REPORT 6

Subject: **Development of the Legacy Corporation's Community Infrastructure Levy (CIL): consulting on the Preliminary Draft Charging Schedule and Infrastructure Delivery Plan**
Agenda item: 9
Report No: 6
Meeting date: 25 June 2013
Report to: Board
Report of: Director of Planning Policy and Decisions

FOR DECISION

This report will be considered in public

1. SUMMARY

1.1. The Legacy Corporation is a Charging Authority for the Community Infrastructure Levy (CIL), which mainly replaces the section 106 regime from April 2014. The first stage in establishing the levy is consultation on a Preliminary Draft Charging Schedule (PDCS). This report seeks Board's agreement to consult on the Legacy Corporation's PDCS (and the Viability Study and Infrastructure Delivery Plan which have informed the proposed CIL rates set out in the PDCS).

1.2. This report proposes that the Legacy Corporation consult on setting a CIL rate as set out in the table below.

Development Type	**Proposed CIL Charge (£/m^2)**
All residential development,	£60 per square metre
Convenience supermarkets and superstores and retail warehouses (over 280 sq m).	£100 per square metre
Hotels	£100 per square metre
Student Accommodation	£100 per square metre
Comparison and all other retail (A1-A5) in 'Stratford' [1]	£100 per square metre
Comparison and all other retail (A1-A5) in 'Rest of Area'[2]	Nil
All other uses	Nil

1.3. The recommended £60 per square metre rate for residential has regard to a range of results from the viability study and takes account of viability across the Legacy Corporation area. This would allow a 'buffer' or discount below the maximum rates (£100-£300) per square metre) that the viability study has concluded could potentially be borne by residential development, and allow for Mayoral CIL of £35 per square metre to be taken into account. This is therefore considered to be a cautious approach.

[1] See PDCS for geographical boundary of 'Stratford' retail.
[2] See PDCS for geographical boundary of 'Rest of Area' retail

1.4. In addition to residential development, convenience supermarkets and superstore development has been assessed as being capable of paying a CIL charge, along with hotels and student accommodation. The recommended rate for these uses is £100 per square metre. Comparison and all other retail use development has been assessed as only being capable of viably paying CIL within a restricted area of Stratford and this area is identified on the Map included in the draft Preliminary Draft Charging Schedule Appendix 1.

1.5. This matter was discussed at Planning Committee on 28 May 2013 and their comments are summarised at section 11 below. The draft PDCS has been amended following comments made at planning committee as set out in section 12, and these changes are reflected in the table above. A further report on this agenda seeks Board's authorisation of the proposed process for allocating section 106 and CIL monies.

2. RECOMMENDATION

2.1. The Board members are invited to:

2.2. **CONSIDER** the information presented in this report and appendices and the officers recommendation to set a CIL at the rates set out in table at section 12.2 of this report and in the Preliminary Draft Charging Schedule.

2.3. **APPROVE** the Preliminary Draft Charging Schedule, Viability Report and Infrastructure Delivery Plan for public consultation.

3. BACKGROUND

3.1. A brief summary of CIL is set out at Appendix 1, along with the current programme for establishing CIL.

3.2. This is the first public stage in the preparation of the Legacy Corporation's Community Infrastructure Levy. The PDCS is at Appendix 2 to this document. Evidence has been prepared to support the PDCS as required by government guidance and the CIL regulations. A CIL viability study has been prepared by BNP Paribas Real Estate consultants, and an Infrastructure Delivery Plan has been prepared by URS consultants for the Legacy Corporation. An executive summary of the viability study is attached at Appendix 3 and the IDP is attached at Appendix 4. The full version of the viability study is available on the Legacy Corporation website as part of the Planning Decisions Committee meeting papers of 28th May 2013 (a web link is provided at the end of this report).

3.3. The Community Infrastructure Levy Regulations 2010 (as amended), set out the requirements in preparing and administering a CIL charge and are accompanied by formal published guidance. A consultation on additional amendments to the Regulations were published by the government in April 2013. Officers have had regard to this and existing guidance and the CIL Regulations in considering the viability and infrastructure requirements evidence, and how this should influence the approach set out in the PDCS.

4. Infrastructure funding gap

4.1. In preparing an Infrastructure Delivery Plan, an assessment of the infrastructure required to deliver the planned growth within the Legacy Corporation area has been undertaken, along with an assessment of the cost of that infrastructure and any funding gap that exists for delivery of that infrastructure. Table 6.1 of the Infrastructure Delivery Plan indicates that there is a funding gap of £63.8 million against a cost of new infrastructure of £136.0 million. This demonstrates that there is a need for the Legacy Corporation to fund some of the required infrastructure through levying CIL.

5. Setting a CIL

5.1. CIL charges are expressed on a per square metre basis and need to be set at a rate that is generally viable across an area, by proposed use. The viability report at Appendix 3 tests the ability of a range of development types throughout the Legacy Corporation area to yield contributions to infrastructure requirements through the Community Infrastructure Levy ('CIL'). Levels of CIL have been tested in combination with the other planning requirements, including the provision of affordable housing. A viability workshop took place with stakeholders on the 12 February 2013. This was attended by a range of public organisations and representatives of local landowners, the development industry and the boroughs. A draft of the IDP was distributed to attendees in advance and a period of two weeks after the meeting set for any formal expression of views or provision of additional information. A similar workshop for infrastructure providers was also held on 28th February and the same approach taken to providing subsequent opportunities for feedback, expression of views and provision of additional information.

5.2. There is no requirement for a Local Planning Authority to charge CIL. It is open to an authority to decide not to set a CIL or to set it at a nil rate for some uses for viability reasons. However, as of April 2014 the ability to secure contributions through s. 106 towards off-site infrastructure will be significantly restricted. CIL is designed to fill this gap.

6. Rates suggested by the viability study

6.1. The viability consultants have suggested the rates set out in the table below for PDCS consultation.

Table 1.8.1: Suggested rates for PDCS consultation

<table>
<tr><th rowspan="2">Type of development</th><th colspan="2">FLAT RATE APPROACH</th><th colspan="2">TWO RATE APPROACH</th></tr>
<tr><th>Stratford</th><th>Rest of area</th><th>Stratford</th><th>Rest of area</th></tr>
<tr><td>All residential development</td><td colspan="2">£60</td><td colspan="2">£60</td></tr>
<tr><td>Convenience supermarkets and superstores and retail warehouses, Hotels and Student Accommodation.</td><td colspan="2">£60</td><td colspan="2">£100</td></tr>
<tr><td>Comparison and all other retail (A1 – A5)</td><td>£60</td><td>Nil</td><td>£100</td><td>Nil</td></tr>
<tr><td>All other uses</td><td colspan="2">Nil</td><td colspan="2">Nil</td></tr>
</table>

6.2. The recommended £60 per square metre rate for residential has regard to a range of results from the viability study and takes account of viability across the Legacy Corporation area. This would allow a 'buffer' or discount below the maximum rates (£100-£300) per square metre) that the viability study has concluded could potentially be borne by residential development, and allow for

Mayoral CIL of £35 per square metre to be taken into account. This is therefore considered to be a cautious approach.

6.3. In addition to residential development, convenience supermarkets and superstore development has been assessed as being capable of paying a CIL charge, along with hotels and student accommodation. Comparison and all other retail use development has been assessed as only being capable of viably paying CIL within a restricted area of Stratford and this area is identified on the Map included in the draft Preliminary Draft Charging Schedule Appendix 1.

6.4. The recommended CIL rate for Convenience based supermarkets, superstores and retail based warehouses is based on a size threshold of over 280 square metres. The viability Study at paragraph 6.31 identifies the reason for this, stating that "We have undertaken a review of convenience based supermarkets in and around the LLDC area using the VOA business rates website, which has identified that units of this nature, which attract such occupiers are all, with one or two exceptions, larger than the Sunday Trading Law threshold of 280 square metres". Officers consider that retail units below this threshold are likely to have different planning characteristics from those above the threshold.

7. CIL and Affordable Housing Delivery

7.1. As the local planning authority, and in accordance with government guidance set out above, a key consideration is the balance between securing additional investment for infrastructure to support development and the potential economic effect of imposing the levy upon development across their area. As set out in the National Planning Policy Framework, the ability to develop viably the sites and the scale of development identified in the Local Plan should not be threatened by the CIL rate.

7.2. Officers have therefore considered carefully the viability evidence provided and considered what effect the suggested CIL rate of £60 a square metre may have on future delivery of the plan. Officers have concluded that imposition of CIL would not put at risk delivery of the plan, but that the impact on delivery of affordable housing at policy compliant levels needs to be carefully considered. As the Legacy Corporation is still preparing its local plan, the current development plan in the area is those parts of the adopted Core Strategies and DPDs of the boroughs (Hackney, Newham, Waltham Forest and Tower Hamlets). Borough policies require 35%-50% affordable housing, with tenure mixes of either 60% or 70% social rented and 40% or 30% intermediate housing (subject to viability).

7.3. The CLG/HCA '2011-2015 Affordable Homes Programme – Framework' (February 2011) document clearly states that RSLs will not receive grant funding for any affordable housing provided through planning obligations. This means that over the last few years it has become more challenging to meet development plan requirements for affordable housing.

7.4. The viability evidence provided does point to some development being potentially viable at policy compliant levels, albeit that it also points to some schemes being unviable. As the consultants state in their viability study, "For residential schemes, the application of CIL of £60 a square metre is unlikely to be an overriding factor in determining whether or not a scheme is viable. When considered in context of total scheme value, CIL will be a modest amount, typically accounting for less than 2% of value".

8. Historic permissions

8.1. Although CIL provides a new mechanism to collect contributions towards infrastructure from development, in the Legacy Corporation area contributions towards infrastructure have previously been required through section 106

agreements. Officers have therefore looked at a number of recently approved schemes to see what section 106 contributions and levels of affordable housing have been achieved, in order to 'sense check' the viability study and to compare contributions from CIL and contributions from section 106.

8.2. The LTGDC applied a 'Planning Obligations Community Benefits Strategy' when negotiating planning obligations. This strategy sought financial and in kind contributions towards infrastructure of £10,000 per residential unit, with contributions for commercial schemes negotiated on a site by site basis.

8.3. The Sugar House Lane scheme granted by LTGDC in October 2012 included a discounted standard charge payment of £8,543 per unit, with 8% on site affordable housing per unit, or 11% affordable housing if grant was received.

8.4. The Bromley by Bow North scheme also granted by LTGDC in October 2012 included £7500 per unit, with 35% affordable housing.

8.5. 2-12 High Street granted by the ODA in March 2012 included around £4200 per unit towards infrastructure, no on site affordable housing but a financial contribution of £200,000 towards off site affordable housing, and potentially a greater contribution towards affordable housing subject to actual viability of the completed development.

8.6. 68-70 High Street granted by the ODA in March 2012 included 20% on site affordable housing and around £3900 per unit towards infrastructure. In addition an off site affordable housing contribution was required subject to actual viability of the completed development.

8.7. The Legacy Communities Scheme section 106 ensures that the development provides for its needs, with financial and in kind provision of social infrastructure such as education, community facilities, play space and open space. Financial and in kind contributions towards highways and public transport infrastructure and mechanisms to ensure it is delivered are also included. Review mechanisms are built in to the section 106 to provide for some flexibility during the build out of the development.

8.8. The introduction of CIL at a £60 per square metre rate will probably result in a lower level of funding for infrastructure coming forward to support development than that which has historically been agreed through the s106 process. Assuming a £60 per square m charge, an average unit size of 72m^2 and a 15% increase for cores, CIL would result in a charge of approximately £5,000 per residential unit. It should be noted that as affordable housing is exempt from the CIL charge, schemes that include affordable housing are likely to deliver a lower financial contribution overall towards infrastructure than through section 106 contributions for which contributions per unit figures have previously generally included all units in the scheme, including affordable housing. The lower level of funding through CIL is a consequence of having to set CIL on the basis of overall viability across the area and the characteristics of the Legacy Corporation area - a relatively small number of major schemes that would have secured contributions through section 106 are expected (areas where there are a large number of small developments are likely to secure more funding through CIL as small schemes tended to not make section 106 contributions).

8.9. Schemes will however continue to need to provide on site affordable housing in accordance with planning policy. Other on site infrastructure will also continue to be required through section 106 agreements, where provision is not listed on the Regulation 123 list. There will therefore be costs on development that are additional to CIL. The Legacy Corporation will prepare more detailed guidance on what will continue to be required through section 106 agreements before the CIL Examination.

8.10. It can be seen that there is a variation in the achievement of affordable housing targets and financial contributions towards infrastructure across the schemes looked at above. It is recognised that it is challenging at present to meet the

current affordable housing policies of the boroughs, primarily because social housing grant is no longer available to support provision of social rented housing. However, the viability study has shown that development generally can afford to pay contributions towards infrastructure and provide on site affordable housing.

8.11. When considering current affordable housing policy targets, these have not been achieved in any more recent scheme that has relied solely on development value to deliver affordable housing, with the range that has been achieved through schemes being from 8-35% but typically at the lower level. The viability study is therefore considered to have demonstrated that the proposed level of CIL charge would result in the same broad level of affordable housing delivery at the current time as has been achieved through section 106 agreement for recently approved schemes. Should the development viability picture improve over time, this would provide the ability to achieve increased levels of affordable housing at the proposed CIL rate.

8.12. The introduction of affordable rent is also considered likely to have a positive effect on viability and so would increase the amount of affordable housing achieved in comparison to the current borough policy position which seeks social rented housing provision.

9. Borough Rates

9.1. The Legacy Corporation have also considered the position of the surrounding boroughs CIL in setting the proposed CIL rate.

9.2. The proposed rates for Tower Hamlets are shown in the table below. The Legacy Corporation Area is adjacent to Zone 2 and part of Zone 3.

Figure 4: Preliminary Draft Charging Schedule

Development type	**Proposed CIL rate**		
Residential	***Zone 1***	***Zone 2***	***Zone 3***
	£200	£65	£35
Student Housing and Hotel	£425		
Offices	***Elsewhere in Borough***	***City Fringe and North Docklands***	
	Nil	£125	
Small Retail (280 sq m or less)	***Elsewhere in Borough***	***City Fringe and North Docklands***	
	Nil	£100	
Large Retail (above 280 sq m)	£200		
All other uses	Nil		

9.3. The proposed charges for Newham are shown in the table below. The Legacy Corporation is adjacent to Zone 1.

	Charging Zone 1 Postcodes E15 (exclusive of the LLDC area), E16 and E3 (part)*	Charging Zone 2 Postcodes E6, E7, E12, E13, IG11 (part)*
Residential (Use Classes C3, C4)	£80 per sq metre	£40 per sq metre
Retail (Use Classes A1, A2, A3, A4, A5)	£30 per sq metre	£30 per sq metre
Hotels (Use Class C1)	£120 per sq metre	£120 per sq metre
Student Accommodation (Use Class C1)	£130 per sq metre	£130 per sq metre
All other uses	£0 per sq metre	£0 per sq metre

9.4. The proposed rates for Hackney are shown in the table below. The Legacy Corporation is adjacent to Zone B.

Table 2: Proposed CIL Rates for Residential Development

Area	Maximum viable charge (£s per sqm)	Discount	Proposed charge	Mayoral CIL (£s per sqm)	Hackney CIL (£s per sqm)
Zone A Shoreditch, Haggerston, Stoke Newington, Hackney Central and Dalston	£300	25%	£225	£35	**£190**
Zone B Hackney Wick, Clapton and Stamford Hill	£80	25%	£60	£35	**£25**
Zone C Finsbury Park and Woodberry Down (excluding the regeneration area)	£120	25%	£90	£35	**£55**
Zone D Woodberry Down regeneration area	£0	n/a	£0	£35	**£0**

Table 3: Proposed CIL Rates on Commercial and Other Development

Type of development	Maximum viable charge (£s per sqm)	Discount	Proposed charge	Mayoral CIL (£s per sqm)	Hackney CIL (£s per sqm)
Offices – City fringe	£218	50%	£109	£35	**£74**
Offices – rest of Borough	£0	n/a	£0	£35	**£0**
Retail – City fringe	£200	50%	£100	£35	**£65**
Retail – rest of Borough	£0	n/a	£0	£35	**£0**
Large format retail	£182	45%	£100	£35	**£65**
Hotel	£177	44%	£100	£35	**£65**
Student housing	£584	30%	£408	£35	**£373**

9.5. It should be noted that the borough rates are set on the basis of wider area context and viability. The difference in potential Legacy Corporation and borough rates are not considered likely to have a significant effect on deliverability of development in each area, and the proposed rate of £60 per square metre is not dramatically different to the areas of Newham and Tower Hamlets adjacent to the Legacy Corporation which are at £80 and £65/£35 respectively. While the Hackney rate is lower, at £25 per square metre, both this and the Legacy Corporation proposed rate are considered to have been derived from appropriate viability testing based on the relevant development values information for each area, which take into account the need to ensure that development remains generally viable across each of the areas that have been considered.

10. Conclusions

10.1. As the Infrastructure Delivery Plan shows, there is an infrastructure funding gap, and there is a need to set a CIL in order to ensure development helps meet some of the funding for infrastructure that is required to support development. Officers have considered the impact of the proposed CIL for residential of £60 a square metre on the delivery of the development plan, including affordable housing.

10.2. Officers have concluded that setting a nil CIL rate for residential in the area would be unlikely to have a measurable negative effect on affordable housing delivery,

while the suggested £60 rate is considered to make a significant contribution towards meeting the infrastructure needs identified as being necessary to support the growth in development planned for the area.

10.3. Therefore, officer's conclusion is that the Legacy Corporation should set a CIL rate for residential.

11. Planning Committee Views

11.1. When the PDCS was reported to planning committee, the planning committee had a number of comments and questions, as follows.

11.1.1. How did we arrive at £60 a square metre given the very large funding gap that there is? Based on viability. Viability study showed that £100 may be possible, but looked as though this impacted on viability of the bottom range of sites too much. Therefore £60 seemed a sensible figure.

11.1.2. There are estimates in the PCDS of what may come forward from residential, but what is likely to come from commercial development? We didn't include this in our calculations as we are not clear on what commercial development is likely to come forward at the moment. More work has been done on housing development through the Strategic Housing Land Availability Assessment work.

11.1.3. What is the review process for the CIL rate? Will it be reviewed within a particular time frame? No decision has yet been made, the PDCS asks consultees for views on appropriate review mechanisms.

11.1.4. Clear comment from and agreement amongst the committee that the student housing rate should be higher than £60 a square metre.

11.1.5. How are we dealing with existing gaps in education provision? Schools study which looks at proposals for schools in Legacy Corporation and surrounding area is ongoing. It is likely that some of the new infrastructure listed in the IDP would probably in practice meet some of the existing need.

12. Flat or two rate approach?

12.1. As can be seen from the Table 1.8.1 in section 6 above, for uses other than residential, a flat rate or two rate approach is recommended.

12.2. Officers are comfortable that the proposed rates suggested by BNP are viable and meet the requirements of the CIL Regulations and guidance. Taking account of comments from the planning committee officers now recommend that a two rate approach is consulted on, rather than a flat rate as recommended to planning committee.

Development Type	**Proposed CIL Charge (£/m^2)**
All residential development,	£60 per square metre
Convenience supermarkets and superstores and retail warehouses (over 280 sq m).	£100 per square metre
Hotels	£100 per square metre
Student Accommodation	£100 per square metre
Comparison and all other retail (A1-A5) in 'Stratford' [3]	£100 per square metre
Comparison and all other retail (A1-A5) in 'Rest of Area'[4]	Nil

[3] See PDCS for geographical boundary of 'Stratford' retail.

All other uses	Nil

12.3. The majority of development that is likely to attract a CIL charge within the Legacy Corporation area is either residential or likely to be nil rated. This is because a significant level of development already has planning permission and there is reasonable certainty that it will be delivered, for example those planning permissions that relate to Stratford City and the Legacy Corporations' Legacy Communities Scheme, along with other schemes permitted by the LTGDC and ODA. In the case of these permitted schemes, related infrastructure delivery has been secured through the relevant section106 agreements and has been not as a result been identified as part of the infrastructure gap within the Infrastructure Delivery Plan for which CIL funding would be applied. However, it is considered that given the size of the funding gap, it would make sense to set the higher rate of £100 a square metre as set out in the table above for the uses at which £100 a square metre is viable.

13. Instalments Policy

13.1. A proposed instalments policy is set out in the PDCS. The aim of this policy is to facilitate early delivery of schemes. Without an instalment policy the full balance of the CIL payable for a development would become payable within 60 days of commencement of development. The approach suggested is similar to that adopted by Wandsworth Council in the Vauxhall, Nine Elms Battersea Opportunity area, where substantial development is expected alongside new infrastructure.

14. Next Steps

14.1. Should the Board agree the PDCS, public consultation will take place for at least 6 weeks. Comments will be reviewed and fed into a Draft Charging Schedule, which will again be subject to 6 weeks public consultation. Following consultation, the Draft Charging Schedule will be submitted to the Planning Inspectorate for independent examination. It is intended that the Charging Schedule will be adopted in Spring 2014.

15. Financial Implications

15.1. The costs involved in implementing and monitoring the Community Infrastructure Levy are included within the planned budget of the Planning Policy and Decisions Unit. In time, CIL will provide a much needed source of revenue for infrastructure across the Legacy Corporation area. As set out in the PDCS it is estimated between £7,626,540 and £11,752,040 could be raised through CIL from residential development in a ten year period, depending on the level of affordable housing delivered. Any CIL raised from non-residential uses would be additional to this figure. Infrastructure to be funded through CIL monies will be set out in more detail at a later stage of the CIL preparation process, when the Regulation 123 list is published.

16. Legal Implications

16.1. Preparation of the Preliminary Draft Charging Schedule has been in accordance with the purposes of the LLDC as established in the Localism Act 2011, the London Legacy Development Corporation (Establishment) Order 2012 and the London Legacy Development Corporation (Planning Functions Order) 2012. It is also in accordance with provisions relating to S106 in the Town and Country

[4] See PDCS for geographical boundary of 'Rest of Area' retail

Planning Act 1990, and the National Planning Policy Framework and to Community Infrastructure Levy in the CIL Regulations 2010 (as amended). There is a requirement to report on spending of CIL monies, and the Legacy Corporation will do so in its Annual Monitoring Report.

17. Priority Themes

17.1. The priority themes of the Legacy Corporation are: Promoting convergence and community participation; Championing equalities and inclusion; Ensuring high quality design; Ensuring environmental sustainability. These themes have been taken into account in developing the proposed Preliminary Draft Charging Schedule and its underlying evidence base. The CIL, if adopted and charged following an Examination, will form a key component in the delivery of infrastructure to support the growth planned for the Legacy Corporation area in a way that complies with each of the key themes. In adding the necessary infrastructure, CIL will particularly help to deliver the convergence agenda.

18. Appendices

- Appendix 1: Summary of CIL and Programme
- Appendix 2: Preliminary Draft Charging Schedule
- Appendix 3: Executive Summary of the Viability Study (Full study available as part of report to Planning Decisions Committee of 28th May 2013 – Item 6, http://www.london.gov.uk/LLDC/ieListDocuments.aspx?CId=273&MId=4742&Ver=4**)**
- Appendix 4: Infrastructure Delivery Plan

List of Background Papers:
Report to Board 15th October 2012 - Local Plan, Local Development Scheme
Report to Board 27th September 2012 – Planning Functions
Report to Planning Decisions Committee 28th May –Development of the Legacy Corporation's Community Infrastructure Levy (CIL): Consulting on the Preliminary Draft Charging Schedule and Infrastructure Delivery Plan (item 6)
CIL Regulations 2010 (as amended)
Community Infrastructure Levy – DCLG Guidance April 2013

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Appendix 1: Summary of CIL and Programme

Community Infrastructure Levy and Infrastructure Delivery Plan

- **What is CIL?**
  - Partially replaces existing section 106 regime to require funding for supporting infrastructure from new development
  - Per sqm charge on new floorspace of 100 sqm (GIA) or more
  - Expressed in a CIL Charging Schedule prepared by LPA
  - Flat rate or differential rates (by area or by use) possible
  - Charging Schedule must be evidence based
    - Area wide economic viability assessment
    - Infrastructure Delivery Plan
  - Subject to Public consultation and Examination
  - Charge rate must be regularly reviewed
  - Charge collected when development commenced

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Community Infrastructure Levy and Infrastructure Delivery Plan

- **Community Infrastructure Levy - programme**
  - Viability report completed
  - Infrastructure Delivery Plan drafted
  - CIL Charging Schedule CIL being prepared

  } May Planning Committee and June Board

  - Preliminary Draft Charging Schedule consultation – Summer 2013
  - Draft Charging Schedule consultation – Autumn 2013
  - Examination – early 2014 (adoption by April 2014)
  - Administrative arrangements for CIL & CIL collection currently being set up

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LONDON LEGACY DEVELOPMENT CORPORATION

Appendix 2

Community Infrastructure Levy



Preliminary Draft Charging Schedule

June 2013

If you require this document in larger print or a different language please contact us on 020 3288 1800

Contents

1. Introduction
2. General Principles of CIL
3. Evidence Base
4. Proposed CIL rates for the Legacy Corporation area
5. Instalments Policy
6. Implementation
7. How to comment
8. Next Steps

Appendix 1 – Proposed ‘Stratford’ retail charging area

1. Introduction

This Preliminary Draft Charging Schedule (PDSC) is the first step in setting a CIL for the London Legacy Development Corporation area. This PDSC sets out the Legacy Corporation's initial ideas on appropriate CIL rates to be applied to future developments. The Legacy Corporation is seeking views on the proposed rates and the evidence that supports them. The PDSC is a first draft in the production of a CIL charging schedule and the rates proposed may change as a result of comments received from this consultation and/or updates to the background evidence.

This document sets out the general principles of CIL, the background, evidence and methodology for producing a CIL charging schedule and the proposed rates for comment.

Details on how to comment on this Preliminary Draft Charging Schedule are set out at section 7.

2. General Principles of CIL

2.1 What is CIL?

The CIL regulations came into force on 6 April 2010 and have been subsequently amended a number of times. CIL is a new system of developer contributions that takes the form of a standard charge per metre square (m^2) of additional new floor space. It allows local planning authorities to raise funding from development to help pay for the infrastructure required to support growth arising from increased levels of housing and commercial floor space. CIL will not be the sole funding source for the entire necessary infrastructure but will supplement other public sector revenue streams.
The Legacy Corporation, formally became a Local Planning Authority (LPA) on 1 October 2012. As part of its function as an LPA, the Legacy Corporation must prepare a Local Plan which sets out the planning policies that will guide future development within its administrative boundary, and is both a charging authority and a collecting authority for CIL. The Legacy Corporation, along with all London Boroughs, is also a collecting authority for the Mayoral CIL.

2.1 Why introduce CIL?

The Government intends CIL to be less complicated, fairer, faster and more transparent than using S106 planning obligations to fund infrastructure (the scope of which will be significantly scaled back from April 2014). By paying a

development linked contribution the developers/landowner will help fund the infrastructure needed to make their development acceptable and sustainable.

New development, even small-scale, will almost always need to be supported by some new or improved infrastructure. The money raised from CIL will be used to pay for infrastructure to support development, ensuring that new development bears a proportion of the cost of delivering the new infrastructure required. CIL can be spent on any community infrastructure required to support growth, it is not tied to a particular project or type of infrastructure. It is intended that CIL is focused on the delivery of new infrastructure but can also be used to increase the capacity of existing infrastructure or to repair failing infrastructure where necessary to support development. There is no requirement for a Local Planning Authority to charge CIL. It is open to an authority to decide not to set a CIL or to set it at a nil rate for some uses for viability reasons.

The Legacy Corporation can decide what infrastructure the money will be spent on. First it must publish which schemes CIL will go towards (known as a Regulation 123 list). The list can change from time to time and is not subject to examination. However, the draft list must be consulted on with the Draft Charging Schedule and needs to be submitted to the Examiner at the CIL charging schedule examination stage.

After the introduction of CIL, some non strategic infrastructure projects which are site specific may still be secured through section 106 agreements. This is likely to include matters such as children's play space, community facilities, green infrastructure, site specific transport improvements and environmental mitigation, although this list is not exhaustive. Section 106 obligations may be secured where appropriate and specific to the site development, irrespective of the development proposed and whether or not a CIL charge is also levied. However, a developer cannot be 'double charged' via CIL and S106 for any item.

2.2 Development that will be liable for CIL

CIL will be levied on virtually all structures or buildings that people normally go into. The following development types will be liable for CIL:

- Development comprising 100m^2 or more of new build floorspace
- Development of less than 100m^2 of new build floorspace that results in the creation of one or more dwellings
- The conversion of a building that is no longer in lawful use.

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2.3 Exemptions and relief from CIL

The CIL regulations provide for certain types of development to be exempt or eligible for relief from CIL. Therefore the following types of development will not be liable for CIL:

- Development by registered charities for the delivery of their charitable purposes
- Those parts of a development which are to be used as social housing
- Development of less than 100m^2 of new build floorspace, provided that it does not result in the creation of a new dwelling
- The conversion of, or works to, a building in lawful use that affects only the interior of the building
- Development of buildings and structures into which people do not normally go (e.g. pylons, electricity substations, plants)

Where planning permission is granted for a new development that involves the extension or demolition of a building in lawful use, the level of CIL payable will be calculated based on the net increase in floorspace. This means that the existing floorspace contained in the building to be extended or demolished will be deducted from the total floorspace of the new development, when calculating the CIL liability.

The definition of lawful use is contained in Regulation 40(10) of the 2010 CIL Regulations, which states:

'For the purpose of this regulation a building is in use if a part of that building has been in use for a continuous period of at least six months within the last twelve months ending on the day planning permission firs permits the chargeable development'

2.4 What is a Charging Schedule?

A CIL Charging Schedule sets out the rates of CIL that the charging authority will levy on development. It sets out the rates in £ per square metre of chargeable development.

The Regulations require that a charging schedule must be subject to two rounds of public consultation, followed by an examination conducted by an independent person. This Preliminary Draft Charging Schedule consultation is the first of the consultations required and sets out the local planning authority's starting point for setting CIL rates, subject to further consideration and discussion. The second period of consultation will be on the Draft Charging Schedule, which will take into account the results of the first consultation and set out the Legacy Corporation's preferred CIL rates that it proposes to submit for examination.

2.5 When is CIL payable?

CIL becomes due for payment upon commencement of the development, and payment must be made within 60 days of the commencement date.

However, the CIL Regulations allow authorities to introduce an instalments policy. This would enable CIL payments to be phased over a period of time following the date of commencement of development.

The introduction of an instalments policy is discretionary. The Legacy Corporation is proposing to adopt an instalments policy to assist with developer's cash flow and to avoid front loading CIL liabilities. Details of the proposed policy are contained later in the PDCS.

2.6 The Mayoral CIL

The Mayor of London is also charging a CIL to help pay for Crossrail. The Legacy Corporation is designated as a Collecting Authority for the Mayor of London's CIL for developments within its area. Mayoral CIL is payable on all developments that received planning permission after 1 April 2012. The Mayoral CIL charges that apply within the four London boroughs which make up Legacy Corporation's area are as follows: Developments in Newham and Waltham Forest are levied at £20 per square metre for all eligible development and Tower Hamlets and Hackney at £35 per square metre.

The Legacy Corporation as a charging authority is required to have regard to the Mayoral CIL when setting its own CIL rate(s). The rates set out in this PDSC are **exclusive** of the Mayoral rate.

3 Evidence Base

3.1 General Principles

The CIL Regulations state that in setting its CIL rate, the charging authority must: *'..aim to strike what appears to the charging authority to be an appropriate balance between:*

- *The desirability of funding CIL and the actual and expected costs of infrastructure required to support development, and;*
- *The potential effect of the imposition of CIL on the economic viability of development across its area. '*

Based on this evidence the charging authority needs to make a reasoned judgement as to the appropriate level at which to charge CIL.

The Charging Schedule must be informed by an appropriate evidence base, which includes:

- An up to date Development Plan
- An Infrastructure Delivery Plan

- A broad assessment of the likely impact of CIL on the viability of development in the Legacy Corporation area.

3.2 The Development Plan

The Legacy Corporation Development Plan comprises the National Planning Policy Framework (2011), the 2011 London Plan and the borough (Tower Hamlets, Newham, Waltham Forest and Hackney) development plans, until the Legacy Corporation adopts its own Local Plan.

Evidence to prepare this PDCS used the anticipated levels of growth and development set out in the current development plan as well as taking account of recent planning permissions granted for the Legacy area. Work carried out by the Legacy Corporation's predecessor organisations, including the Olympic Delivery Authority (ODA), The London Thames Gateway Development Corporation, and the four boroughs, has enabled comprehensive identification of opportunities for growth and development which has informed this PDCS.

The Legacy Corporation has a significant pipeline of planning permissions which has made forecasting future chargeable floor space, informed by assumptions of what has been consented (uses, unit types, mix and size), a robust exercise.

At the same time as developing this PDCS, the Legacy Corporation has been working with the Greater London Authority to update its 2009 SHLAA/HCS[1] to inform its household delivery and phasing assumptions. This information has been used to ensure the PDCS is based on the most up to date, accurate and reliable evidence of development delivery.

Work is ongoing on the Legacy Corporation Local Plan which will increase in planning material weight during the course of the adoption of the CIL Charging Schedule. The direction of travel and the vision and objectives of the Local Plan will be consulted on later this year and will be taken into account in the setting of the future CIL rate. It is unlikely that the Legacy Corporation Local Plan will significantly depart from the growth and development assumptions that underlie the current development plan and therefore it is not considered likely that the CIL rates will need to be reviewed as a consequence of the adoption of the Legacy Corporation Local Plan.

3.3 Draft Infrastructure Delivery Plan

The Legacy Corporation has produced a draft Infrastructure Delivery Plan (IDP) to support the proposed CIL rate, the delivery of the current development plan and the future Local Plan. The IDP is a 'live document' that

[1] SHLAA – Strategic Housing Land Availability Assessment; HCS – Housing Capacity Study

will be regularly updated to take account of changing needs and circumstances over the plan period.

From the work carried out to prepare the IDP it is clear that there is a significant gap in funding for provision of the infrastructure required to support the anticipated levels of growth that is planned within the Legacy Corporation area that is not met by identified funding streams. This represents a 'funding gap' that is considered to be sufficient to demonstrate a need to charge CIL

The projects within the IDP are candidates for CIL funding and are directly linked to the delivery of the development plan. CIL cannot be expected to pay for the entire 'funding gap', but it is expected to make a significant contribution.

The IDP identifies infrastructure costs to meet net demand arising within the Legacy Corporation area to 2031 is estimated at £136.0M. Identified funding which will offset these costs, including s.106 financial contributions, is £32.8M. It is estimated that a further £39.4M could come forward from anticipated but as yet unidentified funding (core government funding and other provider investment). Overall, the remaining infrastructure funding gap is estimated at £63.8M.

The Legacy Corporation intends to provide guidance on its intended approach to S106 planning obligations and the relationship this will have with CIL at a later stage of the CIL preparation process. A draft Regulation 123 list will also be published at the later Draft Charging Schedule stage

3.4 Viability Assessment

It is important to ensure any CIL rate charge does not harm the economic viability of development generally across the charging area. In addition it should support and not deter the delivery of the development plan. CIL charges set at or near the margins of assessed viability are not advised and could have serious implications for delivery.

BNP Paribas were commissioned by the Legacy Corporation to carry out a viability assessment to examine the maximum viable rates of CIL that different types of development could be viably charged in the Legacy Corporation area,

The study methodology compares the residual land values of a sample of actual development sites to a range of benchmark values. If a development incorporating a given level of CIL generates a higher value than the benchmark land value, then it can be judged that the proposed level of CIL will be viable. A series of scenarios were then modelled using a range of percentage levels of affordable housing to establish the potential maximum level of CIL under different circumstances. The modelling also included assumptions of other key policy requirements which are consistent with the Legacy Corporation's current development plan. The full study can be found at: xxxxxxxx.

