

Lower Thames Crossing

Thurrock Council Local Impact Report

Appendix G – Skills, Employment and Legacy

Lower Thames Crossing

Thurrock Council Local Impact Report

Appendix G - Annex 1: Hatch Mitigation Report



LTC Mitigation Benefits

A Final Report by Hatch
October 2020

Thurrock Council

LTC Mitigation Benefits

October 2020

www.hatch.co.uk

Contents Page

Executive Summary	i
Introduction	i
Identified Cost Impacts of LTC Scheme	ii
Mitigation and Legacy Measures	iv
1. Introduction	1
2. Impact Framework	6
Impact Areas and Sub-Areas	6
Assumptions	7
3. Summary of Findings from the Cost Study	8
Headline Economic, Social and Environmental Costs	8
Detail of Core Impact Areas	9
Additional Key Areas of Focus	13
Design Changes since the 2018 Statutory Consultation	17
Thurrock Council’s Position on the LTC Scheme	18
4. Overall Package of Mitigation and Legacy Measures	19
Development of Measures	19
Preferred Package of Measures	20
Summary of Overall Package Impacts	29
5. Direct Mitigation Measures	30
Construction-specific Measures	30
LTC Design Elements	40
Key Junction Mitigation	45
Traffic Management Measures	48
6. Council-led Support	50
Local Labour and Business	50
Local Community and Public Health	56
Transport Network Management and Development	62

7.	Legacy Measures	65
	Infrastructure Facilitation	65
	Infrastructure Provision	70
	Green Corridors and PRow Enhancements	76
	Green Space Enhancements and Heritage Restoration	81
	Climate Change Measures and Incentives	84

8.	Summary and Conclusions	89
	Introduction	89
	Summary of Benefits by Themes	89
	Prioritisation of Measures	95

Glossary

AIL	Abnormal Indivisible Loads
AQMA	Air Quality Management Areas
CPHT	Community and Public Health Team
DCO	Development Consent Order
DfT	Department for Transport
Distributor Road	A low to moderate capacity road which serves to move traffic from local streets to arterial roads. Unlike arterials, distributor roads are designed to provide access to residential properties
GVA	Gross Value Added
HEqIA	Health and Equalities Impact Assessment
HGV	Heavy Goods Vehicle
IMD	Index of Multiple Deprivation
LGV	Light Goods Vehicle
LLBT	Local labour and Business Team
LRN	Local Road Network (maintained by local highway authority, e.g. Thurrock Council)
LR	London Resort
LSOA	Lower Super Output Area
LTC	Lower Thames Crossing
LTC Corridor	The corridor that surrounds the LTC Scheme alignment made up of the smallest available statistical geographies for economic and social data (Lower Super Outputs Areas)
MHCLG	Ministry of Housing Communities and Local Government
NMU	Non-Motorised User
NPPF	National Planning Policy Framework
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way
ONS	Office for National Statistics

LTC Mitigation Benefits

RIS	Road Improvement Scheme
RV	Rateable Value
SME	Small and Medium-Sized Enterprises
SRC	Short Rotation Coppice
SRF	Short Rotation Forestry
SRN	Strategic Road Network (maintained by Highways England)
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TAG	Transport Analysis Guidance (developed by the DfT)
TFWP	Two Forts Way Project
TNMDR	Transport Network Management and Development Resource
VO	Valuation Office

Executive Summary

Introduction

- i. Hatch were previously commissioned by Thurrock Council (the 'Council') to undertake an assessment of the local economic and social costs of the Lower Thames Crossing scheme ('LTC Scheme' hereafter). This identified the type and scale of potential economic, social and environmental costs upon the local community and area that can be expected as a result of the construction and operation of the LTC Scheme. The findings were presented within the 'LTC Economic Cost Study' report in February 2020.
- ii. Hatch have subsequently been working with the Council to help develop a range of potential mitigation and legacy measures in response to the identified costs from the initial assessment. This report provides a summary of the process undertaken to identify potential measures, and to then prioritise them, to produce an overall package of schemes and interventions that the Council consider will adequately offset the identified economic and social costs of the LTC Scheme within Thurrock.

What is the LTC?

- iii. The proposed LTC Scheme is a nationally significant infrastructure project developed by Highways England. It consists of a tunnel crossing beneath the Thames to provide additional strategic capacity across the Thames Estuary.
- iv. Within Thurrock, whilst the alignment cuts directly across the area, the current proposals incorporate relatively limited interactions with the current road network.
- v. The area around the A13 will be reconfigured to incorporate some additional movements to and from the LTC, but these will be limited in scope, and will restrict some local traffic movements.



