplan area	Meridian Water	Education	Secondary	£23,188,000	2014	£12,267,000	2016	2019
West edge of masterplan area	Meridian Water	Education	Primary	£9,930,000	2014	£4,145,400	2017	2018
Prince of Wales Primary School	Enfield Lock	Education	Primary	£2,600,000	2013	£2,600,000.00	2013	2017
Secondary Tuition Centre	Bullsmoor Lane	Education	Secondary	£10,115,000	2015	£4,089,000	2015	2017
Capel Manor College Estate	Bullsmoor Lane	Education	Tertiary	£1,310,000	2011	1,310,000	2015	2016
note mapped incorrectly	Central Leeside (Meridian Water)	Healthcare	GP	£3,910,000	2010		2021	2023
South Street	North East Enfield	Healthcare	GP	£1,700,000	2011		2018	2020
Innova Park	Enfield Lock	Healthcare	GP	£1,700,000	2011		2018	2020
Alma Estate	Ponders End			£1,700,000	2014		2018	2020
Highmead	Angel Edmonton	Healthcare	Community Hospitals/walk in centres	£1,700,000	2011		2015	2015
	Meridian Water	Cultural Centres		£2,000,000	2011		2018	2020
Threeway Bridge /North Columbia Wharf	Ponders End Waterfront	Leisure	Open facilities - informal	£2,000,000	2011		2019	2020
Albany Park	Enfield Lock	Leisure	Open facilities - informal	£2,500,000	2011		2019	2020
	Central Leeside (Meridian Water)	Leisure	Open facilities - informal	£200,000	2010		2021	2022
Meridian Water Towpath	Central Leeside (Meridian Water)	Leisure	Open facilities - informal	£300,000	2011		2019	2020
Heron Hall Academy	Queensway Rd	Education	Secondary	£30,916,800	2014	£30,916,800.00	2015	2016
Arc North Enfield	Ponders End	Education	Secondary	£23,188,000	2015	£23,188,000.00	2016	2018
Oasis Academy Hadley	Poners End	Education	Secondary	£2,100,000	2014	£2,100,000.00	2015	2015
Waltham Forest								
Walthamstow Wetlands, Reservoirs, Forest Road	Blackhorse Road, Walthamstow	Leisure	Open Space	£8,700,000	2014	£8,700,000	2015	2017
Willowfield Humanities College, Clifton Road	Blackhorse Road, Walthamstow	Education	Secondary	£20,000,000	2014	£20,000,000	2015	2015
North Sutherland Road, Walthamstow E17 (Site reference BHL4)	Blackhorse Road, Walthamstow	Leisure	Public Realm and new open space (pocket park)	£1,600,000	2014	£900,000	2015	2018

Scheme	Area	Infrastructure type	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date
BLAAP sites BHL1 (Station), BHL4 North (Sutherland Road) or BHL6		Healthcare	GP surgery	£2,725,500	2010		2015	2018
BLAAP sites BHL1 (Station), BHL4 North (Sutherland Road) or BHL6		Healthcare	Dental practice	£1,500,800	2010		2015	2018
Stoney Down Primary School		Education	Primary	£2,898,000	2010	2,072,700	2015	2016
Walthamstow Primary Academy		Education	Primary	£11,500,000	2010	£11,500,000	2015	2015
Kelmscott School	Markhouse Road	Education	Secondary	£6,210,000	2010	4,089,000	2016	2017
Waltham Forest Leisure Centre (formerly 'WF track and pool')		Leisure	Sports	£22,500,000	2010	£11,250,000	2015	2016
Hackney								
Woodberry Down Estate	Woodberry Down	Education	Primary	£7,599,900	2014	£4,411,680	2015	2017
Southwold	Clapton	Education	Primary	£7,599,900	2014	£7,599,900	2014	2015
Nightingale Road	Lower Clapton	Healthcare	GP	£1,090,200	2010		2014	2016
Borough wide	(Borough-wide)	Healthcare	Community Hospitals/walk in centres	£1,500,800	2010		2018	2020
Stoke Newington	Stoke Newington	Education	Primary	£7,599,990	2014	4,411,680	2015	2017
Stoke Newington	Stoke Newington	Education	Primary	£7,599,900	2014	£7,599,900	2015	2015
Stamford Hill	Stamford Hill	Education	Primary	£7,599,900	2014	£4,411,680	2028	2030
Stamford Hill	Stamford Hill	Healthcare	GP	£8,176,500	2010		2023	2025
Woodberry Down Estate		Education	Primary	£3,799,950	2014	£2,205,840	2020	2022
General		Education	Secondary	£5,859,000	2014	£2,363,400	2017	2019