The key findings of the study are as follows:

- Residential - The ability of residential schemes to make CIL contributions does not vary significantly between different parts of the Legacy Corporation area. Taking account all the variables facing developers in the area the economic viability recommends a charge of up to £60 per square metre for the whole area. The report suggests between £100 to £300 per square metre could be charged. However a buffer or discount below the maximum was applied, to take account of viability concerns and the collection of the Mayor's CIL. £60 per square metre is considered to provide a sufficiently cautious approach.
- Office Development - The evidence indicates that new developments are unlikely to be sufficiently viable to absorb CIL, unless rents increase significantly over the life of the charging schedule. A nil CIL rate is therefore recommended for any office development.
- Industrial and warehousing – The evidence indicates that the potential for developments of industrial and warehousing floorspace schemes to be viably delivered will be limited in current market conditions, therefore it is considered that no charge should be placed on such development.
- Comparison and all other retail (A1-A5) development – Evidence shows the prime retail area close to Westfield shopping centre achieves some of the highest rates in the Country and has a low vacancy rate, therefore could support a maximum CIL of £473 per square metre. However, rents in the non prime areas ('rest of Legacy Corporation area) are significantly lower and it is unlikely that retail development would be viable to support more than the Mayoral CIL rate.
- Convenience supermarket and superstore and retail warehouse development (over 280sqm) – The evidence suggests these uses are capable of absorbing a CIL rate of around £164 per square metre across the Legacy Corporation area.
- Other Developments:
    - Private Rented Student Accommodation – could absorb a maximum CIL rate of £120 per square metre
    - Hotels – A rate of no more than £120 per square metre could be viable
    - D1 and D2 uses - Not viable at any CIL rate

3.5 Estimating Revenue Raised Through CIL

The Legacy Corporation is unique in that 75 per cent of its future housing growth already has a planning consent, be it outline or full. This means for the purpose of estimating CIL revenue, only projected development without an existing planning permission can be included. Therefore CIL is likely to be charged only on the remaining 25 per cent of future projected development, unless significant elements of the existing permitted schemes are superseded by new planning permissions containing CIL chargeable development.

However, should an applicant submit an amended application post the introduction of the Legacy Corporation CIL, they will be liable to pay the rate.

The estimation takes into account the following:

- Legacy Corporation's Strategic Housing Land Availability Assessment;
- The number, type and size of units delivered or being delivered to date;
- The expected housing delivery that would attract CIL in the LLDC area over a 10 year period (2,429 units - approximately 25% of housing delivery of 10,000 over 10 years from 2015 to 2025)
- Deducting affordable housing units (approximately 850 units or 35%) which are exempt from being charged for CIL;
- The average unit type for the area which is a 2 person 2 bedroom unit which using the space standards benchmark in the 2011 London Plan is approximately 70sqm
- Applying a 15% factor increase to take account of core and circulation areas which need to be included in the GIA calculation (NIA to GIA).

Taking account all of the above, it is expected that there will be 195,867m^2 (GIA) new residential floorspace that could be charged CIL in a 10 year period. As affordable housing does not attract a CIL charge, with a rate of £60 square metre it is therefore estimated that, depending on the amount of affordable housing delivered, this could range between **£7,626,540** and £11,752,040 could be raised from CIL in a ten year period. Any CIL raised from non-residential uses would be additional to this figure.

The above is a minimum amount, a greater amount would be received if more CIL chargeable development comes forward than currently anticipated, or if viability improves and the CIL charging schedule is revised.

The Legacy Corporation do not project there to be significant additional non residential floorspace within its area that will be CIL chargeable, based on the proposed preliminary draft charging Schedule rates.

4 Proposed CIL rates for the Legacy Corporation area

4.1 Setting the CIL rate

The BNP Paribas CIL Viability Study informs the proposed CIL rates for the area. The rates are proposed at a level that does not put the level of development required at risk and which acknowledges the types of development which are not viable with the imposition of CIL. Consideration has been given to the Legacy Corporation area's development potential taking account of the likely predominant future land use which is residential development. This is a function of the land market across London but also reflects the vision for the area which is the creation of communities,

neighbourhoods and jobs and the existing pipeline of planning permission across the Legacy Corporation area.

The CIL Regulations acknowledge that the rates of CIL may make some development unviable. The key consideration is to ensure that the imposition of CIL does not harm economic viability across the LLDC area. It is also important that the CIL should not be set at the margins of economic viability. A CIL set at or near the maximum level could have a serious adverse effect on development if there was a market or policy change that tipped viability over the point.

It is considered that the proposed CIL rates below are set sufficiently below the economic viability margin to provide a buffer for market changes. The proposed CIL rates are resistant to market and policy changes, given that they have been set at a level that is viable in the current difficult economic climate.

4.2 CIL Charging Schedule

The proposed CIL rates for the Legacy Corporation area are shown in the table below. A single rate of CIL will be applied to uses that the area wide economic viability assessment has indicated are able to absorb CIL and a rate of nil for all other unviable uses. Almost all chargeable development is residential floorspace and therefore the charge set is reflective of the viable CIL rate for this use. The rate is considered to be both appropriate and justified in terms of the economic viability of all future development. The rates proposed are not considered to put at serious risk the development projected to take place within the area.

Figure 1 – Preliminary Draft Charging Schedule

Development Type	**Proposed CIL Charge (£/m^2)**
All residential development	£60 per square metre
Convenience supermarkets and superstores and retail warehouses (over 280 sq m).	£100 per square metre
Hotels	£100 per square metre
Student Accommodation	£100 per square metre
Comparison and all other retail (A1-A5) in 'Stratford' [2]	£100 per square metre
Comparison and all other retail (A1-A5) in 'Rest of Area'[3]	Nil
All other uses	Nil

Definitions
Superstores/supermarkets:
Shopping destinations in their own right where food and convenience shopping needs are met and which can also include non-food floorspace as part of the overall mix of the unit

[2] See Appendix 1 for geographical boundary of 'Stratford' retail.
[3] See Appendix 1 for geographical boundary of 'Rest of Area' retail.

Retail warehousing:
Large stores specialising in the sale of household goods (such as carpets, furniture and electrical goods), DIY items and other ranges of comparison goods, catering for a significant proportion of car-borne customers.

Convenience goods:
Food and non-alcoholic beverages, tobacco, alcoholic beverages, newspapers and periodicals and non-durable household goods.

Comparison goods:
Any other goods, including clothing, shoes, furniture, household appliances, tools, medical goods, games and toys, books and stationery, jewellery and other personal effects.

4.3 Calculating CIL

CIL will be calculated on the basis set out in Part 5 of the Community Infrastructure Levy Regulations 2010 (as amended).

For ease of interpretation, in most cases, this shall mean that CIL will be charged on the total net additional floor space created (measure as Gross Internal Area)

CIL Charges are indexed based on the difference between the BCIS All - In Tender Price Index at the Date of The Charging Schedule and the Index at date of Planning Permission. The CIL rates shall be tied to the Royal Institute of Chartered Surveyors' All in Tender Price Index; the rate of CIL charged will therefore alter depending on the year planning permission for the chargeable development is granted.

4.4 Conclusion

The proposed charges have been set using appropriate available evidence, striking an appropriate balance between using CIL to fund the infrastructure required to support development and the potential effects of its proposed CIL charge, on economic viability across the Legacy Corporation area as a whole.

5 Instalments Policy

Legacy Corporation's Proposed Instalments Policy

The Legacy Corporation is proposing the following policy which has been prepared in accordance with the Regulation 69B of the Community Infrastructure Levy (Amendment) Regulations 2011. LLDC is proposing to allow payment of CIL by Instalments according to the total amount of liability as follows:

Amount of CIL Liability	Number of Instalments	Payment Periods and Amounts
Any amount less than £100,000	No instalments	• Total amount payable within 60 days of commencement of development
Amounts equal to or more than £100,000 but less than £250,000	Two instalments	• £100,000 payable within 60 days of commencement of development • Balance payable within 120 days of commencement of development
Amounts equal to or more than £250,000 but less than £500,000	Three instalments	• £100,000 payable within 60 days of commencement of development. • Balance payable in a further two instalments of equal amount within 120 and 180 days of commencement of development
Amounts equal to or more than £500,000 but less than £2,000,000	Four instalments	• £250,000 payable within 60 days of commencement of development. • Balance payable in a further three instalments of equal amount within 120 and 180 and 240 days of commencement of development
Amounts equal to or more than £2,000,000 but less than £8,000,000	Four instalments	• £500,000 payable within 60 days of commencement of development. • Balance payable in a further three instalments of equal amount within 180, 360 and 540 days of commencement of development
Amounts equal to or more than £8,000,000	Four instalments	• £2,000,000 payable within 60 days of commencement of development. • Balance payable in a further two instalments of equal amount within 180, 360 and 540 days of commencement of development

The instalments policy would provide greater flexibility to developers when making payment and allow an effective transition process to CIL without compromising development delivery.

It is important to note that the Mayor's instalments policy which took effect on 1st April 2012, would still apply to his component of the CIL payment.

6 Implementation

Review and Monitoring Arrangements

For CIL revenues to deliver Legacy Corporation's infrastructure requirements there will need to be regular reviews of both the Charging Schedule and the Infrastructure proposed to delivery. The Legacy Corporation is conscious that CIL will be part of the long term financial planning for developments as well as infrastructure investment so reviews of the charging rates must respect the need for a high degree of certainty and stability. Nevertheless, the CIL is being set at a time of economic uncertainty so the rates have been set at a level to reflect the circumstances and may need to be modified should the outlook improve. Consequently the Legacy Corporation is proposing a review mechanism which would list the circumstances under which a review of the charges would be triggered.

This consultation invites your views on possible triggers. The proposed mechanism will be published alongside the Draft Charging Schedule.

The Legacy Corporation is committed to ensuring the use of CIL is open and transparent and will publish an annual report which will clearly set out how much CIL money has been received and the infrastructure to which that money has been applied.

7 How to comment

The Legacy Corporation is seeking comments from any interested individuals or organisations on this Preliminary Draft Charging Schedule. The consultation period will run for 6 weeks from XXXXXXXXX to XXXXXXXXXX.

Please note representations made on this consultation cannot be treated in confidence. Copies of all representations received may be made available to the public. The Legacy Corporation may also provide details or a summary of representations on its website. However we will not publish personal information such as telephone numbers, email or private addresses. By submitting a representation on this Preliminary Draft Charging Schedule you confirm that you agree to this and accept responsibility for your comments.

Comments are invited by email or post to:

The Planning Policy Team
London Legacy Development Corporation
Level 10
1 Stratford Place
Montfichet Road
London
E20 1EJ

Or by email to: planningpolicy@londonlegacy.co.uk

Comments should be received no later than **5pm on XXXXXXXX**.

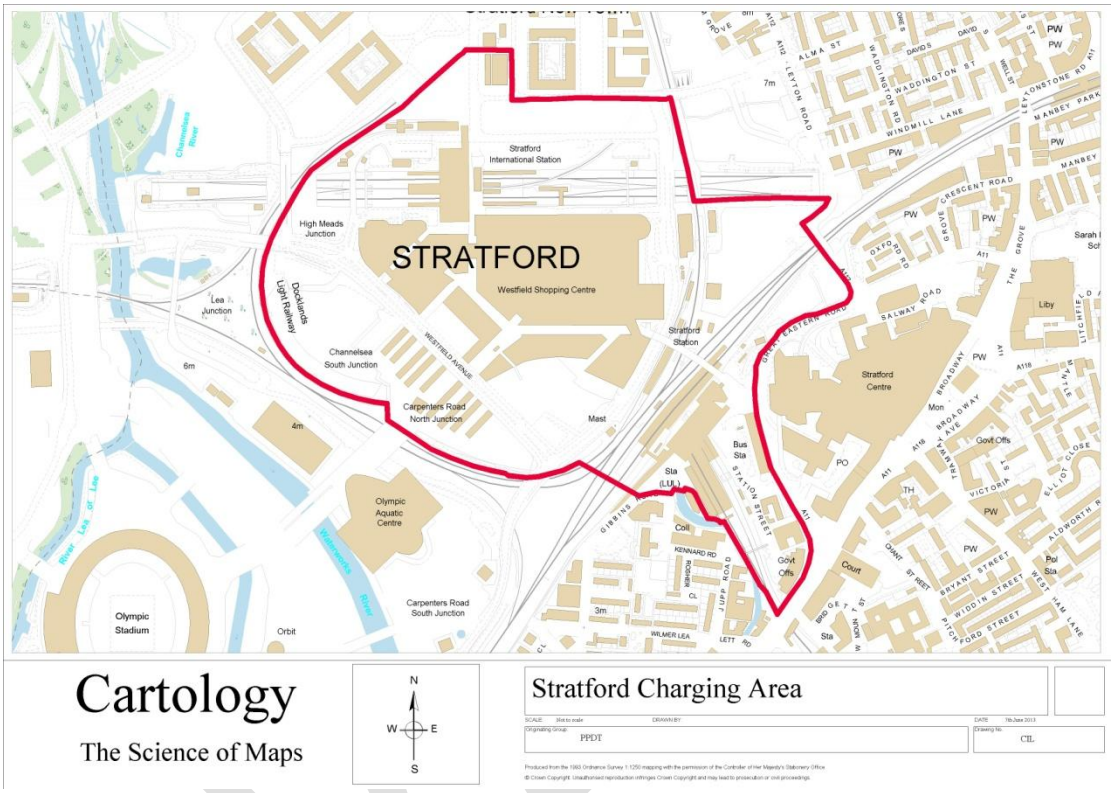
Supporting documents are available to view on the Legacy Corporation's website at www.xx.co.uk

8 Next Steps

The Legacy Corporation will take all comments received by xxxxxx into consideration in the preparation of the Draft Charging Schedule, which will then be published for a further period of public consultation..
This is currently expected to take place xxxxxx but is dependent on the number and nature of the comments received on this PDCS.

Following the consultation on the Draft Charging Schedule, an Independent examiner will be appointed and will conduct a public examination. Any person who makes comments at the Draft Charging Schedule stage will have the right to be heard at the subsequent CIL public examination. During the hearing the Examiner will consider whether the Charging Schedule meets the requirements of the Act and Regulations, that it is supported by appropriate evidence, and that the rate would not put at serious risk economic viability across the Legacy Corporation area as a whole.

Appendix 1 – Proposed ‘Stratford’ retail charging area



Key

- ‘Stratford’ (excludes ‘Rest of area’ retail)

Community Infrastructure Levy: Viability Study

Prepared for

London Legacy Development Corporation

May 2013

Contents

1	Executive Summary	3
2	Introduction	6
3	Methodology and appraisal inputs	15
4	Development appraisals	18
5	Appraisal outputs	33
6	Assessment of the results	36
7	Conclusions and recommendations	49

Appendices

Appendix 1 - Private residential sales values
Appendix 2 - Commercial appraisal results
Appendix 3 - Residential appraisal results
Appendix 4 - Retail Map

1 Executive Summary

1.1 This report tests the ability of a range of development types throughout The London Legacy Development Corporation ('LLDC') to yield contributions to infrastructure requirements through the Community Infrastructure Levy ('CIL'). Levels of CIL have been tested in combination with the other planning requirements, including the provision of affordable housing.

Methodology

1.2 The study methodology compares the residual land values of a range of developments to a range of benchmark land values. If a development incorporating a given level of CIL generates a higher value than the benchmark land value, then it can be judged that the proposed level of CIL will be viable.

1.3 The study utilises the residual land value method of calculating the value of each development. This method is used by developers when determining how much to bid for land and involves calculating the value of the completed scheme and deducting development costs (construction, fees, finance and CIL) and developer's profit. The residual amount is the sum left after these costs have been deducted from the value of the development, and guides a developer in determining an appropriate offer price for the site.

1.4 The housing and commercial property markets are inherently cyclical and the LLDC is testing its proposed rates of CIL at a time when values have fallen below their peak but have subsequently recovered to some degree. In three of the four local authority areas in which the LLDC area is located, values are lower than their peak April 2008, while values in Hackney have significantly surpassed peak values. Despite this recovery, and given the scale of redevelopment proposed within the LLDC area, there is some uncertainty as to the likely short term trajectory of house prices. We have allowed for this by running a sensitivity analysis which in the first instance increases sales values by 10% and build costs by 5% and in the second scenario decreases sales values by 5%. This analysis will enable the LLDC to take a view on the impact of any movements in sales values in the short term. Our commercial appraisals incorporate sensitivity analyses on rent levels and yields.

Key findings

1.5 The key findings of the study are as follows:

- The ability of **residential schemes** to make CIL contributions does not vary significantly between different parts of the LLDC area. CLG guidance requires that charging authorities do not set their CIL at the margins of viability and we would therefore recommend a rate of circa £60 per square metre.
- At current rent levels, our appraisals have identified that **Office development** both in the Stratford area and elsewhere within the LLDC area are not sufficiently viable to absorb a CIL charge. With regard to the Stratford office schemes this is predominantly due to the higher build costs associated with delivering Grade A office space, which allows the higher rents and keener yields to be achieved. We therefore recommend that the LLDC sets a nil rate for office development.
- Our appraisals of developments of **industrial and warehousing floorspace** indicate that these uses are unlikely to generate positive

residual land values. We therefore recommend a zero rate for industrial and warehousing floorspace.

- Residual values generated by **Comparison and all other retail (A1-A5) developments** are somewhat higher than current use values in certain areas. However, to a degree retail development will involve the re-use of existing retail space, so the differential in value between current and newly developed space is modest in areas where rents are low.
  - **Comparison and all other retail (A1-A5) developments** in the **Stratford area** including Westfield is shown to be particularly viable, generating significant surplus residual values. Developments would be able to accommodate a maximum CIL of up to £160 per square metre. Taking into consideration Mayoral CIL and a suitable buffer, we recommend that the LLDC considers a CIL rate of no more than £100 per square metre for such developments in the Stratford area.
  - **Comparison and all other retail (A1-A5) developments** in the **rest of the LLDC area** is identified as insufficiently viable in the current market as rents are so low that schemes are unlikely to generate positive residual values. We therefore suggest a nil rate on comparison and all other retail (A1–A5) developments in the rest of the LLDC area.
- **Convenience supermarket and superstore and retail warehouse development (over 280 square metres)** is capable of generating greater surplus value and could absorb a maximum CIL of around £164 per square metre across the LLDC area. After allowing for mayoral CIL and a discount below the maximum rate, we suggest a CIL of £100 per square metre.
- Two markets for **Student housing** have been identified. The first is schemes let at reduced rent levels by universities, which require cross subsidy from university resources, and are identified as being unviable. It is noted however, that when developed these schemes are likely to be exempt from CIL given the universities' charitable status. The second market is those let at private sector rent levels, which generate sufficient surplus residual values to absorb a maximum CIL of up to £187 per square metre. After allowing for a buffer, which in our experience we consider to be reasonable to deal with site-specific factors, we suggest a rate no higher than £130 per square metre.
- **Hotel developments** are able to absorb a maximum CIL (inclusive of Mayoral CIL) of between £0 to £954 per square metre dependant on the current use of the site. After allowing a buffer, which we consider to be appropriate to deal with site-specific factors, we suggest a rate of no higher than £120 per square metre.
- **D1 and D2** uses often do not generate sufficient income streams to cover their costs and are commonly infrastructure in themselves (e.g. schools and leisure centres). Consequently, they require some form of subsidy to operate. This type of facility is very unlikely to be built by the private sector. We therefore suggest that a nil rate of CIL be set for D1 and D2 uses.

1.6 For residential schemes, the application of CIL of is unlikely to be an overriding factor in determining whether or not a scheme is viable. When considered in context of total scheme value, CIL will be a modest amount, typically accounting for less than 2% of value.

1.7 Should the LLDC wish to do so, it would be possible to simplify the CS by adopting a single rate for all chargeable development. In determining whether this approach is appropriate for the area, the LLDC could consider the amount of new floorspace likely to come forward from the types of chargeable development during the life of the CS. There will be little benefit from charging a differential rate should there be comparably little new development of a particular type likely to come forward. This approach is in line with the Regulations, which require Charging Authorities to *'strike what appears to the charging authority to be an appropriate balance between (a) the desirability of funding (in whole or in part) the actual and expected estimated total cost of infrastructure required to support the development of its area…. and (b) the potential effects (taken as a whole) of the imposition of CIL on the economic viability of development across its area.'* (Regulation 14)

1.8 In light of the above we set out below in table 1.8.1 two suggested approaches to rates for the PDCS consultation for the LLDC to consider.

Table 1.8.1: Suggested rates for PDCS consultation

Type of development	FLAT RATE APPROACH		TWO RATE APPROACH	
	Stratford	Rest of area	Stratford	Rest of area
All residential development	£60		£60	
Convenience supermarkets and superstores and retail warehouses, Hotels and Student Accommodation.	£60		£100	
Comparison and all other retail (A1 – A5)	£60	Nil	£100	Nil
All other uses	Nil		Nil	

1.9 The results of this study are reflective of current market conditions, which are likely to improve over the medium term. It is therefore important that the LLDC keeps the viability situation under review so that levels of CIL can be adjusted to reflect any future changes.

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URS

LLDC

INFRASTRUCTURE DELIVERY PLAN

FINAL REPORT

Prepared for: LLDC

UNITED KINGDOM & IRELAND

LONDON LEGACY DEVELOPMENT CORPORATION

Rev	Date	Details	Prepared by	Checked by	Approved by
1	16/01/2013	Draft report for consultation	Julia Tuck Consultant Victoria Pinoncely Consultant	Esther Howe Associate	Rory Brooke Director
2	01/02/2013	Final report for consultation	Julia Tuck Consultant	Esther Howe Associate	Rory Brooke Director
3	11/04/2013	Final report	Julia Tuck Consultant	Esther Howe Associate	Rory Brooke Director

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ABBREVIATIONS

AAP	Area Action Plan
BSF	Building Schools for the Future
CCHP	Combined Cooling, Heat and Power
CFMP	Thames Catchment Flood Management Plan
CIL	Community Infrastructure Levy
DfE	Department for Education
EA	Environment Agency
EIA	Environmental Impact Assessment
FE	Forms of Entry
FRZ	Flood Risk Zone
FTE	Full time equivalent
GLA	Greater London Authority
GLL	Greenwich Leisure Limited
ha	Hectares
IDP	Infrastructure Development Plan
IWMS	Integrated waste management system
km^2	Square kilometres
kVA	Kilo Volt Amperes
kWh	Kilowatts per hour
LB	London Borough
LCS	Legacy Communities Scheme
LLDC	London Legacy Development Corporation
LTGDC	London Thames Gateway Development Corporation
M	million
m^2	Square metres
m^3	Cubic metres
Ml/d	Million litres per day
NAO	National Audit Office
NPPF	National Planning Policy Framework
ODA	Olympic Delivery Authority
OLSPG	Olympic Legacy Supplementary Planning Guidance
OPDES	Olympic Park District Energy System
p.	Page
PCC	Per Capita Consumption
PCP	Primary Capital Programme
PDCS	Preliminary draft charging schedule
PDZ	Planning Delivery Zone
POC	Points of Connection
PTAL	Public Transport Accessibility Levels
s.106	Section 106

SFRA	Strategic Flood Risk Assessment
SRF	Solid refuse fuel
STW	Sewage Treatment Works
SUDs	Sustainable Urban Drainage Systems
WDA	Waste disposal authority
WRZ	Water Resource Zone

TABLE OF CONTENTS

ABBREVIATIONS IV

EXECUTIVE SUMMARY 1

1. INTRODUCTION 7

1.1 Introduction 7
1.2 Context and Aims 7
1.3 Approach 9
1.4 Report structure 9

2. ANTICIPATED GROWTH IN THE LLDC AREA 11

2.1 Introduction 11
2.2 Growth trajectory 11
2.3 New residents and jobs 13
2.4 Modelling infrastructure needs arising from growth 14

3. SOCIAL INFRASTRUCTURE 16

3.1 Introduction 16
3.2 Primary Education 16
3.3 Secondary Education 19
3.4 Early years 21
3.5 Primary healthcare 24
3.6 Sports and leisure 27
3.7 Open space 29
3.8 Play space 31
3.9 Libraries and community facilities 33

4. TRANSPORT 36

4.1 Introduction 36
4.2 Existing Provision and Policy Framework 36
4.3 Planned Provision - Local schemes 42
4.4 Planned Provision - Strategic schemes 46
4.5 Summary 48

5. UTILITIES AND HARD INFRASTRUCTURE 49

5.1 Introduction 49
5.2 Energy 49
5.3 Water 59
5.4 Sewage 63
5.5 Waste management 66
5.6 Flood defences 72

6. SUMMARY: INFRASTRUCTURE FUNDING GAP 78

APPENDIX A KEY DOCUMENTS

APPENDIX B ESTIMATED PHASING BY SITE

APPENDIX C OCCUPANCY RATES

APPENDIX D TYPOLOGIES

APPENDIX E PLANNED INFRASTRUCTURE PROJECTS

EXECUTIVE SUMMARY

Introduction

The London Legacy Development Corporation ('the LLDC') has commissioned URS and BNP Paribas Real Estate to prepare an Infrastructure Delivery Plan (IDP) and viability assessment to inform the LLDC Community Infrastructure Levy ('CIL') Charging Schedule and Local Plan.

Evidence on future infrastructure and associated funding required to support growth over the Local Plan period underpins the introduction of a CIL charge on development, as set out in the CIL Regulations 2010 (as amended 2011). The IDP will also meet the requirement set out in the National Planning Policy Framework (NPPF) that local planning authorities assess infrastructure needs as part of their plan making activities.

This IDP identifies the existing social, transport and utilities infrastructure within the LLDC area over the period 2014 to 2031. It is based on publically available information and consultation with the boroughs and infrastructure providers. In the period leading up to adoption of the LLDC Local Plan, this IDP will be updated and is likely to evolve, including the details of infrastructure projects listed within this report (which it is intended will be revised annually).

Anticipated Growth in the LLDC area

Based on information on the major development sites within the LLDC area likely to come forward from 2014 to 2031, it is estimated that 20,403 new residential units and 931,722m^2 commercial floorspace will be delivered over the 17 year planning period. The estimated phasing of delivery of these units and floorspace, broken down as an initial two year period (2014-16) and three subsequent five-year periods to 2031, is outlined below.

Table ES1 Estimated Net New Residential and Commercial Floorspace within the LLDC area

Phase	Residential units	Commercial floorspace (m^2)
2014-16	3,938	187,588
2017-21	6,062	268,596
2022-26	6,199	249,753
2027-31	4,204	225,785
Total 2014-2031	**20,403**	**931,722**

Source: URS Calculations

The requirement for new infrastructure is driven by the additional residents and jobs associated with growth. To estimate the new residential population, occupancy rates were applied to the new dwellings coming forward. Occupancy rates for private units are based on Mayhew Study data, and for intermediate and social rented units are based on CORE (the Continuous Recording of Lettings and Sales in Social Housing in England) data - see Section 2.3 and Appendix C for further details. Three typologies with varying unit mixes were developed drawing on recently permitted schemes in the LLDC area: a 'family' typology, a 'mid' or average typology, and an 'urban' or dense typology. Each of the major sites was assigned one of the above three typologies, and the appropriate occupancy rates and child yield factors applied. New jobs arising from development were estimated using an employment density of 25m^2 per employee.

As a result, over the planning period it is estimated that new development will give rise to an additional 48,132 residents, of whom 10,746 will be aged 0-17, and 37,269 jobs will be generated.

Table ES2 Residential population and job generation by phase

Phase	Residents	Children per unit				Jobs
		0 to 3 yrs	*4 to 10 yrs*	*11 to 15 yrs*	*0 to 17 yrs*	
2014-16	8,609	503	659	344	1,633	7,504
2017-21	14,285	941	1,295	707	3,178	10,744
2022-26	15,034	1,002	1,449	814	3,536	9,990
2027-31	10,203	689	982	548	2,399	9,031
Total 2014 - 2031	**48,132**	**3,135**	**4,386**	**2,419**	**10,746**	**37,269**

Approach to the infrastructure assessment

The IDP assesses existing infrastructure provision within the LLDC area and where available reviews information on any shortfall in supply or spare capacity. It then identifies planned projects and the degree to which funding for these projects can be expected to come forward, allowing a 'gap analysis' to be undertaken to identify future investment required to meet net new demand arising from growth over the period 2014-2031. The final infrastructure funding gap takes account of funding anticipated to come forward through s.106 agreements and core government funds.

The study builds on previous work already carried out on infrastructure planning in the LLDC area. This is contained within the Olympic Legacy Supplementary Planning Guidance (OLSPG); the policy documents and infrastructure plans produced by each of the four boroughs which lie within the LLDC area; the GLA's London Plan Implementation Plan; and documentation associated with major planning applications in the LLDC area.

For infrastructure types where demand can be logically linked to projected new housing and employment space, a model is used to estimate net new demand arising from growth in the LLDC area. The forecasts of new residents and jobs set out above drive the model; where relevant account is taken of existing surplus capacity or committed investment which could help meet forecast needs; and benchmark assumptions are applied to estimate net demand and costs. The modelling exercise supplements the information drawn from infrastructure provider plans, policy documents and other elements of the desktop literature review.

Key Findings: Social Infrastructure

Education

Primary education caters for pupils aged four to ten years old, and there are currently two primary schools within the LLDC area. Borough-level data from the Department for Education (DfE) for the four LLDC boroughs shows an effective deficit of places within the London Borough (LB) of Newham and LB of Waltham Forest, and a surplus of places in LB of Tower Hamlets and LB Hackney; however consultation with the Boroughs during the formulation of the OLSPG Infrastructure Delivery Study indicated increases in pupil rolls were projected and geographical mismatch between supply and demand in some areas. Over the entire LLDC planning period it is estimated that there will be additional gross requirement for 4,096 primary school places. However, taking account of new provision coming forward at the Chobham Academy and as part of the Legacy Communities Scheme (LCS), and assuming that the school within the permitted Bromley By Bow South scheme comes forward, the net requirement over the entire planning period is estimated at 2,138 places, with an estimated cost of £31.1 million (M).

Secondary education caters for pupils aged 11 to 16 years old and (if schools have a sixth form) also for students aged 16 to 18 years old. DfE data suggests a current surplus of places within all four LLDC boroughs, though there are currently no schools within the LLDC area. Over the entire planning period it is estimated that the gross requirement is an additional 2,254 secondary places. However, once provision at the new Chobham Academy is taken into account, together with the planned new LSC secondary school to be located at Rick Roberts Way, net demand is considerably less than this (650 places). The cost associated with the provision of 650 additional places is estimated at £18.1M.

Early years education typically refers to provision for children under five years of age. While there is some existing provision within and in proximity to the LLDC area, consultation for the OLSPG Infrastructure Delivery Study indicated that there is little if any spare early years education capacity within the LLDC boroughs. A number of forthcoming schemes within the LLDC area include either planned nursery schools or floorspace capable of accommodating early years education provision. It is estimated that over the planning period there will be gross new demand for 1,568 nursery places. Taking planned provision with committed funding into account, net demand is estimated to be 1,118 places, with an estimated cost of £8.14M.

Primary healthcare

For the purposes of this report, primary healthcare is defined as incorporating general practitioner (GP) services and dental practitioners. There are two health centres within the LLDC area; the Carpenters Road Medical Practice and Trowbridge Surgery. Planned provision of healthcare services over the Local Plan period with committed funding in place has been identified as part of the Stratford City scheme (where a new healthcentre has already been built) and the LCS (where two walk-in centres and a polyclinic are planned). It is estimated that development within the LLDC area over the planning period will generate a gross demand for an additional 26.7 GPs and 24.1 dentists. Net demand is substantially less: 7.7 GPs and 5.1 dentists, resulting in a total cost to meet net demand of £3.0M.

Sports and leisure

This report considers publicly accessible sports courts (e.g. catering for tennis, football and netball) and swimming pools. New facilities will come forward over the planning period, including the Olympics Multi-use Sports Arena, the Olympics Aquatic Centre and Eton Manor sports centre, as well as the Olympic Stadium and Parklands and Veopark / BMX / mountain biking facilities. In addition, the LCS scheme will provide 3,606m^2 D2 (leisure) floorspace and Stratford City will provide 38,424m^2 and a number of refurbishments or expansion of existing facilities are planned within the four LLDC boroughs. Gross demand for swimming pools and sports courts is estimated at 1,336m^2 of courts space and 534m^2 swimming pool space. However taking into account the schemes described above it is considered that there will be no net additional demand for sports court space and 317m^2 net new demand for swimming pools space with an estimated cost of £2.1M.

Open space

Public open space is defined in the London Plan 2011 as public parks, commons, heaths and woodlands and other open spaces with established and unrestricted public access and capable of being classified according to the open space hierarchy which meets recreational and non-recreational needs. Planned provision in the area includes the Olympic Parklands, with at least 102 hectares (ha) of Metropolitan Open Land to be provided over the planning period, of which 12.4ha sits within the LCS and the Walthamstow Wetlands urban wetland reserve. The Stratford City application also includes provision of over 10ha of open space. Other open spaces are included within consented schemes, such as Sugar House Lane, Bromley By Bow North, Bromley By Bow South and Hackney Wick. On the basis of a benchmark standard of 1.2ha per 1,000 people, gross demand arising from development

within the LLDC area is estimated to be 57.8ha. Net demand is estimated to be 32.7ha, which has an associated cost of £10.5M.

Play space

Play space incorporates a number of open space types including dedicated areas for children containing play equipment provided within public open space and multi-use games areas for young people. The permitted schemes within the LLDC area include children's play space in order to meet the needs arising from development; these include doorstep, local, neighbourhood and youth playable spaces as part of the LCS scheme, at Stratford City and at Bromley By Bow South. The Mayor's SPD on child play space (2012) sets out a requirement for 10m^2 of playspace per child aged 0 to 17. Applying this benchmark to the LLDC's new residential population implies gross demand of 107,460m^2. Taking into account identified planned provision, the net demand is estimated at 51,761m^2 and a cost of £10.3M.

Libraries and community facilities

This report considers libraries and community facilities, including idea stores, which can be used for multiple purposes. Currently there is one community centre within the LLDC area, however there are others which sit outside but could serve the LLDC area. The LCS includes provision of up to 2,423m^2 flexible community space, 1,258m^2 flexible cultural space, 3,606m^2 of flexible leisure space and an idea store (2,460m^2). In addition, a multi-use community facility of at least 1,572m^2 will be provided at Stratford City; substantial D1 floorspace is planned at Sugar House Lane and Hackney Wick; and the Bromley By Bow South scheme will provide an additional idea store.

Gross demand is estimated at 1,444m^2 library floorspace and 2,936m^2 community floorspace. However, the additional provision within the schemes described above would result in a requirement of zero for the LLDC area as a whole..

Key Findings: Transport

Relevant policy documents from the four LLDC boroughs and GLA outline aspirations to increase public transport use and reduce reliance on private vehicles. While some transport projects have recently been completed within the LLDC area, mainly in association with the Olympic Games, new and improved transport infrastructure investment will be required to meet demand associated with the projected 48,123 new residents and 37,269 employees.

The transport infrastructure projects identified as required to support growth within the LLDC area include both 'local' schemes (which improve connections between or within neighbourhoods in the LLDC area) and 'strategic' schemes (which are key to connectivity with the surrounding area, the rest of Greater London and beyond).

