

Thurrock Lakeside Basin Preliminary Infrastructure Assessment

FINAL REPORT

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**Thurrock Lakeside Basin Infrastructure
Assessment**

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1 Introduction

1.1 Objectives of the Study

- 1.1.1 SKM Colin Buchanan has been appointed by Thurrock Borough Council (TBC) to undertake a preliminary assessment of infrastructure requirements and costs for each of the draft Strategic Spatial Framework Options proposed for Lakeside Regional Town Centre within the Issues and Options Consultation Draft Site Specific Allocations and Policies Development Plan Document (SSADPD). This assessment is being undertaken at the early stages of the process (Issues and Options stage) for the Lakeside Regional Town Centre and therefore the current options are likely to evolve as further technical evidence and representations are received.
- 1.1.2 This study sets out the range of infrastructure requirements necessary to support the proposed transformation of Lakeside Shopping Centre into a Regional Town Centre, as set out in Thurrock Council's Adopted Core Strategy. An assessment of existing provision which serves the Lakeside Basin is set out in a separate Baseline Report (SKM, 2011), included here at Appendix C.
- 1.1.3 To attain the status of a Regional Centre the Lakeside Basin will be required to undergo major remodelling and transformation. An initial change will be the provision of additional comparison retail floorspace by 2019, which is conditional on accompanying mixed use growth and a range of sustainability measures. These include provision of additional residential, office, hotel, and assembly and leisure activities, and measures such as securing more sustainable travel patterns, greater permeability through the area, modal shift from the car to alternative modes of transport, and design and public realm improvements.
- 1.1.4 The study considers the full range of infrastructure requirements as set out in the Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP, 2010).

1.2 Scope of this Report

- 1.2.1 This draft technical report provides an overview of infrastructure required to serve the Lakeside Basin. Infrastructure assessed covers social and community infrastructure, utilities and transport as follows:
- Education – pre-school services, primary schools and secondary schools
 - Health – primary healthcare¹
 - Community facilities – community centres and libraries
 - Open space and sport – open space, including green infrastructure and sport and leisure facilities
 - Emergency services – police, fire and rescue, and ambulance

¹ Secondary (acute) care is not proposed to be included within the scope of this study; as the alternative development options for the study area will have no discernable differential impact on the need for secondary healthcare.

- Utilities – water, waste water, electricity, gas, broadband and telecoms and renewable and decentralised energy
 - Waste - Waste management, disposal and recycling
 - Transport – highways and public transport (bus and rail).
- 1.2.2 Infrastructure requirements are set out in infrastructure schedules in Chapters 5 and 6. Three infrastructure schedules have been prepared: one for the first five years of the plan which applies to both strategic options, and then separate schedules for each of the options covering the remainder of the Plan period. Both of the strategic options are summarised in Chapter 2. A further option was also considered during the study but was later ruled out for the reasons given in the SSAPDPD.
- 1.2.3 Each infrastructure schedule takes account of the following:
- Item – specific infrastructure project
 - Status – under investigation, planned or committed: i) under investigation items are defined as aspirational projects in the early stages of development, ii) planned items are projects for which approval has been secured and are identified within a service / business plan with an associated cost but for which funding has yet to be confirmed, and iii) committed items are projects for which approvals has been secured and funding allocated
 - Rationale – why the project / scheme is required
 - Funding – from which sources will the funding be obtained (and is it secured)
 - Costs – what is the estimated or known cost of the project (excluding cost of land)
 - Land take – how much land is required
 - Lead – who is the lead partner for delivery of the project
 - Partners – who are other partners involved
 - Delivery Notes – what is the current delivery status of the project and is its delivery dependent on any other project or development proposal
 - Timeframe – when will the project be delivered: over the next 5, 10, or 15+ years.

2 Development Options

2.1 Summary of Development Options

- 2.1.1 As stated above Thurrock Council is consulting upon two Strategic Spatial Framework Options. For the purposes of this study we have assumed that both options will deliver the same quantum of development in the first five years of the plan. Beyond this initial phase the layout and mix of development diverges. The end state of each option therefore varies. Both options, plus existing provision are summarised in the Table 1 overleaf.
- 2.1.2 The main land uses proposed across the study area are for housing, retail, offices and employment land. The quantum of development, broken down by the use types, is described for each option below. Table 1 only sets out the main land uses.

2.2 Existing Provision

- 2.2.1 Lakeside Basin contains a mix of commercial activities, including retail land uses at Lakeside Shopping Centre and other employment land which is predominantly used for commercial and industrial purposes. Of the approximately 240,000m² retail offer, 90% of this is for comparison shopping. There are no houses or offices in the study area at present.

2.3 Years 1 – 5 (to 2016)

- 2.3.1 Proposed development in the first five years is concentrated at the existing Lakeside Shopping Centre (zone A), proposed for expansion, and to the south of West Thurrock Way (zone C2). Proposals include a mix of uses, including housing (400 – 500 units), retail (+ 64,000m² gross) and leisure. In line with existing provision, the majority of retail provision is for an expansion in comparison shopping. This applies to both options.

Table 1: Summary of Development Options – main land uses only

Main Land Use (gross sqm)	Existing development at 2011	Years / Option					
		Years 0 to 5 (to 2016) - First Phase		Years 0 to 15 (to 2026) - Option 1		Years 0 to 15+ - Option 2	
		Net change from 2010	Total quantum at 2016	Net change from 2010	Total quantum at completion	Net change from 2010	Total quantum at completion
Housing (no of units)	0	400 - 500	400 - 500	1,920 - 2,750	1,920 - 2,750	2,760 - 3,950	2,760 - 3,950
Retail * (including restaurants)	243,611	64,181	307,792	95,571	339,182	103,696	347,307
Leisure **	14,565	-3,995	10,570	-3,995	10,570	-3,995	10,570
Offices	0	0	0	6,500 - 13,000	6,500 - 13,000	6,500 - 12,000	6,500 - 12,000
Employment Land	191,510	0	191,510	-64,326	127,184	-118,632	72,878

Notes:

* The figures calculated here include retail granted permission but not yet developed

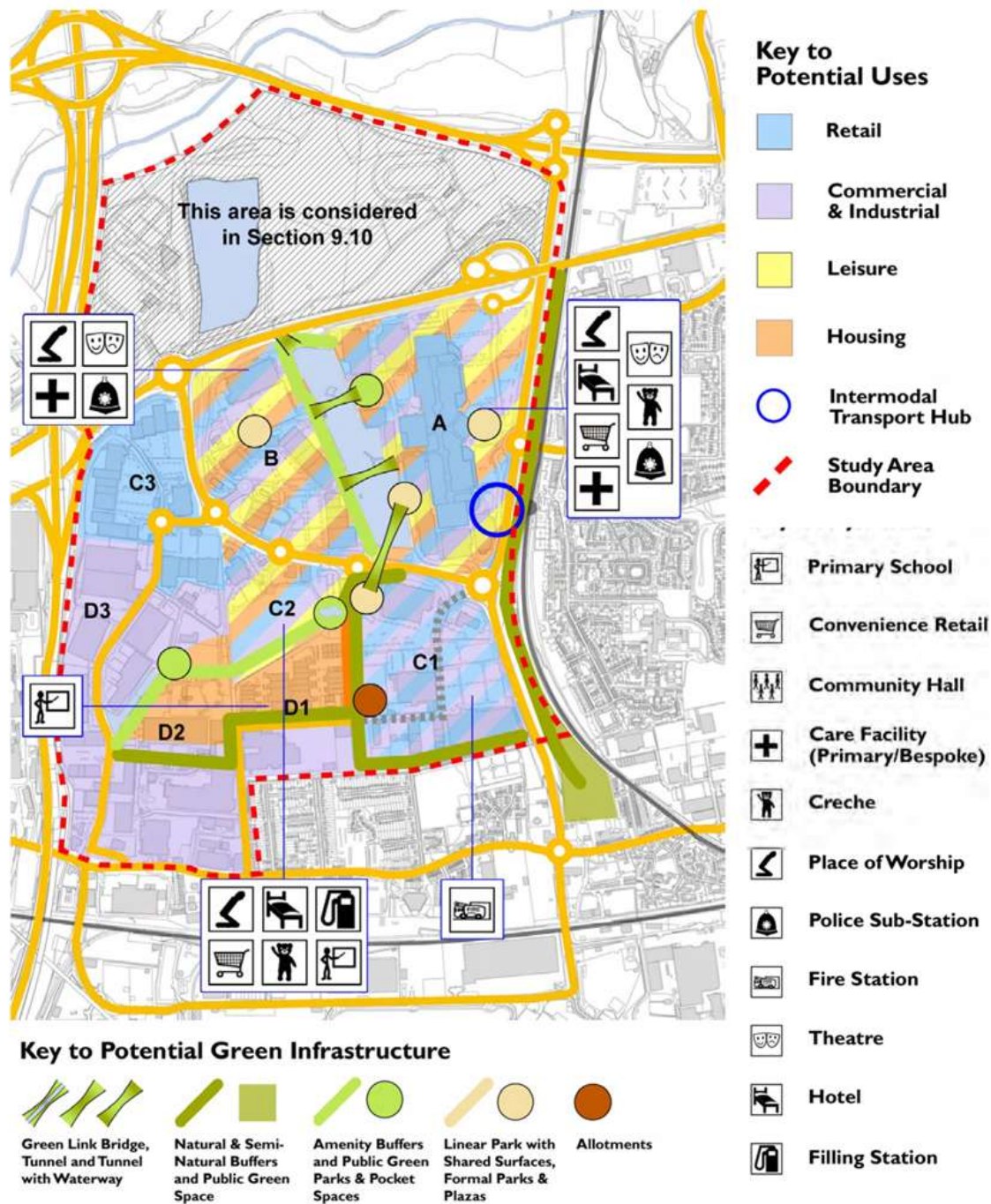
** The decrease in leisure floorspace will not be representative of final scenarios, as leisure floorspace across the Lakeside Basin will increase. The quantum and nature of leisure development will be set out in more detail as the planning process progresses

2.4 Strategic Spatial Framework Option 1: Years 6 -15

- 2.4.1 Following the first five years of development, Strategic Spatial Framework Option 1 then proposes that additional consolidated mixed use town centre related development takes place at the Lakeside retail park (Zone B) and on The Junction (Zone C2). This will comprise a mix of housing, retail, leisure and commercial uses. Internal pedestrian linkages would be strengthened through the provision of two bridge links across Alexandra Lake connecting Zone A and B as well as a new green bridge over West Thurrock Way connecting the Lakeside Shopping Centre with Zones C1 and C2.
- 2.4.2 To the south of West Thurrock Way, zone C1 (land around Ikea and B&Q) is identified as an opportunity for mixed retail, commercial and industrial development. To the west this Option proposes the partial redevelopment of some existing employment land for residential uses (Zoned D1 and D2).
- 2.4.3 In all, Strategic Spatial Framework Option 1 has the potential to deliver 80,250sqm (gross) comparison retail floorspace, 8,500sqm (gross) convenience floorspace, 6,500 – 13,000sqm of new office space and between 1,920 – 2,750 new homes.
- 2.4.4 Strategic Spatial Framework Option 1 is illustrated in Figure 1 overleaf.

Figure 1: Strategic Spatial Framework Option 1

Strategic Spatial Framework Option 1: Potential Uses/ Potential Locations



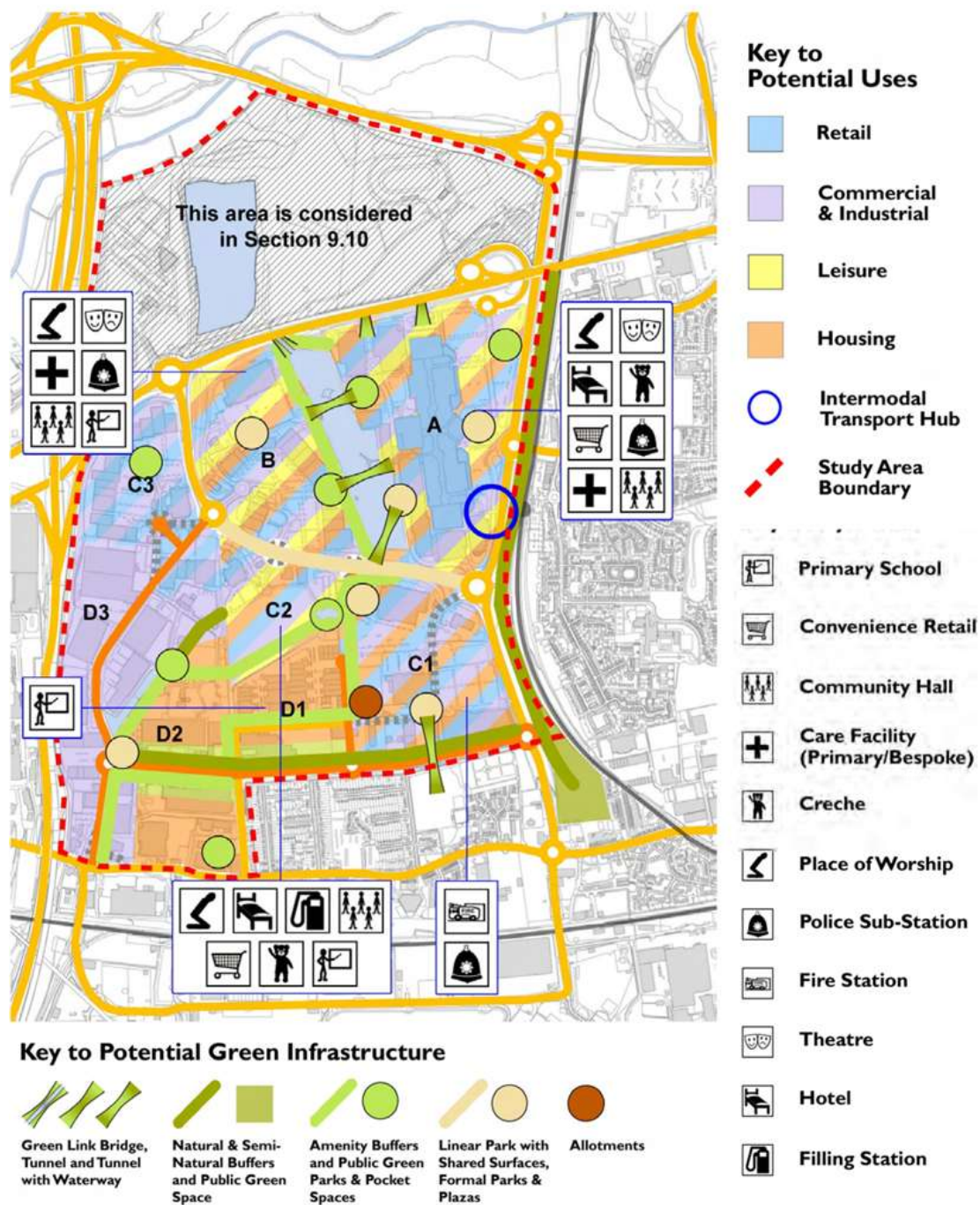
Note: Symbols indicate potential alternative locations for uses
Source: Thurrock BC

2.5 Strategic Spatial Framework Option 2: Years 6 -15

- 2.5.1 Strategic Spatial Framework Option 2 proposes a greater level of development than Option 1, with the objective of achieving a more balanced distribution of Town Centre uses across Zones A, B, C1 and C2. To support this expansion of the centre, West Thurrock Way would be enhanced as a route for pedestrians and cyclists, turning this into a tree lined boulevard between Weston Avenue and the A126.
- 2.5.2 Zone C1, around Ikea and B&Q, land is identified for a mix of housing as well as retail, commercial and industrial uses. To the west of this, zone D1 is redeveloped in its entirety for new housing. Zone D2 is also substantially redeveloped for housing while also including intensified office development. To the north, zone C3 (the Junction retail park) is redeveloped to include commercial uses as well as the existing retail uses.
- 2.5.3 Strategic Spatial Framework Option 2 includes a new east-west route along the southern boundary of the study area. As part of this, Option 2 also proposes an additional green link, connecting with the existing park to the south.
- 2.5.4 In all, Strategic Spatial Framework Option 2 has the potential to deliver 88,250sqm (gross) comparison retail floorspace, 8,500sqm (gross) convenience floorspace, 6,500 – 12,000sqm of new office space and between 2,760 – 3,950 new homes, depending in the densities achieved.
- 2.5.5 Strategic Spatial Framework Option 2 is illustrated in Figure 2 overleaf.