Area Context

- vi. The corridor around the LTC Scheme is characterised by a strong performing economy (*pre-COVID*) with significant recent investment from major organisations, albeit some vacancy rates for Industrial, Office and Retail are higher than the South Essex average.
- vii. Household incomes and levels of deprivation vary significantly across the borough, but a third of areas (*LSOAs*) within the direct corridor around the LTC Scheme are within the top 30% most deprived in the country, with significant health and wellbeing challenges. There is also overrepresentation in lower skill level occupations, albeit with significant recent investment in skills and training to improve outcomes.

Impact Framework

- viii. The original LTC Economic Cost Study was governed by an overall impact framework categorised by four main impact areas and associated sub-areas. These are summarised below.

Business and Economy	a) Loss of commercial assets	Environment	a) Amenity land value lost
	b) Business disruption due to construction		b) Habitat lost/damaged
	c) Impact on existing business performance		c) Heritage/cultural assets lost
	d) Attractiveness to investors and strategic perceptions of the area as a place to work and do business		d) Flood Risk
Community	a) Loss of residential properties		e) Visual impacts
	b) Residential property blight		f) Air quality impacts / emissions
	c) Impact on community facilities		g) Noise impacts
	d) Rights of way lost/severed	Growth Potential	a) Loss or delay of commercial / residential development land
	e) Community disruption		
	f) Impact on community cohesion		
	g) Health and Wellbeing		

Source: Hatch LTC Economic Cost Study

- ix. The four impact areas are not independent and there is overlap in impacts amongst them. They are each meant to capture the impacts from different perspectives. For this reason, the outputs are not all additive, in a collective sense.
- x. This framework will continue to be applied within this follow-on work to identify and examine the impact of potential mitigation and legacy measures to off-set the identified costs of the LTC Scheme within Thurrock.

Identified Cost Impacts of LTC Scheme

- xi. The previous LTC Economic Cost Study examined the range of potential economic, social and environmental impacts that the LTC scheme could have within the Thurrock area, during both the construction of the scheme, as well as once operational.
- xii. It should be noted that, as the study was primarily conducted in Autumn 2019, it was based upon the proposed LTC scheme design as set out by Highways England in the 2018 Statutory Consultation. Since then the proposals have developed further and the implications in terms of the overall potential cost impacts are discussed at the conclusion of the chapter
- xiii. The key impacts are summarised within Table E1 below within the four core identified impact areas of Business & economy, Community, Environment, and Growth.

- **LTC construction impacts** in relation to the combined effects of road closures, diversions and increased construction -related traffic upon local highway congestion and emissions; and
- **LTC operational impacts** in relation to the impact upon the performance of the local road network and the level of emissions.

Thurrock Councils Position on the LTC Scheme

xvi. Given all of the costs identified, the Council's position on the LTC Scheme is that, whilst it may bring strategic connectivity benefits to the South East of England / South Midlands, the current scheme configuration will negatively affect the Thurrock area as:

- It **does not meet several national and Highways England strategic policy tests and scheme objectives**, including the delivery of economic growth and achieving sustainable local growth within the Thurrock area.
- It is **inconsistent with the housing and development potential** for Thurrock
- It will **provide limited additional connectivity for residents and businesses of Thurrock**.
- Throughout the construction phase there will be **considerable disruption of local roads and Public Rights of Way** across Thurrock. This will affect access to employment, education, health facilities and local services, as well as delay development opportunities.
- It includes **very limited options for public transport provision**
- There are a number of design elements that **do not meet the needs of Thurrock businesses and residents**.

A number of other technical and community significant objections have been raised within the three formal consultation Council responses and in a range of formal correspondence and in response to a range of draft technical documents, which all contribute to the over-riding need for additional mitigation and legacy measures to those currently proposed and in addition to those set out in this report.