Local schemes within the LLDC area include improved pedestrian and cycling routes and facilities to better link neighbourhoods; better exploitation of existing assets such as the waterways; improvements to the public realm; and highway and bridge upgrades. Known costs are estimated at £16.9M, with identified funding of £8.6M. Potential strategic-level investments which have been identified include improvements to stations and their access. Known costs are estimated at £29.0M, though £9.5M committed funds have been identified to offset these costs.

Key Findings: Utilities and Hard Infrastructure

Energy

Statistics from the Department of Energy and Climate Change (DECC) show that average domestic energy consumption within Greater London is higher than consumption in all of the four LLDC boroughs. The OLSPG Infrastructure Delivery Study notes that existing capacity in

electricity networks is the local area is thought to be limited. The LB of Tower Hamlets, LB of Newham and LB of Waltham Forest identify several planned projects, including power line replacements and infrastructure upgrades, to help satisfy demand from future development. The OLSPG Infrastructure Delivery Study notes that existing capacity in gas networks is thought to be sufficient, supported by projections from the National Grid Long Term Development Plan (2012). National Grid have an on-going investment programme to maintain existing gas infrastructure; there is limited information about planned gas infrastructure local to the LLDC area.

The Olympic Park District Energy System (OPDES) is a decentralised energy network served by two new energy centres at Kings Yard to the west of the Olympic Park and Stratford City. The OPDES is operated under a Concession Agreement between the employers (LLDC and Stratford City Developments Ltd) and the operator (COFELY East London Energy Ltd). The OPDES has capacity to be expanded into the surrounding neighbourhoods supplying low carbon energy and cooling capability. The OLSPG Energy Study identified four key points where new connections should be provided to facilitate such an expansion.

The gross demand for electricity is estimated, based on a benchmark usage assumption per dwelling / per m^2 commercial floorspace, as 15,694kVA for new dwellings and 65,220kVA for non-residential uses over the planning period. This could imply that the LLDC area will require a total of just under four primary sub-stations and just over 67 distribution sub-stations, costing £16.3M and £3.4M respectively. Gross new demand for gas is estimated at 20,403 m^3/hour residential consumption and 27,952 m^3/hour non-residential consumption.

Water

Thames Water is the owner, operator and supplier of water resources within the LLDC area and the majority of Greater London. Thames Water's Baseline Supply Demand Balance 2015-2040[1] shows that the London Water Resources Zone had an estimated surplus of 15.98 million litres per day (Ml/d) in 2011, however by the end of the planning period (2039/40) it is forecast that London will have a deficit of 367Ml/d. The Thames Water Investment Plan 2010-2015 outlines committed funding for water infrastructure across Greater London. Investments which are needed to meet demand arising include the continuation of the leakage reduction programme via Victorian Mains Replacement (VMR) and maintenance of existing water mains.

Gross additional demand for water is estimated 7,701,120 litres / day for dwellings and non-residential demand is 6,522,054 litres / day for commercial uses over the planning period.

Sewage

Sewage infrastructure covers both surface water drainage and foul water drainage. The sewerage system in the LLDC area and the majority of Greater London is operated by Thames Water. The OLSPG Infrastructure Delivery Study notes that the combined drainage system that collects sewage and surface water in this part of London is inadequate for the flows that occur at times of high rainfall, with sewage sometimes overflowing into the Thames and Lea. Thames Water's London Tideway Improvement Programme consists of: upgrades and/or capacity extensions to STW; works to the Lee Tunnel; and construction of the Thames Tunnel which will capture flows from the 34 unsatisfactory CSOs.

The gross demand for sewage infrastructure can be estimated using the ratio of litres per day, per resident or employee. Estimated gross additional flows from new homes is 9,626,400 litres per day and non-residential demand is 8,851,359 litres per day.

[1] Thames Water: Baseline Supply Demand Balance 2015-2040 (2012). Available at: http://www.thameswater.co.uk/tw/common/downloads/wrmp/about-us-WRMP14-baseline-supply-demand_-balance-september-2012.pdf. Accessed December 2012.

Waste management

Waste is defined by the Environment Agency as including 'Municipal Solid Waste' (household), commercial waste and industrial waste which is non-hazardous and collected by or on behalf of the local authority. Household waste makes up around 80% of the total local authority collected waste in London. Despite a steadily rising population, the overall trend in household waste production is falling. The LLDC area is covered by the North London Waste Disposal Authority (WDA), of which the LB of Waltham Forest and LB of Hackney are members, and the East London WDA, of which the LB of Newham is a member. The LB of Tower Hamlets provides its own waste treatment and disposal service. A number of planned projects have been identified which could help cater for growth, though none sit directly within the LLDC area.

Indicate gross demand arising from residential growth in the LLDC area 21,611,268 kg/pa and from non-residential growth is 48,799,138 kg/pa.

Flood defences

The OLSPG identifies that much of the Queen Elizabeth Olympic Park and its surroundings are in, or close to, the natural flood plain of the River Lea and are at risk of fluvial or tidal flooding. Flood risk is particularly severe in the southern-most section of the LLDC area. The LCS planning permission secured additional flood risk mitigation through site wide design principles and planning conditions. Planned projects in the LLDC area and immediate locality which have been identified include flood defences and surface water storage and drainage improvements, with identified costs of £6.8M to £20M. See Section 5.6 for further details.

Summary: Infrastructure Funding Gap

A list of planned infrastructure projects which have been identified through this study is included at Appendix E. The net new infrastructure requirements arising within the LLDC area over the plan period is summarised in Table 6.1, together with associated costs and the overall funding gap once identified funding and other anticipated but as yet unidentified funding is taken into account.

The costs of meeting net new demand for infrastructure arising within the LLDC area to 2031 are estimated at £136.0M. Identified funding which will offset these costs, including s.106 financial contributions, is £32.8M. It is estimated that a further £39.4M could come forward from anticipated but as yet unidentified funding (that is, core government funding and other provider investment). Overall, the remaining infrastructure funding gap is estimated at £63.8M.

1. INTRODUCTION

1.1 Introduction

The London Legacy Development Corporation ('the LLDC') has commissioned URS and BNP Paribas Real Estate to prepare an Infrastructure Delivery Plan (IDP) and viability assessment to inform the LLDC Community Infrastructure Levy ('CIL') Charging Schedule and Local Plan. This report sets out the IDP and the underpinning evidence base.

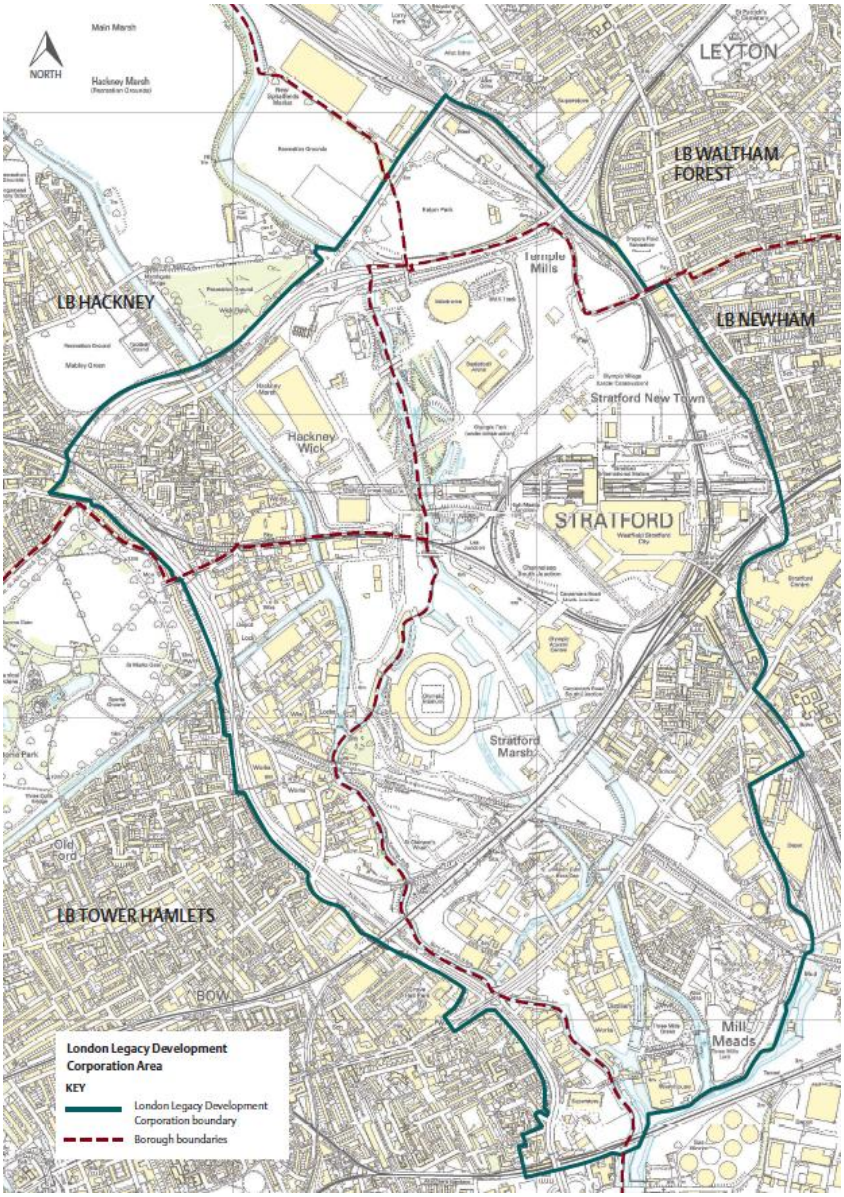
Work has comprised a desk-based review of relevant literature and information, supplemented by the current and detailed knowledge of stakeholders. A draft IDP report was circulated to key consultees and LLDC partners, including officers of the four relevant London boroughs and other infrastructure providers, and presented at a consultee workshop on 28th February 2013. Feedback subsequently provided by consultees is reflected within this final report.

In the period leading up to publication of the LLDC Local Plan, this IDP will be updated and is likely to evolve, including the details of infrastructure projects listed within this report (which it is intended will be revised annually). As such, details currently contained within this report are subject to change.

1.2 Context and Aims

The London Legacy Development Corporation (Planning Functions) Order 2012, effective from 1 October 2012, granted LLDC the full range of planning functions, including those of plan making. In becoming a local planning authority, the LLDC has taken on the planning functions of the Olympic Delivery Authority (ODA), the London Thames Gateway Development Corporation (LTGDC) and the London Boroughs (LB) of Hackney, Newham, Tower Hamlets and Waltham Forest for the land within its area. During the life of the LLDC all planning applications in this area will need to be made to the LLDC. The LLDC area is shown in Figure 1.2.1 below.

Figure 1.2.1 Map of LLDC area



Evidence on future infrastructure and associated funding required to support growth over the Local Plan period underpins the introduction of a CIL charge on development, as set out in the CIL Regulations 2010 (as amended 2011), government guidance and best practice documents.

CIL guidance issued in December 2012[2] states that:

> *"A charging authority needs to identify the total cost of infrastructure that it desires to fund in whole or in part from the levy. ...In determining the size of its total or aggregate infrastructure funding gap, the charging authority should consider known and expected infrastructure costs and the other sources of possible funding available to meet those costs. This process will*

[2] DCLG (December 2012) Community Infrastructure Levy Guidance

identify a Community Infrastructure Levy infrastructure funding target. This target should be informed by a selection of infrastructure projects or types (drawn from infrastructure planning for the area) which are identified as candidates to be funded by the levy in whole or in part in that area".

The IDP will feed into the CIL Preliminary Draft Charging Schedule (PDCS) which will put forward potential CIL rates based on a consideration of infrastructure costs balanced against viability within the LLDC area.

The National Planning Policy Framework (NPPF) indicates that local planning authorities should assess infrastructure needs as part of their plan making activities. This work will also fulfil this requirement, and will feed into the Local Plan for the LLDC area which the LLDC has recently commenced and which covers the period from 2014 to 2031.The planning policy documents and government guidance which are relevant to this report and which formed a basis for the study approach are set out in Appendix A.

1.3 Approach

This study builds on previous work already carried out on infrastructure planning in the LLDC area. This is contained within the Olympic Legacy Supplementary Planning Guidance (OLSPG); the policy documents and infrastructure plans produced by each of the four boroughs which lie within the LLDC area; and documentation associated with major planning applications in the LLDC area.

In addition, the London Plan Implementation Plan (LPIP) provides a *"robust basis for infrastructure planning across London"* and was introduced in response to requests from stakeholders (including boroughs) for *"improved implementation and infrastructure planning by the Mayor"*[3]. The LPIP is intended to *"help boroughs in terms of the wider context for their local implementation and infrastructure planning and the preparation for their Community Infrastructure Levy (CIL)"*.

The IDP is also informed by the published information of infrastructure providers and, importantly, consultation.

Key steps within the approach to the study are as follows:

- Establish likely growth in homes and commercial space within the LLDC area over the planning period.
- Estimate additional residents and jobs associated with this growth by applying occupancy rates and employment density factors.
- Establish likely future demand for various infrastructures arising from growth, including where relevant through an independent infrastructure modelling exercise.
- Identify planned infrastructure projects, the availability of funding to deliver these projects and the degree to which they could meet potential future infrastructure needs.
- Estimate the funding gap associated with meeting any outstanding net demand for infrastructure over the planning period.

1.4 Report structure

The rest of this report is structured as follows:

[3] London Plan Implementation Plan, (2013); Greater London Authority

- Section 2 sets out the growth anticipated within the LLDC area over the Local Plan period (2014 to 2031) in terms of new homes and commercial floorspace and the associated new residents and jobs;

- Section 3 considers a range of infrastructure types categorised as 'social infrastructure', identifying existing provision, planned projects, demand arising over the Local Plan period and the net gap in infrastructure provision and funding;

- Section 4 considers transport;

- Section 5 considers hard infrastructure and utilities (energy, water, sewage, waste and flood risk); and

- Section 6 draws together preliminary findings into an IDP which sets out planned projects, associated costs and the indicative infrastructure funding gap which CIL could help to meet.

2. ANTICIPATED GROWTH IN THE LLDC AREA

2.1 Introduction

This section describes how residential and employment growth in the LLDC area over the Local Plan period has been estimated for the purposes of the infrastructure study, and how this feeds into the assessment of future infrastructure requirements and costs.

It should be noted that further detailed work on projected growth in homes, jobs, residents and employees will be undertaken in due course to inform the emerging LLDC Local Plan.

2.2 Growth trajectory

Information has been gathered on the major sites within the LLDC area on which new residential and commercial floorspace is expected to come forward from 2014 to 2031. Information sources include:

- The Greater London Authority's (GLA) London Development Database of consented schemes;
- Planning application documents for both consented schemes and schemes not yet determined;
- Adopted planning policy documents, including Core Strategies, Area Action Plans (AAP) and development frameworks;
- The GLA's London Strategic Housing Land Availability Assessment and Housing Capacity Study (2009); and
- LLDC officers' knowledge of the sites.

The key sites and the net new dwellings and commercial floorspace[4] associated with each are set out in Table 2.2.1 below. It is estimated that from 2014 to 2031 there will be 20,403 net additional dwellings and 931,722 square metres (m^2) net additional commercial floorspace[5].

[4] For the purposes of this report, commercial floorspace includes use classes A, B and C1 (hotel) floorspace. Jobs will also be generated by other uses classes but have not been included here.
[5] It should be noted that a more detailed exercise to identify potential development sites and their development capacity will be undertaken as part of LLDC's wider work on the Local Plan; Table 2.1 therefore represents preliminary and high-level estimates made specifically for the purposes on this infrastructure study.

Table 2.2.1 Estimates of Net Residential Units and Commercial Floorspaces within the LLDC area

Site		Residential units	Commercial floorspace (m^2)
1	Sugar House Lane (Inter Ikea site)	1,200	57,513
2	Three Mills	211	
3	Cooks Roads (three sites)	342	
4	Fish Island	3,000	175,000
5	Bromley by Bow North	741	-
6	Bromley by Bow South	434	15,325
7	Hackney Wick (including west of Lee Navigation)	1,282	134,337
8	Stratford Edge	202	1,010
9	Unex site	280	-
10	206-214 Stratford High St (Garage)	147	4,625
11	2-12 Stratford High Street	191	665
12	68-70 Stratford High Street	173	731
13	Chobham Farm South	480	-
14	Stratford City (excluding athletes village and zone 1 commercial space[6])	3,636	452,943
15	Chobham Farm	1,100	2,950
16	Legacy Communities Scheme (LCS) excluding Planning Delivery Zones (PDZ) 4 + 5[7]	5,334	73,873
17	Duncan House, Stratford High Street (UEL Building)	150	2750
18	Other unidentified / windfall sites	1,500	15,000
	Total LLDC area	**20,403**	**931,722**

An estimate has been made of how residential and commercial development breaks down by phase. Table 2.2.2 indicates that, while growth is reasonably evenly distributed across the planning period, 2022-26 will have the highest number of residential units coming forward, while 2017-21 will have the most commercial floorspace coming forward. See Appendix B for further detail.

Table 2.2.2 Phasing of Net New Residential and Commercial Floorspace

Phase	Residential units	Commercial floorspace (m^2)
2014-16	3,938	187,588
2017-21	6,062	268,596
2022-26	6,199	249,753
2027-31	4,204	225,785
Total 2014-2031	**20,403**	**931,722**

[6] It is assumed that the 2,818 residential units and commercial space in Zone 1 will have come forward before 2014.
[7] Development within Planning Delivery Zones (PDZ) 4 and 5 is accounted for within Fish Island (site 4) and Hackney Wick (site 7) respectively.

2.3 New residents and jobs

Requirements for new infrastructure are driven by the additional residents and jobs associated with growth. To estimate the new residential population, occupancy rates were applied to the new dwellings coming forward.

The occupancy rates reflect the GLA Intelligence Unit paper on 'Olympics LCS Population Yield' (February 2012) which contained research undertaken by the GLA and the boroughs in relation to the population estimates for the LCS. Occupancy rates for private units are based on Mayhew Study data on Leabridge Ward (within the LB of Hackney). Rates for intermediate and social rented units are based on CORE (the Continuous Recording of Lettings and Sales in Social Housing in England) 2009/10 data. The full dataset is presented in Appendix C. For each type and size of dwelling, an average household size is provided together with the split according to age group.

As household profile and occupancy rates vary according to the size, type and tenure of housing, three residential typologies were derived for the purposes of the infrastructure assessment. These are summarised in Table 2.3.1 below and set out in full in Appendix D. They draw on aspects of three recently permitted schemes in the LLDC area: the LCS, the housing mix of which can be considered typical of a 'family' orientated scheme; Sugar House Lane which can be considered to represent a 'mid' or average scheme; and Manhattan Lofts which can be considered an 'urban' or dense scheme. It has been assumed that in each case the tenure split by number of units is 65% private, 11% intermediate and 25% social rented; these assumptions are considered to reflect current borough policy and recently consented schemes within the LLDC area.

It is not considered appropriate within this high level assessment to differentiate between the household characteristics and infrastructure requirements of Gypsies and Travellers and those of other potential new residents in the LLDC area. Full consideration will be given to the needs of this group within the LLDC Local Plan however, in line with guidance outlined in the NPPF.[8]

Table 2.3.1 Typologies summary

Typology	% 3 bed +	% Houses	Tenure (%)		
			Private	Intermediate	Social rented
Family	44%	19%	65%	11%	25%
Mid	40%	11%	65%	11%	25%
Urban	6%	0%	65%	11%	25%
Bespoke (Stratford City)	25%	0%	65%	11%	25%

The average household size for each typology, derived by applying the occupancy rates, is shown below, together with the 'child yield factors' indicating the number of children per dwelling. Child yield factors are shown for the age groups which are relevant for modelling demand for education and playspace within the infrastructure model[9].

[8] NPPF (2012), Department for Communities and Local Government

[9] The estimate of 0 to 3 year olds is relevant for early years education; 4 to 10 years for primary schools; and 11 to 15 years for secondary schools. Estimated demand for playspace is modelled for children aged 0 to 17. See section 1 for further details on the infrastructure model methodology.

Table 2.3.2 Average household size and child yield factors by typology

Typology	People per unit	Children per dwelling, by key age groups			
		0 to 3 yrs	*4 to 10 yrs*	*11 to 15 yrs*	*0 to 17 yrs*
Family	2.62	0.18	0.29	0.17	0.70
Mid	2.23	0.13	0.19	0.10	0.46
Urban	1.89	0.08	0.07	0.03	0.20
Bespoke	2.24	0.16	0.16	0.08	0.42

Each scheme within Table 2.3.2 above was assigned a typology[10] and the appropriate occupancy rates and child yield factors were applied to estimate the people and children residing at each major site.

New jobs arising from development were estimated using an employment density of 25m^2 per employee. This is a reasonable average for commercial floorspace, based on well-established guidance[11].

Using this methodology, it is estimated that over the 17 year planning period new development within the LLDC area will give rise to an additional 48,132 residents, of whom 10,746 will be aged 0 to 17, and 37,269 jobs will be generated. A breakdown by phase is shown in Table 2.3.3 below.

Table 2.3.3 Residential population and job generation by phase

Phase	Residents	Children per unit				Jobs
		0 to 3 yrs	*4 to 10 yrs*	*11 to 15 yrs*	*0 to 17 yrs*	
2014-16	8,609	503	659	344	1,633	7,504
2017-21	14,285	941	1,295	707	3,178	10,744
2022-26	15,034	1,002	1,449	814	3,536	9,990
2027-31	10,203	689	982	548	2,399	9,031
Total 2014 - 2031	**48,132**	**3,135**	**4,386**	**2,419**	**10,746**	**37,269**

2.4 Modelling infrastructure needs arising from growth

For infrastructure types where demand can be logically linked to projected new housing and employment space, a model was used to estimate gross new demand arising from growth in the LLDC area. This analysis supplements the information drawn from infrastructure provider plans, policy documents and other elements of the desktop literature review. The infrastructures which are modelled are education, healthcare, sports and leisure, open space and child play space, electricity, gas, water, waste and sewerage.

[10] The Mid typology was applied to sites 1 to 7: Sugar House Lane (Inter Ikea site), Three Mills, Cooks Road (3 sites), Fish Island, Bromley by Bow North, Bromley by Bow South, Hackney Wick. The Urban typology was applied to sites 8 to 13: Stratford Edge, Unex, Garage site, 2-12 Stratford High Street, 68-70 Stratford High Street, Chobham Farm South. The Bespoke typology was applied to Stratford City (excluding the athletes village). The Family typology was applied to sites 15 to 18: Chobham Farm, LCS (exc. PDZs 4 + 5), Duncan House, and other / unidentified potential windfall sites.

[11] *Employment Densities Guide 2nd Edition*, (2010); Homes and Communities Agency

The forecasts of new residents and jobs set out above drive the model. For each infrastructure type, a benchmark assumption is applied (i.e. unit of infrastructure required per person / employee) to estimate gross demand. Any surplus capacity within existing infrastructure which is evident from a review of relevant information is subtracted from gross demand. New capacity associated with forthcoming projects, where this new capacity is reasonably certain to come forward, is also subtracted. This includes instances where forth-coming schemes have a signed Section 106 (s.106) agreement and include delivery of infrastructure on-site, or where an infrastructure provider has stated that funding is committed within their forward planning documents or via consultation.

This modelling exercise gives an indication of net demand associated with growth in the LLDC area. Benchmark costs are then applied to estimate funding requirements associated with meeting net new demand. In estimating the final funding gap relating to infrastructure, additional s.106 financial contributions and anticipated core government funding for infrastructure is also reflected.

More detail on the approach to modelling is described within each of the relevant infrastructure assessment sections, including detail on benchmarks and assumptions applied.

3. SOCIAL INFRASTRUCTURE

3.1 Introduction

This section covers education (primary, secondary and early years); primary healthcare; open space; child play space; sports facilities (courts and swimming pools); libraries; and community space.

For each infrastructure type, information on existing facilities and services serving the LLDC area is reviewed, drawing on a range of evidence base and policy documents and infrastructure provider plans. A review is then undertaken of planned provision. Planned projects are listed in Appendix E, including where available detail on phasing, costs, and funding and delivery arrangements.

The estimate of demand arising from growth within the LLDC area is then set out, as derived from the infrastructure model described in Section 2. Where there is planned new capacity with committed funding (including s.106 agreements and in-kind provision within permitted schemes), and where there is surplus capacity within existing infrastructure, this is subtracted from gross demand in order to estimate net infrastructure demand. Funding required to meet net demand is estimated based on the application of benchmark costs per unit.

The funding requirement associated with meeting net social infrastructure needs is summarised in Table 6.1 together with equivalent infrastructure for transport and hard infrastructure[12].

This assessment considers publically accessible social infrastructure and facilities. It is acknowledged that some people will also use private providers for services such as education and leisure, and this may reduce demand for public or voluntary sector facilities.

3.2 Primary Education

Scope

Primary education caters for pupils aged four to ten years old. Local authorities have a statutory requirement to ensure an adequate supply of school places. Guidance from the Audit Commission (which is commonly applied by local authorities) recommends that, as it is impractical to aim for an exact match between the numbers of pupils (demand) and the available places (supply) a 5% surplus capacity should be planned for in schools[13].

Existing supply

An overview of primary school provision by LLDC borough is set out below, drawing on Department for Education (DfE) School Capacity data for 2010/11[14]. DfE data gives school rolls and capacities at the borough level for the four LLDC boroughs and shows there is a surplus provision of primary school places in all boroughs. Taking into account Audit Commission Guidance however, if schools are considered to be 'full' at 95% capacity, there is considered to be a deficit of primary school places within the LB of Newham and LB of Waltham Forest.

2010/11 DfE data for the four LLDC boroughs shows that:

[12] Financial contributions towards social infrastructure within signed s.106 agreements are reflected in Table 6.1 which summarises the infrastructure funding gap, rather than within the tables in the individual infrastructure sub-sections.
[13] Trading Places: A Review of Progress on the Supply and Allocation of School Places, (2002); Audit Commission.
[14] Available at: http://www.education.gov.uk/rsgateway/DB/STR/d001050/index.shtml Accessed January 2013.

- The LB of Hackney has an overall surplus of 8.9% primary school places. However, consultation for the OLSPG Delivery Study highlighted a mis-match between location of surplus and demand for school places. The LB of Hackney's Development Management Local Plan (2012) indicates that there will be a shortage of primary places from 2014/15 onwards.

- There is a surplus of 3.8% places across the LB of Newham's primary schools. The LB of Newham's ten year Primary Place Projections indicated that by 2017 primary school pupil numbers could increase by 20%[15]. The Stratford Metropolitan Master Plan Community Infrastructure Assessment (2011) outlines that most of the schools in the area appear to be in reasonable condition but many have inadequate classroom sizes.

- In the LB of Tower Hamlets, DfE data shows a 5.3% surplus in primary school places, which (taking into account Audit Commission guidance) is in line with OLSPG consultation findings that there is effectively now no spare capacity and a deficit in provision in some areas.

- In the LB of Waltham Forest, DfE data shows a 1.6% surplus overall in the Borough. However, the OLSPG Infrastructure Delivery Study consultation revealed there was actually a deficit in some areas of the Borough. The LB of Waltham Forest Core Strategy (2012) states there are currently 43 established maintained primary schools in the Borough and six infant and junior schools.

In March 2013 the National Audit Office (NAO)[16] forecast primary places required across England by 2014/15. The NOA report indicates that increasing pressure for primary school places will become severe in some parts of the country, in particular, in London. This problem is largely due to increases in birth rates and the improving quality of London schools resulting in retention of pupils. The NOA Report identified LB Tower Hamlets and LB Hackney as areas of high need (defined as a projected shortfall of less than 5%) while LB Newham and LB Hackney are defined as areas of severe need (with a projected shortfall of greater than 5%).

The London Plan Implementation plan notes that the minimum total requirement in London between 2011 and 2021 will be for 4,900 additional primary classes, with GLA demographic projections showing the total numbers of primary age children set to rise by 20.7% by 2021[17].

There are currently two primary schools located within the LLDC area: Carpenters Primary School in Stratford, and Gainsborough Primary School in Hackney Wick. DfE data for 2010/11 shows that Carpenters Primary School has places for 420 pupils, with a 9% surplus (39 spaces). Gainsborough Primary School has 420 places, with a 10% surplus (31 spaces); however this school expanded by one form of entry (FE) in September 2012.

The planning application for the LCS[18] (which falls within the LLDC area) found that the LCS site does not currently have adequate access to primary school facilities. While there is currently some spare capacity within local schools, most are located over 15 minutes' walk away from the site.

Planned provision

Planned provision of primary schools is as follows:

[15] An Overview of Primary Place Planning to 2017, (2008); Children and Young People Scrutiny Commission, LB of Newham.

[16] Capital Funding for New School Places, (2013), National Audit Office

[17] London Plan Implementation Plan, (2013); Greater London Authority

[18] LCS Housing and Social Infrastructure Strategy (2011), OPLC / Aecom, LCS-GLB-ACC-HSIS-001

- On the LCS site, provision of two 3FE primary schools is proposed. According to the s.106 agreement for the LCS, the first primary school (within PDZ 5) will be triggered by occupation of 1,000 residential units across the LCS development, and the second primary school (PDZ 4) will be triggered by the occupation of 4,750 units. Based on likely occupation of residential units, this indicates 'trigger years' of 2018 and 2026 respectively[19]. Application of the original child yield methodology within the LCS planning application indicates that demand arising from the LCS would be approximately 5.9 Forms of Entry (FE). However subsequent sensitivity tests indicated that demand could be greater than this should population exceed the original population estimates and the scheme included a population review mechanism and if required makes appropriate financial contributions for off-site provision.

- The Chobham Academy, which is due to open in 2013 in zone 6 of the Stratford City scheme, will include a 3FE primary school capable of accommodating 630 pupils. This provision is 210 places less than the originally approved Stratford City scheme and given subsequent permissions at Stratford City there would be a shortfall of 86-104 primary school places.

- The permitted Bromley by Bow South scheme includes provision of a 2FE primary school. In addition, the signed s.106 agreements for Bromley by Bow North and Sugar House Lane include financial contributions towards primary school provision in the local area.

- The OLSPG Infrastructure Delivery Study states that the LB of Newham is planning an additional 2FE at Carpenters School (currently 2FE) to serve the wider neighbourhood.

- The Fish Island AAP states that school places will be provided in either one or two primary schools within Fish Island and potentially one secondary school, subject to the amount of development being proposed. The LCS scheme includes a primary school within PDZ 4 (Fish Island East), and the unconsented Neptune Wharf scheme may also include an on-site 3FE primary school within the later stages of development which would meet the need for a second primary school. The OLSPG Infrastructure Delivery Study states that primary provision in the LB of Waltham Forest is expected to be expanded by nine FE up to 2012 in order to meet demand. The funding for this was expected to be provided through the Primary Capital Programme (PCP), though the discontinuation of this programme may affect the delivery of this going forward.

- Within the LB of Waltham Forest there is currently a planned increase in capacity, to provide an additional nine FE to meet the need for places in the Borough to 2014. Demand for these FE will be greatest in the south and centre of the Borough. In 2012 the Government allocated funding to five schools in the Borough through its Priority School Funding Programme[20].

Gross demand, net demand and funding requirement

Estimated gross demand arising for primary school education from new homes in the LLDC area is set out in Table 3.2.1 below[21]. Over the entire planning period it is estimated that an additional 4,096 places will be required, with new demand greatest in the 2022-26 period. Net demand is shown taking into account a small number of surplus places within existing

[19] LCS Planning Committee Main Report, (2012); ODAPCT

[20] Buxton School, George Mitchell School, Hawkswood Primary Pupil Referral Unit, Selwyn Primary School and St Joseph's Catholic Infant School. Available at: http://www.walthamforest.gov.uk/pages/news/multi-million-school-plans.aspx. Accessed December 2012.

[21] It is assumed that 100% of children from social rented, intermediate and private dwellings generate new demand; that leakage to the private sector is 6.6% of total pupil demand; and that net leakage arising from cross-borough movement of pupils is 0%.

schools[22], and also anticipated new provision, namely the Chobham Academy (3FE in 2014-16[23]), the 2FE school at Bromley by Bow South (assumed to come forward in 2014-16), and the two schools within the LCS scheme (one 3FE school in PDZ 5 assumed to come forward in 2017-21, and another 3FE school in PDZ 4 assumed to come forward in 2022-16). Net demand over the entire planning period is 2,138 places (equivalent to 3.4 3FE primary schools), with a cost of £31.16M[24]. The s.106 financial contributions from the Bromley by Bow North and the Sugar House Lane schemes are not reflected below, but are reflected in Table 6.1 which summarises the funding gap across all infrastructures.

Table 3.2.1 Gross Demand, Net Demand and Funding Requirement for Primary Schools

Phase	Gross demand (places)	Supply - existing surplus and new provision (places)	Net supply – inc previous years	Net Demand (places)	3FE schools	Cost (£M)
2014-16	616	698		-82	-0.13	0.0
2017-21	1,210	630	712	497	0.79	7.25
2022-26	1,353	630		723	1.15	10.54
2027-31	917	-		917	1.46	13.37
Total	**4,096**	**1,958**		**2,138**	**3.39**	**31.16**

Source: URS calculations

3.3 Secondary Education

Scope

Secondary education caters for pupils aged 11 to 16 years and old and (if schools have a sixth form) also for students aged 16 to 18 years old. Places are provided by the state maintained, voluntary aided, private and independent sectors. Local authorities have a statutory requirement to ensure an adequate supply of secondary school places.

Existing supply

Relevant information on secondary school provision is set out by borough below. During the OLSPG Infrastructure Delivery Study consultations (October 2011), borough officers indicated that there was little spare capacity in secondary schools within the OLSPG area, and that spare capacity is anticipated to be taken up over the next year or so.

- In the LB of Hackney, there are 11 secondary schools in addition to a number of specialist schools catering for children aged 11-16. DfE figures for 2010/11 suggest a 24.6% surplus in the Borough (3,043 places).
- In the LB of Newham there are 15 secondary schools with 1,044 surplus places (5.4%). However, consultation with the Borough for the OLSPG Delivery Study suggests that there is now no spare capacity and a deficit in provision in some areas, with a need for between six and seven additional FE within the Borough.
- DfE figures for 2010/11 suggest a 7.4% surplus (1,143 places) in the LB of Tower Hamlets.

[22] 38 places in Phase 2014-16. DfE data indicates spare capacity of 9% at Carpenters Primary School in Stratford (39 spaces out of 420) and of 10% at Gainsborough Primary School in Hackney Wick (31 spaces out of 420). Assuming 5% spare capacity is maintained in line with Audit Commission guidance, it is assumed that there are 17 spare places at Carpenters and 21 spaces at Gainsborough.
[23] Chobham Academy will provide 630 places (3FE) in total, however demand from the athletes village (2,818 units, generating demand for 390 places according to URS calculations) has been deducted.
[24] Based on a cost per of £14,578 per pupil place. Available at: Teachernet . As quoted in the OLSPG Infrastructure Delivery Study.

- DfE figures for 2010/11 suggest a 3.0% surplus (438 places) in the LB of Waltham Forest's 16 secondary schools. While the cancellation of the Building Schools for the Future (BSF) programme affected the LB of Waltham Forest's plans for school provision, in 2012 the Borough announced an investment of £30M in a school redevelopment programme[25].

As outlined in Section 3.2, there is a considerable shortfall in school places which has been identified within London. The London Plan Implementation Plan notes that the minimum total requirement between 2011 and 2021 will be for 2,800 additional secondary classes, with GLA demographic projections showing the total numbers of secondary age children set to rise by 22.4% by 2021[26].

The impact assessment for the LCS planning application[27] found that access to secondary school facilities is currently poor, and that while there is currently some spare capacity at local existing schools, the majority are inaccessible from the LCS site.