Figure 2: Strategic Spatial Framework Option 2

Strategic Spatial Framework Option 2: Potential Uses/ Potential Locations



Note: Symbols indicate potential alternative locations for uses
Source: Thurrock BC

2.6 Other Land Uses

- 2.6.1 Other land uses which might be developed include a theatre, hotels, a crèche, places of worship, and a petrol filling station.
- 2.6.2 In addition, there might also be requirements for social and community infrastructure and utilities. The potential need for these services and facilities is discussed in Chapter 5.
- 2.6.3 Subject to market demand, there will be opportunities to develop new leisure facilities of a type not currently present. These will be of a scale commensurate with a Regional Town Centre attracting visitors from a wide catchment and therefore complementary with the regional shopping centre. It is not envisaged that these would have demonstrably different implications for infrastructure demand, though this would be reviewed with relevant service providers (e.g. emergency services) as the Council became aware of the general nature of any proposals; which could vary considerably from sporting provision to night time activities such as bingo or music venues.

2.7 Transportation and the Public Realm

- 2.7.1 Both development options also incorporate improvements to the transport network and public realm. These proposals seek to significantly enhance accessibility and linkages for all modes of transport, particularly walking, cycling and public transport, both within the Lakeside Basin and connections to the surrounding area. Upgrades including improved accessibility and links are also set out as pre-conditions in the East of England Plan Policy ETG2 and in policies of the Adopted Core Strategy. This form of development is considered a fundamental requirement to support any new residents, workers and visitors.
- 2.7.2 Both Strategic Spatial Framework Options propose the creation of an intermodal transport hub to be located at the existing Lakeside Shopping Centre (close to Chafford Hundred station). This new interchange and associated proposals seek to provide an internal bus service for the Lakeside Basin. This is likely to be implemented as part of the proposed expansion of the shopping centre for which a planning application was submitted by the landowner (Capital Shopping Centres) in December 2011.
- 2.7.3 Both Strategic Spatial Framework Options also provide a range of green links. These generally connect zones of new development (including A, B, C2, D1, D2 and C1) to one another and the main transportation routes through the site. This is so that the station can be easily accessed from residential, shopping and employment areas. They aim to increase accessibility to those arriving by public transport and reduce the number of vehicles moving around the basin. Green links also promote activity by incorporating informal recreation, interpretation, rest and play features at regular intervals along their route. They also assist wildlife to migrate between key areas of biodiversity. A minimum standard for a green link is 5 metres width with both pedestrian and cycle access combined with minimum vegetation strip depth of 1.5 metres. It is expected that the vegetation strip contribute to structural planting, such as trees species at 8 metre intervals and/or shrub / hedging species.

3 Assumptions for Development

3.1 Population Growth

- 3.1.1 All proposed development options, including the years one to five, represent growth and provide new housing. A new residential population will be created. This is especially significant given that at present there are no dwellings in the study area, and therefore the site does not provide the full spectrum of required infrastructure to support the proposed new community.
- 3.1.2 Forecasting the characteristics of the new population is important to determine needs and tailor future infrastructure provision. The first step in this process is to calculate the size of the population. A variable average household size has been applied to new housing development. This is based on average household size over 5-year periods as set out in the Adopted Core Strategy (Appendix 4.2.6) as follows:
- Years 0 to 5: 2.4 persons per household
 - Years 6 to 10: 2.35
 - Years 11 to 15: 2.3
- 3.1.3 These figures have been used to calculate the average household size to be applied to both of the Strategic Spatial Framework Options. Therefore, in order to calculate the total new population, an average household size of 2.4 will be applied to the first 400 to 500 homes planned for delivery in the first 5 years. For years 6-15 an average household size of 2.325 is employed as this is the mid-point of Adopted Core Strategy Years 6 to 10 and 11 to 15. Table 2 below sets out population forecasts based on these assumptions.

Table 2: Population Forecast based on average household size assumptions

Option	Plan Period (Years)	Gross housing		Population		
		Lower limit	Upper limit	Lower limit	Upper limit	Mid-Point
Options 1 & 2	1 to 5	400	500	960	1200	1080
Option 1	6 to 15	1920	2750	4494	6431	5463
Option 2	6 to 20	2760	3950	6388	9135	7762

3.2 Housing Type

- 3.2.1 At this stage of the master planning process, housing type (houses or flats) is not set out. This split will be determined as plans progress. In advance of this, mainly for the purposes of estimating the number of new school pupils, it has been assumed that there will be an even 50/50 split between new houses and flats².

² The findings of Soft Market Testing (SKM Colin Buchanan, 2011) indicate that family homes are currently a more attractive residential typology for the Lakeside Basin than flats. However the scale of growth envisaged by Thurrock BC implies that some flats will need to be included in the study area.

4 Methodology

- 4.1.1 This report builds upon work previously undertaken in the Baseline Report (SKM Colin Buchanan, August 2011) whereby contact was initially made with all service providers. The Baseline Report is appended (Appendix C) for information. During November 2011, meetings or telephone discussions were held with service providers during which the development options were presented and implications of growth discussed³. It was also explained that proposals remained confidential at this stage. A list of service providers contacted is set out in Appendix A.
- 4.1.2 In respect of each Strategic Spatial Framework Option, service providers were asked a series of questions as follows to determine what infrastructure would need to be required to support growth:
1. What is the additional capacity required to serve new development – for each option? (On what basis has this been calculated?)
 2. In what form will this be provided (new facility or extension/upgrade to existing services) – for each option?
 3. If a new service or facility is considered to be required –
 - a) What level of development will trigger the need for the facility?
 - b) What area does it serve (i.e. individual development or zone, entire masterplan area, or wider catchment)?
 - c) Where would it be located (and is this different for each option)?
 - d) How long would it take to get the necessary approvals / funding in place (i.e. what is the lead in time) for the development to take place?
 - e) What is the justification / rationale for development – is it in a Strategic Plan or is a Business Case prepared? What is the status of this?
 4. Indicative / estimated costs (or range of costs) of delivery (excluding land costs) at 2011 prices?
 5. Land take / floorspace requirements?
 6. Anticipated mix of funding: developer provision v's developer contribution (s106 or CIL) v's funding by provider?
- 4.1.3 Where service providers have been unable to forecast future requirements, benchmark development standards (relating to trigger points and costs) have been applied.

³ The options presented included a third option since ruled out for the reasons given in the Site Specific Allocations and Policies Development Plan Document (Issues and Options).

- 4.1.4 The outcome of consultation with service providers is presented in four infrastructure schedules set out in Chapter 5. Where available SKM has applied population driven standards of service provision to estimate infrastructure requirements for which other estimates of demand are not available (e.g. open space, sports and leisure provision) from service providers.

5 Transport and Public Realm Infrastructure

5.1 Introduction

- 5.1.1 This chapter sets out the necessary highway, non-highway measures and public realm requirements to support the potential development options for Lakeside Regional Town Centre. In doing so it compares the potential transport infrastructure requirements set out in the adopted Core Strategy with draft development options for Lakeside as set out in Issues and Options SSAPDPD.
- 5.1.2 It is assumed that on-site highway infrastructure and public realm improvements are directly related to the development and will be delivered in phases in accordance with the Development Options. The off-site highway infrastructure is evaluated to determine whether it is a direct consequence of the Lakeside development or required for the overall LDF core strategy for Thurrock.
- 5.1.3 The highway infrastructure requirements are based on the separate Lakeside Transport Modelling Assessment (SKM, 2012) which investigates the different traffic impacts of the two Strategic Spatial Framework Options. The Modelling Assessment has investigated the traffic impacts and identified the junctions and links that exceed capacity. The results for each scenario are compared against each other and the previous transport modelling results informing the LDF Core Strategy. The Modelling Assessment compares each option for the assessment year 2026 to determine broadly what the different impacts are for the increasing level of development.

5.2 Transportation and Public Realm Proposals within Development Options

Highway Realignment

- 5.2.1 Both of the Strategic Spatial Framework Options outlined in Chapter 2 involve reconfiguration of the internal layout of the northern part of the Lakeside Basin to a greater or lesser extent, including realignment of the internal highway network in order to maximise the development proposals, and to support the traffic demand measures to reduce the linked trips between retail outlets by car. The following changes are proposed:

Strategic Spatial Framework Option 1

- Creation of a public transport and pedestrian only link north of the lake between Zone A and Zone B.
- Closure of Heron Way and creation of a new north south route from West Thurrock Way to Motherwell Way between Zones C1 and D1

Strategic Spatial Framework Option 2

- The upgrade of West Thurrock Way between the junctions with the A126 and Weston Avenue/Cygnnet View to support the re-allocation of highway to bus, pedestrian and cycle modes,
- re-alignment of Weston Avenue and its junction with London Road,
- and the construction of a new east west peripheral service road to the south of the study area, linking Weston Avenue to A126 West Thurrock Way, including the realignment of Eastern Avenue.

Public Realm Enhancements / Green Infrastructure

5.2.2 Each development option comprises a range of non-highway infrastructure measures including green links and public realm improvements as summarised below.

Strategic Spatial Framework Option 1

5.2.3 Green Links form circular routes around Lake Alexandra and Northern Lakes, South and Long Ponds the central retail and mixed land use areas. Improved connections are made to existing residential communities to the east, industry in the southwest and retail in the west. The key interventions are three bridge links across Alexandra Lake and West Thurrock Way.

- Link from London Road Allotments to Arterial Road with access to the pedestrian bridge between Chafford Station and Lakeside Shopping Centre
- Two bridge links east west across Lake Alexandra, one covered, from Zone A to B.
- One diagonal green bridge link across Lake Alexandra and B186 West Thurrock Way, from Lakeside Shopping Centre to South Pond, Zone A to C2.
- Green links between zones A, B, C1, C2, C3, D1 and D2.
- An open water and recreation tunnel connecting the Northern and Alexandra Lakes
- Figure of eight route around Northern Lake and Natural and Semi-natural area, with a connection to the eastern entrance.

Figure 3 Public Realm and Green Infrastructure Proposals for Strategic Option1



Figure 4 Public Realm and Green Infrastructure Proposals for Strategic Option 2



Strategic Spatial Framework Option 2

5.2.4 Green Links form circular routes around Lake Alexandra and Northern Lakes, South and Long Ponds and the central retail and mixed land use areas. Improved connections are made to existing residential communities to the east, industry in the southwest and retail in the west. The key interventions are re-routing the traffic from a section of B186 West Thurrock Way, , a bridge connection to southern cliffs to open space and residential areas to the south, and access down to the Mardyke Valley Strategic River corridor, and three bridge links across Alexandra Lake.

- Link from London Road Allotments to Arterial Road with access to the pedestrian bridge between Chafford Station and Lakeside Shopping Centre
- Two bridge links east west across Lake Alexandra, one covered, from Zone A to B.
- One diagonal green bridge link across Lake Alexandra from the Lakeside Shopping Centre to B186 West Thurrock Way,
- Rerouting traffic from the central section of West Thurrock Way B186
- Green links between zones A, B, C1, C2, C3, D1, D2 and D3.
- An open water and recreation tunnel connecting the Northern and Alexandra Lakes
- Figure of eight of eight route around Northern Lake and Natural and Semi-natural area, with a connection to the eastern entrance.
- Connections to the Mardyke Valley strategic river corridor.
- A pedestrian bridge link from public square in Zone C1 over the new southern perimeter road to the southern cliffs
- Green route from Long Pond to the junction of London Road and Motherwell Way.
- New square on Weston Avenue in Zone D3.

Traffic Demand measures

5.2.5 The following measures are required to support the traffic demand reductions for new traffic generated by the new land uses.

- A car park charging and management regime in accordance with East of England Plan Policy ETG2 and Thurrock Core Strategy Policy CSTP14
- A hopper bus to link the zones in the Lakeside Regional Town Centre, enabling those using the area to leave cars in one car park. The hopper bus would be provided in phases in accordance with the phased development of the Lakeside Regional Town Centre. This measure will reduce the need for trips between the retail outlets, and reduce traffic impacts on the principal access junctions to the Lakeside development.

- South Essex Rapid Transit (SERT) scheme has been submitted to DfT for funding. This is proposal to link Basildon to Lakeside via Gray's Town Centre. The combination of improved quality service and bus priority measures will encourage a shift to Public Transport, and provide an alternative link to trail between Grays Town Centre and Lakeside.
- If SERT does not proceed in its current form, then Bus Priority measures will be implemented along the same corridor to deliver an improved public transport link to Gray's Town Centre and to Basildon.
- All new development within the Lakeside Basin will require travel planning to reduce the number of car trips.
- An area wide travel planning approach will be adopted by Thurrock Borough to reduce the overall traffic demand on the local network.

5.2.6 In addition to the above, the modelling assessment reduces existing Traffic in the borough (excluding E-E movements) by 2% based on Area Wide Travel Planning measures.

5.3 Transport Modelling Assessment

5.3.1 The transport modelling assessment looked at several different scenarios. The scenarios are described in the Transport Modelling Study.

5.3.2 The scenarios were modelled by SKM Colin Buchanan for AM and PM peak with the Thurrock Traffic Model (TTM) which was developed to examine development expansion in the Thurrock Borough. The following is a broad assessment of the difference in traffic impacts for the two development options for Lakeside Regional Town Centre being consulted upon in the Site Allocations Issues and Options DPD:

- The baseline scenario demonstrates that there are existing capacity issues on the network.
- The two Strategic Spatial Framework Options generally generate similar traffic capacity issues at the same off site junctions and links.
- The difference in traffic impacts between the two Strategic Spatial Framework Options on the junction and link capacities are not sufficient to alter the classification of the severity of the capacity impact on the identified junctions and links.

5.3.3 A separate modelling scenario based on the Highways Agency (HA) Traffic Model was undertaken to investigate the impacts of East Facing Access to A126 with its junction with A13. The following is a broad summary of the impacts of EFA, though further detailed assessment of the wider impacts is required to examine these initial results:

- The EFA reduces the level of trips on the A13 between Junction 30 of the M25 and the A126 in the morning and evening peaks
- The EFA reduces journey times on the A13 – M25 route (from A1012 to Dartford Bridge), A1306 Arterial Road from the junction with A1012 to the junction 31 on M25.
- The EFA reduces the level of traffic on Arterial Road.

- A select link analysis indicates the majority of the trips on the EFA slips in AM peak are generated by the entire Lakeside basin, bound by the Arterial Road, M25, A126 and London Road.