C Transport & Utility Infrastructure Schemes – Base Scenario

Transport and Utilities

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Haringey									
Tottenham Hale Station Upgrade	Station	£5,000,000	2014	£5,000,000	2016	2017	✓	✓	✓
Improve entrance to Park via highway crossing	Pedestrian	£84,000	2014		2024	2026			✓
Bruce Grove Station forecourt improvements	Station	£1,000,000	2015		2015	2016			✓
West Anglia Line through Seven Sisters - turn back at Seven Sisters	Rail	£1,000,000	2015		2018	2019			✓
Tottenham Green Link	Cycle	£16,000,000	2015	£6,720,000	2015	2017	✓	✓	✓
Northumberland Park Critical Drainage Area (Group4-061)	Flood	£2,030,000	2013	£1,015,000	2023	2026			✓
Haringey and South Tottenham Critical Drainage Area (Group4_057)	Flood	£2,360,000	2013	£1,180,000	2023	2026			✓
Northumberland Park decentralised Energy Opportunity Area	Energy	£12,500,000	2015		2020	2025	✓	✓	✓
Tottenham Hale decentralised Energy Opportunity Area	Energy	£12,500,000	2015		2020	2025	✓	✓	✓
Tottenham High Road Urban Realm Enhancements	public realm	£2,000,000	2015		2016	2017	✓	✓	✓
Smarter Travel Initiatives	sustainable measures	£96,144	2015		2015	2031	✓	✓	✓
West Green Road public realm work	public realm	£1,500,000	2015		2016	2018			✓
Bruce Grove TfL public realm works	public realm	£1,000,000	2015		2016	2018			✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
White Hart Lane station accessibility and capacity enhancements	Station	£14,000,000	2015	£11,000,000	2016	2018	✓	✓	✓
Pedestrian/urban realm improvements linking new developments with existing centres	public realm	£6,000,000	2015	£1,000,000	2016	2019	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£9,750,000	2015		2015	2031	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£900,000	2015		2015	2031			✓
Overcoming severance - cycling	Cycle	£233,817	2015		2015	2031	✓	✓	✓
Overcoming severance - cycling	Cycle	£713,329	2015		2015	2031			✓
network of quiet routes	Cycle	£1,184,950	2015		2015	2031	✓	✓	✓
network of quiet routes	Cycle	£3,615,050	2015		2015	2031			✓
Improved connection to and cycle provision at stations	Cycle	£625,000	2015		2015	2031	✓	✓	✓
Improved connection to and cycle provision at stations	Cycle	£125,000	2015		2015	2031			✓
Pedestrian/urban realm improvements around core ULV stations (Tottenham Hale and Northumberland Park)	public realm	£2,000,000	2015		2015	2031	✓	✓	✓
Moselle Brook flood defences	Flood	£4,500,000	2015	£900,000	2021	2025	✓	✓	✓
Highway Junction Improvements	Highway	£6,000,000	2015		2016	2031	✓	✓	✓
Bruce Grove step-free access	Station	£5,000,000	2015		2019	2024			✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Enfield									
Redevelopment of Edmonton Eco Park	Waste	£30,000,000	2015	£30,000,000	2016	2025	✓	✓	✓
Angel Road Station Borough Scheme - move station south	Station	£11,000,000	2015	£9,000,000	2015	2018	✓	✓	✓
Lee Navigation bridge	Bridge	£4,216,000	2014		2017	2019	✓	✓	✓
Riverside Walk	Pedestrian	£500,000	2014		2016	2017	✓	✓	✓
Improved access to Lee Valley Regional Park, River Lee and King George's Reservoir	Pedestrian	£12,240,000	2014		2020	2021		✓	✓
Footpath along allotments and South Street	Pedestrian	£313,000	2014		2016	2017		✓	✓
Meridian Water Spine Road including bridge over existing highway	Highway	£22,215,000	2015		2017	2019	✓	✓	✓
Northern Gateway Access Route	Highway	£25,000,000	2015		2020	2022		✓	✓
replacement of level crossings with bridges or subways	Highway	£30,000,000	2015		2020	2024		✓	✓
Ponders End station DDA bridge	Station	£3,000,000	2013		2018	2019	✓	✓	✓
Decontamination of Turkey Brook At Albany Park	Flood	£500,000	2013	£70,000	2018	2019		✓	✓
Flood compensation areas - Meridian Water	Flood	£2,144,000	2013	£1,072,000	2018	2019	✓	✓	✓