Planned provision

Consultation with the LLDC boroughs in October 2011 (as part of the OLSPG Infrastructure Delivery Study) found reduced levels of planned investment (compared to that described in the borough's infrastructure studies) and that any additional capacity associated with planned investment was expected to be minimal. However a number of planned projects are of relevance to the LLDC area and are described below:

- The LCS scheme includes provision of a 11,660m^2 secondary school in PDZ12. This secondary school will provide 6FE (900 places), with space to accommodate a sixth form or the equivalent of sixth form education of 225- 350 places. This would meet needs arising from residents of the LCS, and also result in a spare capacity within years 7 to 11 of 1.2FE and an additional 45 places for post-16 students, though this potential spare capacity reduces when outcomes applying alternative child yield methodologies are tested. According to the s.106 for the LCS, the completion of the secondary school should be triggered by occupation of 4,000 residential units across the LCS development. It is likely that the school will be delivered one or two years earlier than the Applicant's original proposition of 2026[28].

- The Stratford City Planning Application includes an education campus in zone 6, Chobham Academy, which is due to open in 2013. This will include a 6FE secondary school. The secondary school element of Chobham Academy has capacity beyond that required solely for Stratford City[29].

- The LB of Newham Core Strategy[30] notes the need for new provision in regeneration areas, including the relocation of Newham Sixth form College (New Vic, the largest sixth form in London) to an alternative site closer to Stratford Centre.

- The OLSPG Infrastructure Delivery Study notes the LB of Tower Hamlet's plans to accommodate future growth through the provision of one new 8FE secondary school, located on one of three potential sites at Fish Island, Aisla Street or Westferry. This

[25]. Willowfield School in Walthamstow will receive £20M from the Council to be relocated to a new site and rebuilt while Leytonstone School will benefit from major remodelling with investment over £10M. The Government has also allocated funding to five additional schools in the borough through its Priority School Funding Programme (see above) and £50M has been allocated for extra school places. Available from: http://www.walthamforest.gov.uk/pages/news/multi-million-school-plans.aspx. Accessed December 2012.
[26] London Plan Implementation Plan, (2013); Greater London Authority
[27] *LCS Housing and Social Infrastructure Strategy*, (2011); OPLC / Aecom. LCS-GLB-ACC-HSIS-001
[28] LCS Planning Committee Main Report, (2012); ODAPCT.
[29] Stratford Village Property Holdings 1 & 2 and London and Continental Railways, Section 73 Application 07/90023/VARODA, Planning Statement (p.74)
[30] Core Strategy, (2012); LB of Newham

equates to 1,200 pupil places, using a standard of 150 pupils per FE, by 2017 at an estimated cost of between £27M and £37M. The LB of Tower Hamlets has also identified plans for a second project at Bow Locks secondary school (which sits just outside the LLDC area), due to open in September 2014. This will provide 4FE to replace the closed Bow Boys School and new provision of a further 4FE to accommodate growth in the area. The £38M of funding required to complete this project will be provided by BSF capital expenditure as part of Wave 5 of the programme. This funding has been committed, though the project has yet to receive planning approval.

Gross demand, net demand and funding requirements

It is estimated that gross demand associated with new homes within the LLDC area will be 2,254 secondary school places. This is set out by phase in Table 3.3.1 below. However, Chobham Academy, opening 2013, will provide 900 additional places (6FE)[31]. Therefore in the 2017-2021 period it is estimated that there will be 383 spare secondary school places. There could also be a surplus of places in the 2022-26 period when the LCS secondary school (6FE, 900 places) is likely to come forward. Over the entire planning period, it is estimated that there will be net new demand for 650 places arising from the LLDC area. Costs associated with the provision of these additional places are estimated at £18.1M[32].

Table 3.3.1 Gross Demand, Net Demand and Funding Requirement for Secondary Schools

Phase	Gross demand (places)	Supply - existing surplus + new provision (places)	Net supply - inc. previous phase	Net Demand	Cost (£M)
2014-16	321	704		-383	0.0
2017-21	660		383	278	7.73
2022-26	760	900	900	-140	0.0
2027-31	512		140	372	10.36
Total	**2,254**	**1,604**		**650**	**18.1**

Source: URS calculations

3.4 Early years

Scope

Early years education typically refers to provision for children under five years of age. All three and four year olds are entitled to 15 hours of free nursery education for 38 weeks of the year. This is applied until they reach compulsory school age (the term following their fifth birthday). Attendance at an educational establishment for children under five years is not compulsory. Free early education places are available at a range of early years settings including nursery schools and classes, children's centres, day nurseries, play groups and pre-schools and childminders.

Existing Supply

Provision within the LLDC area includes the Carpenters Primary School which offers nursery classes, and the private Carpenters and Docklands nursery situated in the Carpenters Estate nearby. In Hackney Wick, Gainsborough Primary School includes one nursery class. There are additional nurseries outside but in proximity to the LLDC area, for example the Stratford Metropolitan Masterplan Community Infrastructure Assessment (2011) identifies seven nursery schools located within the Stratford and New Town ward, three of which are privately

[31] Demand from the athletes village (2,818 units, equivalent to 196 places according to our model) has been subtracted, leaving 704 spare places.
[32] Based on a cost per place of £27,864 per place. Source: Teachernet / OLSPG Infrastructure Delivery Study.

run, and all of which are providing a good quality service with the buildings in reasonably good condition.

The OLSPG Infrastructure Delivery Study referred to borough-level infrastructure assessments[33] to highlight that:

- Each of the LB of Hackney's 53 primary schools has nursery classes attached
- The LB of Newham had low levels of childcare for all age groups compared to outer London figures, with 12 active children's centres and another eight in development in 2010; and
- In the LB of Waltham Forest, provision of early years places in 2009 amounted to 43 nursery classes (3,469 places).

The OLSPG Infrastructure Delivery Study consultation (2011) found that there was little spare capacity in the OLSPG boroughs and that any capacity is anticipated to be taken up over the next year or so.

Planned Provision

Discussions with the boroughs in October 2011 as part of the OLSPG Infrastructure Delivery Study found reduced levels of planned investment (compared to that described in the borough infrastructure assessments) and, where planned investment was anticipated to create additional capacity, that spare capacity was expected to be minimal. However a number of planned projects are of relevance to the LLDC area and are described below:

- The Chobham Academy will be an education campus of approximately 2.1 hectares (ha) located within zone 6 of Stratford City and is due to open in 2013. It will include a two classroom nursery with capacity for 52 full time places in order to meet the needs arising from the Stratford City development.
- The LCS scheme includes nine nursery schools, with at least one per PDZ apart from PDZ 12. The proposed facilities are relatively large (50 places). Nurseries in PDZs 4 and 5 would be co-located with primary schools, and nurseries in PDZ 8 and 6 would be co-located with walk-in health centres. The s.106 agreement for the LCS scheme establishes triggers for the delivery of each nursery relating to the number of residential units delivered within each PDZ.
- The Neptune Wharf scheme, located in Fish Island and as yet unconsented, may include an on-site 1FE nursery school within the fourth and final phase of development[34].
- The recently permitted scheme at Bromley by Bow South includes a 2FE primary school and children's centre. The children's centre will serve children up to three years old.
- A number of forthcoming schemes within the LLDC area include D1 and retail floorspace which could accommodate potentially nurseries if a private sector provider responds to demand for nursery services in due course.

[33] There was no information available from the LB of Tower Hamlets on early years education places

[34] Information available with planning application 12/00210/OUT. The Neptune Wharf EIA considers three 'hypothetical alternative development' scenarios or options. The Phase 4 outline 'illustrative' options comprise: Option 1 - Mixed Use Residential Development; Option 2 - Mixed Use Residential Development including a 3FE primary school and associated outdoor space, including residential accommodation above the school; and Option 3 - Mixed Use Residential Development including a 3FE primary school and associated outdoor space only.

- The Stratford Metropolitan Masterplan Community Infrastructure Assessment (February 2011) identifies a requirement for 15 new nurseries to cater for growth within the masterplan area. It suggests that demand could be met through upgrading and extending existing provision such as that at Greater Carpenters, and that other new nurseries should be concentrated within the Chobham Neighbourhood, Pudding Mill Lane, Sugar House Lane, and the emerging neighbourhoods in the Olympic Park and Stratford City. It is stated that the planning process should ensure that accommodation requirements can be met as the demand for nursery provision arises in these areas.

Gross demand, net demand and funding requirements

It is assumed that 50% of children of pre-school age take up nursery places[35]. On this basis it is estimated that over the planning period there will be gross new demand for 1,568 nursery places.

Net demand is likely to be somewhat less (1,118 places) reflecting provision of nine 50 place nurseries within the LCS scheme, including those located with the primary schools and walk-in centres; it has been assumed that two nurseries come forward in 2017-21, three in 2022-26 and four in 2027-31. Chobham Academy includes a nursery of 52 places, however this provision has been discounted given that this capacity may well be taken up by that part of the scheme coming forward before 2014. As set out above, there are a number of other schemes within the LLDC area which may include nurseries or which contain substantial D1 and retail floorspace which could accommodate a nursery, but this provision is not secure as yet.

On the assumption that a nursery accommodates 52 children attending part time, net demand for 1,118 new places could equate to 21.5 nurseries. Assuming a cost of £14,578 per full time equivalent (FTE) place, the cost of meeting the gap in provision is estimated at £8.14M.

Table 3.4.1 Gross Demand, Net Demand and Funding Requirement for Early Years / Nursery Schools

Phase	Gross demand (places)	Supply - existing surplus + new provision (places)	Net Demand (places)	Cost (£M)
2014-16	252	0	252	1.83
2017-21	471	100	371	2.70
2022-26	501	150	351	2.55
2027-31	345	200	145	1.05
Total	**1,568**	**450**	**1,118**	**8.14**

Source: URS calculations

3.5 Primary healthcare

Scope

For the purpose of this report, primary healthcare is defined as incorporating general practitioner (GP) services and dental practitioners.

Existing supply

The OLSPG Infrastructure Delivery Study, drawing on borough infrastructure studies, found that:

- The Hackney and City Primary Care Trust (PCT) area, which covers the LB of Hackney, has 47 GP surgeries and 183 GPs, giving an average of 1,479 patients per GP which equates to a surplus of GPs based on a standard of one GP per 1,800 patients[36]. There are 43 NHS dental practices in the City and Hackney PCT with a total of 143 dentists. The current ratio of dentists to residents is 1:893, which indicates

[35] On the basis of an assumption outlined in the OLSPG Infrastructure Delivery Study, that 100% of children aged three and four years old would require a nursery education place. In reality, take-up of places tends to vary within this 0 to 4 age group, for example research for the LB of Camden found that 85% of three year olds and 100% of four year olds required a nursery place (implying slightly less than 50% take-up). However 50% is a considered a reasonable approximation for the purposes of this study.
[36] *HUDU Planning Contribution Model Guidance Notes*, (2007); HUDU, NHS London, EDAW / AECOM

a surplus based on the Healthy Urban Development Unit (HUDU) model standard (1:2,000)[37].

- In the LB of Newham, there were 66 GP surgeries with 164 GPs in 2010 serving 316,000 registered patients; and 31 dental practices. The Stratford Metropolitan Masterplan Infrastructure Assessment (2011) found that the geographic spread of GP practices across the Borough as a whole means that most residents have a choice of GP and can walk to their chosen practice within 20 minutes.

- In LB of Tower Hamlets, analysis has indicated a requirement for 8-9 GPs within the North East of the Borough, covering Fish Island, Bow, Bromley-by-Bow and Mile End. No information was provided on the capacity of dentist provision in the Borough.

- In 2009 there were 47 GP practices in the LB of Waltham Forest, with a total of 136 FTE GPs, which equates to 2,004 patients per GP. This suggests a deficit in provision. There were 34 dental practices in the LB of Waltham Forest, providing a total of 100 dentists. This equates to around one dentist per 2,223 residents. This indicates a slight deficit based on the standard of one dentist per 2,000 people.

The strategic health authority NHS London and the 31 London PCTs have been abolished and new clinical commissioning groups are the statutory commissioning bodies from April 2013. In advance of this, PCTs were organised into clusters to reduce management and operating costs and to support the development of GP commissioning in London.[38] NHS North East London and the City is the relevant cluster for the LLDC area. The LPIP comments that the ownership and management of the NHS estate is changing, with some properties transferred to community service providers.

There are currently two health centres within the LLDC area: the Carpenters Road Medical Practice near Newham High Street, and the Trowbridge Surgery in Hackney Wick.

The LCS Housing and Social Infrastructure Strategy (2011) sets out that there are no facilities located in the LCS area, and that access to facilities in the locality is poor.

Planned provision

The LCS scheme includes a one stop primary care centre of approximately 2,554m^2 in PDZ4 with six GPs and six dentists, and two walk-in centres in PDZ 6 and 8, each of 645m^2 and accommodating two GPs and two dentists each. The s.106 for the LCS scheme includes the triggers for delivery of healthcare infrastructure. The completion of the PDZ6 healthcare facility is triggered by occupation of 650 residential units in PDZ6. The completion of the PDZ4 healthcare facility is triggered by occupation of 3,000 residential units; and no more than 4,000 residential units should be occupied until the PDZ4 healthcare facility extension has been completed. The completion of the PDZ8 healthcare facility is triggered by occupation of 4,000 residential units.

The LCS planning application indicates that demand arising from the LCS is likely to be 7.5 GPs and 6.8 dentists. Even when alternative population modelling methodologies are used, it appears that there will be some over-supply of primary healthcare space. The LCS s.106 agreement includes a mechanism for reviewing population estimates and the strategy for healthcare provision over time to ensure that the proposed provision is appropriate to needs arising and also reflects the requirements of the National Health Service..

A new facility within the LB of Newham has recently been delivered as part of the Stratford City s.106 agreement, comprising a 4058m^2 polyclinic medical centre, with an adjacent multi-

[37] *HUDU Planning Contribution Model Guidance Notes*, (2007); HUDU, NHS London, EDAW / AECOM
[38] London Plan Implementation Plan, (2012); Greater London Authority

use community facility of 1,572m^2 and community facilities. The medical centre is expected to be operational from mid-2013.

Funding has been secured as a result of the s.106 agreement for the 223-231 Stratford High Street site (now complete), amounting to contributions of £150,000 towards healthcare.

The Stratford Metropolitan Masterplan (2011) proposes 1,000 – 2,500m^2 new community and health space in the Great Carpenters Estate.

The Fish Island AAP includes plans for the provision of a primary healthcare facility within the Hackney Wick Neighbourhood Centre.

Gross demand, net demand and funding requirement

It is estimated that development within the LLDC area over the planning period will generate demand for an additional 26.7 GPs and 24.1 dentists, based on a HUDU benchmark of 1,800 people per GP and 2,000 people per dentist. This is shown in Table 3.5.1.

Net demand over the entire planning period is substantially less: 7.7 GPs and 5.1 dentists. In the 2014-16 period it has been assumed that additional provision at Stratford City of seven GPs and seven dentists will come forward (this is less than total assumed provision at Stratford City and reflects that by 2014 some capacity within on-site provision will be absorbed by demand from the athletes village residents). In 2017-21 it is assumed that the LCS walk-in centre in PDZ 6 comes forward (two GPs and two dentists). In 2022-26 it is assumed that additional capacity is provided by the LCS polyclinic in PDZ4 (six GPs and six dentists) and the walk-in centre PDZ 8 (two GPs and two dentists). Costs associated with meeting net demand are £3.03M, based on an assumption of 165m^2 per primary care space at £2,380 per m^2 [39].

Table 3.5.1 Gross Demand, Net Demand and Funding Requirement for GPs and Dentists

	Phase	Gross demand (GPs / dentists)	Supply - existing surplus + new provision) (GPs / dentists)	Net supply - inc. previous phase (GPs / dentists)	Net Demand (GPs / dentists)	Cost (£M) (primary healthcare)
GPs	2014-16	4.8	7.0		-2.2	
	2017-21	7.9	2.0	4.4	3.7	1.46
	2022-26	8.4	8.0	8.0	0.4	0.13
	2027-31	5.7	2.0		3.7	1.44
	Total	**26.7**	**19.0**		**7.7**	**3.03**
Dentists	2014-16	4.3	7.0	-	-2.7	The above figures outline the cost of primary healthcare provision and are inclusive of GP and dental services.
	2017-21	7.1	2.0	4.7	2.4	
	2022-26	7.5	8.0	8.0	-0.5	
	2027-31	5.1	2.0	1.5	3.6	
	Total	**24.1**	**19.0**		5.1	

[39] *OLSPG Infrastructure Delivery Study*, (2012); URS Infrastructure & Environment UK Limited and Savills Commercial Ltd. The assumption of 165sqm per primary care space derives from the *HUDU Planning Contribution Model Guidance Notes*, (2007); HUDU, NHS London, EDAW / AECOM. A primary care space is defined as including a range of spaces and services, reflecting that health centres are increasingly likely to offer a wide and varied range of services. As such, it is assumed here that a primary care space can accommodate one GP and one dentist, and the costs outlined in Table 3.2.4 are inclusive of GP and dental care services.

3.6 Sports and leisure

Scope

This section considers publicly accessible sports courts and swimming pools. Standard sized sports courts as defined here would accommodate indoor or outdoor activities such as tennis, and can be grouped together in a hall or outdoor space. It is acknowledged that some people may chose to use privately operated sports courts and swimming pools as part of health clubs or fitness centres (such as Virgin Active and LA Fitness) if these types of private providers choose to open new facilities within the LLDC area, Therefore, the figures in this section outlining demand are likely to present a worst case scenario and the demand for public sports and swimming facilities could be lower.

Existing supply

The OLSPG Infrastructure Delivery Study sets out that:

- In the LB of Hackney there are 10 leisure facilities, of which five are operated jointly by the Borough and Greenwich Leisure Limited (GLL).
- The LB of Newham's Infrastructure Assessment (2010) finds a surplus of supply in the provision of sports courts and swimming pools in the Borough but under provision in some areas.
- The LB of Tower Hamlets has four public swimming pools and four sports courts, and the Borough's Infrastructure Assessment (2009) found that there was a deficit of between one and two swimming pools, based on the Sport England standard for provision.
- The LB of Waltham Forest has a deficit in provision for both sports courts and swimming pools.

The LCS planning application highlighted three leisure facilities local to the site. These are Hackney Marshes, which provide an athletics track and football / rugby pitches, the Catchall Leisure Centre in the LB of Waltham Forest, which provides a swimming pool and one sports court, and the Score Centre, also in the LB of Waltham Forest, which provides five indoor tennis courts.

Planned provision

The facilities from the Olympic Games will lead to a good level of provision in the LLDC area. Inherited recreation assets include:

- the Olympic Legacy Parklands
- the Main Stadium
- the Multi Use Sports Arena or 'Copper Box' (including four sports courts) managed by Greenwich Leisure Limited
- Velopark / BMX / mountain biking, owned and managed by the Lee Valley Regional Park Authority
- Eton Manor, providing four indoor tennis courts, six outdoor tennis courts and two artificial hockey pitches, owned by Lee Valley Regional Park Authority.
- the Aquatics Centre (including three swimming pool lanes) managed by Greenwich Leisure Limited.

The LCS scheme will provide 3,606m^2 D2 (leisure) floorspace[40] while Stratford City will provide 38,424m^2 [41].

Hackney Wick AAP highlights that the Lea Valley Regional Park Plan proposals identify Hackney Wick as an area for leisure, sporting excellence and recreation with enhanced green links and open space available for outdoor sport, informal recreation and nature conservation. The River Lea and the Lea Navigation and their tow paths provide significant potential opportunities for local residents, employees and people visiting the area including boating and canoeing, walking and cycling.

The OLSPG Delivery Study also found that:

- In the LB of Hackney, there were plans for the creation of either five large or 19 small fitness centres.
- The LB of Newham was exploring options for future provision in the Borough, including balancing potential investment in the Aquatics Centre with provision at four other leisure centres. The Atherton Leisure Centre is currently being redeveloped.
- Investment planned for the LB of Tower Hamlet's sports and leisure provision includes one new sports court at Bow Locks School, just outside of the LLDC area.
- The LB of Waltham Forest has identified a number of planned investments, including the replacement of Cathall Leisure Centre, resulting in four new badminton courts. Plans also include the replacement of Kelmscott Leisure Centre, with one new pool added.

Gross demand, net demand and funding requirements

Gross demand for sports courts and swimming pools is estimated based on benchmark assumptions from Sports England of 27.5m^2 court space per 1,000 people and 11.1m^2 of water per 1,000 people. This indicates gross demand of 1,338m^2 of courts space and 534m^2 swimming pool space.

Estimated net demand takes into account the four courts to come forward within the Olympic Multi-use Sports Arena; the 10 new courts to come forward at Eton Manor (based on Sports England data is assumed that two courts represent 510m^2); and the Olympics Aquatic Centre (estimated at 217m^2 which is the standard size for a six lane 25m pool). Taking these schemes into account it appears that there would be no net new demand for sports halls, while demand for swimming pools would be 317m^2. It should be noted that the LCS, Stratford City and other schemes provide substantial additional D2 space on-site which has not been reflected here but which could accommodate new sports and leisure facilities.

[40] LCS Planning Committee Main Report, (2012); ODAPCT

[41] Stratford Village Property Holdings 1 & 2 and London and Continental Railways, (2010); Section 73 Application 07/90023/VARODA, ES Vol 1 (p104)

Table 3.6.1 Gross Demand, Net Demand and Funding Requirement for Sports Courts and Swimming Pools

	Phase	Gross demand (m^2)	Supply - new provision (m^2)	Net Demand (m^2)	Cost (£M)
Sports courts	2014-16	239			
	2017-21	396			
	2022-26	417			
	2027-31	283			
	Total	**1,336**	**3,570**	**0**	**0**
Swimming pools	2014-16	96			
	2017-21	159			
	2022-26	167			
	2027-31	113			
	Total	**534**	**217**	**317**	**2.08**

3.7 Open space

Scope

Public open space is defined in the London Plan 2011 as public parks, commons, heaths and woodlands and other open spaces with established and unrestricted public access and capable of being classified according to the open space hierarchy which meets recreational and non-recreational needs. This includes wetlands and recreational areas such as the Blue Ribbon Network, which is classified as *"a strategically important series of linked spaces"* within the London Plan,[43] presenting opportunities for leisure and recreation.

The London Plan 2011 establishes a hierarchy of open spaces as follows:

- Regional Parks (defined as being 400+ ha) have an 8km catchment area
- Metropolitan Parks (60-400+ ha) have a 3km catchment area
- District Parks (20-60ha) have a 1-2km catchment area
- Local (2-20ha) and Small Local (<2ha) open spaces have a 400m catchment area.

Existing supply

The OLSPG Infrastructure Delivery Study found a borough-wide deficit in open space provision in the LB of Newham and LB of Tower Hamlets, and provision above standard for the LB of Hackney and LB of Waltham Forest. However, local levels of provision vary, and the borough infrastructure assessments highlight the need for additional small open spaces to be provided within residential areas to ensure local access.

Existing open space within and local to the LLDC area includes Victoria Park to the west, Three Mills Green in the south and Walthamstow Wetlands which extends from Hackney Marshes in the north and links to the Queen Elizabeth Olympic Park. The LB of Hackney has invested £10M in improvement works to Hackney Marshes and Mabley Green, which were completed in April 2011, and the LB of Waltham Forest has recently invested in the redevelopment of Drapers Fields which is due to be completed in Spring 2013.

[42] *Open Space, Sport and Recreation Study Update,* (2008); Atkins, LB Camden
[43] London Plan: Spatial Development Strategy for Greater London, (2011); Greater London Authority

The network of waterways within the LLDC area passes through all four boroughs; from the tidal waterway areas in LB Tower Hamlets which adjoin the River Thames, to the Olympic Parkland within the LB Hackney. The waterways network serves as a recreational and wildlife corridor and connects a number of major open spaces, including Victoria Park and Hackney Marshes. It presents opportunities for both on-water recreation (canoeing, rowing and barge sailing) and waterside recreation (e.g. cycling, walking and jogging).

Planned provision

The 2007 Olympic planning permission required that by the end of the Legacy transformation phase at least 102ha of open space capable of being designated as Metropolitan Open Land should be provided within the Olympic Park. There is a total of 12.4ha of open space within the LCS boundary, and a further 100.3ha falling elsewhere within the Olympic Park[44], and therefore this target is set to be exceeded. Types of open space described as part of the LCS scheme include general open space (mainly public squares and civic amenity space), parkland, greenways and waterways. The Lea Valley Regional Park will link the new Queen Elizabeth Olympic Park to the north and the south, forming an important part of the Mayor's All London Green Grid, a multi functional network of open green spaces for biodiversity, recreation, walking, cycling, and flood storage[45]. The four LLDC boroughs fall within the 'Lea Valley and Finchley Ridge' and 'Epping Forest and River Roding' Green Grid areas; the ethos for development of which is centred around London's existing river and landscape corridors; established open spaces and new parks; existing and proposed green; and designated and protected landscapes that cross borough boundaries and the urban fringe.

The Olympic Park will therefore meet a considerable proportion of needs arising for open space within the LLDC area. Given its size and location, it will likely meet demand for Metropolitan parks and District parks arising within the LLDC area as defined in the London Plan 2011 (see the *Scope* section above). However as highlighted within the OLSPG Infrastructure Delivery Study, smaller areas of open space will need to be integrated into new developments to meet local-level needs for accessible public space.

Stratford City's s.106 obligations include provision of open space. The Cascade Parklands will total approximately 10ha, Crescent Park a minimum space of 0.49ha and Long Park a minimum of 0.11ha.

New public open space will be delivered at Bromley-by-Bow North (providing an additional 0.6ha), at Sugar House Lane (0.8ha), at Bromley By Bow South (0.5ha), and at Hackney Wick (0.2 ha). These will be funded by developers and are included with signed s.106 agreements.

Other unpermitted schemes in LLDC area which would also bring forward open spaces to meet new needs for local-level provision include Chobham Farm, the planning application for which includes a linear park comprising 0.84ha of parkland and an additional 1.99 ha of other semi-private and private open spaces; and Neptune Wharf, which includes 11,870m^2 of public open space as well as 2,445m^2 of semi-private and private space and 3,220m^2 rooftop amenity space within current proposals.

The OLSPG Infrastructure Delivery Study found that the LB of Waltham Forest has plans for two open spaces which fall within the OLSPG boundary: Marsh Lane and Abbotts Park. However, consultation with the boroughs carried out at that time highlighted that the outlook for funding was one of reduced levels of investment.

[44] Greater London Authority consultation response to LCS planning application - Stage 2 Report and Letter received 17.07.2012. Available at: http://planningforms.newham.gov.uk/online-applications/applicationDetails.do?activeTab =documents&keyVal=LRMD6ZSZ01L00. Accessed December 2012.
[45] All London Green Grid Supplementary Planning Guidance (SPG), (2012); Greater London Authority

The London Plan Implementation Plan notes that developer contributions are of high importance to funding the development of green infrastructure and open spaces[46].

Consultation with the Environment Agency (EA) has identified the planned development of the Walthamstow Wetlands urban wetlands reserve, to be delivered in partnership by Thames Water, the LB of Waltham Forest together with the GLA and EA. The creation of a wetland reserve and heritage asset will benefit LLDC residents and help deliver the Water Framework Directive. Costs identified so far are £6.5M; some of this funding will be met by Heritage Lottery Fund and the intention is that other partners will also contribute. Later phases have yet to be costed; the scale of the funding gap including later stages is £5-10M.

Gross demand, net demand and funding requirements

The OLSPG Infrastructure Delivery Study uses a benchmark standard for open space provision of 1.2ha per 1,000 people[47], including 0.4ha for informal space and 0.25ha for allotments. On this basis, gross demand arising from development within the LLDC area estimated to be 57.8ha. Net demand is shown in Table 3.7.1 below as 32.7ha, which has an associated cost of £10.5M based on the benchmark of £32 per m^2 used within the OLSPG Infrastructure Delivery Study. The net demand figure reflects 12.4ha being provided within the LCS, 10.6ha within Stratford City, 0.6ha at Bromley by Bow North, 0.8ha at Sugar House Lane, 0.5ha at Bromley By Bow South and 0.2ha at Hackney Wick, but does not include other parts of the Queen Elizabeth Park. While the Queen Elizabeth Park will provide much additional open space and will likely meet the requirement for metropolitan and district parks described in the London Plan, it may not be sufficiently close to all new development within the LLDC area to meet requirements for local or small open spaces.

The Walthamstow Wetlands urban wetlands project is not included in the table below as it provides a different type of resource to the aforementioned open spaces. However, the costs and funding gap for this project are included within the summary table of projects at Appendix E.

Table 3.7.1 Gross Demand, Net Demand and Funding Requirement for Open Spaces

Phasing	Gross demand (ha)	Supply - new provision (ha)	Net Demand (ha)	Cost (£M)
2014-16	10.3			
2017-21	17.1			
2022-26	18.0			
2027-31	12.2			
Total	**57.8**	**25.1**	**32.7**	**10.5**

Source: URS calculations

3.8 Play space

Scope

Play space incorporates a number of open space types including dedicated areas for children containing play equipment provided within public open space and multi-use games areas for young people. The size of these spaces can vary widely.

[46] London Plan Implementation Plan, (2012); Greater London Authority
[47] Taken as an appropriate benchmark for provision in the OLSPG Infrastructure Delivery Study, which takes into account the open space standards of the four LLDC boroughs and standards applied by other London boroughs.

The GLA's Supplementary Planning Document 'Shaping Neighbourhoods: Children and Young People's Play and Informal Recreation' (2012) provides guidance on three levels of accessibility of play space:

- Under 5 years should have access within 100m of dwellings
- 5 to 11 year olds should have access within 400m of dwellings; and
- 12 years and older should have access within 800m of dwellings.

Existing supply

The OLSPG Infrastructure Delivery Study highlighted that the LB of Waltham Forest has a deficit in the supply of child play space in the Borough, with an estimated 3.52m^2 per child, which falls below the GLA's requirement of 10m^2 per child in new developments. While baseline information on other boroughs is lacking, in general information at borough level is of limited relevance given child play space needs to be provided close to home, and in most cases any surplus in existing provision will tend not to be suitably located to meet the needs of new development.

Planned provision

Permitted schemes within the LLDC area include on-site child play space to meet the needs arising from development. For example, a total of 29 children's play areas are proposed within the LCS scheme, comprising 17 doorstep playable spaces, five local playable spaces, three neighbourhood playable spaces, and three youth play spaces. These spaces provide a total of 14,210m^2 of play space, with three playing fields being co-located with schools – local playspace in PDZ 5.5 and youth play space in PDZ 12.2. It is assumed that as play space needs to be provided close to home, this provision will only serve residents of the LCS, though some of the play space for older children may be used by children living elsewhere.

The Stratford City s.106 (Part 8) secures provision for 10ha of open space and various play areas[48]. The Bromley by Bow South s.106 agreement indicates that the scheme includes 1,093 sqm play space provision.

Current proposals for Neptune Wharf include 875m^2 of dedicated playspace, although all of the open space and amenity space would provide space for informal play and recreation for children and young people. Forth-coming schemes will similarly need to make provision on-site to meet the needs of its residents.

Hackney Wick AAP refers to the extension of Eastway community facility which includes children's play areas (see section 3.9 below).

The OLSPG Infrastructure Delivery Study indicated that the LB of Hackney was allocated £1.6M through the Play Pathfinder programme which will fund the creation of ten new spaces by 2018, of which one is located within the LLDC area, the Trowbridge Village Green renovation project.

Gross demand, net demand and funding requirements

The Mayor's SPD on child play space (2012) sets out a requirement for 10m^2 of playspace per child aged 0 to 17. Applying this benchmark to the LLDC's new residential population implies gross demand of 107,460m^2. Taking into account LCS provision (14,210m^2), Bromley by Bow South provision (1,093m^2) and discounting all demand from Stratford City on the assumption

[48] London and Continental Railways, Application to Extend the Time Limit for Implementation, (2010) 10/90641/EXTODA, Planning Statement (p48).

that the s.106 agreement for the site secures adequate playspace to meet on-site needs[49], net demand is estimated at 51,761m^2. This results in a cost of £10.32M applying a benchmark of £199 per m^2 [50].

Table 3.8.1 Gross Demand, Net Demand and Funding Requirement for Child Play Space

Phasing	Gross demand (m^2)	Supply - new provision (m^2)	Net Demand (m^2)	Cost (£M)
2014-16	16,330			
2017-21	31,780			
2022-26	35,360			
2027-31	23,990			
Total	**107,460**	**55,699**	**51,761**	**10.32**

3.9 Libraries and community facilities

Scope

This section considers the library and community facilities required to support growth in the LLDC area. These include Idea Stores in the LB of Tower Hamlets, which are multi-use facilities, providing library services in addition to other community uses such as adult learning courses, events and activities. Community facilities can also provide space for arts or cultural activities, and serve other wider purposes such as providing affordable meeting space for small businesses.

Existing supply

The OLSPG Infrastructure Delivery Study found that:

- The LB of Newham has 11 libraries, though no information is available on the capacity of this provision. The 31 community centres located in the Borough are operated by the council; this is assessed to be sufficient to meet demand, though the quality is generally poor.
- The LB of Tower Hamlets was found to have a surplus of supply of 194m^2 of library and Idea Store space (based on the Museums, Libraries & Archives Council standard of 30m^2 per 1,000 population). There is no information on capacity of community facility provision.
- Provision in the LB of Waltham Forest was below recommended standards. The Borough has invested £11M in six of its ten local libraries, with plans to invest in the remaining four in process.
- The LB of Hackney has an average net floorspace of 33-32m^2 per 1,000 population, which equates to a surplus of provision. There is no information on capacity of community facility provision.

The Hackney Wick AAP states that a range of community and social facilities already exist within Hackney Wick including community halls, youth facilities, public services and places of worship. The majority of these uses and facilities are concentrated in Hackney Wick North along the Eastway, including the Baths Community Centre.

[49] Estimated demand from Stratford City (6,454 units, equivalent to 4,045 children aged 0 to 17 and 40.5ha play space according to our model) has been subtracted.
[50] Open Space, Sport and Recreation Study Update, (2008); Atkins, LB Camden.

Currently there is one community centre within the LLDC area, Carpenters and Docklands Community Centre on Gibbons Road. There are others in Stratford which sit outside but could serve the LLDC area: the Stratford Metropolitan Masterplan Community Infrastructure Assessment (2010) found that nine community centres currently serve the Stratford and New Town ward, most of which have space for hire to the community. One of these is the West Ham Deaf Community Centre, which provides specialised services and organises events for deaf or hearing impaired people. Generally the quality of the buildings is poor and the community centres are underused, particularly those at Community Road and Vicarage Lane.

Planned provision

The LCS scheme includes provision of up to 2,423m^2 flexible community space, up to 1,258m^2 flexible cultural space, up to 3,606m^2 of flexible leisure space and up to a library (2,460m^2). The LCS planning application indicated that each space provided will only cater for demand arising from the PDZ it is located within, with the exception of the Idea Store which will cater for demand from all the LCS PDZs. Given that the provision of community space appears to exceed demand arising from the proposed development, any spare capacity could be used by neighbouring communities, although community space is typically required close to home.

The Chobham Academy education campus, due to open in 2013, will be developed primarily for educational use, including a two classroom nursery, a 3FE primary school and a 6FE secondary school; however, the facilities will also be available for use by the community outside school hours. Likewise, the s.106 for the LCS states that it would be beneficial for the playing fields and other facilities within schools to be made available for use by the local community outside of school hours. In addition, at Stratford City a multi-use community facility of 1,572m^2 has been delivered. The planning permission refers to *a gym, cafe, pharmacy, youth centre and flexible training/enterprise/meeting space or any other use falling within Class D1*[51]*. However the* range and type of community facilities that will be offered is yet to be confirmed.