Off-site traffic impacts of alternative development options

5.3.4 The traffic impacts for the following land use options are compared;

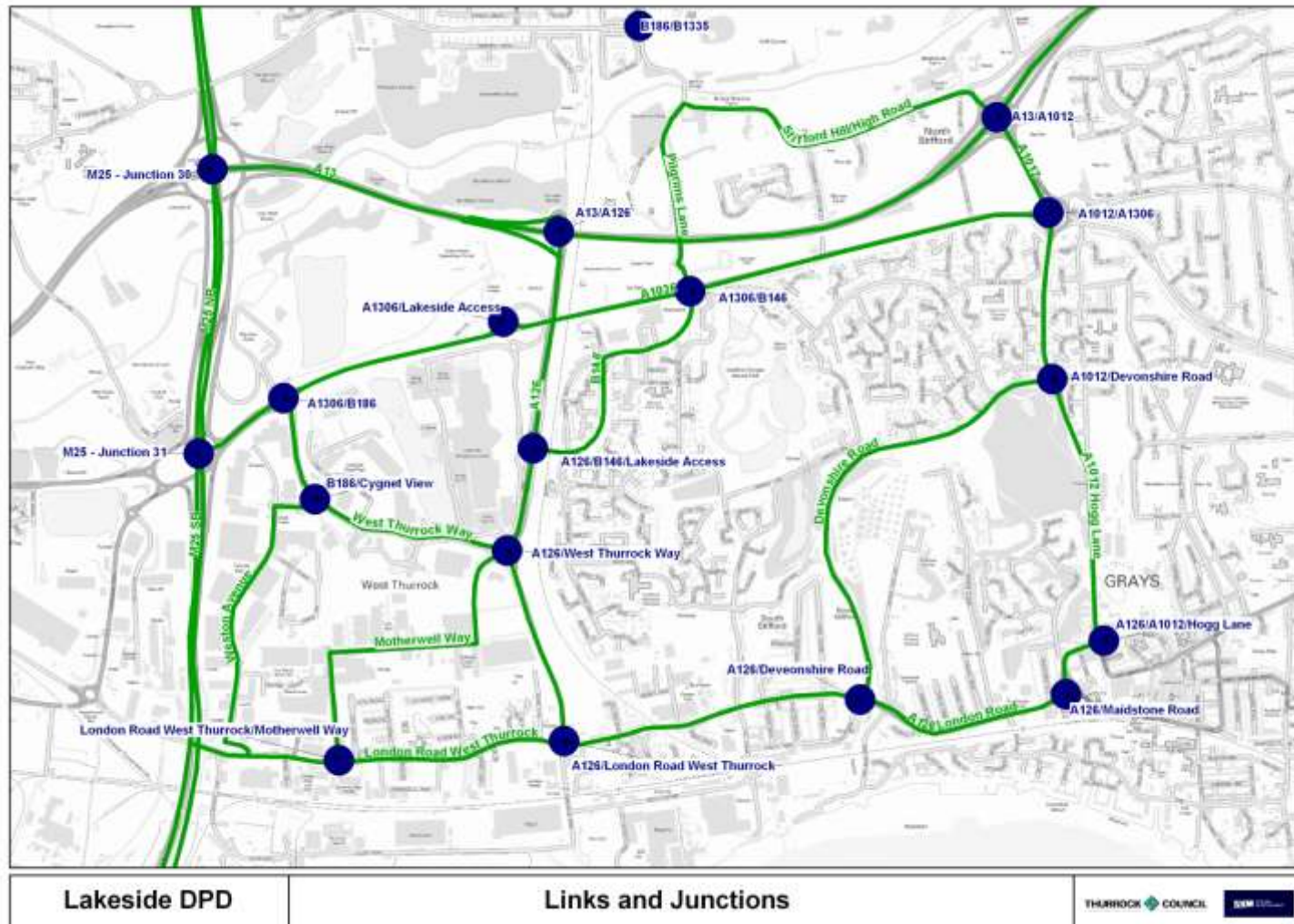
- LDF Core Strategy,
- Baseline
- Strategic Spatial Framework Option 1,
- Strategic Spatial Framework Option 2,

5.3.5 All the junctions and link identified have been assessed according to the following criteria:

- No improvements are recommended if the future capacity is less than 90% in 2026. The level of background growth will be a significant component of the traffic impact.
- If the future capacity exceeds 90% and less than 95%, highway improvements are proposed if the necessary improvements are considered an appropriate response in policy terms and fall within the highway boundary.
- If the future capacity exceeds 95% and less than 100%, highway improvements are considered if the improvements fall within the highway or are deliverable without significant impacts on adjacent residential/commercial developments.
- If the future capacity exceeds 100%, highway improvements will be considered if the improvements can be delivered without major impacts on adjacent development.
- No third party land is required.
- The phasing of infrastructure requirements is defined as the baseline 2011 (i.e. existing deficits), and the delivery periods 1-5 years and 6-15 years for both Strategic Spatial Framework Options 1 and 2.

5.3.6 The assessments of each junction and link are described in a separate Transport Technical Note. Please note that all junction and link numbering refers to the numbering system set out in the Transport Modelling Report, and shown in Figures 5 and 6 below.

Figure 6: Identification of Junctions Assessed



- 5.3.7 The transport modelling demonstrates that the following junctions and links exceed practical capacity and improvements need to be considered.

Junctions

- M25 Junction 30
- M25 Junction 31
- Junction 7 -West Thurrock Way / Stoneness Rd/ London Rd
- Junction 10 - A126 / A13 (Technically these are only slip roads)
- Junction 13 – B186 Pilgrims Lane/A1306 Arterial Road
- Junction 14 - A13 / A1012
- Junction 15 - A1306 / A1012
- Junction 16 - A1012 Hogg Lane/Eastern Way
- Junction 102 - A1012 / Hogg Lane / Devonshire Rd
- Junction 103 - A126 / Devonshire Rd
- Junction 104 - A126 London Rd / Eastern Way
- Junction 105 - A1013 / Derby Rd

A13

- Link 22 - A13 (M25 – A126)

London Road

- Link 12 - A126 London Road (Motherwell Way to West Thurrock Way)
- Link 13 - A126 London Road (West Thurrock Way to Devonshire Road)
- Link 14 - A126 London Road (Devonshire Road to Eastern Way)
- Link 43 - London Rd section between Weston Ave and Motherwell Way

Arterial Road

- Link 21 – A1306 Arterial Road from Pilgrim's Lane to A1012

Others

- Link 17 - A1012 Elizabeth Road
- Link 33/34 - Eastern Way
- Link 41 - Pilgrims Lane
- Link 42 – High Road, Stifford

- 5.3.8 All the junctions and links listed are also identified in the LDF Core Strategy Transport Modelling Report as requiring improvements. Broadly speaking the extent of the improvements required is generally of the same order or less than identified in that report due to the reduction in the projected retail trips as a result of traffic demand measures. Junction 16 A1012 Hogg Lane/Eastern Way is the only additional improvement considered over and above the Core Strategy requirements.

5.4 Assessment of key highway infrastructure shortfalls

- 5.4.1 The following key elements of highway infrastructure investment were previously identified in the Thurrock Infrastructure Investment and Prioritisation Programme which informed the LDF Core Strategy, and have been confirmed as requirements in the subsequent Transport Modelling Report for Lakeside Regional Town Centre.

M25 Junction 30

- 5.4.2 The Department for Transport (DfT) has recognised that improvements to Junction 30 are required, and it has been identified as infrastructure priority for the HA. However the level of capacity improvements has not yet been identified. The modelling for Lakeside Regional Town Centre development has adopted a conservative approach, and has only considered a lower level of intervention for modelling purposes. Any enhancement in the level of intervention will have significant benefits for the local highway network. However further consultation with the HA should explore the inclusion of the link between the M25 and A126 since any improvements to the slip lanes will need to consider the overall link.

M25 Junction 31

- 5.4.3 There are well documented capacity problems related to Junction 31 on the M25. These relate to the current signalling and loops on the roundabout. During the morning and evening peaks congestion at Junction 31 can lead to traffic backing up to the Dartford Crossing. The cost for the improvements necessary at Junction 31 has recently been calculated at £3million

A13 (Under A126 and Railway Bridges)

- 5.4.4 Both the transport modelling studies for the LDF Core Strategy and the Lakeside Regional Town Centre proposals have identified the need to improve capacity on the A13 (the section of two lane carriageway under A126 and the railway line). This remains a significant bottleneck on the A13 and a key constraint on traffic capacity particularly when the section between M25 and A126 is improved. If improvements are considered, then the issue of the East Facing Access to A126 can be addressed at the same time.

A1306 Arterial Road (B186 Pilgrim's Way to A1012 Elizabeth Road)

- 5.4.5 The proposed improvements to the approaches to the junctions of A1306/A1012 and B186 Pilgrim's Way/A1306 arterial road should produce a significant reduction in the level of queuing, and consequently reduce the level of traffic impacts on the links between these junctions. Subject to detailed modelling of retail peaks, no improvement to the link should be required. The

provision of the EFA will also reduce traffic levels on this link. Therefore any infrastructure improvements should focus on junction improvements, and the possibility of EFA.

A126 London Road

- 5.4.6 Any improvements to enhance the capacity of the links along London Road outside the existing highway boundary are not deliverable due to the impact on the adjacent residential properties. Localised improvements are proposed to the junction with A126 and West Thurrock Way, the re-alignment of Weston Avenue junction, and minor improvements to Motherwell Way priority junction. These improvements in combination with the diversion of some of the through traffic to other routes, and the change of land use along London Road from industrial to residential will deliver environmental improvements to this corridor. Furthermore it is anticipated that the provision of SERT along this corridor will encourage a shift from the private motor vehicle to public transport.
- 5.4.7 Therefore no capacity improvements will be considered for London Road, except for the necessary bus priority measures to support SERT.
- 5.4.8 It can be seen that the level of highway infrastructure improvements required for both of the Lakeside Regional Town Centre Strategic Spatial Framework Options is broadly similar.

5.5 On-site highway infrastructure

- 5.5.1 The development of the Lakeside Regional Town Centre will require localised junction improvements at the access points to the Basin, and these will be delivered as the development of either option progresses. The phasing and detail of these improvements will be determined through more detailed modelling as the proposals are worked up in greater detail.

Option 1

Years 1-5

- Junction 9 - A1306 Arterial Road/Lakeside Shopping Centre
- Junction 101 – Lakeside Shopping Centre/A126/Fenner Road
- Junction 8 - B186 West Thurrock Way/A126

Years 6-15

- Junction 6 – B186 West Thurrock Way / A1306 Arterial Road (subject to further detailed investigation)

Option 2

Years 1-5

- Junction 9 - A1306 Arterial Road/Lakeside Shopping Centre

- Junction 101 – Lakeside Shopping Centre/A126/Fenner Road
- Junction 8 - B186 West Thurrock Way/A126

Years 6-15

- Junction 6 – B186 West Thurrock Way / A1306 Arterial Road
- (New) junction of the southern perimeter road with A126
- Junction 32 – Motherwell Way/London Road
- Re-alignment of Weston Avenue/London Road Junction

5.6 Off site Highway Infrastructure

5.6.1 Since the junctions are tested for the combined traffic impacts of all development in the Lakeside Basin, it is difficult to determine the exact phasing of the delivery.

5.6.2 Both Strategic Options require improvements to the following off site junctions, and are broadly required to be delivered in the following stages subject to phasing and impact of individual developments.

Baseline 2011 – Improvements required to remedy existing shortfalls in highway capacity.

- Junction 15 - A1306 Arterial Road/ A1012 Elizabeth road
- B186 Pilgrims Lane/Stifford Hill Junction
- B186/B1335 Stifford Hill/Stifford Road Junction

Development of Lakeside Basin 2011 – 2026

- Junction 7 -West Thurrock Way / Stoneness Rd/ London Rd
- Junction 10 - A126 / A13 including slip lanes
- Junction 13 – B186 Pilgrim's Way/A1306 Arterial Road
- Junction 14 - A13 / A1012
- Junction 16 – A1012/Eastern Way
- Junction 102 – A1012/Devonshire Road

5.6.3 The following links require improvement.

- Link 11 - A126 (West Thurrock Way to A126 London Road)
- Link 35 - Pilgrims Lane

- 5.6.4 It should be noted that there is an inter-relationship between some of the junctions and links identified. There is a possibility that the mitigation proposed for the junctions will have a positive impact on the capacity level for the adjacent link, and alter the above list of links requiring capacity improvements. This will be determined during the detailed transport assessments that will be required to accompany planning applications for individual development proposals.

5.7 Impacts of the development options on on-site highway infrastructure

- 5.7.1 The strategic transport modelling has not identified any capacity issues with respect to the existing access junctions except for the Lakeside Access junction to A1306. The TTM only considers an average PM peak generated by all land uses across the borough, and this report refers to the more detailed modelling undertaken in support of the planning application for the expansion of Lakeside Shopping Centre which has demonstrated capacity issues in the Friday PM and Saturday Retail peaks.
- The Lakeside Shopping Centre Transport Assessment (Royal Haskoning, November 2012) has identified that the following two junctions require mitigation. However the TA has only assessed the impact on the retail expansion for the opening year 2016, and consequently not tested the impacts associated with the expansion of the entire Basin.
 - Junction 8 – B186 West Thurrock Way/A126/Heron Way
 - Junction 9 - Lakeside Access/A1306 Arterial Road/Karting access,
- 5.7.2 The Highway Authority reviewing the application has requested further information to determine the impacts on Junction 10 - Lakeside Access/A126 Junction/ Fenner Road, and the impacts on the A13. Concern has been expressed about the modelling assumptions made in support of the application and these are being reviewed.
- 5.7.3 Please note that the strategic modelling has identified that the expansion of the Lakeside Shopping Centre should consider the impacts on B186 Pilgrim's Lane/A1306 Arterial Road junction.
- 5.7.4 The development of the southern areas of the Lakeside Basin would require improvements to the following junctions:
- Weston Avenue and London Road
 - Motherwell Way and London Road

5.8 Costs for Highway Infrastructure Shortfalls

- 5.8.1 The following assumptions are made for the costs of the highway capacity improvements:
- The LDF costs are at 2008 prices and 5% allowance has been made for inflation till 2011. (Construction costs were broadly level for the period 2008-2010).

- The costs are a broad estimate of the necessary improvements to improve, capacity and no design drawings have been produced.
- The cost of acquiring land is not included.
- The cost of statutory utilities is not included and will be site specific.

5.8.2 The costs are tabulated for the Baseline (2011) and Strategic Spatial Framework Options 1 and 2.

Table 5.1: Highway Capacity Requirements for Baseline 2011 (existing deficit):

Jct/Link No.	Location	Improvement needed	2011	Option 1	Option 2	Cost Estimate	Assumption on Cost
Highway Capacity Requirements to remedy existing highway deficits for Baseline 2011							
M25 J30	Junction of M25 and A13	Additional capacity is required on each arm of the roundabout.	√			£100-400M	Refer to strategic issues
M25 J31	Junction of M25 and A1306	Reconfiguration of roundabout	√			£3M	Refer to strategic issues
Link 44	A13 (under A126/Railway Line)	Add lane in each direction	√			£9.2M	Refer to strategic issues
Jct 12	B186 Pilgrims Lane/ High Road	No improvements are likely if B186 Pilgrim's Lane/A1306 is improved	√			N/A	Refer to local issues
Jct	B186/B1335 Stifford Road	Improvements to be further investigated	√			£300,000	Broad estimate only
Jct 15	A1306 / A1012	Adjust signal timings and additional lanes on two arms	√			£350,000	LDF costs
Jct 105	A1013 / Derby Rd	Signal timings	√			£0	LDF costs
Jct 106	A126 Stanley Rd / A126 Clarence Rd	Additional Lanes, remove parking or signal timings	√			£0	LDF costs
Off-site highway infrastructure requirements for Baseline 2011						£113M - £413M	

Table 5.2: Highway Capacity Requirements for Strategic Spatial Framework Options 1 and 2

Jct/Link No.	Location	Improvement needed	Option 1 & 2	Option 1	Option 2	Cost Estimate	Assumption on Cost
			1-5	6-15			
Jct 9	B186 West Thurrock Way/A1306 Arterial Rd	Improve capacity for retail peak when development occurs		✓	✓	£320,000	Improve width of circulatory carriageway from western approach to Lakeside exit lane to allow 2 lanes for through traffic. Subject to Detailed TA
Jct 6	B186 West Thurrock Way/A1306 Arterial Road	Improve capacity for retail peak when development occurs	✓			£130,000	Detail TA required
Jct 8	B186 West Thurrock Way/A126	Improve capacity for retail peak when development occurs	✓			£85,000	Improve flaring on one approach
Jct 101	A126/ Lakeside Access/Fenner Road	Improve capacity for retail peak when development occurs	✓			£75,000	Refer to Thurrock Infrastructure Prioritisation and Implementation Programme 2006 - 2025
Jct	Weston Ave/London Rd	Improve capacity for retail peak when development occurs			✓	£220,000	New Weston Avenue arm Amendments to pedestrian crossing Additional signalisation 3 rd party land required
Jct 32	Motherwell Way/London Rd	Improve capacity for retail peak when development occurs			✓	£55,000	Change in priority

Jct/Link No.	Location	Improvement needed	Option 1 & 2	Option 1	Option 2	Cost Estimate	Assumption on Cost
Jct	Motherwell Way/A126	Construct new access onto A126 when development occurs			√	£560,000	Construct new signalised Junction on A126 West Thurrock Way
On site highway infrastructure requirements			£290K	£320K	£1,155M		
Jct 7	West Thurrock Way / Stoneness Rd/ London Rd	Improve southbound approach from West Thurrock Way, and signalise junction		√	√	£280,000	Widen southbound approach on West Thurrock Way arm Signalise all 4 arms Include signalised pedestrian crossing
Jct 10	A126 / A13	Improve flaring on both approaches	√			£240,000	Refer to Thurrock Infrastructure Prioritisation and Implementation Programme 2006 - 2025
Jct 13	B186 Pilgrims Ln/A1306 Arterial Rd	Improve SB and EB approaches		√	√	£240,000	Widen southbound approach arm on Pilgrims Lane. Lengthen flare on eastern approach arm
Jct 14	A13 / A1012	Signalise roundabout		√	√	£1,200,000	Refer to Thurrock Infrastructure Prioritisation and Implementation Programme 2006 - 2025
Jct 16	A1012 Hogg Lane/Eastern Way	Improve SB approach lane		√	√	£80,000	Widen approach arm on Elizabeth Road SB within highway boundary.
Jct 102	A1012 / Hogg Lane / Devonshire Rd	Extend flare on 1 arm		√	√	£40,000	Refer to Thurrock Infrastructure Prioritisation and Implementation Programme 2006 - 2025
Link 19	A1306 Arterial Road (West Thurrock Way – Lakeside N Access)	Widen to accommodate 3 lanes				£0	Deliver junction improvements to Junctions 13 and 15

Jct/Link No.	Location	Improvement needed	Option 1 & 2	Option 1	Option 2	Cost Estimate	Assumption on Cost
Link 17	A1012 Elizabeth Road	Improve link capacity				£0	Undeliverable due to impacts on residential land
Jct 104	A126 London Rd / Eastern Way	Create short two lane approach on one arm		√	√	£0	No improvements except to deliver SERT
Link 8	Fenner Road	Improve link capacity		√	√	£0	Assumed benefit from improvements to junctions with A126 and A1306
Link 11	A126 West Thurrock Way – London Rd	Improvement capacity for SB lane between new junction and London Road		√	√	£360,000	Additional lane between new junction and A126 London Road to 3 lanes
Link 12	London Rd (Motherwell Way – A126)	Improve capacity of link		√	√	£0	Undeliverable to impact on adjacent properties. Assume some benefits from junction improvements
Link 43	London Rd (Weston Ave – Motherwell Way)	Improve capacity of link		√	√	£0	Undeliverable to impact on adjacent properties. Assume some benefits from junction improvements
Link 41	Pilgrims Lane	Improve capacity of link		√	√	£0	Assume junction improvements will future capacity issues
Off-site highway infrastructure improvements			£240K	£2.2M	£2.2M		

Summary

5.8.3 Table 5.3 summarises all the public realm, pedestrian/cycle links and highway infrastructure improvements required for the two development options for Lakeside Basin and the baseline requirements.