Mitigation and Legacy Measures

Package Development Process

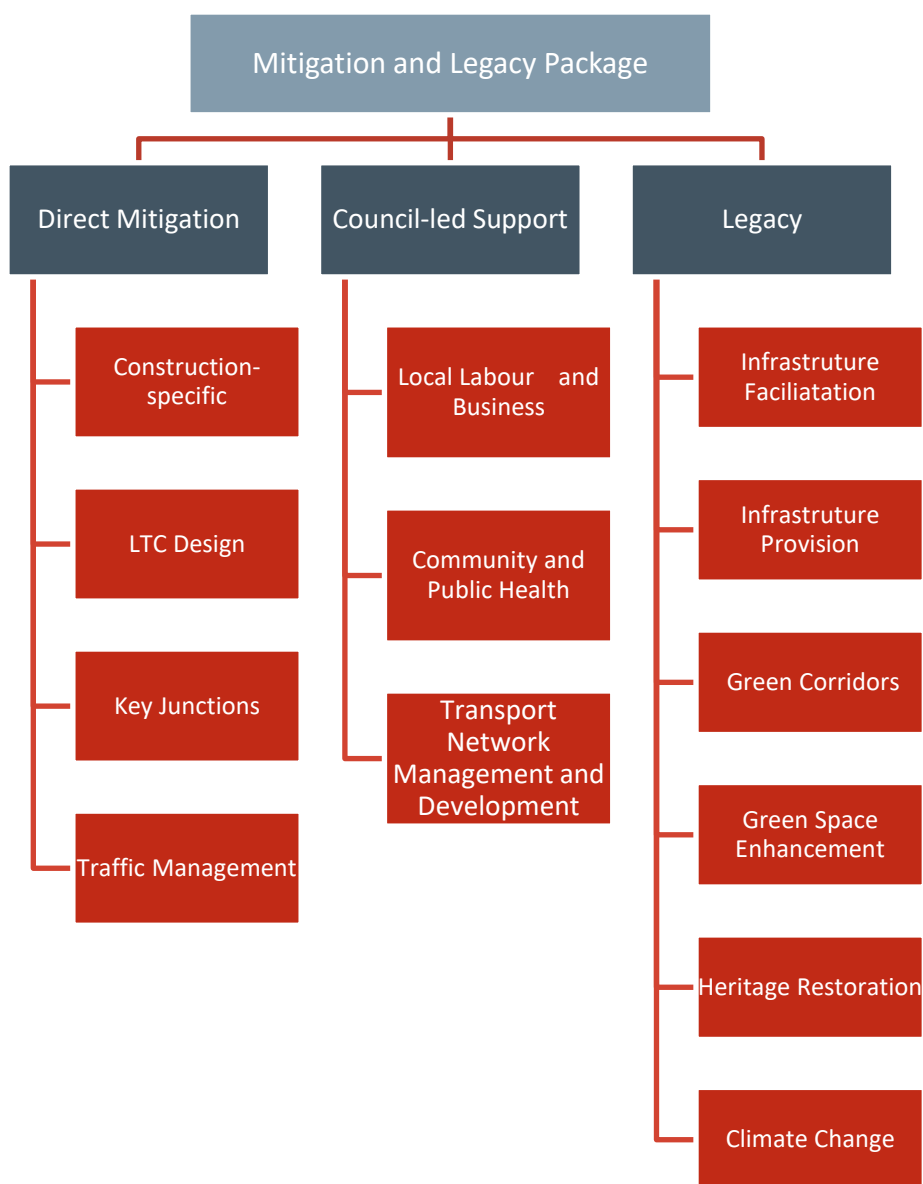
- xvii. The impact assessment of LTC scheme was used as the initial basis upon which to develop a list of potential measures to address to identified economic, social and environmental costs. This generated a 'long-list' of 72 individual measures and concepts.
- xviii. This 'long-list' was subject to more detailed review and development, leading to the removal, refinement and combining of schemes, as well as the development of some additional new proposals.
- xix. This iterative process led to the identification of a final preferred package of measures that incorporates 57 defined schemes and concepts

Preferred Package of Measures

xx. In identifying the preferred package of measures and recognising the issues and opportunities each group of measures addresses, a revised classification process of measures was adopted, to better reflect the groupings. In broad terms, this identified three overarching ‘themes’ for the measures:

- **Direct Mitigation:** measures that address the direct impact of the construction phase, as well as design of the LTC scheme and the resulting traffic and transport implications
- **Council-led Support:** measures that ensure sufficient local resource is available to support local businesses and communities throughout the construction phase and into the transition of the operating scheme
- **Legacy:** measures that will ensure the LTC scheme delivers a lasting legacy across Thurrock and ensure positive local outcomes

xxi. Within each theme a series of sub-themes were then identified, as presented within the diagram below.