The Bromley by Bow Masterplan includes a proposed District Centre (page 25) with community facilities for residents, including a library and an Idea Store. The OLSPG Infrastructure Delivery Study states that funding for an Idea Store, providing around 1,000-1,500m^2 of library and learning space, was expected to be raised through partners including the New Skill Funding Agency, Tower Hamlets College and capital assets from the council, in addition to possible developer contributions. Indicative costs were estimated at around £3.2 - £3.6M for a new build Store. Consultation indicated that the site has been secured.

Recently signed s,106 agreements for the Sugar House Lane and Hackney Wick sites secured delivery of 5,820m^2 community space (4,000m^2 and 1,820m^2 respectively) and the s.106 agreement for the Bromley By Bow South site includes the provision of an Ideas Store (1,315m^2).

The Hackney Wick AAP promotes a strengthened community focus within the 'Community Use Area' along the Eastway where there may be opportunities to build upon and reinforce the existing community facilities and accommodate additional facilities within mixed use development.

Stratford Metropolitan Masterplan proposes 1,000 – 2,500m^2 new community and health space in the Great Carpenters Estate.

At the time of the OLSPG Infrastructure Delivery Study, consultation indicated that:

[51] Reserved matters approval 09/90403/REMODA, granted 1 April 2010

- Increased library provision in the OLSPG area of the LB of Hackney would be covered either by the creation of a new library at Hackney Wick, which is currently uncosted, or through expanding Homerton Library. There are also plans to create a priority community facility, to be developed by the Borough and Berkeley Homes, and the Borough is also undertaking a modernisation programme of its community halls.

- The LB of Newham projects included the refurbishment of Stratford Library, to include a new Integrated Front Office. Chandos East Community Centre, located within the Northern Olympic Fringe area, will be retained as a Hub for the Stratford and West Ham Community Forum area. In addition, it was been confirmed that Abbey Lane Children's Centre is to be retained.

Gross demand, net demand and funding requirements

Gross demand is estimated at 1,444m^2 library floorspace based on an assumed requirement of 30m^2 of per 1,000 people[52], and 3,691m^2 community floorspace based on a benchmark of 61m^2 per 1,000 people[53]. The ideas stores at the LCS and Bromley By Bow South sites will apparently meet the LLDC-wide need for library space, and so net demand is shown as zero. Similarly, when considered on an LLDC-wide level, the 2,423m^2 flexible community space provided by the LCS together with the 1,572m^2 multi-use space within Stratford City, 4,000m^2 at Sugar House Lane and 1,820m^2 at Hackney Wick would leave a net requirement of zero.

Table 3.9.1 Gross Demand, Net Demand and Funding Requirement for Libraries and Community Facilities

	Phasing	Gross demand (m^2)	Supply - new provision (m^2)	Net Demand (m^2)	Cost (£M)
Library space	2014-16	258			
	2017-21	429			
	2022-26	451			
	2027-31	306			
	Total	**1,444**	**3,775**	**0**	**0.0**
Community Space	2014-16	525			
	2017-21	871			
	2022-26	917			
	2027-31	622			
	Total	**2,936**	**9,338**	**0**	**0.0**

Source: URS calculations

[52] OLSPG Infrastructure Delivery Study, (2012)
[53] Lower Lea Valley Regeneration Strategy: Social Infrastructure Paper (2007) GLA. As referenced in OLSPG Infrastructure Delivery Study, (2012)

4. TRANSPORT

4.1 Introduction

This section considers the transport schemes required to support growth within the LLDC area. Schemes are identified as either local (those which improve connections between or within neighbourhoods in the LLDC area) or strategic (those which are key to connectivity with the surrounding area, the rest of Greater London and beyond).

For the purposes of this report, transport and transport infrastructure are defined as: public transport modes (such as rail and bus); private transport modes (including private vehicles, walking and cycling); and the infrastructure required to support travel by these modes, including roads, railway lines, footpaths, cycle routes and waterways. Transport interventions and future projects which would support transport development at a local and strategic level have been drawn from relevant local policy and evidence base documents and consultation, and are summarised in Table 4.1.1 and Figure 4.1.1.

4.2 Existing Provision and Policy Framework

Overview

The LLDC area has a number of local and strategic public transport connections, with services including: London Underground; Docklands Light Railway (DLR); London Overground services (with planned introduction of Crossrail services at Stratford Station in 2018[54]); London bus services; walking and cycling routes (including the CS2 Barclays Cycle Superhighway, with an extension to Stratford to become operational in 2013[55]); and canals and waterways.

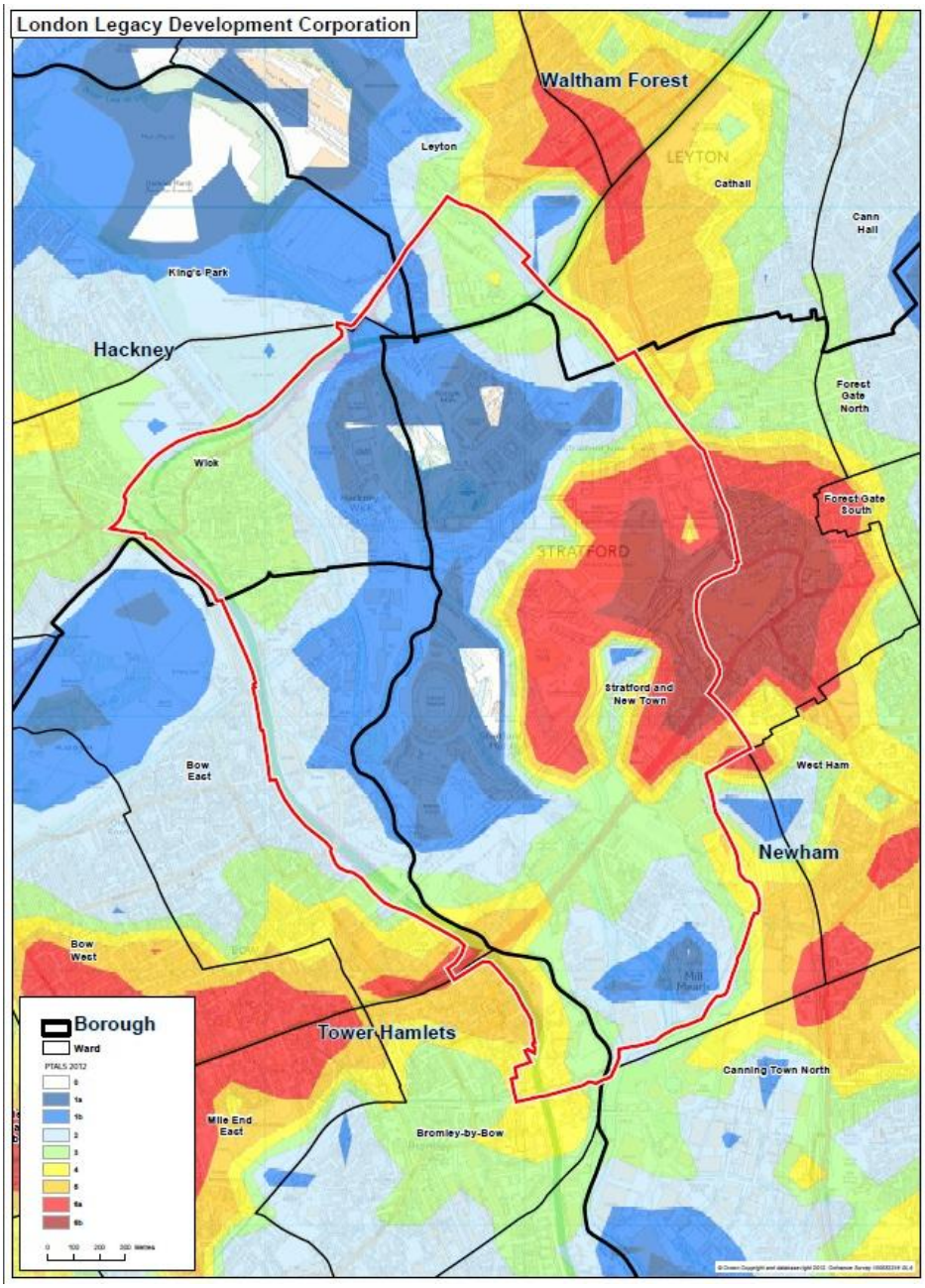
Figure 4.2 identifies the current Public Transport Accessibility (PTAL) levels within the LLDC area. PTAL levels are a *"measure of the accessibility of a point to the public transport network, taking into account walk access time and service availability"*[56]. PTAL levels are based on an eight point accessibility scale, with rating 1a being the worst and rating 6b being the best. The eight accessibility levels are outlined below in Table 4.1.1. It can be seen in Figure 4.1.1 that current PTAL levels vary greatly, ranging from rating 6b around Stratford Station to level 1 within the Olympic Park.

Table 4.1.1 Public Transport Accessibility Levels

PTAL	Range of Index	Map Colour	Description
1a (Low)	0.01 – 2.50		Very poor
1b	2.51 – 5.00		Very poor
2	5.01 – 10.00		Poor
3	10.01 – 15.00		Moderate
4	15.01 – 20.00		Good
5	20.01 – 25.00		Very Good
6a	25.01 – 40.00		Excellent
6b (High)	40.01 +		Excellent

[54] Crossrail works programme. Available at: *http://www.crossrail.co.uk/railway/timeline*. Accessed December 2012.
[55] Transport for London (TfL) Cycling routes. Available at: *http://www.tfl.gov.uk/roadusers/cycling/15832.aspx*. Accessed December 2012.
[56] Measuring Public Transport Accessibility Levels (2010) Transport for London (TfL)

Figure 4.1.1 Public Transport Accessibility Levels in the LLDC area



Source: LLDC

The remainder of this section summarises the key documents which provide evidence of existing and future transport infrastructure needs in the LLDC area, as well as the transport infrastructure which has been identified as required to meet future needs and the processes for planning and delivering transport and connectivity improvements.

Mayor's Transport Strategy: Way to go

The Mayor's Transport Strategy[57] details the existing London public transport network, planned development and improvements to the system.

The strategy emphasises the strategic importance of Crossrail and the benefits for connectivity and improved travel within London and for those who wish to travel into and out of the city. The strategy also describes the upgrades currently taking place on the London Underground, including a *"30 per cent increase in capacity of the Tube, including new trains and signalling systems"* and the introduction of cooling systems on trains.

The strategy outlines six overarching goals which local authorities should respond to as part of their LDF preparation:

- *"To support economic development and population growth;*
- *Enhance the quality of life for all Londoners;*
- *Improve the safety and security of all Londoners;*
- *Improve transport opportunities for all Londoners;*
- *Reduce transport's contribution to climate change, and improve its resilience; and*
- *Support delivery of the London 2012 Olympic and Paralympic Games and its legacy".*

OLSPG – Section 2C, Connectivity and transport

The Olympics Legacy Supplementary Planning Guidance (OLSPG)[58] outlines the GLA's vision for the area's development after the Olympics, and includes guidance on the transport legacy for the area. The guidance describes baseline conditions within the OLSPG area including existing and planned transport infrastructure and barriers to connectivity. It also sets out guidance for the future development of transport infrastructure and requirements in order to facilitate improvements within neighbourhoods in association with local development schemes and at an OLSPG and at borough level in association with the wider development of the area.

'Overarching Development Principle C' outlines the fundamental importance of improved connectivity and transport to delivering growth in the OLSPG area. Local and strategic transport connections must be improved and walking and cycling encouraged, to help ensure that a "*lasting shift to more sustainable forms of transport and movement (in order to) minimise adverse impacts on the capacity and operation of the area's public transport and highway networks"*.

The OLSPG identifies that some areas of the LLDC area are less accessible than others, citing parts of Fish Island and Hackney Wick as having lower levels of public transport accessibility than the wider area. It is noted that the A12 is also *"a particular barrier to movement and connectivity, as are parts of Stratford High Street"* (the A11). The canal and waterways network is identified as a significant opportunity to move freight and construction materials by barge. The waterways also provide an attractive walking environment (potentially helping to encourage connectivity on foot) and the Canal and Waterways Trust undertakes work to maintain towpaths, docks and other inland waterside infrastructure to enable use of the network for both recreation and movement of freight.

The OLSPG outlines three key priorities, all of which are applicable to the LLDC area:

[57] *Way to go: The Mayor's Transport Strategy,* (2008); Greater London Authority (GLA)
[58] *OLSPG Infrastructure Delivery Study*, (2012); URS Infrastructure & Environment UK Limited and Savills Commercial Ltd.

- Improving *"strategic transport links to Stratford and the Queen Elizabeth Olympic Park from across London to help people reach them by public transport"*

- *"Improving local connectivity by creating a network of safe and direct walking and cycling routes across the OLSPG area"*

- Ensuring that new neighbourhoods are *"designed to achieve high levels of local permeability so that people can move safely and directly through their local neighbourhood"*.

OLSPG Strategic Transport Study

TfL have undertaken a Transport Study on behalf of the GLA, to accompany the OLSPG[59]. The study identifies that the area has good strategic transport connections, but has poor local connectivity. In the northern portion of the LLDC area, the study notes significant transport severance *"especially to the north of the (Olympic) park and around Hackney Wick caused by physical barriers, for example, major roads and natural barriers like the River Lea"*.

In order to improve transport functionality, the study identifies the following aims and areas of improvement:

- *"Maximise walking, cycling and public transport use - encourage behaviour change and ensure good local connectivity;*

- *Rail - capacity and connectivity improvements;*

- *Bus - ensuring sufficient infrastructure and capacity;*

- *Highways - traffic management and encourage less car use; and*

- *Land Use - using policy to minimise car use"*.

Rivers, Waterways and the Blue Ribbon Network

Policy 6.1 of the London Plan[60] seeks to *"increase the use of the Blue Ribbon Network"*, especially the River Thames, for passenger and tourist use. Policy 7.7 also notes the opportunities for increasing recreational transport use, through the use of canal towpaths and waterside footpaths, and slipways and jetties which allow access to waterways.

There is a clear emphasis on increasing the opportunities for freight transport as well as passenger use of the Blue Ribbon Network. By reducing demand for other forms of surface transport, particularly on roads, *"the benefits of water transport link through to other key aspects of this Plan, notably climate change mitigation"* and improving quality of life. Policy 7.26 'Increasing the use of the Blue Ribbon Network for Freight Transport' notes that development surrounding the Network *"should protect existing facilities for waterborne freight traffic",* seek to increase the use of Safeguarded Wharves for waterborne freight, and ensure that development proposals *"close to navigable waterways should maximize water transport for bulk materials, particularly during demolition and construction phases"*.

Should demand for greater use of the waterways network for transportation of both people and freight arise, this will give rise to a requirement for onshore infrastructure. The recently permitted Sugar House Lane scheme includes the creation of a water bus stop and access/egress point to the site.

[59] OLSPG Strategic Transport Study, (2011); TfL.
[60] London Plan: Spatial Development Strategy for Greater London, (2011); Greater London Authority

The London boroughs of Tower Hamlets, Newham, Hackney and Waltham Forest

The LB of Newham and LB of Waltham Forest Core Strategies were both adopted in 2012. The LB of Hackney and LB of Tower Hamlets Core Strategies are slightly older (adopted in 2010); but nonetheless also provide comprehensive information on local transport needs and aims at a borough level.

The LB of Tower Hamlets Core Strategy[61] identifies that high public transport accessibility is key for both economic and residential growth within the Borough, citing Crossrail and the Channel Tunnel rail link as major public transport links which will improve both local and strategic connectivity. The LB of Tower Hamlets also aims to reduce reliance on private vehicles and improve use of public transport, also encourage use of watercraft for passenger and freight transport.

The LB of Hackney Core Strategy[62] identifies the council's support for *"improvements to the public realm including walking and cycling routes to the stations"* to facilitate greater movement. The Borough also recognises that waterways, including the Lee Navigation Channel are important for transport connectivity. The LB of Hackney won the *"London Transport Awards in March 2009, in recognition of six years of work to boost sustainable travel through investment in cycling, walking, public transport and road safety"* and identifies these as key transport opportunities for continual improvement.

Similar to the LB of Tower Hamlets, the LB of Newham Core Strategy[63] identifies that the Borough's ongoing regeneration, including its *"convergence with neighbouring boroughs and with London as a whole"*, and its attractiveness for inward economic investment, are dependent to degree upon excellent strategic transport accessibility. The Borough recognises there is a requirement to *"maximise the efficiency and accessibility of the borough's transport network on foot, cycle and public transport in order to reduce congestion, enable development, improve the health, fitness and well-being of residents and make necessary car journeys easier"*.

The LB of Waltham Forest Core Strategy[64] notes that the Borough has good strategic access to the highway network (especially the A12), however this *"brings several challenges to Waltham Forest, such as dividing local neighbourhoods, acting as a barrier for cycle and pedestrian movement and resulting in environmental impacts associated with high volumes of traffic, including air pollution and noise"*. The Borough notes that approximately half of all trips that currently start in Waltham Forest *"also finish within the Borough indicating a huge number of potentially walkable (less than 2km) or cycleable (less than 5km) journeys"*.

As part of LDF preparation, each Greater London borough is required to produce a Local Implementation Plan (LIP) which outlines each borough's proposals for implementation of the Mayor's Transport Strategy (see 4.2.2) in line with local goals and aspirations. Key aspects of the LIPs produced by the four LLDC boroughs are as follows:

- The LB of Tower Hamlets[65] outlines nine local objectives, including: the promotion of an environment which encourages sustainable transport choices; provision of a safe and secure transport system; ensuring that the local transport network is efficient and reliable and can cater to the needs of the Borough's population and support the local economy; and ensuring public transport is accessible to all.

[61] Core Strategy, (2010); LB of Tower Hamlets.
[62] Core Strategy, (2010); LB of Waltham Forest.
[63] Planning Newham – The Core Strategy, (2012); LB of Newham.
[64] Core Strategy, (2012); LB of Waltham Forest.
[65] LB of Tower Hamlets LIP 2 (2011-31), (2011), LB of Tower Hamlets

- The LB of Hackney[66] identifies eight local objectives, including: the improvement of transport sustainability; managing the demand on the highway and public transport network; and promoting active travel and reducing car dependency.

- The LB of Newham[67] lists nine transport objectives which include: tackling congestion and improving movement for all modes of travel; connecting neighbourhoods; improving the condition of roads and footpaths; and encouraging sustainable and healthy travel behaviour.

The LB of Waltham Forest[68] identifies twelve local objectives which include: improving accessibility to, within and between key regeneration and growth areas; improving pedestrian and cycling permeability; reducing road casualties; and reducing the adverse environmental impacts of transport.A12 Corridor Transport Study

The A12 Corridor Transport Study (2010) comprises a transport capacity and access study focused on the Lower Thames Gateway Development Corporation (LTGDC) area within the Lower Lea Valley. It also compiles a list of transport interventions (see Table 4.1) designed to improve accessibility and address the *"substantial barrier to movement"* the A12 presents to east-west travel and connectivity.

Local policy frameworks

Policies, studies and strategies for sub-areas within the LLDC area provide further detailed information on existing transport provision and requirements associated with growth and identify transport interventions and future projects which would support transport development at a local and strategic level.

- The Hackney Wick AAP[69] notes that the area is perceived as suffering from accessibility problems, but is served by a variety of *"significant and improving"* transport infrastructure. The Hackney Wick overground station is the predominant rail link and additionally six regular bus routes serve the area. In addition to public transport provision, the area has access to the *"sub regional strategic road network"* and recently improved walking and cycling opportunities. The AAP outlines one of the key development objectives as increasing *"accessibility and permeability by foot, bicycle and public transport"* within the Hackney Wick area, citing improved accessibility of Hackney Wick by public transport as *"critical to its potential as a new and vibrant place to live and work"*.

- The Fish Island AAP[70] identifies the plan area as having good public transport links via the overground, Docklands Light Railway (DLR) and underground services. The Lee Navigation, River Lea and Union Canal also intersect the area, with their towpaths and waterways providing opportunities for personal travel and transportation of goods. Key transport enhancements outlined in the AAP include the upgrade of Hackney Wick Station, bus service improvements and introduction of the Barclays Cycle Hire scheme.

- The Bromley by Bow (BBB) Masterplan[71] identifies that while BBB underground station is a major transport hub, the area surrounding the station (allowing access to and from the station) suffers from poor local connectivity. The masterplan also cites

[66] LB of Hackney LIP 2, (2011), LB of Hackney
[67] LB of Newham Second Local Implementation Plan, (2011), LB of Newham
[68] LB of Waltham Forest LIP 2, (2011), LB of Waltham Forest
[69] Hackney Wick AAP (2012 LB of Hackney
[70] Fish Island AAP (2012) LB of Tower Hamlets
[71] Bromley by Bow Masterplan (2012) LB of Tower Hamlets

transport infrastructure such as the A12, rail network and River Lea as creating severance within the area for pedestrians and vehicles (including local buses).

- The Stratford Metropolitan Masterplan[72] cites *"regional, national and international transport connections"* as one of the area's and LB of Newham's key strengths. The area has experienced significant public transport improvements as a result of the Olympics and benefits from overground, underground, DLR and international rail connections, as well as a large bus terminal. The masterplan recognises the need to plan development and increase density around existing transport hubs and ensure that new developments are well connected, in order to support growth.

4.3 Planned Provision - Local schemes

Tables 4.3.1 below lists the local transport schemes which have been identified in relevant development plan documents as required to support and facilitate development within the LLDC area.

Where available, indicative costs and the sources of funding have been identified, as well as detail on whether funding is committed or not.

It can be seen that there are many transport projects required to enable and support growth in the LLDC area, but for many of these costs have yet to be identified and the funding source is unknown.

For the purposes of this report, local schemes are those which are concentrated within and immediately around the LLDC area and serve to improve connectivity within the LLDC area. They are considered necessary to support economic development within the LLDC area and the four LLDC boroughs, however they are not likely to have a notable impact on transport functions at a strategic, Greater London level.

[72] Stratford Metropolitan Masterplan (2011) LB of Newham

Table 4.3.1 Planned Provision - Local Transport Schemes

Scheme	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Improving pedestrian and cycle links across the A12 especially from Bow Roundabout southwards, and improved pedestrian and cycle environment along the A12 corridor.	Short-long term	£5.0+M	£5.0+M	No	s.106 (BBB Tesco s.106 agreement)	Developer / TfL	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
Improve pedestrian and cycle route under the A12 from Eastway to Mabley Green	Long term	Unknown	No	Yes	TfL		Hackney Wick AAP
Furhter upgraded pedestrian / cycle connection over the A12 from Wallis Road to Cadogan Terrace.	Med term	Unknown	No	Yes	S106/CIL / TfL / LLDC		Fish Island AAP
A new link between Fish Island North and Fish Island Mid to provide a more direct route between the hub at Hackney Wick and Fish Island Mid (includes options for enhanced crossings over the Hertford Union Canal)	Med term	Unknown	No	Yes	S106 / CIL		Fish Island AAP
Upgrade of existing bridge over Old River Lea (south of Old Ford Lock) for use by cycles and wheelchairs by adding ramp on south bank and widening bridge deck	Short/med term	£232,000	No	232,000		CRT/LLDC	Canal Park project scoping
New pedestrian/cycle connection from Crown Close/Wick Lane to Greenway (ramp/stairs)	Short-med term	Tbc	300,000	Yes	S106/CIL/LLDC	Developer	LBTH/OPLC connections study and HWFI public realm strategy
New rail bridge connection across the River Lea at Autumn Street or Riverside Wharf (dependent on the future of Bow Midland East rail yard in Newham).	Long term	Unknown	No	Yes			Fish Island AAP
Upgraded pedestrian and cycle facilities at Wansbeck Road crossing	Short term	£250,000	No	£250,000	LLDC / LBTH / S106 / CIL	LLDC/LBTH	Fish Island AAP and HWFI public realm strategy

Subway improvements at Three Mills Lane	Med term	Unknown	Yes	No	s.106 (BBB Tesco s.106 agreement)		Bromley by Bow Masterplan SPD
Improved cycle and pedestrian crossings at Bow Interchange	Short term	Unknown	400,000	Yes	OPTEMS		Bromley by Bow Masterplan SPD
Improved cycle and pedestrian crossings at Bow Interchange	Long term	Unknown	No	No	TBC - linked to adjacent developments / future public sector funding		Bromley by Bow Masterplan SPD
Highway improvements in the Chobham Farm Area improving East-West local connectivity	Short / Med term	Unknown	Yes	No	developer		Stratford Metropolitan Masterplan Transport Study
Narrowing of Stratford High Street to northeast of Warton Road	Med term	Unknown	No	Yes	Unknown		Stratford Metropolitan Masterplan Transport Study
Downscaling of Warton Road junction	Med term	300,000	No	300,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Direct access into Stratford Station from Carpenters area	Med term	5,000,000	No	Yes	£200,000 from S106 (50k / 150k trigger split)		Stratford Metropolitan Masterplan Transport Study
Improved pedestrian and cycle connections between Carpenters area and Stratford Town Centre	Short / Med term	800,000	No	800,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Pedestrian and cycle bridge between the Bisson Street and Sugar House Lane areas	Med / Long term	700,000	No	700,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Direct link between Sugar House Lane and Marshgate Lane	Short / Med term	£3.5M	£2.65M	850,000	Landprop to fund and deliver SHS junction		Stratford Metropolitan Masterplan Transport Study
Fatwalk 1 - improvements to wayfinding, public realm and interpretation on Fatwalk landscapes alongside Three mills Wall River	Short term	£100,000	none	£100,000	S106/CIL/LLDC	LLDC/CRT/LBN	Lea River Park strategy
Fatwalk 2 - Link between Twelvetrees Bridge and Lea Valley Walk - new stairs, lift and ramps, and associated public realm - new local connection between Bromley by Bow to Stratford and QEOP to River Thames	Short term	£1M	No	£1,000,000	LLDC/TfL/LBN/GLA	LLDC/LBN	Fatwalk Stage E

Upgraded pedestrian link from Dace Road to the Greenway	Med term	Unknown	No	Yes	S106 /CIL / LLDC	Fish Island AAP
Warton Road Bridge works	Long Term	Unknown	No	Yes	Unknown	TFL internal work
LCS planning permission projects/upgrades	Long Term	Unknown	Yes	No	LCS S106	LCS Planning Permission

4.4 Planned Provision - Strategic schemes

Strategic schemes are those which are key to connectivity with the surrounding area and are likely to affect major road, rail or other public transport networks within the four LLDC boroughs and at a wider geographical scale.

Table 4.4.1 – Planned Provision - Strategic Transport Schemes

Scheme	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Hackney Wick London Overground	Med term	£10M	£5.25M	c£5M	Network Rail / TfL / GLA riot recovery fund / LTGDC.	Network Rail?	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
Bromley by Bow London Underground	Short-med term (subject to funding delivery possible by 2015)	£9M	£4.275M	£4.75M	S106s £3.5M St Andrews, £700,000 Bromley by Bow north £75,000 Sunflour Mill	Developer / TfL	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
TfL Cycle Hire	Med Term	£8M	No	£8M	Unknown	TFL/Developer	TFL internal work
Downgrade of Great Eastern Road/Stratford Gyratory	Med Term	£5M	No?	£5M	S106/CIL/TfL/LBN	LBN	Stratford Gyratory Traffic Management Proposals, 2007

4.5 Summary

Relevant policy documents from the four LLDC boroughs and OLSPG policy outline aspirations to increase public transport use and reduce reliance on private vehicles. While some transport projects have recently been completed within the LLDC area, mainly in association with the Olympic Games, new and improved transport infrastructure investment will be required to meet demand associated with the projected 46,595 new residents and 37,269 employees.

A review of relevant documentation identified a 'long-list' of transport infrastructure projects, which was then refined in consultation with TfL and other consultees. The list will covers both 'local' schemes (which improve connections between or within neighbourhoods in the LLDC area) and 'strategic' schemes (which are key to connectivity with the surrounding area, the rest of Greater London and beyond).

Local schemes within the LLDC area include improved pedestrian and cycling routes and facilities to better link neighbourhoods; better exploitation of existing assets such as the waterways, including implementation of new sections of the 'Fatwalk' along the River Lea; improvements to the public realm; and highway and bridge upgrades. Known costs are estimated at £16.9M, and identified funds associated with these projects are £8.6M.

Potential strategic-level investments which have been identified include improvements to stations and their access. Known costs are estimated at £29.0M, though £9.5M of funds are already identified to offset these costs.

5. UTILITIES AND HARD INFRASTRUCTURE

5.1 Introduction

This section covers the key utilities and hard infrastructure which serves the LLDC area. This includes energy (electricity, gas and Combined Cooling, Heat and Power [CCHP]), sewerage (waste water), waste management and flood defences.

The responsibility of monitoring existing capacity, undertaking maintenance and expansion of these systems lies with a number of private utilities operators. It is typical for the majority of infrastructure providers to plan delivery of projects at a regional or sub-regional rather than local level. For this reason, the information outlined within this section largely relates to projects at a wider geographical scale than just the LLDC area or LLDC boroughs and often covers planned infrastructure at a Greater London level. The London Plan Implementation Plan contains comprehensive information on utilities and hard infrastructure, and provides useful background information and London-wide context for this report.[73]

This assessment has drawn upon information published by providers for public use, including investment and resource management plans. Information has also been sourced from borough-level infrastructure studies and strategic policy documents such as AAPs which are relevant to the LLDC area.

5.2 Energy

5.2.1 *Existing Provision and Policy Framework*

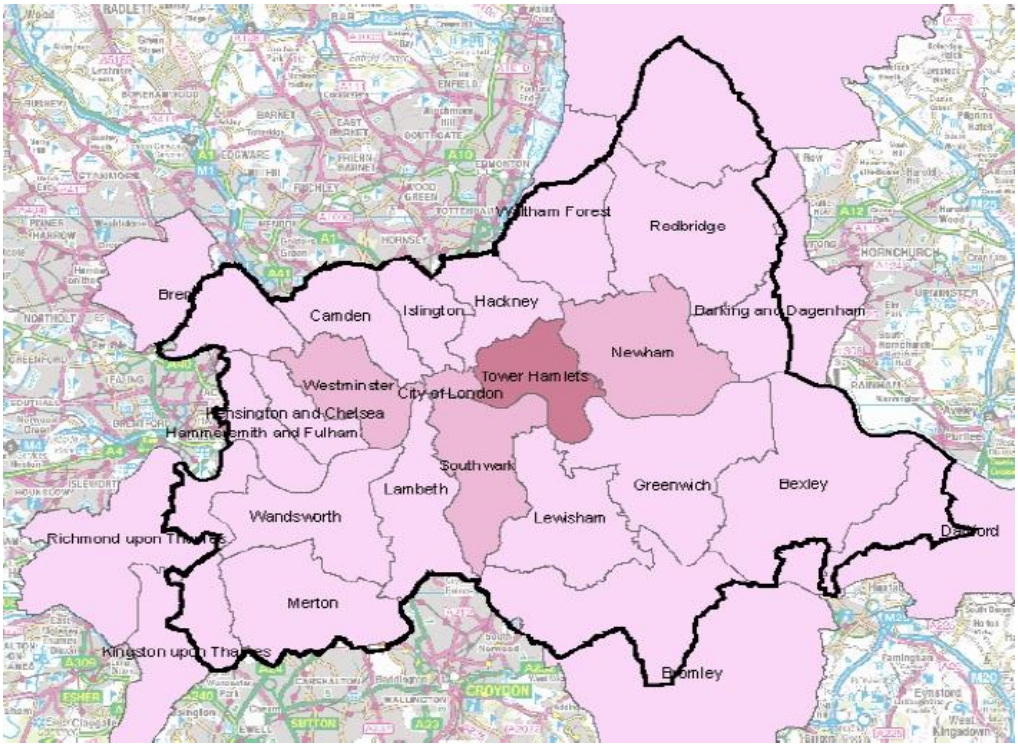
5.2.1.1 *Electricity*

The LLDC area falls within the London Power Networks (LPN) area, which covers approximately 665 Square kilometres (km^2) across Greater London. LPN is the distribution network operator who owns and maintains the infrastructure which delivers electricity to customers[74]. The map below shows the extent of the LPN area.

Electricity network operators have a legal obligation to ensure that adequate electricity supply is available to meet the requirements of new residential development. LPN submit their growth plan to the regulator (Ofgem) for approval and review, a requirement set out Ofgem's national guidance.

[73] This report does not consider telecoms and IT infrastructure; however like other utilities telecoms are planned at a strategic level by the statutory provider rather than the local planning authority. Relevant detail is contained within the LPIP.
[74] UK Power Networks (2012) 'About us'. Available from: *http://www.ukpowernetworks.co.uk/internet/en /about-us/*. Accessed December 2012.

Figure 5.2.1 London Power Networks operational area



Source: EDF Energy / Waltham Forest Utilities Infrastructure Assessment 2009

The Department for Energy and Climate Change (DECC) publishes local and regional statistics outlining energy consumption. Table 5.2.1 shows the electricity usage within each of the four LLDC boroughs, in comparison with Greater London levels, in 2010[75].

Table 5.2.1 Electricity consumption by borough and Greater London wide (2010)

Area	Average domestic consumption (kWh[76])	Average commercial and industrial consumption (kWh)
Hackney	3,518	27,726
Newham	3,735	97,963
Tower Hamlets	3,790	177,222
Waltham Forest	3,791	44,629
Greater London	3,988	70,631

Source: DECC Sub-national energy consumption statistics (2010)[77]

The OLSPG Infrastructure Delivery Study notes that existing capacity in electricity networks is thought to be limited. Consultation undertaken with EDF for that study indicated that the current network capacity was adequate for meeting existing demand, but that planned developments within the LLDC area will place additional demand on the network.

It should however be noted that construction works for the Games entailed significant investment in site wide utilities which were sited and sized in order to meet anticipated demand from the long term post-Games legacy, including electricity and gas. The Olympic Park District Energy System (OPDES) (see section 5.2.1.3 below) was a core element of this utilities infrastructure which has potential to serve forth-coming development in the LLDC area.

[75] DECC Sub-national energy consumption statistics (2010). Available at: http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/ regional.aspx. Accessed December 2012.
[76] Kilowatts per hour.
[77] The most recent year for which data is available.

A review of the infrastructure studies and development plan documents of the four boroughs highlighted the following:

- The LB of Tower Hamlets[78] notes that electricity provision is likely to be *"operated close to capacity and therefore any major developments are likely to require varying degrees of infrastructure improvements"*.
- The LB of Hackney[79] also notes that enhanced utilities infrastructure is likely to be required, and that upgrades to existing electricity infrastructure[80] will help ensure that there is sufficient supply available to meet the demand from new developments.
- The LB of Waltham Forest[81] outlines that CCHP systems are an efficient way of generating energy within the Borough due to the density of the built environment and identifies the OLSPG area as one of high energy demand.
- The LB of Newham[82] outlines support for development of a decentralised energy network across the Borough, encouraging local energy generation and district heating *"with major developments being required to link to existing networks or demonstrate how the design makes provision for future connection"*.

The LB of Tower Hamlets, LB of Newham and LB of Waltham Forest identify several planned projects (see 5.2.2) which include power line replacements and upgrades to the electricity infrastructure located within these boroughs in order to help satisfy demand from future development.

5.2.1.2 *Gas*

National Grid is the gas transmission and distribution network operator for the LLDC area, and the whole of Greater London[83].

Similarly to electricity, as the provider, National Grid have a duty to *"develop and maintain an efficient coordinated and economical transmission system for the conveyance of gas and respond to requests for new gas supplies in certain circumstances"*[84].

DECC publishes local and regional statistics outlining gas consumption. Table 5.2.2 shows the gas usage within each of the four LLDC boroughs, in comparison with Greater London levels in 2010[85].