- Total Baseline 2011 = £3.65 million on local road network plus £109m - £409m on the strategic highway network.
- Total Strategic Spatial Framework Option 1 (1-15 years) = £23.69 million
- Total Strategic Spatial Framework Option 2 (1-15 years) =£ 27.89 million

Table 5.3: Total transport and public realm infrastructure costs

	Baseline	Option 1 & 2	Option 1	Option 2
		1-5 years	6 - 15 years	6 - 15 years
Public transport incl link and bus station		£10.7M		
Parking Management Strategy/		£450,000		
Travel Demand Measures		Not available	Not available	Not available
Public Realm/Green links including lake bridges, land bridges and public spaces		£2.05M	£6.27M	£4.23M
Internal Highway network, including re-aligned streets		£0M	£1.16M	£6.5M
On-site highway infrastructure, access junctions only		£0.29M	£0.32M	£1.22M
Off site highway infrastructure, excluding trunk road network	£3.65M	£0.24M	£2.2M	£2.2M
Trunk road network (M25 / A13)	£109-409M			
Totals	£113M–413M	£13.74M	£9.95M	£14.15M

5.8.4 Please note that the costs reported in the Thurrock Infrastructure Prioritisation and Implementation Programme 2006-2026 (September 2009) have been utilised for the off-site highway infrastructure requirements for Lakeside, except for when alternative improvements are proposed. These costs have been escalated 5%.

5.8.5 This summary excludes any improvements to A1306 Arterial Road subject to detailed modelling.

6 Social, Environmental and Utilities Infrastructure Requirements

- 6.1.1 Social, environmental and utilities infrastructure requirements for each Strategic Spatial Framework Option are set out in Tables 6.1 – 6.3. This chapter provides additional explanatory information for each service to support these schedules.
- 6.1.2 An assessment of existing provision which serves the Lakeside Basin is set out in a separate Baseline Report (SKM, 2011), included at Appendix C for information.

6.2 Health

- 6.2.1 Standards of service delivery require one new GP for every 1,800 population. However, health centres are generally built to accommodate at least 3 GPs; smaller branch surgeries are not viable propositions. Hence a new health centre is unlikely to be brought forward until this threshold is met, which based on the population forecasts set out earlier would not be until years 6-10 at the earliest. South East Essex Primary Care Trust (PCT) has indicated that the existing health centre at Chafford Hundred will serve the needs of the new residential population associated with the development at Lakeside occupied during the first 5 years. The PCT comment that the service would benefit from financial contributions during the first years of development to invest into existing provision.
- 6.2.2 Specialist medical services may be required on-site, however the exact nature of these will be determined by the needs of the population and therefore the exact form of provision is unclear at this stage. For example, at Chafford Hundred, facilities for women, such as an ante-natal clinic, and young children were provided to meet needs as a result of higher than expected birth rates. The PCT comment that detailed information on the type of housing proposed, when available, will be useful to undertake demographic modeling to help forecast the characteristics of the new population, and estimate demand for specific needs.

6.3 Education

- 6.3.1 Pupil forecasting has been undertaken by Thurrock BC Education Department. There is likely to be a requirement for a new primary school in both Strategic Spatial Framework Options, but not in the initial five year period.
- 6.3.2 Once required, new primary schools would ultimately need to be at least 2FE (forms of entry) in size once completely built out, however they can be phased to operate as a 1FE initially.
- 6.3.3 Secondary schools would need to be expanded to meet demand arising from both Strategic Spatial Framework Options. Additional facilities likely to be built as part of expanding existing schools include classrooms and catering space, halls and studios and outside space.

6.4 Open Space, Sport and Leisure

- 6.4.1 The Site Allocations Issues and Options DPD proposes that public open space in the form of green spaces and green links provide a local greengrid network for the benefit of residents, workers and visitors. The network provides non-vehicular access, recreation and biodiversity

which is required in order to transform the character and quality of Lakeside Basin into an integrated town centre.

- 6.4.2 Areas proposed for sport and open space are calculated by applying a population estimate to development standards. Locally-derived standards are used where possible, and if these do not exist, national standards are applied. Local standards are set out in the Thurrock Open Space Strategy and national standards have been mainly taken from Sport England.
- 6.4.3 The objective is to accommodate green space within existing retail areas (held under a variety of land ownerships). The proposed approach provides relatively small spaces which are distributed across the study area. These spaces and links would serve not only residents but also a large workforce and visitors and therefore are considered to be an absolute minimum requirement for a new Regional Town Centre.
- 6.4.4 Parks and gardens green space (PGS) requirements are provided by formal park / plaza with enhanced facilities for social events and play. These are likely to be limited to a number of satellite parks, between 0.5 and 1.5 hectares in size, combined with pocket green spaces. These provide the traditional civic public green space and set the tone and quality of the Lakeside Basin for retail, commercial and residential activity. They are located at key junctions of green links and different land uses such as at residential and retail or industry boundaries, transport interchanges (bus terminal) and main frontage of Lakeside Shopping Centre.
- 6.4.5 Amenity green space requirements (AGS) are provided by informal greens and recreation areas with public realm and recreational features. These are likely to range in size from between 0.5 and 3 hectares in size, combined with pocket green spaces at regular intervals on longer or more isolated links within the network. These spaces provide informal recreation and a sense of place, setting the standard of a high quality environment for residents, workers and shoppers. They are associated with existing water features and key Green Link access points.
- 6.4.6 Natural and semi natural green space (NSN), requirements are to provide a positive day-to-day experience of nature. The Lakeside Basin contains land, water and geological features which have been naturally colonised, however, these remain inaccessible by foot to the large number of visitors and future residents of the Basin. Immediate doorstep access to natural features can be designed into the network of spaces and links. However, the scale of NSN green space required cannot be easily accommodated. A balance between taking up land with a commercial potential and overcoming barriers to access NSN green space beyond the Basin needs to be considered. A number of access intervention projects are identified which aim to deliver both recreational and commercial benefits. These interventions also enable delivery of Thurrock's Strategic Greengrid objectives.
- 6.4.7 Toddler and young children's play area requirements are closely related to the form and distribution of residential development, and as such are to be accommodated within the individual residential development sites. Play areas for older children are to be associated with pocket, amenity or park and garden green space.
- 6.4.8 Requirements for allotments for a new residential population are not extensive and again are assumed to be provided with the individual residential development sites. There may, however,

be opportunities for associated retail to provide a community allotment facility to serve residents and workers of the basin.

- 6.4.9 Future sports provision will be provided at Belhus Sports Hub, which will also serve Aveley and South Ockenden and West of the Borough. This centre will provide a range of sports facilities and cost approximately £12m to £18.5m to fully develop. It will be funded by developer contributions, public funding, private funding and through prudential borrowing, by the local authority, on basis of improved revenue position. The strategic case for the provision of sports hubs has been approved by the Council and more detailed planning is underway. With regard to sports halls, and other potentially shared-use sport and leisure facilities, joint planning should be undertaken with secondary schools.

6.5 Emergency Services

- 6.5.1 Essex Police has confirmed that they do not apply a population threshold to identify the need for new capital investment. However, future development at Lakeside is considered to potentially require the installation of a new mini sub-station as part of the shopping centre.
- 6.5.2 In addition, the Police have also requested ANPR (Automatic Number Plate Recognition) cameras within the key roads be introduced.
- 6.5.3 Essex Fire & Rescue Service has aspirations to relocate an existing station in Grays towards Lakeside. This would be intended to take place with or without new development at Lakeside Basin. The service provider would welcome any opportunity to accommodate the new station as part of new development proposed at Lakeside.
- 6.5.4 East of England Ambulance Service have emphasised that a key issue relates to evening and night-time activities at Lakeside and as a result additional staff and vehicles would need to be provided at these times. There is capacity at the existing station in Grays for future development.

6.6 Community Facilities

- 6.6.1 The council is currently reviewing all community hall facilities in light of potential consolidation of resources. This issue is recommended to be further investigated as development proposals advance.

6.7 Utilities

- 6.7.1 Essex and Suffolk Water confirm that there are no abnormal constraints or costs envisaged with the provision of potable water. However, some local infrastructure upgrades may be required.
- 6.7.2 Anglian Water has confirmed that overall the Sewage Treatment Works can accommodate the flows associated with the levels of development set out in the Site Allocation Issues and Options DPD. However, London Road Pumping Station, which the area drains to, is at capacity and is likely to require upgrading. The service provider suggested an alternative is to direct flows to the private Lakeside pumping station which would have minimal impact on the downstream network, although this will obviously have ownership constraints and it is unknown as to whether this would also require an upgrade. If this is possible, there will be no costs associated to the first

phase. Future work needs to fully assess constraints and determine the location for any new pumping station especially in light of land ownership and capacity.

- 6.7.3 National Grid confirm that there is available capacity in the medium pressure system to supply most, if not all, of the proposed development with gas, depending on actual non-domestic use and loads.
- 6.7.4 National Grid has also confirmed that there will be no significant impact associated with the development options in the Site Allocations Issues & Options DPD on the electricity transmission network.

6.8 Summary of Infrastructure Required

- 6.8.1 This section summaries the social, environmental and utilities infrastructure requirements associated with the two Strategic Spatial Framework Options in tabular form, as follows:
- Table 6.1: Both Options: Years 1-5
 - Table 6.2: Strategic Option 1: Years 6-15
 - Table 6.3: Strategic Option 2: Years 6-15
 - Table 6.4: Indicative Infrastructure Costs

Table 6.1: Thurrock Lakeside Basin Infrastructure Schedule for Years 1 – 5 (Both Strategic Spatial Framework Options)

SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
HEALTH															
Primary Care	Primary care for new residents - access existing health centres	Planned	PCT confirm that new population (up to 1,110) can access existing health centres - most likely to be at Chafford Hundred. No additional GPs required	GP Consortia	TBC	South West Essex PCT	Existing health centres eg Chafford Hundred	None - existing health centre(s) to be utilised	N/A - existing health centre(s) to be utilised	Developer contributions to assist existing health centres, until new health centre is built on site (if required).	On-going - to be in line with growth	Y			
EDUCATION															
Primary Schools	2 approaches to be considered: 1) Expand existing primary schools. Warren Primary is considered to offer potential to expand to accommodate additional pupils. Or, 2) Develop new primary school. School would begin as 1 FE but expand to 2 FE + in later options	Under investigation	Development to generate 98 to 123 pupils	DfE and developer contributions	1. Approximately £2.5m to refurbish and extend one primary school (TIPIP, 2010). 2. £2.5m for one 1 FE primary school	Thurrock Borough Council - Education	Existing Primary schools. Or, New Primary school	N/A - existing primary school(s) to be expanded on existing sites. Or, 2 ha for one 2 FE primary school, 3 ha for 3 FE	Within existing primary schools - catchments are open so accessible to all of the development area. Or, new school is likely to be located close to new housing - south of A1306	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	Short-term development - to be in line with growth, until new primary school is required on-site	Y			
Secondary Schools	Existing secondary schools to be expanded - capacity potentially available in Harris Academy (Chafford Hundred), Ockendon, Ormiston Park and William Edwards	Under investigation	Development to generate 53 to 66 pupils	DfE and developer contributions	Approximately £2.5m to refurbish and extend one secondary school, add 1FE	Thurrock Borough Council - Education	Existing Secondary schools	N/A - existing secondary school(s) to be expanded on existing sites	Within existing secondary schools - catchments are open so accessible to all of the development area	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	On-going - to be in line with growth, until new secondary school is required	Y			
GREEN GRID, OPEN SPACE, SPORT & LEISURE															
Green Grid	Natural and Semi-natural Greenspace	Under investigation	2 ha per 1,000 population – based on existing deficit and new space triggered by new development . £105,000 per ha (TIPIP, 2010)	Developer contributions	£227,000(TIPIP, 2010)	Thurrock Borough Council	Developer	2.16 ha	Accommodated by green space and 4 buffer areas: i) natural & semi natural green space to north and northeast of the Northern Lake, ii) Southern floodplain of the Mardyke between Ship Lane and Davy Down (iii) eastern cliff face linking London Road to Arterial Road, and iv) zones C1, D1 and D3	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Parks and Gardens	Under investigation	0.7 ha per 1,000 population	Developer contributions	£49,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	0.76 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Amenity Greenspace	Under investigation	0.8 ha per 1,000 population	Developer contributions	£55,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	0.86 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Children's Play Space	Under investigation	1.8 m2 per child bed space (minimum 151 children expected)	Developer contributions	£17,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	271 m2	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Leisure	Allotments	Under investigation	6.25 plots (0.01 ha per plot) per 1,000 population	Developer contributions	Unknown costs	Thurrock Borough Council	Developer	0.03 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Sport	Belhus Sports Hub - proposed development at existing is expected to meet the needs of new residents for all options	Planned	Feasibility study undertaken (January 2010) - strategic case for sports hubs at Belhus (to serve Aveley and South Ockendon and West of the borough) and Blackshots is approved	Developer contributions, public funding, private funding. Only local authority capital source is through prudential borrowing - could be achieved on basis of improved revenue position of new facilities	£384,000 (Sport England Facilities Calculator, 2011) for swimming pools, halls, indoor bowls and artificial turf pitches	Thurrock Borough Council	Belhus Sports Park, other sports organisations	Belhus Park (existing facility)	Belhus Sports Park (existing facility)	No funding secured at present. Belhus to see increase in visits per annum from 130,000 to 228,00 - 275,000	Medium to long-term development				
COMMUNITY FACILITIES															
Libraries	Library space	Under investigation	30.2 m2 per 1,000 population at cost of £3,210 per m2 (Museum, Libraries and Archives Councils)	Developer contributions	£105,000	Thurrock Borough Council	N/A	33 m2	Expected to be part of existing library facility	TBC	Unknown				
EMERGENCY SERVICES															
Police	Potential need for police sub-	Under	Additional officers required. Police	Developer contributions	Unknown	Essex Police	Thurrock	Unknown.	Likely to be part of new	N/A	Police officers to be in				



SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
	station as part of new development	investigation	standards require 1 new officer per every 1,000 units and 20,000 m2 retail and offices				Borough Council		development or existing Lakeside shopping centre		place as triggered by development				
Police	Automatic Number Plate Recognition (ANPR)	Under investigation	Cameras required on key roads	Unknown	£8,000 per camera	Essex Police	N/A	N/A	Key roads – to be determined		To be installed in line with development				
Ambulance	Potential additional ambulance provision	Under investigation	Potential to provide additional vehicles and staff at certain times eg .Friday and Saturday nights	East of England Ambulance Service - commissioning bodies.	Unknown	East of England Ambulance Service	N/A	None - capacity at existing station in Grays for expansion and additional, vehicles and staff if required	Existing station at Grays	Service provider keen to understand proposed leisure activities eg nightclubs - these represent key risks, rather than resident population increase	On-going - to respond to any increase in risk as part of new development	Y			
UTILITIES															
Anglian Water	Strategic sewage treatment and conveyance / Local Foul and Surface water sewage network	Under investigation	Essential infrastructure requirement for new development. London Road pumping station at capacity and might need upgrades. Alternatively, direct flows to private Lakeside pumping station.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding from Anglian Water	£2m - £5m (to upgrade London Road PS)	Thurrock Borough Council and lead Developers unless strategic upgrades required which will led by utilities	Anglian Water	Unknown - assessment made once constraint is known	Unknown	Potential ownership constraints	Unknown				
Essex and Suffolk Water	Reservoirs and water sources / Local water supply network	Under investigation	Essential infrastructure requirement for new development. Some local infrastructure upgrades might be required.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding from Anglian Water	No abnormal costs	Thurrock Borough Council and lead Developers unless strategic upgrades required which will led by utilities	Essex and Suffolk Water	Unknown - assessment made once constraint is known	Unknown	Unknown	Unknown				

Table 6.2: Thurrock Lakeside Basin Infrastructure Schedule for Strategic Option 1 (Years 6 – 15)

SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
HEALTH															
Primary Care	If lower housing numbers achieved: there is potential for primary care for new residents - to be provided through access existing health centres	Planned	New population (at least 4,494) to access existing health centres - most likely to be at Chafford Hundred. 2 additional GPs required.	Developer contributions	PCT confirms costs of £2,500 - £3,000 per sqm. 1 GP requires 165 sqm.	South West Essex PCT	Existing health centres eg Chafford Hundred	None - existing health centre(s) to be utilised	N/A - existing health centre(s) to be utilised	Developer contributions to assist existing health centres, until new health centre is built on site (if required).	On-going - to be in line with growth	Y	Y	Y	
Primary Care	If higher housing numbers are achieved then Primary care for new residents may require- development of new health centre	Under investigation	New population (up to 6,431) to access new health centre. 3 GPs required	GP Consortia & developer contributions	£2m (Health Centre for 4GPs)	South West Essex PCT	New health centre	Floorspace: 660sqm (Health Centre for 4GPs). Also require space for car parking, emergency access etc	At Lakeside Basin. Ideally accessible location, and part of wider community hub	Important for service provider to understand total planned development as some developer contributions could be banked to assist new health centre instead of supporting existing facilities	Long-term development - new health centre only required once population reaches 6,000			Y	
Bespoke Care	Specialist care facility to meet specific needs of new population. Type of care to be determined once population in place.	Under investigation	Specialist facilities have been developed to support other new communities e.g. at Chafford Hundred	Developer contributions, private organisation	Unknown costs at present	Unknown at present	Unknown at present	Unknown at present	Potential to be located in Lakeside Basin	Opportunity (if exists) might be taken by public or private organisation	Long-term development - needs to be established once new population is in place			Y	
EDUCATION															
Primary Schools	New primary school(s) - a 3 FE or 4 FE to be developed. However this is dependent upon outcome (existing schools vs new build - from Option 1)	Under investigation	Assume development generates 471 to 675 - pupils	DfE and developer contributions	£5m for one 2 FE primary school, £7.5m for 3 FE	Thurrock Borough Council - Education	New Primary school(s)	2 ha for one 2 FE primary school, 3 ha for 3 FE	Additional FE to be added to new school on-site vs new build school on-site.	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	Short to medium-term development - to be in line with growth	Y	Y	Y	
Secondary Schools	Existing secondary schools to be expanded - capacity potentially available in Harris Academy (Chafford Hundred), Ockendon, Ormiston Park and William Edwards	Under investigation	Assume development generates 254 to 364 pupils	DfE and developer contributions	Approximately £2.5m to refurbish and extend one secondary school Estimated cost: £2.5m	Thurrock Borough Council - Education	Existing Secondary schools	N/A - existing secondary school(s) to be expanded on existing sites	Within existing secondary schools - catchments are open so accessible to all of the development area	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	On-going - to be in line with growth, until new secondary school is required	Y	Y	Y	
GREEN GRID, OPEN SPACE, SPORT & LEISURE															
Green Grid	Natural and Semi-natural Greenspace	Under investigation	2 ha per 1,000 population. £105,000 per ha (TIPIP, 2010)	Developer contributions	£1.15m	Thurrock Borough Council	Developer	10.93 ha	Accommodated by green space and 4 buffer areas: i) natural & semi natural green space to north and northeast of the Northern Lake, ii) Southern floodplain of the Mardyke between Ship Lane and Davy Down (iii) eastern cliff face linking London Road to Arterial Road, and iv) zones C1, D1 and D3	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Parks and Gardens	Under investigation	0.7 ha per 1,000 population	Developer contributions	£251,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	3.82 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Amenity Greenspace	Under investigation	0.8 ha per 1,000 population	Developer contributions	£287,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	4.37 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Children's Play Space	Under investigation	1.8 m2 per child bed space (minimum 725 children expected)	Developer contributions	£79,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	1,305 m2	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Leisure	Allotments	Under investigation	6.25 plots (0.01 ha per plot) per 1,000 population	Developer contributions	Unknown costs	Thurrock Borough Council	Developer	0.17 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			

SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
Sport	Belhus Sports Hub - proposed development at existing is expected to meet the needs of new residents for all options	Planned	Feasibility study undertaken (January 2010) - strategic case for sports hubs at Belhus is approved	Developer contributions, public funding, private funding. Only local authority capital source is through prudential borrowing - could be achieved on basis of improved revenue position of new facilities to provide £7.1m to £9.8m	£2.07m (Sport England Facilities Calculator, 2011) for swimming pools, halls, indoor bowls and artificial turf pitches	Thurrock Borough Council	Belhus Sports Park, other sports organisations	Belhus Park (existing facility)	Belhus Sports Park (existing facility)	No funding secured at present. Belhus to see increase in visits per annum from 130,000 to 228,00 - 275,000	Medium to long-term development		Y	Y	
COMMUNITY FACILITIES															
Libraries	Library space	Under investigation	30.2 m2 per 1,000 population at cost of £3,210 per m2 (Museum, Libraries and Archives Councils)	Developer contributions	£530,000	Thurrock Borough Council	N/A	165 m2	Expected to be part of existing library facility	To be confirmed by TBC	Unknown				
EMERGENCY SERVICES															
Police	Potential need for police sub-station as part of new development	Under investigation	Additional officers required. Police standards require 1 new officer per every 1,000 units and 20,000 m2 retail and offices	Developer contributions	Unknown	Essex Police	Thurrock Borough Council	Unknown. Space to accommodate at least 3 police officers	Likely to be part of new development or existing Lakeside shopping centre	N/A	Police officers to be in place as triggered by development				
Police	Automatic Number Plate Recognition (ANPR)	Under investigation	Cameras required on key roads	Unknown	£8,000 per camera	Essex Police	N/A	N/A	Key roads – to be determined	N/A	To be installed in line with development				
Fire & Rescue	Relocation of existing Fire & Rescue Station. Service provision is adequate and can meet future needs	Under investigation	Existing station located in Grays and serves West Thurrock. Service provider has aspirations to locate towards Lakeside, even without planned growth. Therefore growth proposals strengthen this aspiration	Aim to fund through disposal of existing site. If there is a shortfall other streams, including developer contributions, to be pursued	£5m	Essex County Fire & Rescue Service	N/A	1 ha	Service provider wants to relocate closer to Lakeside (from Grays). Any site, including at Lakeside Basin, would be satisfactory.	No funding secured at present. Service provider considers capital costs might be covered by disposal of existing site. However, there might be a shortfall.	Medium to long-term development		Y	Y	
Ambulance	Potential additional ambulance provision	Under investigation	Potential to provide additional vehicles and staff at certain times eg Friday and Saturday nights	East of England Ambulance Service - commissioning bodies. Developer contributions never sought in the past	Service provider unable to estimate costs	East of England Ambulance Service	N/A	None - capacity at existing station in Grays for expansion and additional, vehicles and staff if required	Existing station at Grays	Service provider keen to understand proposed leisure activities eg nightclubs - these represent key risks, rather than resident population increase	On-going - to respond to any increase in risk as part of new development	Y	Y	Y	
WASTE MANAGEMENT															
Waste and Recycling	Vehicles for refuse collection and recycling & organic waste	Planned	Service standards: 1,500 units require 3 vehicles - for refuse collection, recycling and garden/kitchen waste	Waste Revenue Budget	£150,000 = cost per vehicle per year (including capital costs and crew). Total cost = £450,000	Thurrock Borough Council	TBC	N/A	N/A	Vehicles need to be replaced every 7 years	On-going - provision to be in line with growth	Y	Y	Y	
UTILITIES															
Anglian Water	Strategic sewage treatment and conveyance / Local Foul and Surface water sewage network	Under investigation	Essential infrastructure requirement for new development. London Road pumping station at capacity and might need upgrades. Alternatively, direct flows to private Lakeside pumping station.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding from Anglian Water	£2m - £5m (to upgrade London Road PS)	Thurrock Borough Council and lead Developers unless strategic upgrades required which will be led by utilities	Anglian Water	Unknown - assessment made once constraint is known	Unknown	Potential ownership constraints	Unknown				
Essex and Suffolk Water	Reservoirs and water sources / Local water supply network	Under investigation	Essential infrastructure requirement for new development. Some local infrastructure upgrades might be required.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding from Anglian Water	No abnormal costs	Thurrock Borough Council and lead Developers unless strategic upgrades required which will be led by utilities	Essex and Suffolk Water	Unknown - assessment made once constraint is known	Unknown	Unknown	Unknown				

Table 6.3: Thurrock Lakeside Basin Infrastructure Schedule for Strategic Option 2 (Years 6 – 15)

SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
HEALTH															
Primary Care	If higher housing numbers are achieved: Primary care for new residents may require development of a new health centre	Under investigation	New population (up to 9,135) to access new health centre. Minimum to accommodate 3 GPs. 4 GPs required	Developer contributions (service provider estimates £500 per new unit)	£2m (Health Centre for 4GPs)	South West Essex PCT	New health centre	Floorspace: 660sqm (Health Centre for 4GPs). Also require space for car parking, emergency access etc	At Lakeside Basin. Ideally accessible location, and part of wider community hub	Important for service provider to understand total planned development as some developer contributions could be banked to assist new health centre instead of supporting existing facilities	Long-term development - new health centre only required once population reaches 6,000			Y	Y
Bespoke Care	Specialist care facility	Under investigation	Specialist facilities have been developed to support other new communities eg Chafford Hundred	Developer contributions, private organisation	Unknown costs	TBC	TBC	TBC	TBC	Need for specialist facility to respond to specific needs of new population	Long-term development - needs to be established once new population is in place			Y	Y
EDUCATION															
Primary Schools	Two new primary schools - to cover 6 FE. However this is dependent upon outcome (existing schools vs new build - from Option 1)	Under investigation	Development to generate 678 to 970 - pupils	Developer contributions	£5m for one 2 FE primary school, £7.5 for 3 FE: Estimated cost: £12.5m	Thurrock Borough Council - Education	New Primary school(s)	2 ha for one 2 FE primary school, 3 ha for 3 FE	Additional FE to be added to new school on-site vs new build school on-site.	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	Short to medium-term development - to be in line with growth	Y	Y		
Secondary Schools	Existing secondary schools to be expanded - capacity potentially available in Harris Academy (Chafford Hundred), Ockendon, Ormiston Park and William Edwards	Under investigation	Development to generate 365 to 522 pupils – 4FE required	Developer contributions	Approximately £2.5m to refurbish and extend one secondary school Estimated cost: £10m	Thurrock Borough Council - Education	Existing Secondary schools	N/A - existing secondary school(s) to be expanded on existing sites	Within existing secondary schools - catchments are open so accessible to all of the development area	Phasing of development, type of housing (split between houses vs flats) are important for service provider to determine needs	On-going - to be in line with growth, until new secondary school is required	Y	Y		
GREEN INFRASTRUCTURE, OPEN SPACE, SPORT & LEISURE															
Green Grid	Natural and Semi-natural Greenspace	Under investigation	2 ha per 1,000 population. £105,000 per ha (TIPIP, 2010)	Developer contributions	£1.63m	Thurrock Borough Council	Developer	15.52 ha	Accommodated by green space and 4 buffer areas: i) natural & semi natural green space to north and northeast of the Northern Lake, ii) Southern floodplain of the Mardyke between Ship Lane and Davy Down (iii) eastern cliff face linking London Road to Arterial Road, and iv) zones C1, D1 and D3	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Parks and Gardens	Under investigation	0.7 ha per 1,000 population	Developer contributions	£362,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	5.43 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Amenity Greenspace	Under investigation	0.8 ha per 1,000 population	Developer contributions	£413,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	6.21 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Open Space	Children's Play Space	Under investigation	1.8 m2 per child bed space (minimum 1,043 children expected)	Developer contributions	£114,000 (TIPIP, 2010)	Thurrock Borough Council	Developer	1,800 m2	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			
Leisure	Allotments	Under investigation	6.25 plots (0.01 ha per plot) per 1,000 population	Developer contributions	Unknown costs	Thurrock Borough Council	Developer	0.24 ha	To be located within new development areas to be accessible to all	Provision to come forward as land is developed for housing	On-going - to be in line with growth	Y			

SERVICE	ITEM	Status	Rationale / Justification	FUNDING	ESTIMATED COST	LEAD	PARTNERS	LANDTAKE	LOCATION	DELIVERY NOTES	TIMEFRAME	5YR	10YR	15YR	20YR
Sport	Belhus Sports Hub - proposed development at existing is expected to meet the needs of new residents for all options	Planned	Feasibility study undertaken (January 2010) - strategic case for sports hubs at Belhus is approved	Developer contributions, public funding, private funding. Only local authority capital source is through prudential borrowing - could be achieved on basis of improved revenue position	£2.95m (Sport England Facilities Calculator, 2011) for swimming pools, halls, indoor bowls and artificial turf pitches	Thurrock Borough Council	Belhus Sports Park, other sports organisations	Belhus Park (existing facility)	Belhus Sports Park (existing facility)	No funding secured at present. Belhus to see increase in visits per annum from 130,000 to 228,00 - 275,000	Medium to long-term development		Y	Y	Y
COMMUNITY FACILITIES															
Libraries	Library space	Under investigation	30.2 m2 per 1,000 population at cost of £3,210 per m2 (Museum, Libraries and Archives Councils)	Developer contributions	£752,000	Thurrock Borough Council	N/A	234 m2	Expected to be part of existing library facility	To be confirmed by TBC	Unknown				
Community Halls	Community halls	Under investigation	1 community hall (1,750 m2) per 7,000 population (UWE and Local Government Management Board Design Guide)	Developer contributions	£250,000	Thurrock Borough Council	N/A	1,750 m2	Built as part of new development in accessible location. Part of community hub.	To be confirmed by TBC	Unknown				
EMERGENCY SERVICES															
Police	Potential need for police sub-station as part of new development	Under investigation	Additional officers required. Police standards require 1 new officer per every 1,000 units and 20,000 m2 retail and offices	Developer contributions	Unknown	Essex Police	Thurrock Borough Council	Unknown. Space to accommodate at least 3 police officers	Likely to be part of new development or existing Lakeside shopping centre	N/A	Police officers to be in place as triggered by development				
Police	Automatic Number Plate Recognition (ANPR)	Under investigation	Cameras required on key roads	Unknown	£8,000 per camera	Essex Police	N/A	N/A	Key roads – to be determined	N/A	To be installed in line with development				
Fire & Rescue	Relocation of existing Fire & Rescue Station. Service provision is adequate and can meet future needs	Under investigation	Existing station located in Grays and serves West Thurrock. Service provider has aspirations to locate towards Lakeside, even without planned growth. Therefore growth proposals strengthen this aspiration	Aim to fund through disposal of existing site. If there is a shortfall other streams, including developer contributions, to be pursued	£5m	Essex County Fire & Rescue Service	N/A	1 ha	Service provider wants to relocate closer to Lakeside (from Grays). Any site, including at Lakeside Basin, would be satisfactory.	No funding secured at present. Service provider considers capital costs might be covered by disposal of existing site. However, there might be a shortfall.	Medium to long-term development		Y	Y	Y
Ambulance	Potential additional ambulance provision	Under investigation	Potential to provide additional vehicles and staff at certain times eg Friday and Saturday nights	East of England Ambulance Service - commissioning bodies. Developer contributions never sought in the past	Service provider unable to estimate costs	East of England Ambulance Service	N/A	None - capacity at existing station in Grays for expansion and additional, vehicles and staff if required	Existing station at Grays	Service provider keen to understand proposed leisure activities eg nightclubs - these represent key risks, rather than resident population increase	On-going - to respond to any increase in risk as part of new development	Y	Y	Y	Y
WASTE MANAGEMENT															
Waste and Recycling	Vehicles for refuse collection and recycling & organic waste	Planned	Service standards: 3,000 units require 6 vehicles - for refuse collection, recycling and garden/kitchen waste	Waste Revenue Budget	£150,000 = cost per vehicle per year (including capital costs and crew). Total cost = £900,000	Thurrock Borough Council	TBC	N/A	N/A	Vehicles need to be replaced every 7 years	On-going - provision to be in line with growth	Y	Y	Y	Y
UTILITIES															
Anglian Water	Strategic sewage treatment and conveyance / Local Foul and Surface water sewage network	Under investigation	Essential infrastructure requirement for new development. London Road pumping station at capacity and might need upgrades. Alternatively, direct flows to private Lakeside pumping station.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding	£2m - £5m (to upgrade London Road PS)	Thurrock Borough Council and lead Developers unless strategic upgrades required which will be led by utilities	Anglian Water	Unknown - assessment made once constraint is known	Unknown	Potential ownership constraints	Unknown				
Essex and Suffolk Water	Reservoirs and water sources / Local water supply network	Under investigation	Essential infrastructure requirement for new development. Some local infrastructure upgrades might be required.	Any upgrades will mainly be from Developer contributions although some may be in strategic funding	No abnormal costs	Thurrock Borough Council and lead Developers unless strategic upgrades required which will be led by utilities	Essex and Suffolk Water	Unknown - assessment made once constraint is known	Unknown	Unknown	Unknown				