Montagu Road - increase conveyance	Flood	£200,000	2013	£100,000	2018	2019		✓	✓
Increase Bullsmoor Lane drainage capacity	Flood	£300,000	2013	£210,000	2023	2024		✓	✓
M25 Holmesdale Tunnel drainage	Flood	£1,000,000	2013	£700,000	2023	2024		✓	✓
Smarter Travel Initiatives	sustainable measures	£101,388	2015		2015	2031	✓	✓	✓
Pedestrian/urban realm improvements linking new developments with existing centres	public realm	£11,000,000	2015		2016	2019	✓	✓	✓
Step-free access at Brimsdown	Station	£5,000,000	2015		2019	2024		✓	✓
Step-free access at Enfield Lock	Station	£5,000,000	2015		2019	2024		✓	✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Improvements to strategic cycling Routes	Cycle	£2,250,000	2015		2015	2031	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£9,500,000	2015		2015	2031		✓	✓
Overcoming severance - cycling	Cycle	£289,430	2015		2015	2031	✓	✓	✓
Overcoming severance - cycling	Cycle	£1,592,293	2015		2015	2031		✓	✓
Network of quiet routes	Cycle	£1,615,016	2015		2015	2031	✓	✓	✓
Network of quiet routes	Cycle	£8,884,984	2015		2015	2031		✓	✓
Improved connection to and cycle provision at stations	Cycle	£375,000	2015		2015	2031	✓	✓	✓
Improved connection to and cycle provision at stations	Cycle	£625,000	2015		2015	2031		✓	✓
Pedestrian/urban realm improvements around Ponders End	public realm	£1,000,000	2015		2015	2031	✓	✓	✓
A406 Flood Defences at Edmonton	Flood	£1,000,000	2015	£500,000	2025	2027		✓	✓
Decentralised energy system	Energy	£21,400,000	2014		2015	2019	✓	✓	✓
Highway Junction Improvements	Highway	£10,000,000	2015		2016	2031	✓	✓	✓
Caterhatch Lane / A10	Highway	£150,000	2015		2016	2016	✓	✓	✓
Mini Holland - £30m Cycle Infrastructure	Cycle	£15,000,000	2013	£15,000,000	2015	2018		✓	✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Waltham Forest									
Re-open Lea Bridge Station	Station	£11,600,000	2014	£11,600,000	2015	2015			✓
Improve/replace bridge over flood relief channel	Bridge	£2,000,000	2015		2025	2026			✓
enhance Ferry Lane and Forest Road	public realm	£3,000,000	2015		2016	2017			✓
Blackhorse Lane streetscape Improvements including cycle route	public realm	£1,500,000	2015		2016	2017			✓
Sutherland Road Public Realm improvements	public realm	£1,600,000	2015		2015	2018			✓
Mini Holland - £30m Cycle Infrastructure	Cycle	£9,387,500	2013	£9,248,750	2015	2018			✓
Blackhorse Road / Forest Road junction improvements	Highway	£2,900,000	2015	£1,250,000	2015	2018	✓	✓	✓
Blackhorse Road station refurbishment	Station	£1,000,000	2015		2015	2018	✓	✓	✓
Blackhorse Road Station public realm improvements	Public realm	£1,500,000	2015		2016	2018	✓	✓	✓
North-south route through Walthamstow Wetlands	Cycle	£1,000,000	2014	£1,000,000	2015	2016			✓
Smarter Travel Initiatives	sustainable measures	£42,732	2015		2015	2031	✓	✓	✓
Link from Walthamstow Wetlands to Lee Valley Path	Cycle	£313,000	2014		2016	2017			✓
Blackhorse Lane North decentralised energy system	Energy	£3,800,000	2015		2015	2017	✓	✓	✓
Blackhorse Lane South decentralised energy system	Energy	£5,100,000	2015		2017	2020	✓	✓	✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Pedestrian/urban realm improvements linking new developments with existing centres	public realm	£7,000,000	2015		2016	2019	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£1,800,000	2015		2015	2031			✓
Overcoming severance - cycling	Cycle	£194,964	2015		2015	2031	✓	✓	✓
Overcoming severance - cycling	Cycle	£963,014	2015		2015	2031			✓
network of quiet routes	Cycle	£757,647	2015		2015	2031	✓	✓	✓
network of quiet routes	Cycle	£3,742,353	2015		2015	2031			✓
Improved connection to and cycle provision at stations	Cycle	£125,000	2015		2015	2031	✓	✓	✓