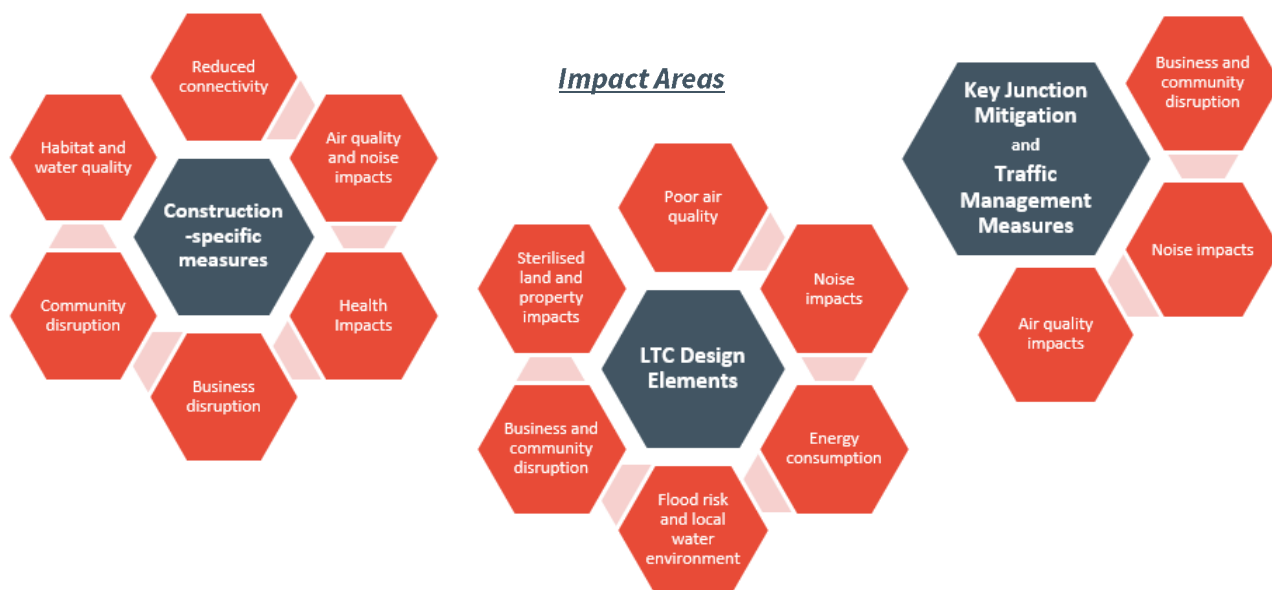
- xxii. The overall package of measures has been developed to encompass a range of different identified requirements to ensure the construction and the operational phases of the scheme do not negatively impact upon local business and community activity, as well as the local environment.
- xxiii. To achieve this requires measures that:
- Provide additional direct mitigation of construction impacts;
 - Amend the physical and operational design of the LTC Scheme;
 - Ensure the local transport network is not negatively impacted;
 - Enables the Council to support local businesses and the community and continue to provide high quality services and network provision; and
 - Provide a future legacy for the area in terms of enhanced connectivity, opportunities for growth, access to green corridors and open space, protection of habitats and heritage, and positive climate change action.
- xxiv. The full list of measures includes schemes that the council expects Highways England to deliver as standard, however they have been included within this report as they are priorities of Thurrock Council.

Direct Mitigation Measures

- xxv. This first group of measures focuses upon minimising the level of disruption caused by both the construction and on-going operational phase of the LTC scheme. The proposed measures have been categorised within the following four 'sub-themes':
- **Construction-specific measures:** to limit the impact of constructing LTC in terms of emissions (dust, particulate matter, noise) as well as traffic and transport impacts.
 - **LTC Design Elements:** proposed revisions to LTC design to minimise the physical and operational impact of the scheme in terms of the sterilisation of land, flood risk and drainage, and local pollution (air, water, and noise)
 - **Key Junctions:** mitigation at junctions impacted by increased traffic movements
 - **Traffic Management Measures:** mitigation in local settlements affected by diversion of traffic movements

Impact Areas

- xxvi. The diagram below provides a summary of the types of impacts that this set of measures will address, in terms of the identified economic costs of the LTC Scheme proposals.



Measures

xxvii. A total of 23 measures have been identified within this 'theme' and are summarised within Table E2 below. Although some additional detail is presented in **Chapter 5** for each mitigation measure; all these measures will need to continue to be refined over the coming months.

Table E2 Direct Mitigation Measures

Ref.	Scheme Measure	Brief Description	Paragraph Reference in Main Report	DCO Securing Document/ Commentary
Construction-specific (emissions)				
M1	Ensure optimum phasing of construction	Ensure the construction operations cause the minimum level of disruption by phasing activities to reduce any specific burdens upon individual localities.	5.7	tbc
M2	Reduce the number and/or optimise the location of construction compounds	Ensure the construction operations cause the minimum level of disruption by locating compound sites away from properties and sensitive receptors	5.9	tbc
M3*	Minimise construction and construction traffic emissions	Ensure best practice approaches are adopted in relation to dust and emissions.	5.12	tbc
M4	Real-time air quality and noise monitoring at key receptor sites	Identify list of sensitive sites where sensors should be installed to monitor air quality and noise, with required actions if target limits are exceeded.	5.14	tbc
M5*	Alter construction hours to reduce noise and disruption in residential areas	Ensure the construction operations cause the minimum level of disruption by only applying appropriate on-site working hours	5.17	tbc
M6	Additional noise mitigation in Chadwell and East Tilbury	Current levels of proposed mitigation are considered insufficient in these sensitive locations.	5.20	tbc