Table 6.4: Summary of Indicative Infrastructure Costs for both Strategic Spatial Framework Options

	First 5 Years	Option 1	Option 2
	1 - 5 years	6 - 15 years	6 - 20 years
Health	None	£2m (max)	£2m (min)
Education			
Primary schools	£2.5m	£7.5m	£12.5m
Secondary schools	£2.5m (max)	£2.5m	£10m (min)
Green Infrastructure	£0.23m	£1.15m	£1.63m
Open Space, Sport & Leisure			
Open Space & Leisure	£0.12m	£0.6m	£0.89m
Sport	£0.38m	£2.07m	£2.95m
Community Facilities	£0.1m	£0.53m	£1m
Emergency Services	Nil	£5m (max)	£5m (max)
Waste Management	Nil	£0.45m	£0.9m
Utilities (max used)	Nil	£2m - £5m	£2m - £5m
Transport			
Public Transport/Parking/TDM	£11.15m	TBC	TBC
Public Realm/Green links	£2.05m	£6.27m	£4.23m
Internal Highway network	Nil	£1.16m	£6.5m
On-site highway infrastructure	£0.29	£0.32	£1.22m
Off site highway infrastructure	£0.24	£2.2m	£2.2m
TOTAL COSTS	£19.5m	£34 - 37m	£53-56m

All costs in Table 6.4 are estimates subject to further refinement and testing. The total costs for are for individual options (i.e. they are not cumulative). They exclude costs associated with addressing existing infrastructure deficits (e.g. Junctions 30/31 of the M25).

Appendix A – Highway Infrastructure Requirements for the LDF Core Strategy

Table A1 Junction Improvements identified in LDF Core Strategy

Jct No.	Location	Improvement needed	2006 Base	2021	2025	Cost Estimate	Assumption on Cost
7	West Thurrock Way / Stoneness Rd/ London Rd	Remarking to improve flaring on one approach		√	√	£2,000	No construction work required
8	A1306 / A1012	Improve flaring on one approach		√	√	£30,000	Not inclusive of stat costs
10	A126 / A13	Improve flaring on both approaches		√	√	£240,000	Not inclusive of stat costs
11	B1335 / B186 South Rd / B186 Stifford Hill	1 arm upgrade to 2 lanes	√	√	√	£520,000	Inclusive of junction resurfacing and replacement of traffic signals Not inclusive of stat. costs
12	B186 Stifford Hill / B186 Pilgrims Lane	Convert from mini to standard roundabout	√	√	√	£640,000	Inclusive of junction resurfacing Not inclusive of stat. costs
13	A1306 / B186 Pilgrims Lane / B186 Burghley Rd	1 arm upgrade to 2 lanes		√	√	£120,000	Widening to northern arm only - signal timing changes throughout Not inclusive of stat cost
14	A13 / A1012	Signalise roundabout	√	√	√	£1,200,000	Inclusive of a nominal amount of £250,000 for resurfacing Not inclusive of stat. costs
15	A1306 / A1012	Adjust signal timings and additional lanes on two arms	√	√	√	£321,000	Not inclusive of stat costs
17	A1013 / A126	Adjust signal timings		√	√	£4,000	No construction work required
24	A13 / A1014 / A1013	Signalise roundabout		√	√	£325,000	Assume cable-less linking Not inclusive of Stat costs. Allowance made for re-surfacing
25	East Tilbury Rd / Muckingford Rd	Extend flare on 1 arm		√	√	£35,000	Not inclusive of stat costs

Jct No.	Location	Improvement needed	2006 Base	2021	2025	Cost Estimate	Assumption on Cost
28	A1013 / Buckingham Hill Road	Signalisation/roundabout	√	√	√	£520,000/ £295,000	Traffic signals, inc junction resurfacing Roundabout inc resurfacing Not inclusive of stats costs
101	A126 / Fenner Rd / Lakeside	Minor flare widening on one approach		√	√	£25,000	Not inclusive of stat costs
102	A1012 / Hogg Lane / Devonshire Rd	Extend flare on 1 arm	√	√	√	£34,000	Not inclusive of stat costs
103	A126 / Devonshire Rd	Adjust signal phasing and create flared entry and exit	√	√	√	£200,000	Not inclusive of stat costs
104	A126 London Rd / Eastern Way	Create short two lane approach on one arm	√	√	√	£40,000	Not inclusive of stat costs
105	A1013 / Derby Rd	Signal timings	√	√	√	£4,000	No construction work required
106	A126 Stanley Rd / A126 Clarence Rd	Additional Lanes, remove parking or signal timings	√	√	√	£545,000	Tight junction assumed CPO required to provide additional carriageway Not inclusive of stat costs Parking to be removed
M25J30	Junction of M25 and A13	Additional capacity is required on each arm of the roundabout.	√	√	√	Beyond Scope of this Study	
M25J31	M25 / A1306 / A1090	Additional capacity would be required on both M25 off-slips and A1306 West approach.		√	√	Beyond Scope of this Study	
Total cost of all junction improvements						£4,580,000	

Table A2 Highway Link Improvements identified in the Core Strategy

Link location	Link length (km)	Solution	Cost	Assumption on cost
A13 (M25 to A126)	1.45	Widening by 1 lane	£6,775,000	Carriageway widening Bridging works, gantries and traffic signal costs Not inclusive of stat costs
A13 (A126 to A1012)	1.91	Widening by 1 lane	£9,190,000	Carriageway widening Bridging works and gantries Not inclusive of stat costs
A13 (A1012 to A1089)	2.76	Widening by 1 lane	£12,175,000	Carriageway widening Bridging works Not inclusive of stat costs
A13 (A1089 to A128)	2.25	Widening by 1 lane	£10,275,000	Carriageway widening Bridging works Not inclusive of stat costs
A13 (A128 to A1014)	3.35	Widening by 1 lane	£19,300,000	Carriageway widening Bridging works Not inclusive of stat costs
A13(A1014 to A176)	4.66	Widen by 1 lane	£20,600,000	Carriageway widening Bridging works Not inclusive of stat. Costs
A1306 Arterial Road	2.23	Widening by 1 lane	£9,600,000	No factoring applied to allow for a lower category of road over dual carriageway. Not inc. of stat. cost
A1306 London Road	1.32	Widening by 1 lane	£5,700,000	No factoring applied to allow for a lower category of road over dual carriageway. Not inc. of stat. costs
A1089 Slips (near jct 22)	0.6	New bus/cycle link	£2,600,000	No factoring applied to allow for a lower category of road over dual carriageway. Not inclusive of stat. costs
Total Highway Link Costs			£96,215,000	

Appendix B – Infrastructure Providers consulted

- Health – South West Essex Primary Care Trust
- Education – Thurrock Borough Council
- Green Infrastructure – Thurrock Borough Council
- Open Space, Sport & Leisure – Thurrock Borough Council
- Police – Essex Police
- Fire & Rescue – Essex Fire & Rescue Service
- Ambulance – East of England Ambulance Service
- Strategic sewage treatment and conveyance – Anglian Water
- Local foul and surface water sewage treatment and conveyance – Anglian Water
- Local water supply network – Essex and Suffolk Water
- Electricity Transmission: strategic infrastructure – National Grid
- Electricity Distribution: local infrastructure – Eastern power
- Gas network – National Grid

Appendix C – Baseline Report (September, 2011)

Thurrock Lakeside Infrastructure Assessment

BASELINE REPORT

Project Number VN40002 | September 2011

**Thurrock Lakeside Infrastructure
Assessment**

Document Title: **Baseline Report**

Version: Report

Date: 5 September 2011

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1. Introduction

1.1 Objectives of the Study

- 1.1.1 SKM Colin Buchanan has been appointed by Thurrock Borough Council (TBC) to undertake a preliminary assessment of infrastructure requirements and costs for each of the spatial development options within the proposed Lakeside Regional Centre Study Area. The extent of the Study Area is shown on Figure 1.1 which provides an overview of existing physical infrastructure in the Study Area.
- 1.1.2 This study will inform the full range of infrastructure requirements necessary to support the proposed transformation of Lakeside Shopping Centre into a Regional Town Centre, as set out in the Single Issue Review¹ (SIR) of the East of England Plan (2008), and in Thurrock Council's Draft Local Development Framework Core Strategy.
- 1.1.3 To attain the status of a Regional Centre the Lakeside Basin will be required to undergo major remodelling and transformation. An initial change will be the provision of additional comparison retail floorspace by 2019, which is conditional on accompanying mixed use growth and a range of sustainability measures. These include provision of additional residential, office, hotel, and assembly and leisure activities, and measures such as securing more sustainable travel patterns, greater permeability through the area, modal shift from the car to alternative modes of transport, and design and public realm improvements.
- 1.1.4 The study will address the full range of infrastructure requirements as set out in the Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP); including; a comparative assessment of the impact of infrastructure interventions; initial assessments of delivery options in relation to the phasing of development; and an outline delivery programme to assist the Council with the selection of a preferred development option

1.2 Scope of this Report

- 1.2.1 This report provides an overview of the existing infrastructure serving the Lakeside Study Area and any committed infrastructure investment as a baseline from which the assessments will be undertaken. Infrastructure in this baseline report is classified under three headings: i) social and community infrastructure, ii) utilities, and iii) transport.
- 1.2.2 As can be seen from Figure 1.1 the baseline is not confined solely to on-site infrastructure within the boundaries of the Study Area. The area of search includes the communities immediately surrounding the study area as it is anticipated that many existing facilities in these locations will be used by future residents of, and visitors to, the Lakeside Basin. These areas include Aveley (to the north west), West Thurrock (part of the Lakeside Basin), Chafford Hundred and South Stifford.
- 1.2.3 A desk-based approach to gathering information set out in this section has been undertaken. This is primarily based upon a review of infrastructure work previously undertaken by Colin

¹ Go-East, January 2010, Thurrock Key Centre for Development and Change: A Revision to the Regional Spatial Strategy for the East of England

Buchanan for TBC. This work has been reviewed in the following order, taking account of most recent information first:

- Thurrock Infrastructure Funding and Trajectory Refresh (Dec 2010)
- Thurrock Infrastructure Prioritisation and Implementation Programme (Feb 2010)
- Thurrock Infrastructure Prioritisation and Implementation Programme (Feb 2008)

1.2.4 Information is referenced to these reports, as well as documents specific to each service provider (where relevant). As agreed with TBC no contact has been made with infrastructure / service providers during this initial desk based review.

1.2.5 Baseline data and information has been collected on the following infrastructure types:

Education – Pre-school services, Primary schools, Secondary schools and Post-sixteen institutions (including Colleges and Universities)

Health – Primary healthcare²

Community facilities – community centres and libraries

Open space and sport – open space, including green infrastructure and sport and leisure facilities

Emergency services – police, fire and ambulance

Utilities – water, waste water, electricity, gas, broadband and telecoms and renewable and decentralised energy

Waste - Waste management, disposal and recycling

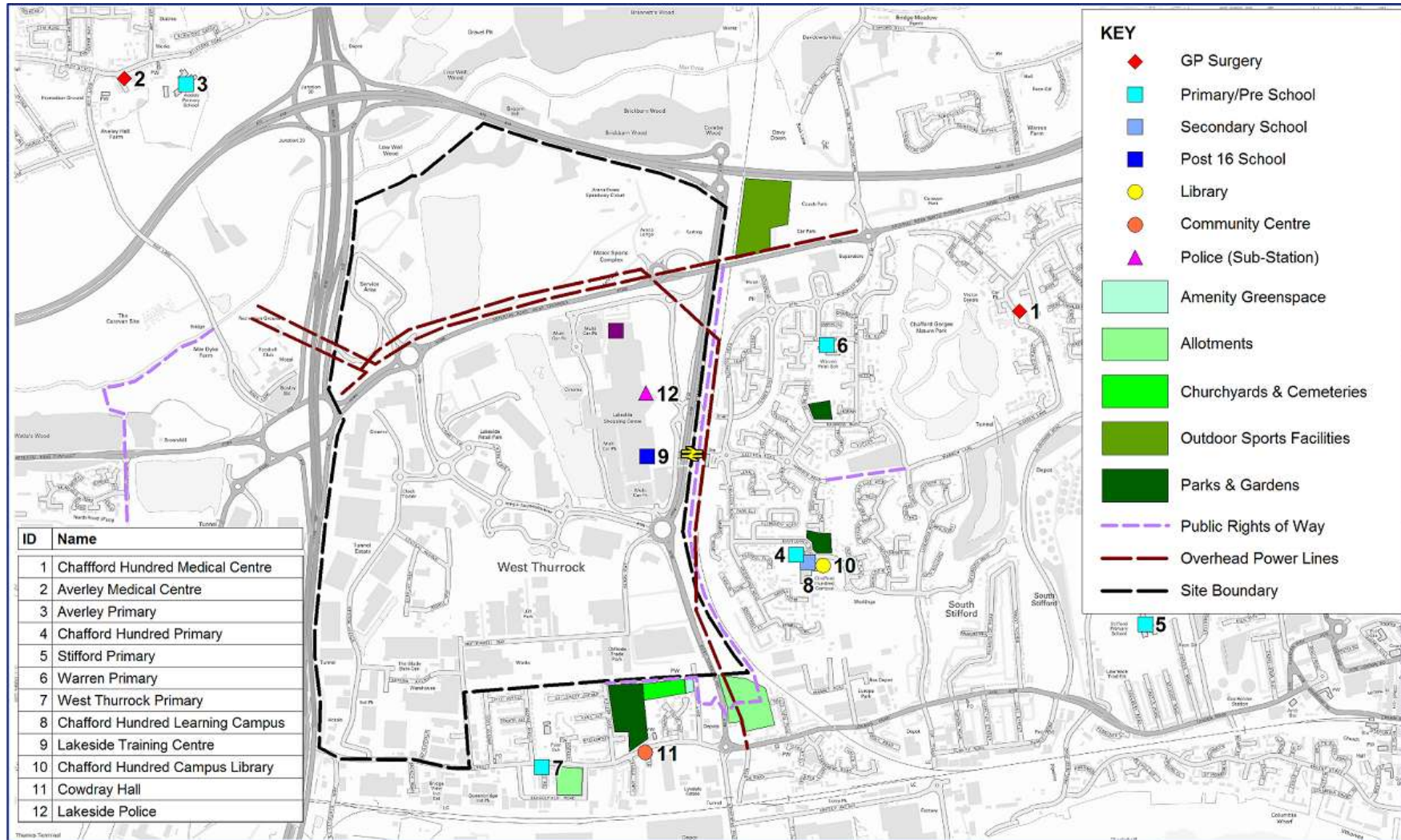
Transport – highways and public transport (bus and rail).