Table 5.2.2 Gas consumption by borough and Greater London wide (2010)

Area	Average domestic consumption (kWh[86])	Average commercial and industrial consumption (kWh)
Hackney	12,243.1	287,193.0
Newham	13,228.3	1,579,885.9
Tower Hamlets	10,478.8	591,514.1
Waltham Forest	14,541.7	403,928.9
Greater London	14,961.6	513,386.5

Source: DECC Sub-national energy consumption statistics (2010)[87]

[78] LB of Tower Hamlets (2006) Transport and Utilities Baseline Review
[79] LB of Hackney (2010) Core Strategy
[80] LB of Hackney (2009) Infrastructure Assessment
[81] LB of Waltham Forest (2012) Core Strategy
[82] LB of Newham (2012) Core Strategy
[83] Network Operators FAQ (2012). Available at: http://www.energynetworks.org/info/faqs/gas-transmission-map.html. Accessed December 2012.
[84] LB of Hackney (2009) Infrastructure Assessment.
[85] DECC Sub-national energy consumption statistics (2010. Available at: *http://www.decc.gov.uk/en/content/cms/statistics /energy_stats/regional/ regional.aspx*. Accessed December 2012.
[86] Kilowatt hours

The study notes that existing capacity is thought to be sufficient, supported by projections from the National Grid Long Term Development Plan (2010) which estimate an annual drop in demand for gas. Figures cited in the study have now been revised and are outlined below.

The National Grid Long Term Development Plan (2012)[88] sets out the projected demand for gas supply within Greater London up to 2020 and the planned investment necessary to meet this demand. This plan projects that demand will decrease by around 1.5% by the end of 2020. This predicted drop in usage rates can largely be attributed to the rise in gas prices and the economic downturn, as well as increased efficiency of gas boilers.

A review of the infrastructure studies and development plan documents of the four boroughs highlighted the following:

- The LB of Tower Hamlets suggests that on the basis of consultations they have undertaken, there is sufficient supply to support planned development however *"no safeguarding of the supply is in place to ensure capacity is reserved for any future development"*[89] [90].
- The LB of Hackney notes that *"generally network developments to provide supplies to the local gas distribution network are as a result of overall regional demand growth rather than site specific developments"* and notes that there are no current issues known at present, with regard to the future supply of gas infrastructure within the Borough[91].
- The LB of Newham confirms that on the basis of consultations with providers, there is unlikely to be any change in their provision strategy (e.g. an increase in capacity) on the basis of known growth projections at the time the Future Needs Report was written[92]. The Borough identifies the Beckton Pressure Reduction Station (see 5.2.3) as a key planned project which will help to satisfy demand from future development within the LB of Newham.

5.2.1.3 *Combined Cooling Heat and Power (CCHP)*

The London Plan Implementation Plan notes that in light of the CO^2 reduction targets outlined in the Mayor's Climate Change Mitigation and Energy Strategy[93], and "challenges and uncertainty surrounding the UK's electricity supply", decentralised energy opportunities are rapidly gaining greater importance.

The OLSPG Energy Study provides detail on the OPDES, a decentralized energy network which aligns with the Mayor's aim to develop a *"more sustainable, secure, cost-effective and low to zero carbon energy supply in the capital"*[94]. The network comprises a CCHP system (which combines electricity generation with heat production) and gas, oil and biomass boilers.

The energy network is served by two new energy centres. The energy centre within Kings Yard to the west of the main Queen Elizabeth Olympic Park comprises a heat generating biomass boiler and a natural gas powered CCHP which generates both heat and electricity. This heat is transferred around the network as hot water. A second energy centre to the north of Stratford Regional Station provides power, heat and cooling for Stratford City.

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[87] The most recent year for which data is available.
[88] Long Term Development Plan (2012) National Grid
[89] LB of Tower Hamlets (2006) Transport and Utilities Baseline Review
[90] LB of Tower Hamlets (2009) Infrastructure Delivery Plan Report
[91] LB of Hackney (2009) Hackney Infrastructure Assessment
[92] LB of Newham (2010) Community Infrastructure Study Future Needs Report
[93] Mayor of London (2011) Climate Change Mitigation and Energy Strategy, GLA
[94] OLSPG Energy Study (2011), p.6

The OPDES is operated under a Concession Agreement between the employers (LLDC and Stratford City Developments Ltd) and the operator (COFELY East London Energy Ltd). The agreement requires that all new buildings and developments built within the Olympic Park 'Exclusivity Area' purchase heat from the energy network and that the operator provides the connections and supplies heat to developments within the exclusivity area. The concession lasts for 40 years. The exclusivity agreement does not apply to all areas for cooling.

As this scheme is capable of delivering heat from any energy source and the two energy centres have a modular design, new energy production technologies can be incorporated alongside the existing equipment, enabling the most appropriate mix of fuels and technologies to be deployed in the future. Moreover, both centres have capacity to be expanded into the surrounding neighbourhoods supplying additional low carbon energy and cooling capability. The OLSPG states that development in the OLSPG area should be designed to connect to the decentralised energy networks, or at least to be compatible to allow future connectivity and expansion. Along with an energy efficient design and the use of low carbon energy, this will minimise the environmental impact of new development and help meet the London Plan's target of supplying 25% of London's energy requirements from decentralised energy by 2025.

The LCS planning permission requires PDZs 1, 2, 3, 4, 5 and 6 to connect into this network. As the inherited network includes the use of biomass boilers to meet 20% of heat demand, together with energy demand reductions on site, this will achieve in excess of a 20% reduction in carbon dioxide emissions for the LCS. The extension of the District Heat Network from Stadium Island PDZ 3 south to PDZ 8 also has planning permission and the Applicant will also explore opportunities to extend the district heat network to PDZs 8 and 12

While spare capacity was designed into the OPDES, export beyond the boundaries of the exclusivity area is currently constrained by a lack of available exit points from the Park into neighbouring areas. The OLSPG Energy Study therefore identified four key points where new connections should be provided to facilitate such an expansion. A further five transport corridors were identified in the LCS planning application submitted by the OPLC in October 2011 as potential points of connection (POC) in the future . The four POC identified by the GLA and COFELY would be made through bridges and under track crossings and are aligned with the main areas of opportunity for existing and planned heat demand in each of the four boroughs:

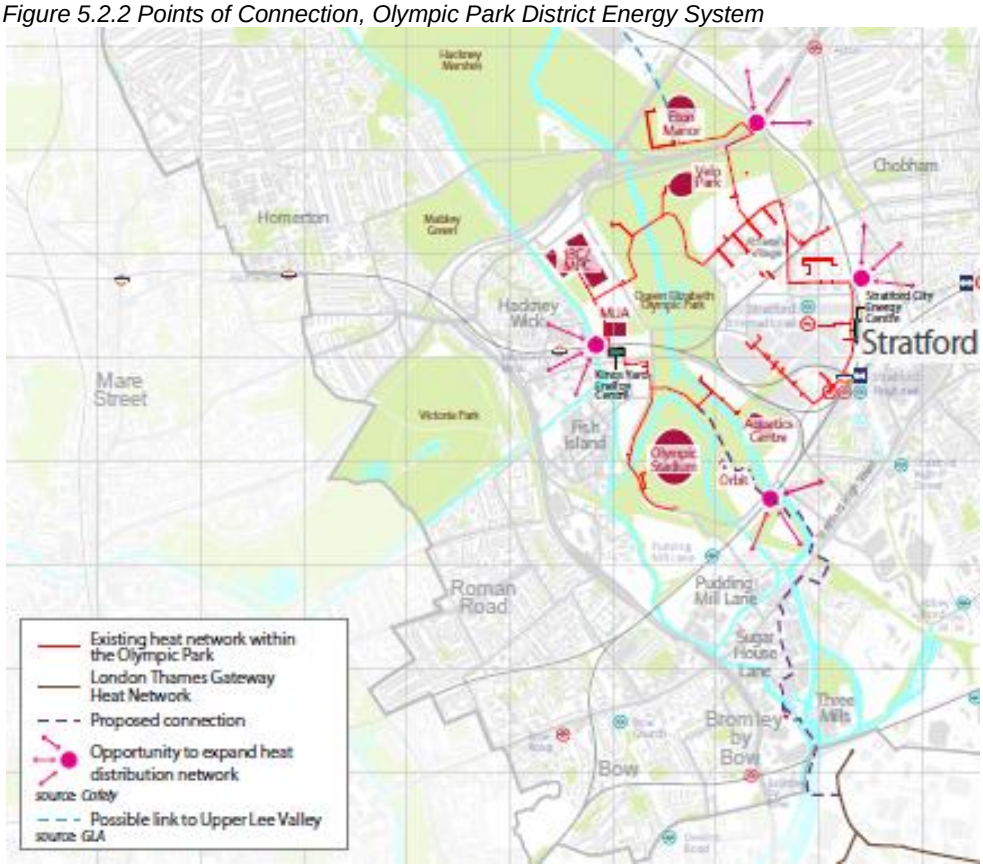
- Point A (LB of Waltham Forest heat export point): to serve the sites at Leyton and Lea Bridge road
- Point B (LB of Newham): to serve development at Chobham Farm and Stratford Island
- Point C (already being built): COFELY have received funding from the London Development Agency and the LTGDC to connect to the plots on the southern fringe of the park including the Ardmore Development (Genesis) and in due course Pudding Mill Lane, Sugar House Lane, West Ham, and Bromley by Bow
- Point D: connection to Fish Island and Hackney Wick with the potential to serve sites west of the Olympic Park in the boroughs of Tower Hamlets and Hackney, including as far west as Homerton hospital and a number of housing estates managed by Hackney Homes.

The OLSPG Energy Study proposes that the provision of space in bridges and other planned infrastructure crossings should be a requirement placed on the infrastructure developer to ensure that pipework can be incorporated at a later date. It is suggested that expansion of the network would be funded through capital contributions from developers and from the system operator, depending on the location and scale of the development to be connected. When the developer contributions, together with any operator contributions are insufficient to justify the

business case for extending the network, public sector contributions may be required, either from the local borough, London or national level authorities.

The potential POC are shown in Figure 5.2.2 below:

Figure 5.2.2 Points of Connection, Olympic Park District Energy System



Source: Figure 3, p.17, OPSPG Energy Study

The OLSPG also states that opportunities should also be explored by developers and planning authorities to link these energy networks with the network being developed for the Upper Lea Valley, including the significant sources of heat and power at the Edmonton Eco Park, and a potential southern connection to the London Thames Gateway Heat Network.

The host borough Core Strategies and the emerging Hackney Wick and Fish Island AAPs also refer to the desire to utilise and extend the Olympic Park energy network.

5.2.2 *Committed and planned provision*

Table 5.2.3 below lists the planned energy schemes which have been identified in relevant documents as required to support and facilitate development within the LLDC area. Where available, indicative costs and the sources of funding have been identified, as well as detail on whether funding is committed or not.

In addition to the projects outlined below, between 2010 and 2020 National Grid plan to invest an average of approximately £500M per annum on maintenance and enhancement of existing gas infrastructure within the LB of Newham[95].

[95] LB of Newham (2010) Community Infrastructure Study Future Needs Report

Table 5.2.3 Committed and planned provision – energy

Infrastructure project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding source / arrangements	Delivery / other responsible agencies	Information Source
Electricity							
Electricity sub-station upgrades in Bow and West Ham	Unknown	Unknown	Unknown	Unknown	London Power Networks	Unknown	LB of Tower Hamlets Core Strategy
132kV power lines replacement in Stratford and West Ham	2015-2019	Unknown	Yes	No	National Grid	Unknown	LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning and Funding Gap Report
132kV network between West Ham and Brunswick Wharf	2015-2019	Unknown	Yes	No	National Grid	Unknown	LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning and Funding Gap Report
132kV network laid from West Ham to Orchard Place	2015-2019	Unknown	Yes	No	National Grid	Unknown	LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning and Funding Gap Report
Provision of 26.3 MVA across the borough through various projects	2009-2026	Unknown	Unknown	Unknown	Unknown	Unknown	LB of Waltham Forest Core Strategy
Gas							
Beckton pressure reduction Station rebuild	2014-2015	Unknown	Yes	No	National Grid	Unknown	LB of Newham Community Infrastructure Study Future Needs Report
Combined Cooling, Heating and Power networks							
Point of Contact A, LB of Waltham Forest heat export point	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	OLSPG Energy Study
Point of Contact B, LB of Newham heat export point	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	OLSPG Energy Study
Point of Contact D, connection to Fish Island and Hackney Wick	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	OLSPG Energy Study
Newham Local Heat Network – connection from West Ham (Manor Road) to Greenway	Unknown	Unknown	Unknown	Unknown	Unknown		LB of Newham Community Infrastructure Study Future Needs Report, Royal Docks Infrastructure Study (Ramboll), Heat Network Local Development Order (March 2013)
Total cost							

5.2.3 *Energy requirements associated with growth*

Electricity

The gross demand for electricity can be estimated applying the following assumptions regarding usage in Kilo Volt Amperes (kVA) by use class[96]:

- Residential demand, 1.3 kVA per dwelling
- Non-residential development, 0.07 kVA per m^2 Net Internal Area (NIA)[97]

It should be noted that providers generally plan at a sub-regional rather than local level and that electricity requirements for local development will differ considerably to those at a wider geographical area. On the basis of consultation undertaken by URS with electricity providers for previous strategic infrastructure studies; when planning for regional development, the demand ratio applied per residential dwelling is approximately 1.0 kVA, for a local development the demand ratio applied is approximately 1.6 kVA per dwelling. Therefore, for the purposes of this assessment, a mid-point ratio of 1.3 kVA has been applied.

For the commercial (office and retail) and industrial / warehouse sector, there is a large variation in demand (dependent on the type and size of business) – a distribution unit (which is likely to have a demand for energy) could use less electricity than a small industrial company (which is likely to have a higher energy demand). The rate used here represents a reasonable average.

To determine the net demand, electricity projects coming forward as part of planned demand should also be taken into account. While Table 5.2.3 identifies five forthcoming projects, capacity within the network is thought to be limited, and an outstanding requirement could occur over the duration of the planning period due to volume of development and estimated population increase within the LLDC area.

On the basis of the ratios set out above, the indicative gross demand is outlined in Table 5.2.4 below.

Table 5.2.4 Estimated Electricity Demand from New Development (kVA)

Gross demand	kVA
2014-2016	
Gross demand: Residential	3,029
Gross demand: Non-Residential	13,131
Sub-total	*16,160*
2017-2021	
Gross demand: Residential	7,880
Gross demand: Non-Residential	18,802
Sub-total	*26,682*
2022-2026	
Gross demand: Residential	8,058
Gross demand: Non-Residential	17,483
Sub-total	*25,541*
2027-2031	
Gross demand: Residential	5,465

[96] These figures have been informed through consultation undertaken by URS for other London-based strategic infrastructure assessments.

[97] This is an average of the rates for office development (0.08 kVA per m^2), retail development (0.12 kVA per m^2 NIA) and industrial / warehouse development (0.04 kVA per m^2 NIA).

Gross demand: Non-Residential	15,085
Sub-total	*21,270*
Total	
Gross demand: Residential	15,694
Gross demand: Non-Residential	65,220
Total demand within LLDC area	**80,915**

Source: URS calculations

Gas

The gross demand for gas can be estimated using the ratio of cubic metres per hour (m^3/hour) by dwelling or NIA floorspace for non-residential use. The breakdown for residential and non-residential uses is as follows, based on typical ratios applied by utility companies for both development design and strategic planning[98]:

- Residential demand, 1.0m^3/hour per dwelling (based on the average demand from low, medium and high density development)
- For non-residential demand, 0.03m^3/hour per m^2 NIA (an average ratio based on retail development, 0.01 m^3/hour per m^2 NIA and industrial / warehouse development, 0.05 m^3/hour per m^2 NIA).

To determine the net demand, gas infrastructure projects coming forward as part of planned demand should also be taken into account. While Table 5.2 identifies forthcoming projects, information on future capacity within the network is limited.

On the basis of the ratios set out above, the indicative gross demand is outlined in Table 5.2.5 below.

Table 5.2.5 Estimated Gas Demand from New Development (m^3/hour)

Gross demand	**m^3/hour**
2014-2016	
Gross demand: Residential	3,938
Gross demand: Non-Residential	5,627
Sub-total	*9,566*
2017-2021	
Gross demand: Residential	6,062
Gross demand: Non-Residential	8,057
Sub-total	*14,112*
2022-2026	
Gross demand: Residential	6,199
Gross demand: Non-Residential	7,493
Sub-total	*13,692*
2027-2031	
Gross demand: Residential	4,204
Gross demand: Non-Residential	6,774
Sub-total	*10,977*
Total	
Gross demand: Residential	20,403
Gross demand: Non-Residential	27,952
Total demand within LLDC area	**48,355**

Source: URS calculations

[98] These figures have been informed through consultation undertaken by URS for other London-based strategic infrastructure assessments.

5.2.4 *Cost of provision*

Electricity

On the basis of costs obtained by URS as a result of consultation with electricity providers for other strategic infrastructure assessments, broad-brush estimates for the size and cost of electricity sub stations are as follows:

- Primary sub-station capable of serving 5,000 dwellings - £4M
- Distribution sub-station capable of serving 300 dwellings - £50,000

It is estimated that the LLDC area will require a total of just under four primary sub-stations and just over 67 distribution sub-stations. Based on these assumptions, it is estimated that the costs across the LLDC area for provision of four primary sub-stations will be £16.2M and for approximately 67 distribution sub-stations is £3.4M as outlined in Table 5.2.6 below.

Table 5.2.6 Estimated cost of Electricity Provision Requirements (£M)

Gross demand	Number	£M
2014-2016		
Primary sub-station	0.8	3.2
Distribution sub-station	13.1	0.7
2017-2021		
Primary sub-station	1.2	4.8
Distribution sub-station	19.7	1.0
2022-2026		
Primary sub-station	1.2	5.0
Distribution sub-station	20.6	1.0
2027-2031		
Primary sub-station	0.8	3.4
Distribution sub-station	14.0	0.7
Total		
Primary sub-station	4.0	16.3
Distribution sub-station	67.4	3.4

Source: URS calculations

Gas

In the absence of more detailed local analysis it is not possible to estimate costs at this stage.

5.3 Water

Thames Water is the owner, operator and supplier of water resources within the LLDC area and the majority of Greater London[99]. Thames Water is regulated by Ofwat according to their performance, including maintaining security of supply and the quality of drinking water delivered.

5.3.1 *Existing provision and policy framework*

Water resources are planned at a Water Resource Zone (WRZ) level, which is defined as the largest possible zone in which all water resources can be shared, ensuring that all customers experience the same level of service[100]. The LLDC falls within the London WRZ.

[99] Water UK Boundaries (2012). Available at: http://www.water.org.uk/home/our-members/find-water-company. Accessed December 2012.
[100] Water UK: Water facts (2012). Available at: http://www.water.org.uk/home/resources-and-links/jargon-buster/jargon-w. Accessed December 2012.

The Environment Agency estimated that water use per person in Greater London amounted to 162 litres per day in 2008/09[101]. This equated to 1,217M litres per day by household (domestic) consumers and 492M litres per day by commercial and industrial consumers. Water demand in London is much higher than the average for England and Wales[102]. London is one of the areas which has been classified by the Environment Agency as *"under water stress"*[103]. This is due to the high population density combined with limited water resources, requiring the careful management and planning of resources[104].

Thames Water notes that the completion of a new desalination plant in Beckton in 2010 has the ability to *"provide additional water supply to around 1M people in times of drought, peak demands or low flows"* and produce approximately 140M litres of treated water each day[105]. The Environment Agency suggests that the new plant will remove any immediate water deficit within Greater London[106].

The OLSPG Infrastructure Delivery Study (2012) describes the sourcing of the majority of clean water resources for Greater London, by abstraction from the River Thames and River Lea. The abstracted water is subsequently stored in reservoirs at Crossness, near Bexley, and Walthamstow Marshes, as well as in small boreholes across the city. The study notes that water companies have a legal obligation to ensure that *"adequate water supply infrastructure is provided to meet the requirements of new development"*. The rest of London's water is supplied from groundwater sources[107].

Thames Water's Baseline Supply Demand Balance 2015-2040[108] compares the amount of water available for supply with the forecast demand for water, inclusive of a headroom figure. It shows that the London WRZ had an estimated surplus of 15.98 million litres per day (Ml/d) in 2011, by the end of the planning period (2039/40) it is forecast that London will have a deficit of 367Ml/d.

A review of the infrastructure studies and development plan documents of the four boroughs highlighted the following:

- The LB of Tower Hamlets notes that developments in London must aim to comply with water reduction targets[109], and that this is one of six indicators developed by the 'Movement for Innovation', which *"aims to lead radical improvement in construction"*, including value for money, and development and environmental standards[110].
- Similarly, the LB of Waltham Forest *"requires developments to be designed in a manner that minimises the use of water"*[111].
- The LB of Newham emphasises the need for *"the prudent use of water resources"* in the context of increased development and less reliable rainfall[112].

[101] Environment Agency: Household water use per person (2009). Available at: http://www.environment-agency.gov.uk /research/library/publications/41051.aspx. Accessed December 2012.
[102] Proportioned average per capita consumption for the water companies supplying Greater London taken from the OFWAT June Returns Data 2006-2010
[103] Water for people and the environment : water resources strategy for England and Wales, (2009); Environment Agency,
[104] London Plan Implementation Plan, (2012); Greater London Authority
[105] Thames Water: Desalination plant in Beckton (2012). Available at: http://www.environment-agency.gov.uk/research /library/publications/115967.aspx. Accessed December 2012.
[106] Environment Agency: Supply and demand of water in London (2012). Available at: http://www.environment-agency.gov.uk/ research/library/publications/41053.aspx. Accessed December 2012.
[107] London Plan Implementation Plan, (2012); Greater London Authority
[108] Thames Water: Baseline Supply Demand Balance 2015-2040 (2012). Available at: http://www.thameswater.co.uk/tw/common/downloads/wrmp/about-us-WRMP14-baseline-supply-demand_-balance-september-2012.pdf. Accessed December 2012.
[109] LB of Tower Hamlets (2006) Transport and Utilities Baseline Review
[110] Housing Authority: The Movement for Innovation (2002). Available at*: www.housingauthority.gov.hk/haconf2002. Accessed December 2012*.
[111] LB of Waltham Forest (2012) Core Strategy

- The LB of Hackney also aims to reduce water consumption by *"ensuring efficient use of water, sustainable waste management, promoting waste minimisation and recycling"*[113]*.* While there is no significant capacity issue with water supply in the Borough at present, demand is likely to steadily increase[114].

The Fish Island AAP[115] notes that new developments should achieve and demonstrate *"exemplary water efficiency"* measures.

The construction works for the Olympic Games entailed significant investment in site wide utilities which were sited and sized in order to meet anticipated demand from the long term post-Games legacy. This included a primary water supply network. A condition within the LCS planning permission requires all residential buildings to incorporate water efficient fixtures and fitting to reduce potable water use to 105 litres or less per person per day and non-residential buildings to meet as a minimum BREEAM credit Wat 2. The potential to reduce potable water use further by pursuing the long term use of the Thames Water Old Ford Water Recycling Plant, a non-potable water network research and development project in Hackney, is also being investigated.

5.3.2 *Committed and planned provision*

Water companies adopt the twin track approach of increasing supply but also of managing demand and reducing leakage. Thames Water is currently planning to reach a per capita consumption (PCC) of 135l/h/d by 2035. However, this will require a significant change in people's behaviour and involvement of multiple stakeholders[116].

The Thames Water Investment Plan 2010-2015 outlines committed funding for water infrastructure across Greater London. The investment plan for the period beyond 2015 is currently being developed; a schedule of planned schemes is not yet available. Investments which are needed to meet demand arising across the Greater London region include the continuation of the leakage reduction programme via Victorian Mains Replacement (VMR) and maintenance of existing water mains.

The Thames Water Resource Management Plan (2010-35) outlines a preferred programme over the short, medium and long term to ensure the security of water supply in Greater London. While the plan covers water supply at a Greater London level, the elements outlined in Table 5.3.1 are also relevant to the LLDC area.

Table 5.3.1 Preferred programme set out in Thames Water Resource Management Plan 2010-2035

Programme	Short term (2010-2015)	Medium term (2015-2020)	Long term (2020-2035)
Leakage reduction	1,000km of mains replacement Pressure management Network reconfiguration Active leakage control	2,000km of mains replacement Pressure management Network reconfiguration Active leakage control	
Metering	Compulsory targeted metering to achieve 40% meter penetration	Compulsory targeted metering to achieve 60% meter penetration	Compulsory targeted metering to achieve 80% meter penetration
Water efficiency	Enhanced water efficiency programme	Enhanced water efficiency programme	Enhanced water efficiency programme.
Resource			East London Resource

[112] LB of Newham (2012) Core Strategy
[113] LB of Hackney (2010) Core Strategy
[114] LB of Hackney (2009) Infrastructure Assessment
[115] Fish Island AAP (2012) LB of Tower Hamlets
[116] Thames Water: Water Resources Management Plan 2010-2035 (June 2012). Available at: http://www.thameswater.co.uk/about-us/5392.htm. Accessed January 2013.

Programme	Short term (2010-2015)	Medium term (2015-2020)	Long term (2020-2035)
development			Development (ELReD) (2020/21) Larger resource yet to be finalised (2026/27) (not located in London)

Source: based on the Thames Water Resources Management Plan 2010-2035 (July 2012)

5.3.3 *Water requirements*

The gross demand for water can be estimated using a ratio of litres per day, per resident or employee. The breakdown for residential and non-residential uses is as follows:

- Residential demand, 160 litres/day per resident[117]
- For non-residential demand, 8 litres/day per employee[118]

On the basis of the ratios outlined above, the indicative gross demand is outlined in Table 5.3.2 below.

Table 5.3.2 Estimated Water Demand from New Development (litres / day)

Gross demand	Litres / day
2014-2016	
Gross demand: Residential	1,377,440
Gross demand: Non-Residential	1,313,116
Sub-total	2,690,556
2017-2021	
Gross demand: Residential	2,285,600
Gross demand: Non-Residential	1,880,172
Sub-total	4,165,772
2022-2026	
Gross demand: Residential	2,405,440
Gross demand: Non-Residential	1,748,271
Sub-total	4,153,711
2027-2031	
Gross demand: Residential	1,632,480
Gross demand: Non-Residential	1,580,495
Sub-total	3,212,975
Total	
Gross demand: Residential	7,701,120
Gross demand: Non-Residential	6,522,054
Total demand within LLDC area	14,223,174

Source: URS calculations

5.3.4 *Cost of provision*

In the absence of more detailed local analysis it is not possible to estimate costs at this stage.

[117] Based on URS research undertaken for other strategic infrastructure assessments
[118] Based on URS research undertaken for other strategic infrastructure assessments

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5.4 Sewage

Sewage infrastructure covers both surface water drainage and foul water drainage. The sewerage system in the LLDC area and the majority of Greater London is operated by Thames Water.

5.4.1 *Existing provision and policy framework*

Physical assets associated with transporting and treating surface and foul water, and discharging the treated effluent to watercourses, include: sewage treatment works (STW); pumping stations; sewers; maintenance and control equipment; IT and buildings.

Sewerage companies have a legal obligation to ensure that adequate sewer treatment infrastructure is provided to meet the requirements of new development. London's sewage is treated at eight major STW – Beckton, Crossness, Mogden, Riverside and Long Reach (that discharge effluent to the tidal River Thames), and Hogsmill, Beddington and Deephams (that discharge into freshwater tributaries of the Thames). Thames Water has estimated that approximately 72% of sewage sludge produced in the Greater London region (the solid waste left after the sewage treatment process) is recycled for use as a 'biosolid' fertiliser[119].

Thames Water's 'Investment Programme: Our plans for 2010-2015' (2010) outlines the committed investment plans within the region, including the company's *"largest-ever wastewater investment programme"* over the plan period. Plans include the investment of £675M to modernise and extend London's five major STWs, to increase their capacity and improve the standards to which wastewater is treated. The plan forecasts that approximately 236,000 new properties will require connection to mains drainage systems by 2015.

It is essential that strategic wastewater infrastructure is planned and provided in a timely way to support existing and new development. The quality of London's water bodies must be improved if they are to meet the requirements of the European Water Framework Directive. The OLSPG notes that the combined drainage system that collects sewage and surface water in this part of London is inadequate for the flows that occur at times of high rainfall, with sewage sometimes overflowing into the Thames and Lea. However Thames Water has started on works to prevent sewage discharges into the River Lea from Abbey Mills pumping station, which will also link the Lee Tunnel and proposed Thames Tideway Tunnel. Thames Water's planned upgrade of its Deephams sewage works to the north of the OLSPG area will also help reduce flood risk and improve water quality in the Lea Valley.

A review of the infrastructure studies and development plan documents of the four boroughs highlighted the following:

- The LB of Newham[120] cites the STW at Beckton as serving a large portion of Greater London; these have recently undergone improvement works. The Borough recognises that *"modernisation and additional capacity will be required to deal with foul and storm water arisings and sewage sludge in London"*.

- The LB of Tower Hamlets[121] is *"served by a combined foul and surface water drainage network"* which is discharged via the Northern Outfall sewer, to the STW at Beckton. The Utilities Baseline Review notes that Beckton and Abbey Mills STW and the Northern Outfall sewer *"are currently at or close to capacity".*

[119] Thames Water: Managing sewage (2012). Available at: http://www.thameswater.co.uk/about-us/6001.htm. Accessed December 2012.
[120] LB of Newham (2012) Core Strategy
[121] LB of Tower Hamlets (2006) Transport and Utilities Baseline Review

- The LB of Hackney is also served by the STW in Beckton[122], and notes the problems which can arise in areas which are served by combined sewer systems (which transport surface and foul water) including possible discharge of foul waste in times of high flows[123].

5.4.2 *Committed and planned provision*

Thames Water's London Tideway Improvement Programme consists of three components[124]:

- Upgrades and/or capacity extensions to Crossness, Beckton, Mogden, Long Reach and Riverside STW. These works will improve the quality of the effluent and increase the amount of sewage the sites can treat, so reducing the frequency and size of storm discharges to the river. The upgrades are underway and due to be completed by 2015 and amount to investment of approximately £675M.

- The Lee Tunnel, which together with the extensions to the Beckton STW will largely eliminate overflows from the Abbey Mills pumping station, which is currently the largest single source of storm sewage to the river. This too is under construction and is expected to be completed in 2015. In the period 2010-2015, Thames Water expects to invest some £1.3 billion to upgrade the five STWs and to construct the Lee Tunnel.

- The Thames Tunnel, as currently designed, will capture flows from the 34 unsatisfactory CSOs along the tideway, and convey them for treatment at the extended Beckton STW. It is currently expected to be complete by 2023, subject to approvals and financing. The cost is currently estimated at £4.1billion.

As part of its Business Plan for 2010-2015 (AMP5) Thames Water is developing and implementing a proposal for the major upgrade of Deephams STW. The primary aim of this upgrade is to help the River Lea meet environmental quality targets but it will also provide sufficient capacity to accommodate growth up to 2026. This project will not complete until the 2015-2020 period and is expected to cost several hundred millions of pounds.

Some of London's smaller STWs, away from the Thames Tideway, may require some extra capacity before 2021. Requirements will be identified and planned for by Thames Water through their next Business Plan, which is due to be prepared during 2012 and 2013. Thames Water will seek approval from Ofwat to invest in strategic growth schemes through the five-yearly periodic review of water company prices. The next review will be in 2014.

As well as the investment described above, to support the anticipated housing growth in London beyond 2021 Thames Water may have to increase its overall sewage treatment capacity to cope with an increased population of around 740,000 by 2031. The Environment Agency report *London Environmental Infrastructure Needs: A Strategic Study* (2010) report estimated that an additional £335M may need to be invested in London's STWs over this period to prevent deterioration in water status. Further investment requirements could relate to sewer network improvements, sewer flood alleviation and improved sewage sludge disposal. The funding for investment in wastewater infrastructure is largely raised through charges to water company customers.

Table 5.4.1 below lists the committed and planned sewage schemes which have been identified in relevant documents as required to support and facilitate development within the LLDC area.

[122] LB of Hackney (2010) Core Strategy
[123] LB of Hackney (2009) Infrastructure Assessment
[124] Thames Water (2010) Investment Programme: Our plans for 2010-2015

Table 5.4.1 Committed and planned provision – sewage

Infrastructure project	Phasing	Cost (£M)	Committed funding	Funding gap	Funding / source arrangements	Information Source
Thames Tideway Tunnel combined sewer overflow improvement projects	Approx. 2015-2020	£4.1 billion	Yes	No	Thames Water and Ofwat	LB of Tower Hamlets Infrastructure Delivery Plan and Core Strategy; LB of Newham Core Strategy; LB of Hackney Infrastructure Assessment
Deephams STW	Approx. 2015	As part of an allocated £675M for STW upgrades	Yes	No	Unknown	Thames Water Investment Programme: Our plans for 2010-2015
Beckton STW upgrade	Approx. 2015	As part of an allocated £675M for STW upgrades	Yes	No	Unknown	Thames Water Investment Programme: Our plans for 2010-2015
Additional works to upgrade sewage works capacity as a result of residential growth	Up to 2031	Unknown	No	Yes	Unknown	Thames Water Investment Programme: Our plans for 2010-2015
Total cost		**Unknown**				

5.4.3 *Sewage requirements*

The gross demand for sewage management can be estimated using the ratio of litres per day, per resident or employee. The breakdown for residential and non-residential uses is as follows:

- Residential property flow rate, 200 litres/day per resident[125]
- Non-residential flow rate, 9.5 litres/day per employee[126]

On the basis of the ratios outlined above, the indicative gross demand is outlined in Table 5.4.2 below.

Table 5.4.2 Estimated Sewage Flow Rate (litres / day)

Gross demand	Litres / day
2014-2016	
Gross demand: Residential	1,721,800
Gross demand: Non-Residential	1,782,086
Sub-total	3,503,886
2017-2021	
Gross demand: Residential	2,857,000
Gross demand: Non-Residential	2,551,662
Sub-total	5,408,662
2022-2026	
Gross demand: Residential	3,006,800
Gross demand: Non-Residential	2,372,654
Sub-total	5,379,454
2027-2031	
Gross demand: Residential	2,040,600
Gross demand: Non-Residential	2,144,958
Sub-total	4,185,558
Total	
Gross demand: Residential	9,626,400
Gross demand: Non-Residential	8,851,359
Total demand within LLDC area	18,477,759

Source: URS calculations

5.4.4 *Cost of provision*

In the absence of more detailed local analysis it is not possible to estimate costs at this stage.

5.5 Waste management

Waste is defined by the Environment Agency as including 'Municipal Solid Waste' (household), commercial waste and industrial waste which is non-hazardous and collected by or on behalf of the local authority[127].

[125] Based on URS research undertaken for other strategic infrastructure assessments
[126] Based on URS research undertaken for other strategic infrastructure assessments
[127] The State of the Environment : Waste Management (2010) Environment Agency

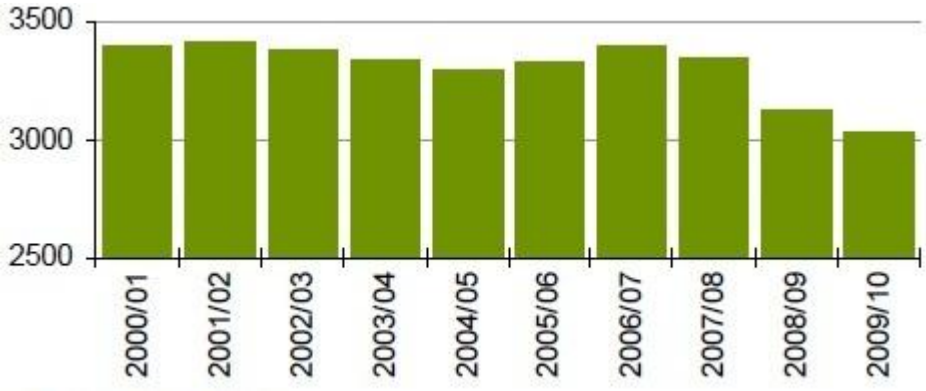
5.5.1 *Policy review and existing provision*

5.5.1.1 *Overview*

The 2011 State of the Environment Report for London outlines that since 2000, *"the amount of household waste produced in London has declined by 11%"*[128] over a period of 10 years. Over the same time period there has also been a 41% reduction in the amount of local authority collected waste sent to landfill in London.