Construction-specific (transport)				
M7	Sustainable public transport access to construction sites	Provide an electric shuttle bus between the new interchange at Stanford-le-Hope station and the main construction compounds	5.26	tbc
M8	Implement innovative public transport measures	Use the construction phase as an opportunity to trial innovative forms of public transport measures.	5.28	tbc
M9	Enable active travel to construction sites	Ensure construction workers can access construction compounds via active travel modes.	5.32	tbc
M10	Use of marine transport for the movement of materials	Use of river transport to move materials and construction equipment to and from site during the construction phase	5.34	tbc
M11	Adequate waste management processes	Ensure clear waste management processes and mitigation measures during construction (coded bins, appropriate training)	5.36	tbc
LTC Design Elements				
M12	Smart speed limits that can respond to traffic flows and pollutant concentrations	Ensure that the smart and variable speed limits can be utilised to respond to real-time air quality monitoring data and slow traffic during periods of higher pollution	5.41	tbc
M13	Use of low-noise road surfacing on the LTC and the local network	As well as utilising low-noise surfacing along the LTC, this surfacing should also be applied on local roads to help off-set the overall level of noise generated from the scheme	5.42	tbc
M14	Use of best-in-class energy efficient systems for operations	It is accepted that HE will adopt modern lighting and signage, but it is important to confirm that best-in-class energy efficiency is being provided.	5.44	tbc
M15	Build sufficient earth bunds and noise barriers along the route to reduce noise impact	Whilst landscaping and noise barrier measures are already proposed, it is important to confirm that sufficient provision is being made across the full alignment	5.45	tbc
M16	Flood risk mitigation and water quality improvement through SuDS	Greater emphasis should be made on the use of SuDS features within the scheme to deliver water quality benefits	5.47	tbc
M17 *	Revised Proposals for A13/LTC Junction	Alternative proposals to minimise the extensive land sterilisation, property demolition and blight creating by the existing proposals	5.48	tbc
M18	LTC Toll Hypothecation	Ensure a fixed proportion of LTC tolls are hypothecated to support projects within Thurrock	5.51	tbc

Key Junctions				
M19*	Orsett Cock Roundabout Mitigation	Additional mitigation to negate the negative impact of the LTC scheme upon the A128 approach to the junction.	5.62	tbc
M20*	Manorway Roundabout Mitigation	Additional lane capacity on the A1014 and A1013 approaches to ensure port and local traffic movements are not impaired by the LTC.	5.64	tbc
Traffic Management				
M21	Traffic Management Measures (Orsett)	LTC scheme is forecast to result in additional traffic movements on local roads through the villages of Orsett and Horndon, as well as Chadwell St. Mary, including HGV movements.	5.70	tbc
M22	Traffic Management Measures (Horndon)			tbc
M23	Traffic Management Measures (Chadwell St. Mary)			tbc

* designated as high priority measure

Benefits

xxviii. The proposed mitigation measures could lead to significant positive benefits for:

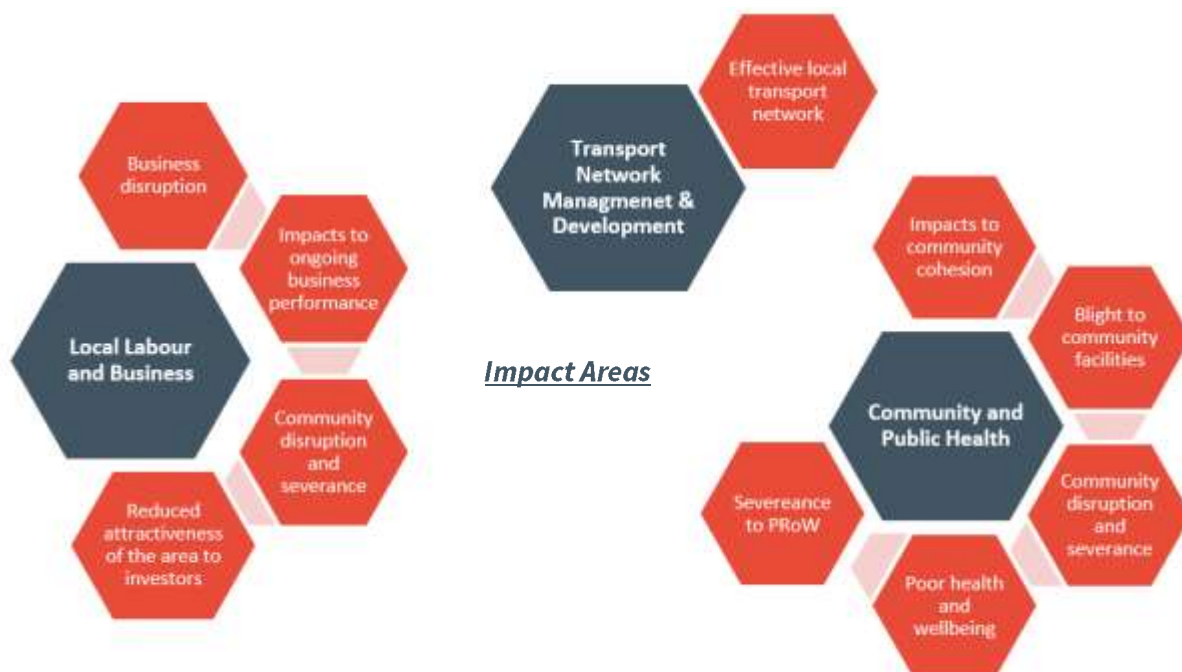
- **Local residents** in terms of reduced congestion, the risk of poor air quality, lower levels of disruption from noise, and property blight. These benefits would be during both the construction and operational phases of the LTC. In particular, they would ensure that potential high peaks in emission levels (associated with concurrent high levels of construction activity) are avoided;
- **Local businesses** in terms of reducing levels of construction-related traffic and ensuring congestion is kept to a minimum, as well as levels of connectivity during the operational phase;
- **Construction workers** increased levels of sustainable travel options, as well as active travel provision, with associated health & wellbeing benefits;
- **The local environment** by minimising the risk of negative impacts of waste upon habitat and water environment, as well as flood risk and water quality; and
- **Future growth** by minimising land sterilisation and ensuring the local highway network operates efficiently.

Council-led Support

- xxix. The Council recognise that both the construction phase of the LTC scheme, along with its subsequent operational phase, will result in pressures upon the way some local businesses can operate, as well as the cohesion of local communities and their access to employment, education and public services and amenities. This in turn, this will place additional pressures upon Council resources to support these groups and to continue to undertake their statutory duties of maintaining the local transport network and providing public services.
- xxx. The proposed measures have been categorised within the following three ‘sub-themes’:
- **Local Labour and Business:** measures to support employment and educational opportunities for local workers/residents and ensure local businesses are not adversely impacted by the disruption created by the scheme.
 - **Community and Public Health:** measures to support the local community, including access to health and welfare services, as well opportunities to support local improvement projects.
 - **Transport Network Management and Development:** additional resource to support the implementation of temporary and permanent TRO’s and on-site works on the local highway network.

Impact Areas

- xxxi. The diagram below provides a summary of the types of impacts that this set of measures will address, in terms of the identified economic costs of the LTC Scheme proposals.



Measures

- xxxii. A total of 12 measures have been identified within this ‘theme’ and are summarised within Table E3 below. Additional detail is presented in **Chapter 6** for each Council-led support measure, although all these measures will need to continue to be refined over the coming months.

Table E3 Council-led Support Measures

Ref.	Scheme Measure	Brief Description	Paragraph Reference in Main Report	DCO Securing Document/ Commentary
Local Labour and Business				
CLS1 *	Council-led Local Labour and Business Team	A Council team with the responsibility for ensuring that residents and businesses secure economic benefits from the LTC.	6.6	tbc
CLS2	Business rates holidays for firms affected during construction	Business rates holidays for those businesses most affected by the LTC scheme during construction.	6.10	tbc
CLS3	Target for local labour and apprentice use	Establish clear targets for engaging local labour and apprentices during the construction of the LTC scheme	6.13	tbc
CLS4	Employment opportunities small capital grants scheme	Grants to support voluntary and community organisations who are helping local people into employment	6.15	tbc
CLS5	Social value procurement	Ensure LTC procurement meets with requirements of the Council commissioning, procurement and grant funding strategy	6.16	tbc
CLS6	Shop shutter/signage creative improvement programme	Grant funding to improve business environments and tackle perceptions of the local area	6.18	tbc
CLS7	Green business support scheme	Utilising and expanding on existing green initiatives.	6.19	tbc
Community and Public Health				
CLS8 *	Council-led Community and Public Health Team	Apply the same principle as the Local Labour and Business Team and create a Local Community and Public Health Team within Thurrock Council.	6.27	tbc
CLS9	Public Health mitigation during construction	Public Health mitigation measures including the enhancement of public transport to healthcare facilities and the reinforcement of local NHS provision.	6.31	tbc
CLS10 *	Community engagement during construction	Support to enable community engagement during the construction of the LTC scheme.	6.32	tbc
CLS11	Community investment small capital grants scheme	Capital grants to facilitate aesthetic and environmental improvements within the community.	6.34	tbc
Transport Network Management and Development				
CLS12	Transport Network Management and Development Resource	Additional Council resource provision to cover the requirements to manage and develop the transport network in response to the impacts of the LTC construction.	6.43	tbc