1.2.6 For each infrastructure category documentation has been reviewed to compile baseline conditions and proposed and committed investments. The baseline covers what physically exists on the ground or is provided at the date which the most recent documentation was produced. Where analysis of capacity (surplus or deficits) exists this has also be included in this report. Information related to proposed investment includes planned (committed and fully funded) or proposed (unfunded but specified in relevant business plans). Where known, this report also acknowledges any proposed changes to the way in which infrastructure or services may be delivered in future which could have an impact on capacity or accessibility. It is anticipated that further information on likely changes in service delivery as a result of changes in national policy (e.g. healthcare and education) or planned reduction in funding (e.g. police, libraries) will be forthcoming through engagement with service providers to be undertaken during the next stage of the study.

² Secondary (acute) care is not proposed to be included within the scope of this study; as the alternative development options for the study area will have no discernable differential impact on the need for secondary healthcare.

- 1.2.7 This report therefore provides a snapshot of the current and committed infrastructure serving Thurrock Lakeside. It does not attempt to make any assessment of future needs arising from the redevelopment of the area. This will be covered in the next stages of the study.

Figure 1.1: Existing Infrastructure Serving the Lakeside Study Area



2. Policy Context

2.1 Single Issue Review

2.1.2 The Single Issue Review³ (SIR) of the East of England Plan (2008-2009) revised policies ETG2 and E5 to state that the northern part of the Lakeside Basin (the study area) becomes defined as a Regional Centre. This change is dependent on the conditions set out in amended policy ETG2 'Thurrock Key Centre for Development and Change' as follows:

- (2) *Local Development Documents should guide the regeneration and remodelling of the wider Lakeside Basin and West Thurrock area on sustainable mixed use lines by:*
 - i. *defining the boundary of the area;*
 - ii. *providing for a broader employment base through the identification of key strategic employment sites;*
 - iii. *promoting a high quality built environment and public realm that is more coherent, legible and integrated;*
 - iv. *protecting and enhancing green infrastructure including the provision of further accessible natural green space to meet local standards;*
 - v. *promoting a greater mix of uses, including additional residential, office, hotel, and assembly and leisure activities;*
 - vi. *improving the range of services and facilities;*
 - vii. *securing more sustainable movement patterns, reduced private motor vehicle dependence and complementary travel demand management measures including an area-wide travel plan;*
 - viii. *improving local accessibility and connectivity by public transport and pedestrian and cyclist permeability throughout the area including consideration of ways to reconnect the north and the south of the area, a new high frequency service rail station in the south, and a personal rapid transport system; and*
 - ix. *providing the necessary improvements to the local and strategic road network.*
- (3) *The attainment of Regional Centre status for the northern part of Lakeside Basin is conditional upon the adoption of Local Development Documents providing for:*
 - i. *a town centre boundary, with a designated primary shopping area;*
 - ii. *a greater mix of uses and services including a significant increase in housing and office accommodation and the provision of convenience retail floorspace;*
 - iii. *an indicative scale of floorspace for each major town centre use;*
 - iv. *indicative thresholds for new retail floorspace, phased with required infrastructure;*
 - v. *design and public realm enhancements;*
 - vi. *improved accessibility for pedestrians and by non-car modes, including the introduction of a car parking charging and management regime; and*
 - vii. *an implementation plan.*
- (4) *Retail expansion at the new Regional Centre should be limited to 50,000 m2 of net comparison floorspace by 2019 together with an appropriate amount of convenience floorspace to reflect the Borough's population growth. No retail expansion should be approved until the adoption of the appropriate Local Development Documents and the imposition of appropriate conditions and obligations to secure the objectives of paragraphs (2) and (3). Any further strategic retail development beyond the initial 50,000 m2 net of comparison retail floorspace at the new Lakeside Regional Centre should be considered through future RSS reviews.*

³ Go-East, January 2010, Thurrock Key Centre for Development and Change: A Revision to the Regional Spatial Strategy for the East of England

2.1.3 Notably, the SIR does not specify the housing potential for the Lakeside Basin. In spite of this, background documents prepared on behalf of the East of England Regional Assembly⁴ consider three scenarios for growth, including housing. The number of new homes ranges from 1,800 to more than 3,800 units in the preferred scenario. It should however be noted that most sites located outside the Lakeside area as defined for the purposes of this study and the forthcoming Site Allocations Development Plan Document. They are located along London Road, in South Stifford and Chafford Hundred and consider development in the green belt on land to the north of the A1306.

2.2 Local Development Framework

2.2.1 Thurrock's Core Strategy was submitted for examination purposes in April 2010 and is still in the examination process; this is due to a combination of changing Government policy and the need to re-consult on gypsy and traveller site provision. It is currently anticipated that the Inspector will report later this year, followed by adoption of the Core Strategy in December 2011.

2.2.2 The submission Core Strategy is in line with the findings and recommendations of the SIR. Lakeside is one of five primary regeneration areas in the borough: it will be 'transformed into a Regional Centre (town centre) providing a range of retail, leisure, employment, housing and new transport facilities'⁵. However, the Policy CSTP7, specifically distinguishes between the town centre functions of Lakeside and Grays. Grays town centre is identified as a "focus for cultural, administrative and educational functions, whilst providing retail development that is complementary to the Lakeside Basin". Whereas, the new Lakeside regional centre is to accommodate almost ten times more retail floorspace in addition to significant residential development. As a result there is a need to provide community infrastructure as part of this growth.

2.2.3 In the Study Area, the Core Strategy proposes a transformation that will comprise:

- 50,000 sqm net additional comparison retail floorspace;
- 4,000 sqm convenience floorspace;
- Up to 3,000 new homes;
- Convenience and service retail, office and leisure floorspace;
- Improved open space, community and health facilities; and
- Improved highways access, public transport, pedestrian routes, road and parking alterations.

2.2.4 It should be noted that the Core Strategy identifies where strategic scale releases of the green belt might take place (as well as limited local releases necessary for planned developments and where the surrounding Green Belt will be enhanced). Land to the north of the A1306 within the study area (i.e.: the Arena Essex site), which is currently within the Green Belt, is not identified for release.

⁴ GVA Grimley for EERA, March 2009, Lakeside Basin Single Issue Review

⁵ See para 3.10 of Submission Core Strategy

- 2.2.5 The Site Allocations DPD is in preparation and will contain a specific chapter on Lakeside, which is identified as one of five main regeneration and opportunity hubs in the borough. A separate Delivery and Implementation SPD will also be prepared. The timing of the DPD and SPD will be contingent upon the outcome of the Inspectors Report on the Core Strategy.

3. Social and Community Infrastructure

3.1 Introduction

- 3.1.1 This chapter assesses current baseline social and community infrastructure provision in the Lakeside Basin study area through a review of previous studies which highlight potential shortfalls in provision and identify planned improvements. These will be further tested in following phases of the study.

3.2 Sources of Information

- 3.2.1 The primary sources of information which have informed this review are:

- Infrastructure Funding and Trajectory Refresh (Colin Buchanan, Dec 2010)
- Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP) (Colin Buchanan, Feb 2010)
- Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP) (Colin Buchanan, Feb 2008)

- 3.2.2 In addition, due to the previous strategic nature of the assessment for sports facilities, the following document has also been considered:

- Thurrock Outdoor Sports Strategy (TBC, Nov 2010)

- 3.2.3 As part of the next stage of the project all service providers will be contacted and consulted. This process will identify up-to-date and detailed information relating to existing and future provision of infrastructure in respect of development at the Lakeside Basin.

3.3 Education

> Pre-schools

- 3.3.1 **Baseline** - There are five pre-school facilities (as part of primary schools) located around the Lakeside Basin. These include Aveley Primary, Chafford Hundred Primary, Stifford Primary, Warren Primary and West Thurrock Primary. The TIPIP (Feb 2010) did not obtain any information on the capacity of these facilities.

- 3.3.2 **Proposed and committed investment** – Needs analysis carried out in 2009 indicates that 2,000 additional nursery age children will be generated by housing growth in Thurrock up to 2021. Demand generated by up to 3,000 homes at the Lakeside Basin could result in up to 6 pre-school facilities. Previous work includes no information on future planned development.

> Primary schools

- 3.3.3 **Baseline** – There are five primary schools located around the Lakeside Basin. These include Aveley Primary, Chafford Hundred Primary, Stifford Primary, Warren Primary and West Thurrock Primary.

The TIPIP (CB, Feb 2010), used primary school capacity data from 2008, extracted from the “Assessment of demand for and supply of School Places up to 2020” (Mouchel, April 2008) as follows:

- Aveley Primary had a small capacity with 210 places and is forecast to have a deficit of 159 places by 2020.
- Chafford Hundred Primary and Warren Primary were particularly oversubscribed, accommodating an additional 75 and 58 students respectively.
- Stifford Primary had temporary accommodation and required investment to bring the school up to a suitable standard.
- West Thurrock Primary was newly built and had limited capacity.

3.3.4 **Proposed and committed investment** – The most recent information on proposed and committed investment is set out in the TIPIP (CB, Feb 2010) in accordance with the Core Strategy (CSTP12) which outlines the future programme for refurbishment, expansion and new schools as follows:

- A new school is required in South Stifford
- A new school in West Thurrock for which a site in the Lakeside Basin is desirable
- Aveley Primary and Chafford Hundred Primary to undergo refurbishment and expansion.

3.3.5 The current status of each project needs to be confirmed with TBC Education Department.

> Secondary schools / Post-16

3.3.6 **Baseline** – Chafford Hundred Learning Campus is the only institution located in the area of search. In addition, South Essex College, formerly Thurrock and Basildon College, offers teaching facilities in Lakeside Shopping Centre.

3.3.7 Further work is required to understand the existing catchment areas of schools and further education institutions to understand the extent to which there is spare capacity in schools and institutions which will serve future residents of the Lakeside Basin.

3.3.8 **Proposed and committed investment** – The TIPIP stated that a number of school refurbishment / redevelopment proposals were planned through TBC and the Building Schools for the Future (BSF) programme. This is also referred to in the Thurrock Core Strategy proposed Submission (Feb 2010) under Policy CSTP12 – Education and Learning. Six secondary schools were to undergo new building works, rebuilding/refurbishment and expansion. Sites included: Ormiston Park Academy (Aveley & Purfleet area) which was to be rebuilt and expanded; and Chafford Hundred which was planned to be extended.

3.3.9 The current status of all these projects needs to be obtained from TBC following the cancellation of the BSF programme and cuts to local authority funding.

> Further & Higher Education

- 3.3.10 A Thurrock Learning Campus is proposed for development at Grays. This will reinforce its role as the administrative, cultural and education centre for the borough, complementing the commercial role of Lakeside. The final form that this project will take is to be determined. This study will seek to establish what if any satellite provision may be required within the Lakeside Regional Centre.

3.4 Health

> Primary healthcare

- 3.4.1 **Baseline** – There are two medical centres in the vicinity of the Lakeside Basin. They are Chafford Hundred Medical Centre and Aveley Medical Centre. The TIPIP noted that minor upgrades were required at both these facilities.
- 3.4.2 **Proposed and committed investment** – the status of any proposed investment of these centres needs to be reviewed with the PCT.

3.5 Community facilities

> Community centres and libraries

- 3.5.1 **Baseline** – Cowdray Hall is located to the south of the Lakeside Basin, and Chafford Hundred Campus Library to the east. The TIPIP commented that Cowdray Hall was classed as being in poor condition. It also stated that, excluding West Thurrock, libraries are evenly distributed and serve the majority of built up population areas.
- 3.5.2 **Proposed and committed investment** – TIPIP noted that the Cowdray would be prioritised for repair and improvement. It also stated that TBC's Department for Communities, Libraries and Cultural Services believes there is still a need for some kind of library provision in West Thurrock.
- 3.5.3 The Council is seeking more creative solutions to provide these services. In terms of future provision, the TBC's department for Communities, Libraries and Cultural Services explained (Nov 2010) that community halls and libraries are likely to be delivered as part of wider service centres or multi-purpose facilities. This form of dual multi-functionalism would increase accessibility to all services by being closer to more residents (due to population increases) and via other means such as extending opening hours, and are more financially sustainable over the long term.
- 3.5.4 To this end, the Council has undertaken three feasibility studies for a library at Aveley which would be able to provide multipurpose facilities. The current status of this and all other existing and planned provision will need to be reviewed in the light of recent local government funding cuts.

3.6 Open space and Sport

> Open space / Green infrastructure

- 3.6.1 **Baseline** – The Strategy identifies that the Lakeside Basin is an area that is deficient in all types of park. The study area itself contains no public open greenspace (with the exception of a public right of way along the eastern boundary of the study area adjacent to the railway line). However a number of open spaces are located in the surrounding area. As set out in the Thurrock Open Spaces Strategy 2006 – 2011 these include amenity greenspace, allotments, churchyards and cemeteries, outdoor sports facilities and parks and gardens. In addition, there is a large area of natural and semi-natural greenspace to the north of the study area, which extends across the borough. .
- 3.6.2 **Proposed and committed investment** – The TIPIP refers to the GreenGrid Strategy under Policy CSSP5 of the Core Strategy which recommends that there are a number of sites within Thurrock which have potential to be enhanced and incorporated within a wider green infrastructure network. In summary, Thurrock aims to deliver eight GreenGrid Improvement Zones, of which one is located at West Thurrock / Chafford Hundred including the Lakeside Study Area.

> **Sport and leisure**

- 3.6.3 **Baseline** – The catchments of sports and leisure facilities will be discussed with service providers (in the next stage) to understand which are relevant to this study.
- 3.6.4 Thurrock Outdoor Sports Strategy (Nov 2010) states that there are two football clubs in the Lakeside Basin and that pitches have improved in recent years.
- 3.6.5 **Proposed and committed investment** – The catchments of sports and leisure facilities will be discussed with service providers (in the next stage) to understand how well the study area is currently served.
- 3.6.6 TCB's department of Sport and Leisure confirmed in Nov 2010 that two Strategic Sports and Well-Being Hubs at Belhus Park, to the north west of Lakeside, and Blackshots Recreation Ground, in Grays to the east, will be developed. The status of both will be reviewed.
- 3.6.7 Thurrock Outdoor Sports Strategy (Nov 2010) states that in addition to the above, a third site near Lakeside Shopping Centre could provide a synthetic turf pitch but may be more suitable for a Goals or Power League facility.

3.7 Emergency services

- 3.7.1 Only the police have a facility in the study area.

> **Police**

- 3.7.2 **Baseline** – TIPIP states that Essex Police confirm there are five police stations in Thurrock, one being at Lakeside Shopping Centre.
- 3.7.3 **Proposed and committed investment** – There are no known plans for future expansion of services at Lakeside.

> Fire

3.7.4 **Baseline** – TIPIP identified three fire and rescue service stations in Thurrock.

3.7.5 **Proposed and committed investment** – the TIPIP Refresh (Dec 2010) notes that the Essex Fire Service commented at that time that there are no plans for new fire services in Thurrock; although this will need to be confirmed during the course of this study. The TIPIP confirms that that in response to population growth there will be no reduction in existing services and that resources will be better managed so that the service can operate more effectively and efficiently. This will need to be confirmed in light of recent local authority funding cuts.

> Ambulance

3.7.6 **Baseline** – There are two ambulance stations located in Thurrock; at Thurrock and Corringham.

3.7.7 **Proposed and committed investment** – TIPIP identified no proposed or committed investments; this will need confirming with the service provider.

4. Utilities Infrastructure

4.1 Introduction

- 4.1.1 This chapter assesses current baseline utility provision in the Lakeside Basin study area through a review of previous utility studies and recent external area wide studies which highlight potential shortfalls in provision and identify planned improvements. These will be further tested in following phases of the study.