Household waste makes up around 80% of the total local authority collected waste in London. Despite a steadily rising population, the overall trend in household waste production is of falling levels, as outlined in Figure 5.5.1 below.

Figure 5.5.1 Total household waste arisings in Greater London (thousand tonnes) - 2000/01-2009/10



Source: Defra 2010, in London's Environment Revealed: State of the Environment Report for London (2011)

The OLSPG Infrastructure Delivery Study notes the growing emphasis at a local, national and international level on decreasing the amount of waste produced, as well as the level sent to landfill; and promoting recycling as an alternative to waste disposal. The policy for waste is driven at the regional level by the London Plan 2011, which sets out the apportionment and projected waste arising at borough-level, as well as capacity estimates for the amount of waste to be managed by each borough.

A number of local authorities in Greater London have merged to create four statutory Waste Disposal Authorities (WDAs): North London WDA, East London WDA, South London Waste Disposal Partnership and West London Waste. Each WDA is responsible for the disposal of wastes collected by the local authorities situated within its statutory area.

The LLDC area is covered by two of these authorities: the North London WDA, of which the LB of Waltham Forest and LB of Hackney are members, and the East London WDA, of which the LB of Newham is a member. The LB of Tower Hamlets provides its own waste treatment and disposal service and does not operate as part of a WDA.

The OLSPG Energy Study (2011) outlines that the North London WDA is currently going through procurement for waste handling services to manage the production of 300,000 tonnes of solid refuse fuel (SRF), and a separate contract for the energy conversion of this waste. The procurement will be completed by around 2014 and will be a 25 year contract. The East London WDA was one of the first authorities in London to commission a large Integrated Waste Management System (IWMS) (dealing with both recycling and waste disposal) and has one of the largest IWMS contracts in the UK (a 25 year contract) running until 2021. The

[128] The State of the Environment Report for London (2011) Environment Agency

current waste contract held by the LB of Tower Hamlets is due to end in 2014; the Borough is currently seeking to commission a new contract.

Development principle E5 of the OLSPG covers waste management and contamination. It promotes efficient management of waste and the safeguarding of existing waste management facilities, and identifies approximately 18 such facilities within the LLDC area[129]. The prevention or reduction of waste, followed by reuse and then recycling should be order in which waste is dealt with, after which the potential to secure energy from waste using new and emerging advanced conversion technologies should be explored. It is stated that: "*The Mayor and boroughs will explore the possibility of developing new waste management capacity, with a focus on the potential in industrial areas within and beyond the OLSPG area".*

The OLSPG proposes that, as much of the industrial land within the OLSPG area is contaminated, the opportunity to create a soil treatment plant in the OLSPG area is investigated. It also notes that Edmonton Eco Park to the north of the OLSPG area is one of the sub region's major domestic and commercial waste facilities and there is an opportunity to consolidate waste from the OLSPG area to this facility using the area's many waterways.

Policy 5.17 of the London Plan[130] outlines the scope to use rail and water transport (using the Blue Ribbon Network) to potentially minimise the environmental impacts of transporting waste material. The Lower Lea Valley Waterspace Strategy[131] also emphasises the opportunity to transport waste materials by river, noting that upgrades to waterways infrastructure as part of the Olympics legacy may help to facilitate the movement of boats for moving waste or freight more easily.

5.5.1.2 *Draft North London Waste Plan*

The Draft North London Waste Plan (2011) is the strategic planning document for North London WDA authorities, outlining the boroughs' combined approach to waste management over the next 15 year period. The plan also responds to the London Plan (2011) target of achieving zero waste to landfill by 2031. Over the life of the North London Waste Plan, Municipal Solid Waste is *"anticipated to grow at an average rate of just under 1% every year"*.

The plan identifies two new sites for delivery of waste handling or general waste facilities (both of which fall outside the LLDC boroughs). In addition the plan outlines 57 existing waste management or waste transfer sites within the North London WDA area, which are safeguarded for waste purposes. Of these sites, there is one existing waste treatment site in Hackney and three in Waltham Forest. There are also three household waste recycling centres within Waltham Forest.

5.5.1.3 *East London Joint Waste Development Plan*

The East London Joint Waste Development Plan was adopted in 2012 and estimates a requirement to provide sufficient waste management capacity for 1.573M tonnes of Municipal Solid Waste and commercial and industrial waste by 2021. The plan identifies that additional waste facilities are likely to be required to serve the boroughs which fall within the East WDA area.

5.5.1.4 *LB of Tower Hamlets*

The Borough's Waste Management Strategy 2003-18 (2003) outlines the management procedures for all types of waste within the Borough, including household waste disposal. The strategy seeks to achieve recycling of 45% of household waste by 2015. All non-recyclable

[129] Figure 2.E.4 Waste management sites and Green Enterprise District
[130] London Plan: Spatial Development Strategy for Greater London, (2011); Greater London Authority
[131] Lower Lea Valley Waterspace Strategy, (2011); Peter Brett Associates / LDA Design

waste collected within the Borough is sent to Northumberland Wharf Waste Transfer Station (WTA) and then to landfill outside the Borough. The Strategy outlines the following future municipal waste requirements over the duration of the period:

- Central composting, approximately 12,000 tonnes
- Bulking / sorting for recyclables, approximately 84,000 tonnes
- Recovery / disposal of residual waste, approximately 98,000 tonnes.

5.5.1.5 *The London Boroughs of Tower Hamlets, Newham, Hackney and Waltham Forest*

All four of the LLDC boroughs emphasise the 'reduce; re-use; recycle' approach for addressing the levels of waste produced within those boroughs. A review of the infrastructure strategies and development plan documents highlights the following relevant points:

- The LB of Tower Hamlets identifies key priorities for managing the Borough's waste, including minimising the amount of waste which is produced in the Borough, maximising the recycling of waste and *"managing non recyclable waste using treatment methods other than landfill"*[132]. All sites suitable for waste management will be safeguarded within the Borough; there have been six sites identified as suitable for accommodating a new waste management facility[133], two of which (Empson Street and Fish Island South) are close to the LLDC boundary but lie outside the area. The LB of Tower Hamlets also cites the use of waste as a power generating fuel source as a possible solution to reducing the levels of landfill waste[134].
- The LB of Newham[135] notes that new developments should include facilities for recycling and management of waste on site, as far as possible. There are two existing waste management facilities within the Borough, a third preferred site has also been identified at Beckon Riverside, outside the LLDC area (see Table 5.6).
- The LB of Hackney[136] also emphasises the need to *"reduce the amount of waste sent to landfill and recycle more"* and provide new waste management facilities where required, including on site as part of new developments. The majority of the Borough's waste is disposed of at the Edmonton Energy-From-Waste Plant; this helps contribute to a *"significantly lower"* proportion of waste going to landfill than both West and East London Waste Authorities[137].
- The LB of Waltham Forest[138] also promotes sustainable waste management and recycling and the opportunity to generate energy from waste. The Borough will safeguard existing waste sites while aiming to reduce the need to provide additional sites. To achieve this, the intensification of existing sites will be supported where necessary.

5.5.2 *Committed and planned provision*

The OLSPG Delivery Study indicates that LB of Hackney has plans for the expansion of strategic waste sites around Millfields Depot by 2014. These plans have not been costed.

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[132] LB of Tower Hamlets Core Strategy (2010) LB of Tower Hamlets
[133] Waste Evidence Base Report, (2009) LB of Tower Hamlets
[134] LB of Tower Hamlets (2006) Transport and Utilities Baseline Review
[135] LB of Newham Core Strategy (2012), LB of Newham
[136] LB of Hackney Core Strategy (2010) LB of Hackney
[137] LB of Hackney Infrastructure Assessment (2009) LB of Hackney
[138] LB of Waltham Forest Core Strategy (2012) LB of Waltham Forest

Table 5.5.1 below lists the committed and planned waste schemes which have been identified in relevant development plan documents as required to support and facilitate development within the LLDC area. Where available, the sources of funding have been identified, as well as detail on whether funding is committed.

Table 5.5.1 Committed and planned provision – waste

Infrastructure project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
INF3 waste site at Beckton Riverside	2012-2015	Unknown	Unknown	Unknown	Unknown	Unknown	LB of Newham CIL Infrastructure Planning Report and East London Joint Waste Development Plan
LB of Tower Hamlets waste treatment / disposal facility	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	OLSPG Infrastructure Delivery Study
Expansion of LB of Hackney strategic waste sites (around Millfields Depot)	Approx. 2014 onwards	Unknown	Unknown	Unknown	Unknown	Unknown	OLSPG Infrastructure Delivery Study
Total cost		**Unknown**					

5.5.3 *Waste requirements*

The requirement for waste management systems can be estimated based on the amount of waste arising (by volume in kilograms) per annum (kg/pa) can be estimated using the following ratios:

- Residential, 449kg per person, per annum[139]
- Commercial and industrial, 1,505kg per employee, per annum[140]

The ratio for non-residential waste is the average weight of commercial / industrial waste generated by employees of the LB of Hackney, LB of Newham, LB of Tower Hamlets and LB of Waltham Forest. On the basis of these ratios, the indicative gross demand is outlined in Table 5.5.2 below.

Table 5.5.2 Estimated Gross Waste Generation (kg / pa)

Gross demand	**(kg / pa)**
2014-2016	
Gross demand: Residential	3,865,441
Gross demand: Non-Residential	9,825,558
Sub-total	*13,690,999*
2017-2021	
Gross demand: Residential	6,413,965
Gross demand: Non-Residential	14,067,937
Sub-total	*20,481,902*
2022-2026	
Gross demand: Residential	6,750,266
Gross demand: Non-Residential	13,080,667
Sub-total	*19,830,933*
2027-2031	
Gross demand: Residential	4,581,147
Gross demand: Non-Residential	11,824,976
Sub-total	*16,406,123*
Total	
Gross demand: Residential	21,611,268
Gross demand: Non-Residential	48,799,138
Total demand within LLDC area	**70,410,406**

Source: URS calculations

5.5.4 *Cost of provision*

In the absence of more detailed local analysis it is not possible to estimate costs at this stage.

5.6 Flood defences

Flood risk is defined by the Environment Agency as both the likelihood of flooding occurring but also the possible damage a flood could do. By understanding the probability of a flood occurring but also the potential impact or consequences of the flood, the flood risk is determined[141]. The OLSPG Infrastructure Delivery Study notes that flood defences are *"typically built within and along the banks of rivers, canals and reservoirs to protect developments from flood risk".* and identifies other flood mitigation infrastructure as including *"attenuation basins and tanks, over sized sewers and sustainable urban drainage systems (SUDS)".*

[139] DEFRA: www.defra.gov.uk/statistics/files/mwb201011_statsrelease.pdf
[140] Calculated from http://legacy.london.gov.uk/shaping-london/london-plan/docs/waste-arisings-note.pdf
[141] Environment Agency: Flood (2012). Available at: *http://www.environment-agency.gov.uk/homeandleisure /floods/31658.aspx*. Accessed December 2012.

The Thames Barrier forms part of the tidal defences in London. It has been raised (to protect London from high tides, storm surges in the Thames Estuary, and high river flows from the River Thames tributaries) over 100 times since it became operational in 1982. Just over two thirds of these have been since 2000[142].

The NPPF identifies different 'flood zone' levels, which can be used to categorise an area's risk of flooding geographically. The four flood zone levels are as follows:

Table 5.6.1 Flood zone levels[143]

Flood zone	Definition	Probability of flooding
Flood zone 1	This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)	Low probability
Flood zone 2	This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year	Medium probability
Flood zone 3a	This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year	High probability
Flood zone 3b	This zone comprises land where water has to flow or be stored in times of flood. At risk from a flood event greater than or equal to the 1 in 20 year event or otherwise agreed between the Local Planning Authority and the Environment Agency (greater than 5% annual probability of flooding each year)	Functional floodplain

5.6.1 *Policy review and existing provision*

5.6.1.1 *Overview*

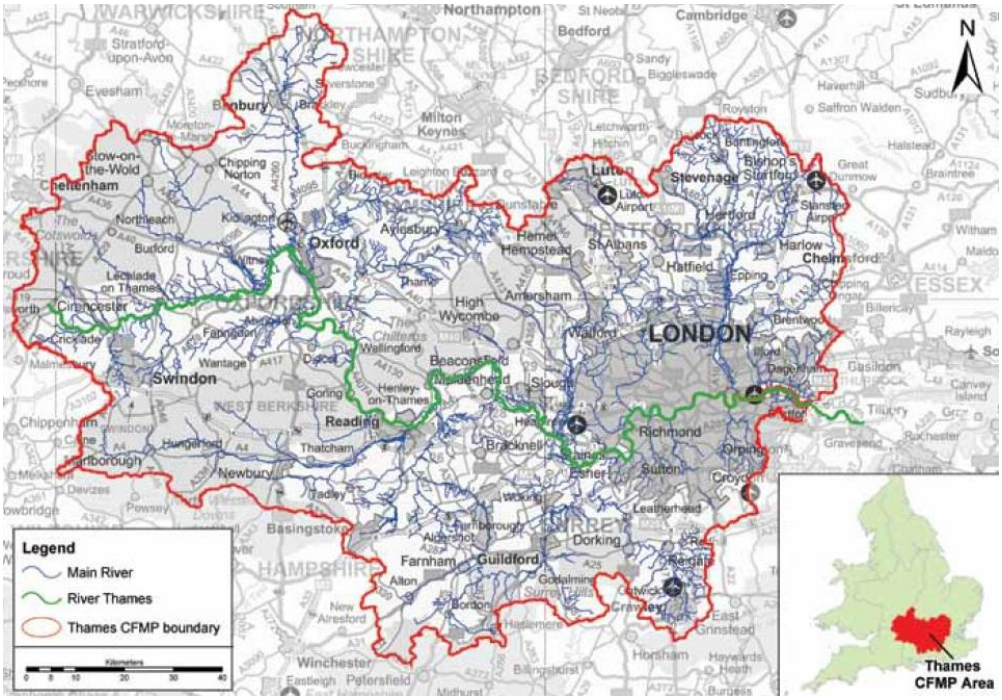
Floods can arise from a variety of sources, including groundwater, sewer, surface water, fluvial (river), and tidal flooding. Bodies responsible for maintaining and renewing flood defences in the LLDC area include:

- Thames Water (responsible for the combined foul and surface water sewerage network)
- The Environment Agency (responsible for providing flood warnings and flooding advice, and assisting with the planning for and management of flooding)
- Canals and Rivers Trust (a charity responsible for approximately 2,000 miles of inland waterways within England and Wales)
- Local authorities (responsible for producing Surface Water Management Plans and / or Strategic Flood Risk Assessments [SFRA])
- Private individuals and landowners.

The Thames Catchment Flood Management Plan (CFMP)[144] contains an overview of the current and future flood risk for settlements which are on or within proximity to the River Thames or its tributaries. All of the LLDC boroughs fall within the CFMP area.

[142] London Plan Implementation Plan, (2012); Greater London Authority
[143] National Planning Policy Framework: Technical Guidance Note – Flood Zones (2010)
[144] Thames CFMP (2008) Environment Agency

Figure 5.6.1 Thames Catchment Flood Management Plan area



The CFMP identifies that *"London and the Lower Thames have the greatest total number of people and property at risk"* as a result of fluvial flooding. The boroughs of Lewisham, Tower Hamlets and Waltham Forest are identified as each having 2,000 to 5,000 properties at risk in a 1% annual probability river flood within the Thames CFMP area. By contrast, the LB of Hackney is assessed as having only 100 to 250 properties at risk in the same annual river flood probability.

Thames Water identifies sewer flooding as a key issue (partly influenced by surface water run-off following heavy rainfall, which can be exacerbated by new developments) and will invest £346m by 2015 to address this issue *"including plans to build underground tanks to collect and store heavy rainfall, increase the capacity of our sewers, and offer flood mitigation to homes at risk"*[145].

OLSPG

The OLSPG identifies that much of the Queen Elizabeth Olympic Park and its surroundings are in, or close to, the natural flood plain of the River Lea and are at risk of fluvial or tidal flooding. Flood risk is particularly severe in the southern-most section of the LLDC area[146]. However the area is currently protected by a range of existing flood defences. Flood defence works to ensure adequate defence of the Olympic Park during and after the Games included works at Three Mills Lock, Henniker's Ditch culvert, increased flood water storage in the northern half of the Olympic Park and along Waterworks River, a new surface water drainage network, and new / upgraded river wall structures. The LCS planning permission secured additional flood risk mitigation through site wide design principles and planning conditions for work at the Reserved Matters stage.

[145] Thames Water: What we're doing to tackle sewer flooding (2012). Available at: http://www.thameswater.co.uk/about-us/7497.htm. Accessed December 2012.
[146] See Figure 2.E.3. OLSPG p.52.

The OLSPG area is primarily served by a combined drainage system that collects sewage and surface water. While the OLSPG notes that this system is inadequate for the amount of combined sewage and surface water flow that occurs at times of high rainfall, it also refers to recent and planned works by Thames Water which will reduce sewage discharges into the River Lea and reduce flood risk (see section 5.6.2 for further details).

Development principle E4 of the OLSPG covers flood risk and water conservation and management, stating that it is *"essential that new neighbourhoods and existing communities in the OLSPG area have a high standard of protection from flooding"*[147]. Sustainable drainage measures should therefore be incorporated across the OLSPG area to ensure new development does not increase flood risk, and sustainable drainage systems should be complemented by urban greening measures such as living roofs, and walls or planting.

The GLA, the Environment Agency, the London boroughs and OLSPG boroughs and regional partners are working together via the Drain London project to produce surface water management plans (SWMPs), and assess local and strategic flood risks.

5.6.1.2 *The London Boroughs of Tower Hamlets, Newham, Hackney and Waltham Forest*

Relevant infrastructure assessments, development plan documents and evidence base studies of the four boroughs are reviewed below.

The majority of the LB of Hackney is located in Flood Risk Zone (FRZ) 1 (the lowest FRZ), classified as an area with a low probability of flooding. The main source of flood risk is fluvial flooding from the River Lea – the Borough falls within the River Lea catchment and is predominantly *"developed floodplain with built flood defences"*. The River Lea flood defences were built in the 1970's to accommodate a 1 in 70 year flood event; a level of protection which the Borough feels is no longer adequate[148]. In particular, the LB of Hackney identifies the Hackney Wick AAP area to be at high risk of flooding, *"where flooded depths could be in excess of 1 metre and in some places up to 1.4 metres"*[149]. Hackney Wick is defined as FRZ 3a, a high risk zone. As such there is a need for new flood defences to be constructed in Hackney Wick.

The LB of Hackney Level 2[150] SFRA (2010)[151] found that the River Lea catchment area within the Borough is a predominantly developed floodplain *"influenced by urbanisation and low permeability London Clay geology, which both encourage a rapid response of the catchment to rainfall events"*. Hydrodynamic modelling of the Lower Lea Valley (undertaken by the LDA) made available for the SFRA shows that Hackney Wick is at risk of fluvial flooding from the Hackney Cut. The SFRA identifies the potential opportunities for mitigation in the Hackney Wick area, the potential for flood defence improvements along the Hackney Cut and increasing floodplain storage in the Hackney Marshes as the most appropriate solutions to manage the flood risk.

The LB of Newham notes that consideration of flood risk should be an integral part of the design of new developments, and that *"regeneration should improve the resilience of those parts of the Borough at risk from flooding"*[152]. The LB of Newham SFRA identifies the main

[147] OLSPG Infrastructure Delivery Study (2012) p.51
[148] LB of Hackney Infrastructure Assessment (2009) LB of Hackney
[149] LB of Hackney Core Strategy (2010) LB of Hackney
[150] Planning Policy Statement 25: Development and Flood Risk (PPS25) requires boroughs to undertake a Strategic Flood Risk Assessment (SFRA) as part of their LDF evidence base process. This will feed into the sequential testing process to determine the suitability of land for development. Flood zones of 2 or 3 should be further considered as part of the sequential testing process before development takes place. The Level 1 SFRA found that the majority of development proposed for the Borough is located in areas of Flood Zone 1 associated with a low probability of flooding, with the exception of Hackney Wick. As a result, a Level 2 SFRA was commissioned to provide more detailed information regarding the nature of flood risk within the Hackney Wick AAP area.
[151] LB of Hackney SFRA (2010) Scott Wilson for LB of Hackney
[152] LB of Newham Core Strategy (2012) LB of Newham

risks of flooding as fluvial flooding in the Lower Lea and Lower Roding catchments, breaches in the Thames Tidal Defences during tidal surge events and surface water flooding from impermeable surfaces[153]. The key areas at risk include the western areas of the Borough that are within the Lower Lea Valley and are likely to be affected by flooding on the lower reaches of the River Lea. In terms of flood defences, the SFRA notes that *"there is little benefit in further raising flood defences in Newham as the flood mechanisms are predominantly originating in neighbouring boroughs"*; an integrated approach between the LB of Newham and neighbouring boroughs is therefore required. Management of surface water run-off, especially as part of new developments, is identified as a key mechanism to aid flood prevention.

The LB of Tower Hamlets[154] notes that new development within the Borough should not increase the risk of flooding, and that all new developments *"must aim to increase the amount of permeable surfaces, including SUDS, to improve drainage and reduce surface water run-off"*. The LB of Tower Hamlets SFRA[155] states that parts of the Borough are at potential risk of flooding within FRZs 1, 2 and 3, and the current main risks of flooding in the Borough are *"fluvial flooding in the Lower Lea catchment, breaches in the Thames Tidal Defences during tidal surge events and surface water flooding from impermeable surfaces"*.

The LB of Waltham Forest[156] also emphasises that flood risk should be a key consideration when constructing and determining the location of new developments. The primary source of flood risk in the Borough is fluvial flooding. With rises in *"fluvial flows, rising groundwater and increases to peak rainfall run-off and volumes, the risk of river and surface flooding will increase in the future, both in frequency and scale"*. LB of Waltham Forest SFRA[157] identifies the River Lea (which forms the western boundary of the Borough) as posing a flood risk to the North Olympic Fringe area, approximately 60% of which lies within FRZs associated with river channels which make up the River Lea, Lee Navigation, Flood Relief Channel and Dagenham Brook.

5.6.1.3 *Local policy frameworks*

Policies, studies and strategies for sub-areas within the LLDC area provide further detailed information on existing flood defences and requirements associated with growth. Further information is provided within other recent planning applications for major sites within the LLDC area.

The Hackney Wick AAP[158] identifies the Hackney Wick area as falling within FRZs 2 and 3 (as outlined in the LB of Hackney Core Strategy) and therefore in order for growth and development in this area to be sustainable into the future, flood mitigation measures need to be considered. The AAP notes that new developments should be designed to incorporate flood defence measures and notes that flood risk mitigation and alleviation will require s106 contributions to help fund measures required.

5.6.2 *Committed and planned provision*

Table 5.6.2 below lists the committed and planned flood defence schemes which have been identified in relevant documents as required to support and facilitate development within the LLDC area. Where available, the sources of funding have been identified, as well as detail on whether funding is committed or not.

[153] LB of Newham SFRA (2010) LB of Newham
[154] LB of Tower Hamlets Core Strategy (2010) LB of Tower Hamlets
[155] LB of Tower Hamlets SFRA (2012) Capita Symonds
[156] LB of Waltham Forest Core Strategy (2012) LB of Waltham Forest
[157] LB Waltham Forest Level 2 Strategic Flood Risk Assessment (2011) LB of Waltham Forest
[158] Hackney Wick AAP (2012) LB of Hackney

Table 5.6.2 Committed and planned provision – flood defences

Infrastructure project	Phasing	Cost (£)	Committed funding	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Hackney Wick and Hackney Marshes Flood alleviation and habitat enhancement	Med / Long term	£7-11M	No	£7-11M	Multi-agency and cross borough; unlikely to qualify for national EA Flood Defence Grant-in-Aid	LB of Hackney, LLDC, EA, LB of Tower Hamlets, Canals and Rivers Trust	Consultation with Environment Agency and Hackney Level 2 Strategic Flood Risk Assessment
Strategic flood mitigation options	Short / Med term	£800–10M	No	£800–10M	Multi-agency and cross borough	LB of Hackney, LB of Tower Hamlets, Environment Agency	Hackney Wick AAP
Surface water flooding mitigation	Short / Med / Long term	Unknown	No	Yes	Defra, S106 / Private development	LB of Hackney, Environment Agency	Hackney Wick AAP
Olympic Online Wetland	2015 - 2019	Unknown	No	Yes	Unknown		LB of Newham Core Strategy
Total cost		**At least £12M**		**At least £12M**			

6. INFRASTRUCTURE FUNDING GAP

6.1 Approach

The assessments in the preceding sections have estimated demand for additional infrastructure associated with growth in the LLDC area. Information has been reviewed on: existing surplus capacity or planned investment which will increase supply of the infrastructure in question; costs associated with meeting residual or net demand; and funding which is likely to come forward to meet these costs.

Table 6.1 below summarises the findings in order to identify the infrastructure funding gap for the LLDC area. A full list of planned infrastructure projects which have been identified is included at Appendix E.

For each infrastructure category the following information is set out within Table 6.1:

- **Gross demand** arising from growth within the LLDC area during the planning period, where this has been estimated within the infrastructure model.

- **Net demand** once account has been taken of any surplus within the existing infrastructure and any planned projects which are reasonably certain of coming forward; this includes infrastructure to be provided on-site within recently consented schemes in the LLDC area (see previous sections and Appendix E for detail).

- **Costs of meeting net demand** associated with growth in the LLDC area, based on either our independent modelling exercise or alternatively with reference to projects and costs identified via consultation, provider plans and policy documents. Many projects have not at this stage been costed and therefore are not included within the figures (see Appendix E for further detail). Some schemes sit outside the LLDC area and will support growth not only in arising in the LLDC area but also at a wider geographical level. For these schemes, only 40% of the identified costs are included within the LLDC infrastructure funding gap.[159]

- **Identified funding** for particular projects or infrastructures which can subtracted from the infrastructure funding requirement, based on consultation with stakeholders and also reflecting any financial contributions within signed s.106 agreements.[160] In addition, developer contributions received by LLDC from recently permitted schemes which were pooled as part of LTGDC's tariff system for the Lower Lea Valley are subtracted from the funding gap.

- **Other anticipated but unidentified** funding from other sources which can reasonably be expected to come forward in line with historical trends, namely funding from central or local government. A typical approach to this element of an IDP is to consider past trends in, or forth-coming plans for, capital spending by the LA in question. However as the LLDC area comprises parts of four different London Boroughs, this is not straight-forward to do. A series of assumptions are therefore applied which are considered reasonable in the current funding context. For provision of education (primary, secondary and pre-school) and transport projects, it is assumed that funding from the Department of Education and Department for Transport (respectively) will meet 40% of future funding identified as required in the LLDC area. For other infrastructures where costs have been identified, it is

[159] The schemes which fall into this category and for which costs are available are the two flood risk projects, the Walthamstow Wetlands green infrastructure project and the Downgrade of Great Eastern Road/Stratford Gyratory.
[160] Infrastructure provided 'in-kind' within permitted schemes, as identified within signed s.106 agreements, is reflected in the assessment of net demand as described above.

assumed that 20% of the residual funding gap will be met from the capital budget programmes of the four LLDC Boroughs, the NHS, and other infrastructure providers.

6.2 Infrastructure Funding Gap

The infrastructure funding gap is shown in Table 6.1 below.

Identified infrastructure costs to meet net demand arising within the LLDC area to 2031 are estimated at £136.0M. Identified funding which will offset these costs, including s.106 financial contributions, is £32.8M. It is estimated that a further £39.4M could come forward from anticipated but as yet unidentified funding (core government funding and other provider investment). Overall, the remaining infrastructure funding gap is estimated at £63.8M.

The infrastructure funding gap could be much higher than this, given that the estimate excludes some major items such as utilities, transport schemes and other items for which there is currently limited information. Moreover the difficult economic climate is leading to reduced levels of funding and this constrained environment looks set to continue for some years.

In due course, LLDC will work up further detail on the infrastructure requirements and costs set out this report in order to prepare the Local Plan. Work will include consideration of the priority of different projects, and the preparation of the CIL Regulation 123 list, as well as continued collaboration with key partners in order to confirm infrastructure funding and delivery arrangements.

Utilities will be critical to enabling growth in the LLDC area. However they are typically planned at a strategic level by statutory providers who have a duty to develop and maintain networks and ensure supply. Funding for energy and water is likely to come from utility companies (including through customer charges), as well as direct from developers (who will pay as required to connect to and use existing or new infrastructure). While over the plan period considerable investment is likely to be required in utilities infrastructure, at this stage it is not possible to identify with any certainty. For these reasons costs have not been factored into the infrastructure funding gap. Other ‘hard’ infrastructure considered in this report includes waste and flood defences, with costs of £6M identified for flood defence projects within the LLDC infrastructure funding gap (£4.8M once allowance is made for anticipated unidentified funding).

Transport is of fundamental importance to development within the LLDC area. At present, a series of infrastructure projects have been identified, including improved pedestrian and cycling routes and other linkages, implementation of sections of the ‘Fatwalk’ along the River Lea, highway and bridge upgrades, and improvements to station access. However many transport schemes have no cost information available and therefore the estimated gap in transport infrastructure funding (£45.9M, reduced to £16.7M once identified funding and anticipated unidentified funding is subtracted) is likely to be a considerable under-estimate. LLDC is undertaking further work on transport requirements in its planning area and will continue to work with partners including TfL to identify needs and to plan delivery.

The social infrastructure listed within Table 6.1 is required to ensure development is sustainable in social, economic and environmental terms, and to underpin the delivery of places which people, businesses and visitors will be attracted to and enjoy. £85.8M costs are identified for social infrastructure items, reducing to £55.3M once identified and unidentified funding is considered (in addition, it is likely that a considerable proportion of the £11.7M ‘pooled’ s.106 financial contributions are likely to be allocated to social infrastructure).

These findings reflect consultation with key stakeholders, including the four LLDC Boroughs, the GLA, TfL and statutory providers such as the EA. Going forward, the same stakeholders will be fundamental to delivery of the infrastructure projects identified. Mechanisms for on-going engagement and collaboration with these partners will be developed as part of the LLDC

Local Plan process. This could tie into the GLA's on-going work to assemble stakeholder groups regarding infrastructure provision and future infrastructure requirements within Greater London, as referenced in the London Plan Implementation Plan.

Table 6.1 Net Infrastructure Requirements and Funding Gap

Infrastructure type	Gross demand	Existing capacity	Planned / Committed provision	Net demand (gross demand less existing capacity and committed provision)	Costs (investment to meet net demand)	Identified funding (inc. s.106 contrib-utions)	Anticipated unidentified funding	Funding gap
Primary education	4,096 places	Minimal (estimated at 38 places)	Two 3 FE schools at LCS; one 3 FE school at Chobham Academy; 2FE school at Bromley By Bow South	2,138 places	£31.2M	£2.89M	£11.3M	£15.71M
Secondary education	2,254 places	Assumed at / near capacity	6FE at Chobham Farm; 6FE at LCS	650 places	£18.1M		£7.2M	£10.86M
Early years education	1,568 places	Assumed at / near capacity	Nine new nurseries at LCS (450 places); one new nursery at Chobham Academy (52 places)	1,118 places	£8.1M		£3.3M	£4.88M
Primary healthcare	26.7 GPs, 24.1 dentists	Assumed at / near capacity	Stratford City polyclinic; LCS primary care centre + two walk-in centres	7.7 GPs, 5.1 dentists	£3.0M	£150k	£418k	£2.31M
Open space and green infrastructure	57.8ha	Varies by location but generally low levels of provision	LSC; Stratford City; Bromley by Bow North; Sugar House Lane; Bromley By Bow South; Hackney Wick; Walthamstow Wetlands	32.7ha	£12.5M		£2.4M	£10.0M
Child play space	107,460 m^2	Assumed at / near capacity	LCS; Stratford City, Stratford City, Bromley By Bow South	51,761m^2	£10.3M		£2.1M	£8.42M
Sports halls	1,336m^2	Assumed at / near capacity	Olympic Multi-use Sports Arena, Eton Manor; Stratford City	0				
Swimming pools	534m^2	Assumed at / near capacity	Olympics Aquatic Centre	317m^2	£2.1M		£418k	£1.67M

Infrastructure type	Gross demand	Existing capacity	Planned / Committed provision	Net demand (gross demand less existing capacity and committed provision)	Costs (investment to meet net demand)	Identified funding (inc. s.106 contrib-utions)	Anticipated unidentified funding	Funding gap
Libraries + Idea Stores	1,444m^2	Assumed at / near capacity	LCS ideas store (2,460m^2), Bromley By Bow South Ideas Store (1,315m^2)	0				
Community space	2,936m^2	Assumed at / near capacity	LCS (2,423m^2), Stratford City (1,572m^2), Sugar House Lane (4000m^2), Hackney Wick (1,820 m^2)	0				
Local transport schemes			Schemes in and around LLDC area including improved pedestrian / cycling / other links, improvements to the public realm, and highway and bridge upgrades		At least £16.9M	£8.6M	£3.3M	At least £5.0M
Strategic transport schemes			Wider network improvements including station upgrades		£29.0M	£9.5M	£7.8M	£11.7M
Electricity	80,915kVA	Assumed at / near capacity	London Power Networks on-going investment programme; local infrastructure upgrades	80,915kVA	£19.7M			Unknown
Gas	48,335m^3 / hr	Assumed at / near capacity	National Grid on-going investment programme; local infrastructure upgrades	48,335 m^3 / hr	Unknown			Unknown
CHPP			Connections between OPDES and surrounding neighbourhoods					Unknown
Water	14.2Ml / day	Assumed at/near capacity	Thames Water Resource Management Plan (2010-35) including leakage reduction, metering, water efficiency and resource development.	14.2Ml / day	Unknown			Unknown
Sewage	18.5Ml/day	Assumed at/near capacity	Thames Water on-going investment programme including Thames Tideway Tunnel and STW upgrades	18.5Ml / day				Unknown

Infrastructure type	Gross demand	Existing capacity	Planned / Committed provision	Net demand (gross demand less existing capacity and committed provision)	Costs (investment to meet net demand)	Identified funding (inc. s.106 contrib-utions)	Anticipated unidentified funding	Funding gap
Waste	70.4M kg / annum	Assumed at/near capacity	Expanded / new waste management sites in surrounding area	70.4M kg / annum				Unknown
Flood defence			Schemes in and around LLDC area including Hackney Wick		£4.8M		£960k	£3.8M
Other pooled / generic s.106 financial contributions						£11.7M		
Total					**£136.0M**	**£32.8M**	**£39.4M**	**£63.8M**

APPENDIX A KEY DOCUMENTS

Below, key policy documents, strategies and government guidance informing this report are listed.