* designated as high priority measure

Benefits

xxxiii. The proposed mitigation measures could lead to significant positive benefits for:

- **Local residents** in terms of keeping them informed and consulted upon the construction phase impacts, ensuring they play a leading role in shaping and delivering mitigation, improving community cohesion, enhancing health & wellbeing outcomes, providing pathways to employment and training, and maintaining effective local transport network provision;
- **Local businesses** in terms of protection against potential negative impacts upon financial operations, assistance in attracting trade, and maintaining effective local transport network provision;
- **The local environment** by reducing business-related emissions, and promoting green growth; and
- **Future growth** by supporting business and community innovation.

Legacy Measures

xxxiv. This final 'theme' represents measures that seek to ensure the LTC scheme delivers a lasting legacy across Thurrock and delivers positive local outcomes.

xxxv. The Proposed measures have been categorised within the following six 'sub-themes':

- **Infrastructure Facilitation:** passive provision enabling works and/or support for future infrastructure delivery and measures to support Thurrock local growth requirements
- **Infrastructure Provision:** delivery of physical highway, housing and digital legacy infrastructure
- **Green Corridors:** upgrade and enhancement to bridleways, footpaths and cycleways to create green corridors
- **Green Space Enhancement:** bringing existing green space up to an appropriate standard
- **Heritage Restoration:** improvement and safeguarding of heritage assets
- **Climate Change Measures:** measures that will offset negative impact of carbon emissions from LTC

Impact Areas

xxxvi. The diagram below provides a summary of the types of impacts that this set of measures will address, in terms of the identified economic costs of the LTC Scheme proposals.



Measures

xxxvii. A total of 22 measures have been identified within this ‘theme’ and are summarised within Table E4 below. Additional detail is presented in **Chapter 7** for each legacy measure, although all these measures will need to continue to be refined over the coming months.

Table E4 Legacy Measures

Ref.	Scheme Measure	Brief Description	Paragraph Reference in Main Report	DCO Securing Document/ Commentary
Infrastructure Facilitation				
L1 *	Passive provision for LTC Junctions	Safeguarding for the future provision of junctions onto the LTC at East Tilbury and South Ockendon.	7.5	tbc
L2	A13 East-facing Access Support and Facilitation	Whilst this scheme will be delivered in isolation, it is requested that HE acknowledge the importance of this scheme alongside the delivery of the LTC and actively support and enable its delivery.	7.9	tbc

L3	Tilbury Link Road Enabling Works	Construct any elements of the proposed haul road that will fall within the general alignment of the TLR alignment to a standard to support the subsequent delivery of the Link Road.	7.10	tbc
L4	Asda Roundabout Enhancement	The requirement for enhancements should be actively examined alongside other potential highway improvements.	7.12	tbc
L5	Public transport provision on the LTC	Recognising the long-term aspiration for the LTC to be utilised for cross-river public transport connections.	7.13	tbc
L6	Distributor Road Facilitation	Maximise opportunities to utilise the construction of the LTC to enable future distributor roads to be more readily delivered.	7.14	tbc
Infrastructure/Highway Provision				
L7 *	Permanent Multi-modal rail crossing	Construct a permanent bridge over the Tilbury Loop Line near east Tilbury to a width and standard that would enable it to be adopted as part of the future local highway, walking and cycling network.	7.19	tbc
L8 *	A1012 Junction and Medebridge Road Improvement	Deliver the proposed construction haul road along the current Medebridge Road alignment from the A13 to Grangewater to a sufficient width and standard to enable it to be adopted by the Council.	7.24	tbc
L9	Daneholes Roundabout Enhancement	Provide a bus lane on the outside lane on the A1013 Stanford Road approach to the roundabout to give enhanced priority to buses across the junction	7.28	tbc
L10	Improve Internet / 5G Connections	Utilise the construction phase of the LTC as an opportunity to lay down internet and 5G cables within the alignment and make provision on all bridges and tunnels, as appropriate.	7.31	tbc
L11	Building Legacy Housing Provision	Provision of worker accommodation that can be left as a legacy for Thurrock Council to use.	7.33	tbc
Green Corridors and PRoW Enhancements				
L12	Optimising bridge crossing provision	Ensuring that the proposed re-provision of bridges across the LTC, along existing corridors, deliver sufficient legacy provision to encourage active sustainable travel and support future growth.	7.40	tbc
L13 *	Two Forts Way Project (TFWP)	The TFWP is a comprehensive masterplan for the coastal area extending from Tilbury Station via the Forts, toward Thurrock Thameside Nature Park. The project will need to consider future maintenance requirements.	7.42	tbc
L14	Complete and improve the PRoW network	A range of other improvements to complete gaps and enhance the network of bridleways, footpaths and cycleways to complement the TFWP and the LTC bridge crossings. All improvements will need to consider future maintenance requirements.	7.48	tbc