Improved connection to and cycle provision at stations	Cycle	£125,000	2015		2015	2031			✓
Dagenham Brook Flood Defence	Flood	£4,100,000	2015	£1,640,000	2018	2020			✓
A406 Flood Defences at Chingford	Flood	£1,000,000	2015	£500,000	2025	2027			✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Hackney									
Seven Sisters Road	Highway	£8,000,000	2014		2016	2018	✓	✓	✓
Removal of Stoke Newington Gyratory	Highway	£10,000,000	2013		2018	2020			✓
footbridge across New River to Eade Road	Pedestrian	£327,000	2014		2025	2027	✓	✓	✓
Portland Avenue junction improvements	Highway	£400,000	2015		2015	2017			✓
Improved accessibility at Clapton Station	Station	£1,000,000	2013		2018	2019			✓
Improved accessibility at Stoke Newington Station	Station	£1,000,000	2013		2017	2018			✓
Estate cycle parking	Cycle	£168,000	2013	£80,000	2016	2020			✓
Car Club expansion	sustainable measures	£560,000	2013	£20,000	2016	2020			✓
Introduce Controlled Parking Zones	Highway	£280,000	2013		2016	2031			✓
Smarter Travel Initiatives	sustainable measures	£73,428	2015		2016	2031	✓	✓	✓
Upgrade of New River Path	Pedestrian	£812,000	2014		2025	2027	✓	✓	✓
Piccadilly line improvements	underground	£5,000,000	2015	£5,000,000	2020	2030			✓
Cazenove Rd corridor improvements	Highway	£750,000	2015		2016	2018			✓
Safer cycling for Schools scheme (Cycling to school partnership)	Cycle	£250,000	2015		2016	2018			✓
Green lanes Corridor Scheme	Highway	£1,500,000	2015		2016	2017			✓
Dunsmure Rd Public Realm	public realm	£300,000	2015		2016	2017			✓
Evering Road Corridor Scheme	Highway	£500,000	2015		2017	2018			✓
Pedestrian/urban realm improvements linking new developments with existing centres	public realm	£6,000,000	2015		2016	2019	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£1,500,000	2015		2015	2031	✓	✓	✓
Improvements to strategic cycling Routes	Cycle	£1,950,000	2015		2015	2031			✓
Overcoming severance - cycling	Cycle	£167,973	2015		2015	2031	✓	✓	✓
Overcoming severance - cycling	Cycle	£845,179	2015		2015	2031			✓
network of quiet routes	Cycle	£696,330	2015		2015	2031	✓	✓	✓
network of quiet routes	Cycle	£3,503,670	2015		2015	2031			✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
Improved connection to and cycle provision at stations	Cycle	£125,000	2015		2015	2031	✓	✓	✓
Improved connection to and cycle provision at stations	Cycle	£500,000	2015		2015	2031			✓
Critical Drainage Area schemes	Flood	£4,000,000	2015	£2,000,000	2015	2031			✓
Roll out of SUDS treatment	Flood	£1,120,000	2015	£70,000	2015	2031			✓
Highway Junction Improvements	Highway	£2,000,000	2015		2016	2031			✓
A503 Seven Sisters Road / B152 St Ann's Road	Highway	£8,000,000	2015		2017	2020		✓	✓

Scheme	Sub type	Cost of delivery in pounds (£)	Cost Basis	Secured Funding	Year funding required	Delivery Date	Schemes in Base Case Scenario	Schemes in 4-tracking Scenario	Schemes in Crossrail 2 Scenario
All									
STAR - 3 tracking section between Tottenham Hale and Angel Road	Rail	£52,100,000	2015	£52,100,000	2015	2019	✓	✓	✓
Barking to Gospel Oak (over ground) electrification	Rail	£115,000,000	2015	£115,000,000	2015	2018	✓	✓	✓
Additional bus km's	bus	£135,000,000	2015	£135,000,000	2015	2031	✓	(higher costs)	(higher costs)
Additional bus infrastructure	bus	£20,000,000	2015	£20,000,000	2015	2031	✓	(higher costs)	(higher costs)

Control Sheet

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Upper Lee Valley Development Infrastructure Study

Document Type
Final Report

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1	20.07.2015	Issue to TfL / GLA
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Review

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