- DCLG (May 2011) Community Infrastructure Levy: An Overview
- DCLG (December 2012) Community Infrastructure Levy Guidance
- Planning Advisory Service (PAS) (June 2009) A steps approach to infrastructure planning and delivery
- Department of Communities and Local Government (DCLG) (March 2012) National Planning Policy Framework
- Greater London Authority (July 2011) London Plan
- GLA (June 2012) Early Revised Minor Alterations to the London Plan
- GLA (July 2012) Olympic Legacy Supplementary Planning Guidance
- GLA (January 2012) OLSPG Infrastructure Delivery Study
- GLA (August 2011) OLSPG Strategic Transport Study
- GLA (December 2011) OLSPG Energy Study
- GLA (July 2012) Development Capacity Methodology – Final Technical Report
- LB of Hackney (November 2010) LDF Core Strategy
- LB of Hackney (September 2012) LDF Hackney Wick AAP
- LB of Hackney (July 2012) LDF Development Management Plan-Draft for Public Participation
- LB of Hackney (November 2009) Hackney Infrastructure Assessment
- LB of Hackney (2011) Infrastructure Assessment Update and Delivery Plan 2011-14
- LB of Newham (LBN) (January 2012) LDF Core Strategy

  LB of Newham (January 2010) Newham Community Infrastructure Study Baseline Report

  LB of Newham (June 2010) Newham Community Infrastructure Study Future Needs Report
- LB of Newham (February 2011) Stratford Metropolitan Masterplan Executive Summary
- LB of Newham (February 2011) Stratford Metropolitan Masterplan Supporting Document: Community Infrastructure Assessment
- LB of Newham (July 2012) CIL Preliminary Draft Charging Schedule
- LB of Tower Hamlets (September 2010) LDF Core Strategy

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- LB of Tower Hamlets (September 2012) LDF Fish Island AAP
- LB of Tower Hamlets (May 2012) LDF Bromley by Bow Masterplan Supplementary Planning Document
- LB of Tower Hamlets (September 2012) LDF Managing Development, Development Plan Document (post examination in public version)
- LB of Tower Hamlets (August 2011) Tower Hamlets Transport Planning Strategy (2011-2031)
- LB of Tower Hamlets (November 2006) Transport and Utilities Baseline Review
- LB of Tower Hamlets (November 2012) Community Infrastructure Levy (CIL) Preliminary Draft Charging Schedule
- LB of Tower Hamlets (September 2009) LDF Infrastructure Delivery Plan
- LB of Waltham Forest (LBWF) (March 2012) Waltham Forest Local Plan Core Strategy
- LB of Waltham Forest (November 2009) Waltham Forest Strategic Infrastructure Plan Social Infrastructure Needs Assessment
- LB of Waltham Forest (November 2009) Waltham Forest Strategic Infrastructure Plan Executive Summary and Strategic Infrastructure Plan
- London Plan Implementation Plan (2013) Greater London Authority

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APPENDIX B ESTIMATED PHASING BY SITE

Table B.1 Estimated Phasing by Site

Site	Residential units					Commercial floorspace (m^2)				
	Total	***2014-2015***	***2016-2020***	***2021-2025***	***2026-30***	**Total**	***2014-16***	***2017-21***	***2022-26***	***2027-31***
Chobham Farm South	**480**		240	240						
Sugar House Lane (Inter Ikea site)	**1,200**	600	480	120		**52,513**	26,257	21,005	5,251	
Three Mills	**211**		106	106						
Cooks Roads (three sites)	**342**		171	171						
Fish Island	**3,000**	500	750	875	875	**175,000**	5,000	4,000	83,000	83,000
Bromley by Bow North	**741**	593	148							
Bromley by Bow South	**434**	347	87			**15,325**	12,260	3,065		
Hackney Wick	**1,282**	106	445	445	286	**134,337**	87,319	40,301	6,717	
Stratford Edge	**202**	202				**1,010**	1,010			
Unex site	**280**	280								
206 – 214 Stratford High Street (Garage)	**147**	147				**4,625**	4,625			
2-12 Stratford High Street	**191**	191				**665**	665			
68-70 High Street	**173**	173				**731**	731			
LCS exc. PDZs 4 + 5	**5,334**	107	960	2,134	2,134	**73,873**	1,477	13,297	29,549	29,549
Stratford City	**3,636**	364	1,454	909	909	**452,943**	45,294	181,177	113,236	113,236
Chobham Farm	**1,100**	329	771			**2,950**	2,950			
Unidentified potential windfall sites	**1,500**		300	1,200		**15,000**		3,000	12,000	
Total	**20,403**	**3,938**	**6,062**	**6,199**	**4,204**	**931,722**	**187,588**	**268,596**	**249,753**	**225,785**

APPENDIX C OCCUPANCY RATES

Table C.1 Occupancy Rates for Market Units

MARKET - LEABRIDGE WARD DATA															
	Studio	1 bed flat	2 bed flat	3 bed flat	4 bed flat	5 bed flat	1 bed house	2 bed house	3 bed mews*	4 bed mews*	3 bed maisonette /stacked maisonette*	4 bed maisonette /stacked maisonette*	3 bed house	4 bed house	5 bed house
AHS	1.79	1.93	2.17	2.58	2.82	1.56	1.84	2.78	3.26	3.44	3.26	3.44	3.26	3.44	3.2
0-3 yr	0.0%	1.0%	1.6%	4.0%	6.6%	0.0%	5.3%	5.0%	25.8%	7.1%	7.9%	7.1%	7.9%	7.1%	8.0%
4-10 yr	0.0%	1.4%	2.4%	6.0%	10.0%	0.0%	7.9%	7.5%	11.9%	10.7%	11.9%	10.7%	11.9%	10.7%	12.0%
11-15 yr	0.0%	0.9%	1.4%	3.6%	5.9%	0.0%	4.7%	4.5%	7.1%	6.4%	7.1%	6.4%	7.1%	6.4%	7.1%
16-17 yr	1.8%	1.1%	1.4%	0.7%	0.0%	0.0%	0.0%	1.3%	0.6%	1.8%	0.6%	1.8%	0.6%	1.8%	1.5%
18-19 yr	2.4%	1.5%	1.8%	1.0%	0.0%	0.0%	0.0%	1.7%	0.8%	2.3%	0.8%	2.3%	0.8%	2.3%	2.0%
20-24 yr	11.4%	7.1%	8.5%	4.6%	0.0%	0.0%	0.0%	8.0%	3.7%	11.1%	3.7%	11.1%	3.7%	11.1%	9.6%
25-29 yr	28.2%	26.8%	28.4%	23.6%	14.4%	52.9%	30.5%	19.4%	16.4%	12.6%	16.4%	12.6%	16.4%	12.6%	15.2%
30-34 yr	25.1%	23.9%	25.3%	21.0%	12.9%	47.1%	27.2%	17.3%	14.6%	11.2%	14.6%	11.2%	14.6%	11.2%	13.5%
35-39 yr	11.7%	13.5%	12.6%	16.8%	23.8%	0.0%	8.9%	11.3%	14.7%	15.6%	14.7%	15.6%	14.7%	15.6%	11.3%
40-44 yr	8.6%	9.9%	9.3%	12.3%	17.5%	0.0%	6.5%	8.3%	10.8%	11.4%	10.8%	11.4%	10.8%	11.4%	8.3%
45-49 yr	5.5%	6.5%	3.4%	2.0%	5.5%	0.0%	0.0%	5.5%	5.3%	4.6%	5.3%	4.6%	5.3%	4.6%	6.0%
50-54 yr	3.4%	4.0%	2.1%	1.2%	3.4%	0.0%	0.0%	3.4%	3.3%	2.9%	3.3%	2.9%	3.3%	2.9%	3.7%
55-59 yr	0.8%	1.0%	0.8%	1.3%	0.0%	0.0%	3.7%	2.8%	1.3%	0.9%	1.3%	0.9%	1.3%	0.9%	0.7%
60-64 yr	0.4%	0.5%	0.4%	0.7%	0.0%	0.0%	2.0%	1.5%	0.7%	0.5%	0.7%	0.5%	0.7%	0.5%	0.4%
65-69 yr	0.2%	0.3%	0.2%	0.3%	0.0%	0.0%	1.0%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%
70-74 yr	0.2%	0.3%	0.2%	0.4%	0.0%	0.0%	1.0%	0.8%	0.4%	0.3%	0.4%	0.3%	0.4%	0.3%	0.2%
75+ yr	0.3%	0.4%	0.3%	0.5%	0.0%	0.0%	1.4%	1.0%	0.5%	0.3%	0.5%	0.3%	0.5%	0.3%	0.3%

**Data not available; rate for houses used. Source: Mayhew Study data on Leabridge Ward (within the LB of Hackney). See GLA Intelligence Unit paper on 'Olympics LCS Population Yield' (2012).*

Table C.2 Intermediate and social rented units

INTERMEDIATE - CORE															
	Studio	1 bed	2 bed	3 bed	4 bed	5 bed flat	1 bed house	2 bed house	3 bed mews	4 bed mews	3 bed maisonette / stacked maisonette	4 bed maisonette / stacked maisonette	3 bed town house	4 bed town house	5 bed town house
AHS	1.2*	1.2	1.5	2.2	2.82**	1.56**	1.84**	2.78**	2.4	3.44**	2.4	3.44**	2.4	3.44*	3.2*
0-3 yr	0.0%	2.0%	2.3%	4.8%	0.07%	0.0%	5.3%	5.0%	8.5%	7.1%	8.5%	7.1%	8.5%	0.071	0.08
4-10 yr	0.0%	0.1%	1.9%	7.2%	0.10%	0.0%	7.9%	7.5%	9.8%	10.7%	9.8%	10.7%	9.8%	0.107	0.12
11-15 yr	0.0%	0.1%	0.9%	4.2%	0.06%	0.0%	4.7%	4.5%	7.3%	6.4%	7.3%	6.4%	7.3%	0.064	0.071
16-17 yr	1.8%	0.0%	0.3%	1.8%	0.00%	0.0%	0.0%	1.3%	1.9%	1.8%	1.9%	1.8%	1.9%	0.018	0.015
18-19 yr	2.4%	0.2%	0.3%	0.9%	0.00%	0.0%	0.0%	1.7%	1.6%	2.3%	1.6%	2.3%	1.6%	0.023	0.02
20-24 yr	11.4%	8.5%	8.8%	6.6%	0.00%	0.0%	0.0%	8.0%	3.8%	11.1%	3.8%	11.1%	3.8%	0.111	0.096
25-29 yr	28.2%	35.7%	32.2%	22.0%	0.14%	52.9%	30.5%	19.4%	12.0%	12.6%	12.0%	12.6%	12.0%	0.126	0.152
30-34 yr	25.1%	27.3%	26.6%	17.8%	0.13%	47.1%	27.2%	17.3%	18.6%	11.2%	18.6%	11.2%	18.6%	0.112	0.135
35-39 yr	11.7%	15.8%	14.1%	14.8%	0.24%	0.0%	8.9%	11.3%	14.2%	15.6%	14.2%	15.6%	14.2%	0.156	0.113
40-44 yr	8.6%	6.4%	6.4%	8.4%	0.10%	0.0%	6.5%	8.3%	13.9%	11.4%	13.9%	11.4%	13.9%	0.114	0.083
45-49 yr	5.5%	3.0%	3.4%	6.3%	0.05%	0.0%	0.0%	5.5%	5.4%	4.6%	5.4%	4.6%	5.4%	0.046	0.06
50-54 yr	3.4%	1.5%	1.4%	3.0%	0.03%	0.0%	0.0%	3.4%	1.9%	2.9%	1.9%	2.9%	1.9%	0.029	0.037
55-59 yr	0.8%	0.6%	0.6%	0.6%	0.00%	0.0%	3.7%	2.8%	0.6%	0.9%	0.6%	0.9%	0.6%	0.009	0.007
60-64 yr	0.4%	0.2%	0.2%	0.3%	0.00%	0.0%	2.0%	1.5%	0.0%	0.5%	0.0%	0.5%	0.0%	0.005	0.004
65-69 yr	0.2%	0.2%	0.1%	0.3%	0.00%	0.0%	1.0%	0.7%	0.0%	0.3%	0.0%	0.3%	0.0%	0.003	0.002
70-74 yr	0.2%	0.1%	0.1%	0.9%	0.00%	0.0%	1.0%	0.8%	0.0%	0.3%	0.0%	0.3%	0.0%	0.003	0.002
75+ yr	0.3%	0.0%	0.2%	0.0%	0.00%	0.0%	1.4%	1.0%	0.6%	0.3%	0.6%	0.3%	0.6%	0.003	0.003

**Gap in data; rate for one bed flat used. ** Gap in data; rates for private dwellings used. Source: CORE (the Continuous Recording of Lettings and Sales in Social Housing in England) 2009/10 data. See GLA Intelligence Unit paper on 'Olympics LCS Population Yield' (2012).*

Table C.3 Intermediate and social rented units

	SOCIAL - CORE														
	Studio	**1 bed**	**2 bed**	**3 bed**	**4 bed**	**5 bed flat**	**1 bed house**	**2 bed house**	**3 bed mews**	**4 bed mews**	**3 bed maisonette / stacked maisonette**	**4 bed maisonette / stacked maisonette**	**3 bed town house**	**4 bed town house**	**5 bed town house**
AHS	1.1*	1.1	2.4	4	6	1.56**	1.84**	2.78**	4.0	5.7	4.0	5.7	4.0	5.7	7.0
0-3 yr	0.0%	1.8%	24.4%	15.8%	11.4%	0.0%	5.3%	5.0%	10.5%	7.3%	10.5%	7.3%	10.5%	7.3%	6.2%
4-10 yr	0.0%	0.5%	12.2%	26.2%	25.5%	0.0%	7.9%	7.5%	22.8%	23.6%	22.8%	23.6%	22.8%	23.6%	23.9%
11-15 yr	0.0%	0.1%	3.3%	10.8%	20.0%	0.0%	4.7%	4.5%	14.7%	19.6%	14.7%	19.6%	14.7%	19.6%	20.8%
16-17 yr	1.8%	0.7%	1.2%	3.2%	5.9%	0.0%	0.0%	1.3%	4.4%	6.6%	4.4%	6.6%	4.4%	6.6%	9.5%
18-19 yr	2.4%	6.2%	2.4%	2.5%	4.8%	0.0%	0.0%	1.7%	4.0%	5.0%	4.0%	5.0%	4.0%	5.0%	5.6%
20-24 yr	11.4%	19.8%	12.6%	4.9%	4.2%	0.0%	0.0%	8.0%	5.7%	7.1%	5.7%	7.1%	5.7%	7.1%	7.6%
25-29 yr	28.2%	17.8%	15.1%	7.1%	2.3%	52.9%	30.5%	19.4%	4.8%	2.4%	4.8%	2.4%	4.8%	2.4%	1.9%
30-34 yr	25.1%	9.9%	10.2%	9.2%	4.5%	47.1%	27.2%	17.3%	6.8%	4.2%	6.8%	4.2%	6.8%	4.2%	2.7%
35-39 yr	11.7%	8.1%	6.0%	8.1%	7.3%	0.0%	8.9%	11.3%	8.0%	7.7%	8.0%	7.7%	8.0%	7.7%	7.4%
40-44 yr	8.6%	7.4%	3.6%	5.5%	5.7%	0.0%	6.5%	8.3%	6.9%	6.4%	6.9%	6.4%	6.9%	6.4%	5.6%
45-49 yr	5.5%	6.9%	2.9%	3.1%	4.3%	0.0%	0.0%	5.5%	5.0%	4.3%	5.0%	4.3%	5.0%	4.3%	3.3%
50-54 yr	3.4%	5.4%	2.0%	1.5%	1.4%	0.0%	0.0%	3.4%	2.8%	2.2%	2.8%	2.2%	2.8%	2.2%	2.7%
55-59 yr	0.8%	4.2%	1.3%	0.7%	1.0%	0.0%	3.7%	2.8%	1.3%	1.1%	1.3%	1.1%	1.3%	1.1%	0.8%
60-64 yr	0.4%	3.8%	0.8%	0.3%	0.2%	0.0%	2.0%	1.5%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.2%
65-69 yr	0.2%	2.8%	0.6%	0.4%	0.5%	0.0%	1.0%	0.7%	0.5%	0.4%	0.5%	0.4%	0.5%	0.4%	0.4%
70-74 yr	0.2%	2.1%	0.7%	0.5%	0.6%	0.0%	1.0%	0.8%	0.6%	0.5%	0.6%	0.5%	0.6%	0.5%	0.4%
75+ yr	0.3%	2.5%	0.6%	0.4%	0.5%	0.0%	1.4%	1.0%	0.5%	0.8%	0.5%	0.8%	0.5%	0.8%	1.0%

**Gap in data; rate for one bed flat used. ** Gap in data; rate for private units used. Source: CORE (the Continuous Recording of Lettings and Sales in Social Housing in England) 2009/10 data. See GLA Intelligence Unit paper on 'Olympics LCS Population Yield' (2012).*

APPENDIX D TYPOLOGIES

Table D.1 Typologies

Unit size / type	Studio	1 bed flat	2 bed flat	3 bed flat	4 bed flat	5 bed flat	1 bed house	2 bed house	3 bed mews	4 bed mews	3 bed maisonette / stacked maisonette	4 bed maisonette / stacked maisonette	3 bed town house	4 bed town house	5 bed town house	Total
'Family'																
Unit size / type																
Private	3%	32%	25%	22%	0%	0%	0%	0%	1%	2%	3%	3%	3%	5%	2%	100%
Intermediate	0%	41%	43%	1%	0%	0%	0%	0%	3%	0%	3%	0%	9%	0%	0%	100%
Social Rented	0%	14%	21%	33%	11%	0%	0%	0%	1%	1%	4%	3%	4%	5%	2%	100%
Unit mix inc tenure																
Private	2%	21%	17%	14%	0%	0%	0%	0%	1%	1%	2%	2%	2%	3%	1%	65%
Intermediate	0%	4%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	10%
Social Rented	0%	3%	5%	8%	3%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	24%
'Mid'																
Unit size / type																
Private	1%	38%	17%	32%	1%	0%	1%	3%	4%	2%	0%	0%	0%	0%	1%	100%
Intermediate	1%	38%	17%	32%	1%	0%	1%	3%	4%	2%	0%	0%	0%	0%	1%	100%
Social Rented	1%	38%	17%	32%	1%	0%	1%	3%	4%	2%	0%	0%	0%	0%	1%	100%
Unit mix inc tenure																
Private	1%	25%	11%	21%	1%	0%	0%	0%	3%	1%	0%	0%	0%	0%	1%	65%
Intermediate	0%	4%	2%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%
Social Rented	0%	9%	4%	8%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	25%

'Urban'																
Unit size / type																
Private	6%	57%	32%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Intermediate	6%	57%	32%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Social Rented	6%	57%	32%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Unit mix inc tenure																
Private	4%	37%	21%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	65%
Intermediate	1%	6%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%
Social Rented	1%	14%	8%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
'Bespoke' Stratford City																
Unit size / type																
Private	0%	27%	48%	20%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Intermediate	0%	27%	48%	20%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Social Rented	0%	27%	48%	20%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Unit mix inc tenure																
Private	0%	18%	31%	13%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	65%
Intermediate	0%	3%	5%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%
Social Rented	0%	7%	12%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%

APPENDIX E PLANNED INFRASTRUCTURE PROJECTS

Table E.1 Planned Infrastructure Projects in the LLDC area

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Primary Schools							
LCS - Two 3FE primary schools (PDZ5 and PDZ4)	Assumed 2017-21 (PDZ5) and 2022-26 (PDZ 4)	Unknown	Yes	No	LLDC/Developer		LCS s.106 agreement
A 3FE primary school as part of Chobham Academy	Opening 2013	Unknown	Yes	No	Developer		
A 2FE primary school at Bromley by Bow South	2014-16	Unknown	Yes	No	Developer		Bromley By Bow South s.106 agreement
A 3FE primary school, Neptune Wharf (Fish Island)	Unknown	Unknown	No	Yes	Developer		Neptune Wharf Planning Application (Options 2 or 3)
Additional 2FE at Carpenters School	Unknown	Unknown	No	Yes	Unknown		OLSPG Infrastructure Delivery Study
Additional education provision within the Sugar House Lane / Pudding Mill Lane area	Unknown	Unknown	Partial	No	£2.39M from Sugar House Lane s.106 agreement	LB Newham	LB Newham
Secondary Schools							
LCS - 6FE Secondary School	Estimated 2022-26	Unknown	Yes	No	LLDC/Developer		LCS s.106 agreement
6 FE Secondary School as part of Chobham Academy	Opening 2013	Unknown	Yes	No	BSF capital expenditure - wave 5		Stratford City Planning Permission
Bow Locks - replacement provision for 4FE Secondary School and new provision of a further 4FE	2014	Unknown	Yes	No	Unknown		OLSPG Infrastructure Delivery Study
New secondary school in Fish Island, Aisla Street or Westferry	Unknown	Unknown	No	Yes	Unknown		Fish Island AAP / OLSPG Infrastructure Delivery Study
Early years / Nurseries							
LCS - Nine nurseries, 50 places each	Estimated two nurseries 2017-21, three in	Unknown	Yes	No	Developer		LCS s.106 agreement

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
	2022-26 and four in 2027-31						
A two classroom nursery as part of Chobham Academy: capacity for 52 places	Opening 2013	Unknown	Yes	No	Developer		Stratford City Planning Permission
A 1FE Nursery at Neptune Wharf Fish Island	Unknown	Unknown	No	Yes	Developer		Neptune Wharf Planning Application (Options 2 or 3)
A Children's Centre at Bromley By Bow new District Centre	Unknown	Unknown	No	Yes	Unknown		Bromley by Bow Masterplan; Planning Application
Primary Healthcare							
LCS - Primary Care Centre (PDZ 4, 2,554m^2, six GPs and six dentists); two walk-in centres (PDZ 6 and 8, each 645m^2, each two GPs and two dentists)	2017 - 2026	Unknown	Yes	No	LLDC/Developer		LCS Planning Application
Stratford City Polyclinic,10 GPs and 10 dentists (estimated)	2013	Unknown	Yes	No	Developer / ODA		Stratford City s.106 agreement
Primary Healthcare Centre in Hackney Wick Neighbourhood Centre	Med / Long term	Unknown	No	Yes	Primary Care Trust / S106 / CIL		Fish Island AAP
Sports and Leisure							
Olympic Legacy Parklands	Unknown	Unknown	Yes	No	Unknown	LLDC/LVRPA	
Multi-Use Sports Arena	Unknown	Unknown	Yes	No	Unknown	LLDC/Greenwich Leisure Limited	
Velopark / BMX / Mountain Biking area	Unknown	Unknown	Yes	No	Unknown	Lee Valley Regional Park Authority	
Aquatics Centre	Unknown	Unknown	Yes	No	Unknown	LLDC/Greenwich Leisure Limited	
Eton Manor sports centre (four indoor tennis courts, six outdoor tennis courts and two artificial hockey pitches)	2014-16	Unknown	Yes	No		Lee Valley Regional Park Authority	

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
New sports hall at Bow Locks School	Unknown	Unknown	Yes	No	Unknown		
1,000 – 2,500m^2 community and health space in the Greater Carpenters Estate area	Unknown	Unknown	No	Yes	Unknown		Stratford Metropolitan Masterplan
Replacement of Cathall Leisure Centre (including four new badminton courts); replacement of Kelmscott Leisure Centre (one new pool).	Unknown	Unknown	No	Yes	Unknown		OLSPG Infrastructure Delivery Study
Open Space							
LCS - 12.4ha open space within the red line boundary	2015 - 2031		Yes	No	Developer / LLDC (part of permitted scheme)		LCS Planning Application
Stratford City – approximately 11 ha			Yes	No	Developer (part of permitted scheme)		Stratford City S106 agreement
Public open space at Bromley by Bow North, Sugar House Lane, Bromley by Bow South, Hackney Wick			Yes	No	Developer (part of permitted schemes)		LLDC consultation / relevant s.106 agreements
Public square or piazza near Hackney Wick	Unknown	Unknown	No	Yes	Unknown		Fish Island AAP
1.2 ha local park, Fish Island / north of Hertford Union Canal	Unknown	£1.1M	Yes	£1.1M	s.106 / CIL contributions / capital funding		Fish Island AAP
Opportunities for public space south of Hertford Union Canal	Unknown	Unknown	No	Yes	Unknown		Fish Island AAP
New informal open space at the junction of Stour Road and Beachy Road	Unknown	Unknown	No	Yes	Unknown		Fish Island AAP
Local / open square with connections to and from the Greenway in Fish Island south adjacent to 417 Wick Lane	Unknown	Unknown	No	Yes	Unknown		Fish Island AAP
Marsh Lane and Abbotts Park	Unknown	Marsh Lane, £2.2M; Abbotts Park, £495,000	No	Marsh Lane, £2.2M; Abbotts Park, £495,000	Unknown		OLSPG Infrastructure Delivery Study

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Walthamstow Wetlands	2015-2020	£6.5M (first phase only)	Yes (for initial stages)	£5-10M (including later stages)	LLDC boroughs, GLA, EA	Thames Water, Walthamstow Wetlands Partnership, LB Waltham Forest, LB Walthamstow	EA, LLDC consultation
Child play space							
LCS - 29 children's play spaces / areas totalling 14,210m^2	2015 - 2031	Unknown	Yes	No	Developer		LCS s.106 agreement
Bromley by Bow South - 1,093 m^2	By 2014-16	Unknown	Yes	No	s. 106 agreement		LLDC / consultation
Eastway Community Facility including children's play areas	Med / Long	Unknown	No	Yes	Unknown		Hackney Wick AAP
Trowbridge Village Green renovation project	Unknown	Unknown	No	Yes	Play Pathfinder		OLSPG Infrastructure Delivery Study
Libraries and Multi-Use Community Space							
LCS – Up to 2,423m^2 flexible community space, up to 1,258m^2 flexible cultural space, up to 3,606m^2 of flexible leisure space and a library (up to2,460m^2)	Unknown	Unknown	Yes	No	Developer funding		LCS s.106 agreement
Stratford City - multi-use community facility of 1,572m^2 on the eastern side of the site	Unknown	Unknown	Yes	No	Unknown		Stratford City
Bromley-by-Bow South Ideas Store (1,315m^2)	2014-16	Unknown	Yes	No	Developer (provision as part of scheme)		Bromley By Bow s.106 agreement
'Community Use Area' along the Eastway - opportunities to build upon existing community facilities and accommodate additional facilities within mixed use development	Unknown	Unknown	No	Yes	Unknown		Hackney Wick AAP
1,000 - 2,500m^2 new community and health space	Unknown	Unknown	No	Yes	Unknown		Stratford Metropolitan Masterplan

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
in the Greater Carpenters Estate							
Local transport schemes							
Improving pedestrian and cycle links across the A12 especially from Bow Roundabout southwards, and improved pedestrian and cycle environment along the A12 corridor.	Short-Long term	£5.0+M	£5.0+M	No	s.106 (BBB Tesco s.106 agreement)	Developer / TfL	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
Improve pedestrian and cycle route under the A12 from Eastway to Mabley Green	Long term	Unknown	No	Yes	TfL		Hackney Wick AAP
Furhter upgraded pedestrian / cycle connection over the A12 from Wallis Road to Cadogan Terrace.	Med term	Unknown	No	Yes	s.106/CIL / TfL / LLDC		Fish Island AAP
A new link between Fish Island North and Fish Island Mid to provide a more direct route between the hub at Hackney Wick and Fish Island Mid (includes options for enhanced crossings over the Hertford Union Canal)	Med term	Unknown	No	Yes	s.106 / CIL		Fish Island AAP
Upgrade of existing bridge over Old River Lea (south of Old Ford Lock) for use by cycles and wheelchairs by adding ramp on south bank and widening bridge deck	Short/Med term	£232,000	No	£232,000		CRT/LLDC	Canal Park project scoping
New pedestrian/cycle connection from Crown Close/Wick Lane to Greenway (ramp/stairs)	Short/Med term	Tbc	300,000	Yes	s.106/CIL/LLDC	Developer	LBTH/OPLC connections study and HWFI public realm strategy
New rail bridge connection across the River Lea at Autumn Street or Riverside Wharf (dependent on the future of Bow Midland East rail yard in Newham).	Long term	Unknown	No	Yes			Fish Island AAP
Upgraded pedestrian and cycle facilities at Wansbeck	Short term	£250,000	No	£250,000	LLDC / LBTH / S106 / CIL	LLDC/LBTH	Fish Island AAP and HWFI public realm

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
Road crossing							strategy
Subway improvements at Three Mills Lane	Med term	Unknown	Yes	No	s.106 (BBB Tesco s.106 agreement)		Bromley by Bow Masterplan SPD
Improved cycle and pedestrian crossings at Bow Interchange	Short term	Unknown	£400,000	Yes	OPTEMS		Bromley by Bow Masterplan SPD
Improved cycle and pedestrian crossings at Bow Interchange	Long term	Unknown	No	No	TBC - linked to adjacent developments / future public sector funding		Bromley by Bow Masterplan SPD
Highway improvements in the Chobham Farm Area improving East-West local connectivity	Short / Med term	Unknown	Yes	No	Developer		Stratford Metropolitan Masterplan Transport Study
Narrowing of Stratford High Street to northeast of Warton Road	Med term	Unknown	No	Yes	Unknown		Stratford Metropolitan Masterplan Transport Study
Downscaling of Warton Road junction	Med term	£300,000	No	£300,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Direct access into Stratford Station from Carpenters area	Med term	5,000,000	No	Yes	£200,000 from S106 (50k / 150k trigger split)		Stratford Metropolitan Masterplan Transport Study
Improved pedestrian and cycle connections between Carpenters area and Stratford Town Centre	Short / Med term	£800,000	No	£800,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Pedestrian and cycle bridge between the Bisson Street and Sugar House Lane areas	Med / Long term	£700,000	No	£700,000	Unknown		Stratford Metropolitan Masterplan Transport Study
Direct link between Sugar House Lane and Marshgate Lane	Short / Med term	£3.5M	yes - £2.65M	£850,000	Landprop to fund and deliver SHS junction		Stratford Metropolitan Masterplan Transport Study
Fatwalk 1 - improvements to wayfinding, public realm and interpretation on Fatwalk landscapes alongside Three mills Wall River	Short term	£100,000	none	£100,000	S106/CIL/LLDC	LLDC/CRT/LBN	Lea River Park strategy
Fatwalk 2 - Link between Twelvetrees Bridge and Lea Valley Walk - new stairs, lift and ramps, and associated public realm - new local	Short term	£1M	No	£1M	LLDC/TfL/LBN/GLA	LLDC/LBN	Fatwalk Stage E

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
connection between Bromley by Bow to Stratford and QEOP to River Thames							
Upgraded pedestrian link from Dace Road to the Greenway	Med term	Unknown	No	Yes	s.106 /CIL / LLDC		Fish Island AAP
Warton Road Bridge works	Long Term	Unknown	No	Yes	Unknown		TFL internal work
LCS planning permission projects/upgrades	Long Term	Unknown	Yes	No	LCS S106		LCS Planning Permission
Strategic transport schemes							
Hackney Wick London Overground	Med term	£10M	£5.25M	c£5M	Network Rail / TfL / GLA riot recovery fund / LTGDC.	Network Rail?	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
Bromley by Bow London Underground	Short-Med term (subject to funding delivery possible by 2015)	£9M	£4.275M	£4.75M	S106: £3.5M St Andrews, £700,000 Bromley by Bow north £75,000 Sunflour Mill = £4,275,000	Developer / TfL	OLSPG Strategic Transport Study and OLSPG Infrastructure Delivery Study
TfL Cycle Hire	Med Term	£8M	No	£8M	Unknown	TFL/Developer	TFL internal work
Downgrade of Great Eastern Road/Stratford Gyratory	Medium	£5M	No?	£5M	S106/CIL/TfL/LBN	LBN	Stratford Gyratory Traffic Management Proposals, 2007
Electricity							
Electricity sub-station upgrades in Bow and West Ham	Unknown	Unknown	Unknown	Unknown	National Grid		LB of Tower Hamlets Core Strategy
132kV power lines replacement in Stratford and West Ham	2015-2019	Unknown	Yes	No	EDF		LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning and Funding Gap Report
132kV network between West Ham and Brunswick Wharf	2015-2019	Unknown	Yes	No	EDF		LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning and Funding Gap Report
132kV network laid from West Ham to Orchard Place	2015-2019	Unknown	Yes	No	EDF		LB of Newham Core Strategy and LB of Newham CIL Infrastructure Planning

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
							and Funding Gap Report
Provision of 26.3 MVA across the borough through various projects	2009- 2026	Unknown	Unknown	Unknown	Unknown		LB of Waltham Forest Core Strategy
Gas							
Beckton pressure reduction Station rebuild	2014-2015	Unknown	Yes	No	National Grid		LB of Newham Community Infrastructure Study Future Needs Report
Combined Cooling, Heating and Power networks							
Point of Contact A, LB of Waltham Forest heat export point	Unknown	Unknown	Unknown	Unknown	Unknown		OLSPG Energy Study
Point of Contact B, LB of Newham heat export point	Unknown	Unknown	Unknown	Unknown	Unknown		OLSPG Energy Study
Point of Contact D, connection to Fish Island and Hackney Wick	Unknown	Unknown	Unknown	Unknown	Unknown		OLSPG Energy Study
Newham Local Heat Network – connection from West Ham (Manor Road) to Greenway	Unknown	Unknown	Unknown	Unknown	Unknown		LB of Newham Community Infrastructure Study Future Needs Report, Royal Docks Infrastructure Study (Ramboll), Heat Network Local Development Order (March 2013)
Sewage							
Thames Tideway Tunnel combined sewer overflow improvement projects	Approx. 2015-2020	£4.1 billion	Yes	No	Thames Water and Ofwat		LB of Tower Hamlets Infrastructure Delivery Plan and Core Strategy; LB of Newham Core Strategy; LB of Hackney Infrastructure Assessment
Deephams STW	Approx. 2015	As part of an allocated £675M for STW upgrades	Yes	No	Unknown		Thames Water Investment Programme: Our plans for 2010-2015
Beckton STW upgrade	Approx. 2015	As part of an allocated	Yes	No	Unknown		Thames Water Investment Programme:

Infrastructure Project	Phasing	Cost (£M)	Committed funding (£M)	Funding gap	Funding / source arrangements	Delivery / other responsible agencies	Information Source
		£675M for STW upgrades					Our plans for 2010-2015
Additional works to upgrade sewage works capacity as a result of residential growth	Up to 2031	Unknown	No	Yes	Unknown		Thames Water Investment Programme: Our plans for 2010-2015
Waste							
INF3 waste site at Beckton Riverside	2012-2015	Unknown	Unknown	Unknown	Unknown		LB of Newham CIL Infrastructure Planning Report and East London Joint Waste Development Plan
LB of Tower Hamlets waste treatment / disposal facility	Unknown	Unknown	Unknown	Unknown	Unknown		OLSPG Infrastructure Delivery Study
Expansion of LB of Hackney strategic waste sites (around Millfields Depot)	Approx. 2014 onwards	Unknown	Unknown	Unknown	Unknown		OLSPG Infrastructure Delivery Study
Flooding							
Hackney Wick and Hackney Marshes Flood alleviation and habitat enhancement	Med / Long term	£7-11M	Yes	£7-11M	Multi-agency and cross borough	LB of Hackney, Environment Agency, LB of Tower Hamlets, Canals and Rivers Trust	Consultation with Environment Agency and Hackney Level 2 Strategic Flood Risk Assessment
Strategic flood mitigation options	Short / Med term	£800–10M	No	£800–10M	Multi-agency and cross borough	LB of Hackney, LB of Tower Hamlets, Environment Agency	Hackney Wick AAP
Surface water flooding mitigation	Short / Med / Long term	Unknown	No	Yes	Defra, S106 / Private development	LB of Hackney, Environment Agency	Hackney Wick AAP
Olympic Online Wetland	2015 - 2019	Unknown	No	Yes	Unknown		LB of Newham Core Strategy