4.2 Sources of Information

- 4.2.1 The primary sources of information which have informed this review are:

- Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP) (Colin Buchanan, Feb 2010)
- Infrastructure Funding and Trajectory Refresh (Colin Buchanan, Dec 2010)
- Thurrock Water Cycle Study, Outline Study (TWCS) (Scott Wilson, Mar 2010)
- Tilbury Power Station (RWE npower Corporate Responsibility website)
- Tilbury Power Station Biomass Conversion Scheme (RWE npower, Dec 2010)
- Thurrock Energy Study (Nov 2010, Delap and Waller EcoCo Ltd).

4.3 Water

- 4.3.1 The Thurrock Water Cycle Study, Outline Study (TWCS) records that the Environment Agency (EA) deems Thurrock to be within an area of serious water stress. This is based on their Catchment Abstraction Management Strategy (CAMS) for the lower Thames and Anglian regions which indicate that there are limitations to water availability from existing sources and alternatives sources will be required to cater for projected developments.
- 4.3.2 Essex and Suffolk Water (ESW) are responsible for supplying potable water to the study area. ESW's draft Water Resource Management Plan (WRMP) indicates a shortfall in available water supply compared to peak demand in dry periods over the period to 2035 for the whole of the Thurrock area.
- 4.3.3 To overcome this shortfall the ESW strategy, within the WRMP, is a mixture of demand management measures, proposed to reduce customer demand in the short to medium term, and a major water resource improvement scheme, the Abberton Reservoir dam raising scheme, scheduled for 2014/15 at the end of AMP5.
- 4.3.4 The demand management measures include metering for all customers and infrastructure improvements, such as mains renewals. The Abberton Reservoir scheme received planning permission on 30 April 2009. Prior to the scheme becoming operational ESW will continue to operate with a supply level being less than predicted demand, although once the Abberton Reservoir scheme is completed it is forecast the Essex Water Resource Zone will have a surplus.
- 4.3.5 In Summary (from TWCS):

- No water available for further abstractions.
- Water will be sourced from Abberton Reservoir from 2114/15.
- This will make sufficient water supplies available to predicted developments up to 2025.
- By introducing water efficiency measures within existing and new dwellings to improve water efficiency the aim is to work towards 'water neutrality'.

4.4 Sewerage and Sewage Treatment

- 4.4.1 Tilbury Wastewater Treatment Works (WwTW) serves the whole of the Thurrock area and discharges to the Thames Estuary south east of Tilbury. It is owned and maintained by Anglian Water Services (AWS).
- 4.4.2 It is understood that capacity in the Tilbury WwTW to accommodate further growth is limited beyond that of seasonal variations and expected growth from existing sources. This expected growth is from existing planned housing and employment up to 2025 which only accounts for approximately half the proposed growth in the catchments. AWS are understood to be carrying out a further study to clarify the exact capacity at the WwTW and what level development has been allowed for.
- 4.4.3 The existing wastewater network in the study area drains by gravity to the west of the study area where it is then pumped east from West Thurrock/London Road Sewage Pumping Station (SPS). The Wastewater flows along the strategic pipe network, combined with flows from West Thurrock/Tunnel SPS and Grays/Lakeside West Thurrock Way SPS, before flowing through Grays and eventually to the receiving Tilbury WwTW.
- 4.4.4 There are no connections to the south of the strategic pipeline. The strategic sewer is expected to exceed capacity in 2025, in part due to the cumulative developments upstream in the network at Purfleet and Aveley. AWS plan to address this by building a new sewer to serve the Purfleet and West Thurrock area.
- 4.4.5 In Summary (from TWCS):
- AWS are currently investigating the volumetric capacity of Tilbury WwTW and until this is completed and either identifies capacity or requirements to facilitate capacity there is considered to be limited capacity to treat and discharge wastewater from new developments in the study area.
 - Wastewater from the area drains east to Grays
 - There are existing wastewater network capacity problems.
 - New AWS sewer planned to serve this area, and West Thurrock, but limited capacity until built.

4.5 Waste Management

- 4.5.1 Thurrock Council is responsible for waste collection, disposal and recycling in the Lakeside area. The St Clements Way re-use and recycling centre, which lies immediately to the South of the Study Area, was one of two such facilities in the borough, until its closure at end November 2010.

It continues to be used as a depot for the maintenance of the waste collection fleet and as an education resource centre. The facility was closed as a civic amenity site in order to contribute to the necessary reductions in the Council's budget. It is unclear at present what its longer term future will be. The remaining amenity site is at Linford in the east of the Borough.

- 4.5.2 TIPIP indicated that capital investment would be relatively low in the short term as two new seven year waste management contracts had been entered into in 2010; but that from 2017 a new waste management solution for the borough may need to be developed, possibly using alternative technologies. This may have significant capital costs.

4.6 Electricity

> Distribution

- 4.6.1 The National Grid owns and maintains the electricity transmission system in England and Wales as a whole, and has national responsibility for providing future needs and requirements to meet increased demand and renewable energy targets.
- 4.6.2 The local and regional distribution and transmission network is operated and maintained by EDF. It is understood that there are capacity restrictions on the majority of the local network and that most major new development will require some level of reinforcement to the existing network.
- 4.6.3 There are a number of major schemes in progress throughout the Thurrock area to improve distribution namely:
- A new 400kv substation at Tilbury due to be completed in 2011;
 - A proposed 132kv substation at Barking to provide for the Barking Reach project.
- 4.6.4 Existing overhead high voltage cables currently run along the A1306 road which runs through the northern part of the study area and then along the A216 road which forms the eastern boundary. These cables cross a small section of the north eastern part of the study area.

> Generation

- 4.6.5 Tilbury Power Station (Tilbury B) which is located approximately 8km south east of the site is currently being upgraded to convert from coal fired generation to 100% sustainable biomass. This is expected to be opened in 2011 Q4. The power station was due to be closed after 2015 under the Large Combustion Plant Directive (LCPD) which requires significant reductions on emissions. It may be possible to extend the life of the power station beyond 2015 subject to it being able to meet the revised emission targets.
- 4.6.6 A new 900 megawatt gas fired power station called the Gateway Energy Centre within the London Gateway site is in feasibility stage. This is proposed to be operational by 2015.

4.7 Gas

- 4.7.1 National Grid is responsible for the mains gas pipelines in the Thurrock area. At this time no specific upgrades or sources of supply are envisaged by National Grid to allow for the future

forecast demand however, National Grid will respond to supply demand as it is required. This will be dependent on any local decentralised energy provision.

4.8 Renewable / Decentralised Energy

- 4.8.1 Core strategy Policy PMD13 sets the Council's approach to reducing the consumption of fossil fuels and the carbon footprint by increasing the proportion of renewable and low carbon energy generation within the borough.
- 4.8.2 This accords with national guidelines and the introduction of revised building regulations, expected circa 2015.
- 4.8.3 There are currently no large scale decentralised energy networks in the area and generally renewable energy sources are from small scale solar thermal technologies fitted to individual buildings. This is due to its ability to be scaled down to meet the 10% energy reductions for individual units.
- 4.8.4 PMD13 requires opportunities for establishing district energy networks to be taken up in the Priority Locations of which the study area is one. The potential supply options are primarily the solar and biomass technologies. There are none planned in the study area at this time.

5. Transport Infrastructure

- 5.1.1 This chapter assesses current baseline transport infrastructure provision in the Lakeside Basin study area through a review of previous transport studies and recent Transport Update from TBC.
- 5.1.2 The studies identify the key issues and opportunities, and the potential shortfalls in the transport infrastructure and identify planned improvements. These will be further tested in following phases of the study.

5.2 Sources of Information

- 5.2.1 The primary sources of information which have informed this review are:
- Infrastructure Funding and Trajectory Refresh (Colin Buchanan, Dec 2010)
 - Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP) (Colin Buchanan, Feb 2010)
 - Thurrock Infrastructure Prioritisation and Implementation Programme (TIPIP) 4.2 Transport Modelling for Preferred Option (Colin Buchanan, Sept 2009b)
 - East of England RSS Single Issue Review Thurrock Key Centre for Development and Change: Draft Policy Transportation Strategic Network (Colin Buchanan for Thurrock Borough Council, July 2009b)
 - East of England Regional Assembly Lakeside Basin Single Issue Review (GVA Grimley March 2009)
 - East of England Regional Assembly Lakeside Basin Single Issue Review (GVA Grimley March 2009)
 - TTGDC Lakeside Transport Study RAP AB 25-07-8 Full (Peter Brett Associates July 2008)
 - Benoy Lakeside Basin Access and Movement Framework (Peter Brett Associates July 2008)

5.3 Key Issues

> Quantum of development

- 5.3.1 The various reports listed above investigate different scenarios in terms of the quantum of development. The different scenarios need to be rationalised and the preferred scenarios agreed for testing during this study.

> Traffic Data

- 5.3.2 The baseline traffic surveys were undertaken between April 2005 and November 2007. The parallel traffic modelling study (currently being commissioned by TBC) should review the levels of

traffic growth since the surveys were undertaken to review the impact of the current economic climate on the levels of traffic growth.

5.4 Baseline Traffic Assessment

> Strategic Highway Network

5.4.1 For the purposes of the baseline report, we refer to the Friday PM peak for assessment of current highway capacity issues (CB, 2009b). However, the next stage of the study will review the other peak traffic periods namely AM and SAT peaks since the different land uses will have different peak traffic impacts.

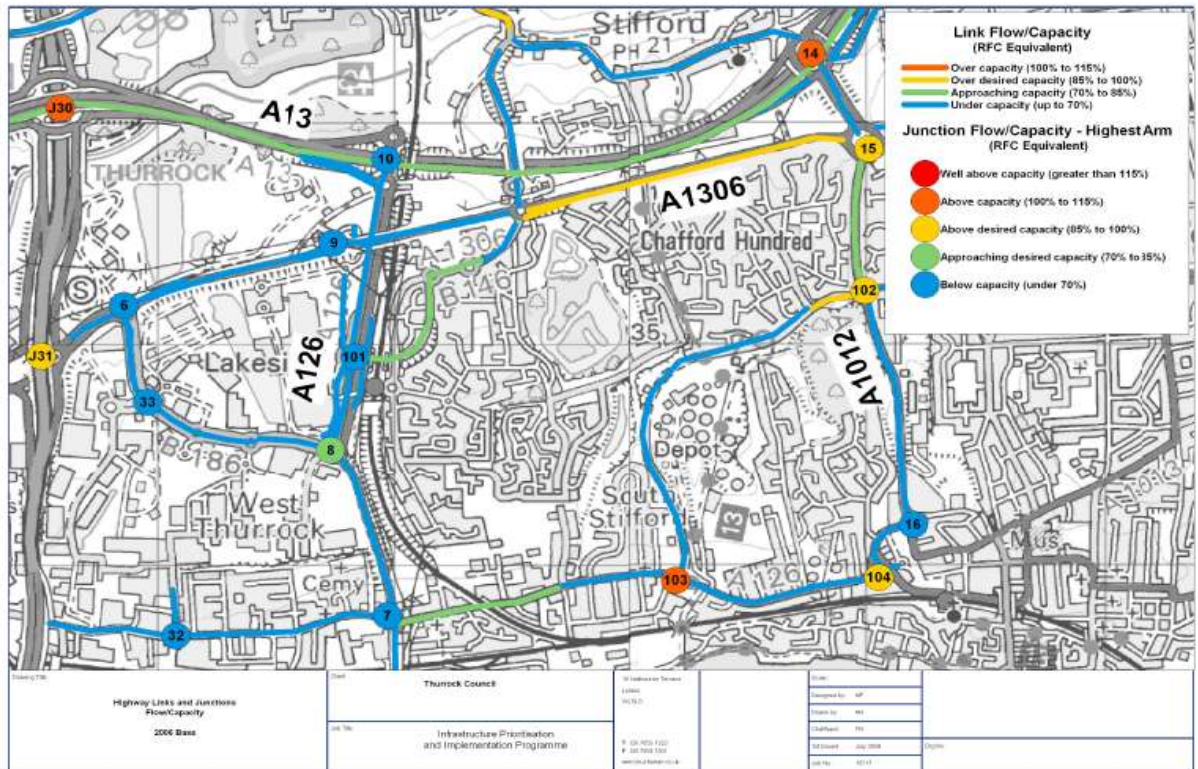
5.4.2 To demonstrate the performance of the highway network more clearly, the operation of the road links and junctions were grouped into five categories to indicate the level of stress based on the capacity of the network (CB, 2009b). These categories are summarised below:

For highways,

- **Well above capacity** (Flow/Capacity above 115%); shown in Red
- **Above capacity** (Flow/Capacity between 100% and 115%); shown in Orange
- **Above desired capacity** (Flow/Capacity between 85% and 100%); shown in Yellow
- **Approaching desired capacity** (Flow/Capacity between 70% and 85%); shown in Green
- **Below capacity** (Flow/Capacity below 70%); shown in Blue

5.4.3 Based on the above, the following stress diagram identifies the shortfall in capacity in the current network for 2006 PM peak.

Figure 5.1: Link and Junction Flow Capacity 2006, PM Peak



Source: Colin Buchanan (2009b)

5.4.4 The following road links and junctions were found to be above the desired capacity for:

- A1306 between A1012 and B186
- J31 M25/A1306 partially grade separated junction but with no northbound slips onto M25
- Junction 15 A1306 / A1012
- Junction 102 A1012 / Hogg Lane / Devonshire Rd
- Junction 104 A126 London Rd / Eastern Way

5.4.5 The following junctions were above capacity:

- J30 M25/A13 partially grade separated junction
- Junction no 14 A13/A1012 partially grade separated junction
- Junction no 103 A126 / Devonshire Rd

- 5.4.6 It is the Council's long term goal to improve the A13 and access into Lakeside, especially from the east. East access to Lakeside from the A13 could be combined with a scheme for J30. The DfT publication 'Investment in Highways Transport Schemes' (October 2010) confirms that a scheme for Junction 30 will commence post 2015 and should be completed by or before 2020.
- 5.4.7 An interim scheme for J30 is scheduled for 2013, with anticipation completion by 2016. However it is unclear how this proposal will be funded.
- 5.4.8 DfT is currently consulting on a new charging order for the Dartford Crossing. This will also allow for the suspension of charges during critical incidents that cause major disruption on the strategic network. Currently the suspension of charging during critical incidents is being trialled.

> Local road links

5.5 West Thurrock Way

- 5.5.1 West Thurrock Way is the primary east west link through the site. The character and function needs to be addressed to discourage the current trend of the visitors to Lakeside to travel by car between the primary retail sites. The option to disconnect the link has been considered, but an alternative east west route would be required to maintain the necessary movement patterns. The study will need to review the options and identify the preferred option.
- 5.5.2 It is currently a barrier to the movement of pedestrians and cyclists, and any preferred option will need to improve the pedestrian and cycle links.

5.6 North South Links

- 5.6.1 The Lakeside Basin would benefit from improved north south links to provide better integration within the basin and better connections to London Road, the railway line and development south of the railway line.

> Public Transport

- 5.6.2 The current bus station is located to the north of the site. The option to move the location has been considered in order to improve access to public transport and the penetration into the site. The study will need to address the options for the re-location or refurbishment of the bus station.
- 5.6.3 A shuttle bus is proposed to provide alternative means of transport to travel between the existing retail centres. S106 monies have already been collected for a loop north of the lake, but a Study Area wide scheme should be considered. An alternative proposal for a Personalised Rapid Transit system has been proposed by the Lakeside Basin Masterplan. This study should consider the preferred approach.
- 5.6.4 SERT is a dedicated passenger bus transport system which aimed at linking up the main development sites within the Thames Gateway in South Essex. The first phase (SERT1) would run from Basildon, through Thurrock to Lakeside. A final bid will be made to central government for the money to build SERT 1 (South Essex Rapid Transport) in September 2011. The introduction

of SERT should provide the necessary step change to encourage a shift to a higher mode share for public transport.

- 5.6.5 A new railway station at West Thurrock on Fenchurch Street to Shoeburyness via Grays line is a key aspiration for Lakeside Masterplan. However it is not currently supported by Network Rail and a robust business case would need to be developed to promote the proposal.

> Car parking management

- 5.6.6 A car parking strategy is needed to change the attitude to car parking charges at Lakeside. It is essential pre-requisite for consideration as a town centre. The strategy would address a park and ride scheme for staff, shared car parking hubs and a phased approach to car parking charges.
- 5.6.7 It would also support the promotion of the shuttle bus, reduce the level of internal vehicle trips and allow for reduction in traffic capacity of West Thurrock Way.
- 5.6.8 The Capital Shopping Centres (CSC) Coach site north of A1036 has been considered for staff Park & Ride.