Green Space Enhancements and Heritage Restoration				
L15	Enhanced Green Space	Enhance key sites that are in close proximity to the LTC, are of low quality, and are in need of investment.	7.60	tbc
L16*	Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project	Securing the legacy of Coalhouse Fort and the surrounding natural and cultural landscape.	7.63	tbc
L17	Historic Landscape Restoration	Restoration of Belhus Woods including a site survey and Conservation Management Plan	7.66	tbc
L18	Enabling the restoration of the historic landfill site and cleaning the marine habitat	Support and facilitate the collaborative partnership of organisations seeking to deliver the restoration of the site at East Tilbury Landfill.	7.68	tbc
Climate Change Measures and Incentives				
L19	Incentives for low-emission vehicles to use the LTC	Ensure that electric and/or low-emission vehicles are incentivised to use the LTC with discounted or free use of the new crossing.	7.75	tbc
L20*	Target (with penalties) for low-emission vehicle usage on the LTC	Electric car usage targets with financial penalties payable to Thurrock in the event of exceedance to offset local air quality and impacts.	7.78	tbc
L21	Carbon offsetting of the LTC scheme	Carbon offsetting measures across Thurrock that offset the CO ₂ produced by the construction and operation of the LTC	7.79	tbc
L22	Tree Planting across Thurrock	Street tree planting initiatives and delivery of LTC Forest aspirations.	7.85	tbc

* designated as high priority measure

Benefits

xxxviii. The proposed mitigation measures could lead to significant positive benefits for:

- **Local residents** in terms of enhanced local and strategic accessibility, access to PROWs and green space - with associated health benefits, improved internet connectivity, temporary housing needs, access to heritage assets, reduced carbon emissions;
- **Local businesses** in terms of enhanced local and strategic connectivity, improved internet connectivity, support for the visitor economy through heritage restoration and access to green space;
- **The local environment** by facilitating the restoration of contaminated land, enhancing green space, creating woodland and mini forest areas, and promoting green growth; and
- **Future growth** by unlocking access to development opportunities

1. Introduction

- 1.1 Hatch were previously commissioned by Thurrock Council (the Council) to undertake an assessment of the local economic and social costs of the Lower Thames Crossing scheme (LTC Scheme hereafter). This identified the type and scale of potential economic, social and environmental costs upon the local community and area that can be expected as a result of the construction and operation of the LTC Scheme. The findings were presented within the '**LTC Economic Cost Study**'¹ report in February 2020.
- 1.2 Hatch have subsequently been working with the Council to help develop a range of potential mitigation and legacy measures in response to the identified costs from the initial assessment. This report provides a summary of the process undertaken to identify potential measures, and to then prioritise them, to produce an overall package of schemes and interventions that the Council consider will adequately offset the identified economic and social costs of the LTC Scheme within Thurrock.

What is the LTC?

- 1.3 The proposed LTC Scheme is a nationally significant infrastructure project developed by Highways England. It consists of a tunnel crossing beneath the Thames to provide additional strategic capacity across the Thames Estuary.
- 1.4 The LTC will have:
- approximately 23km of new roads connecting the tunnel to the existing road network;
 - three lanes in both directions with a 70mph speed limit (with the exception of the southbound section from the M25 to the A13 that will be 2-lane only);
 - two 4km tunnels, one for southbound traffic, one for northbound traffic crossing beneath the river;
 - a free-flow charging system; and
 - upgrades to existing roads (M25, A2 and A13) where the LTC meets them.

LTC Configuration within Thurrock

- 1.5 Within Thurrock, whilst the alignment cuts directly across the area, the current proposals incorporate relatively limited interactions with the current road network.
- 1.6 The A13 junctions with the A1089 and A128 will be reconfigured to incorporate some additional movements to and from the LTC, but even these will be limited in scope, and will restrict some local traffic movements (discussed further in the sections below).
- 1.7 Figure 1.1 provides an overview of the general LTC Scheme alignment within the Thurrock area, including the configuration of the proposed junction with the A13.

¹ Lower Thames Crossing Economic Cost Study, Hatch Regeneris on behalf of Thurrock Council (February 2020)

Figure 1.1 LTC Alignment within Thurrock

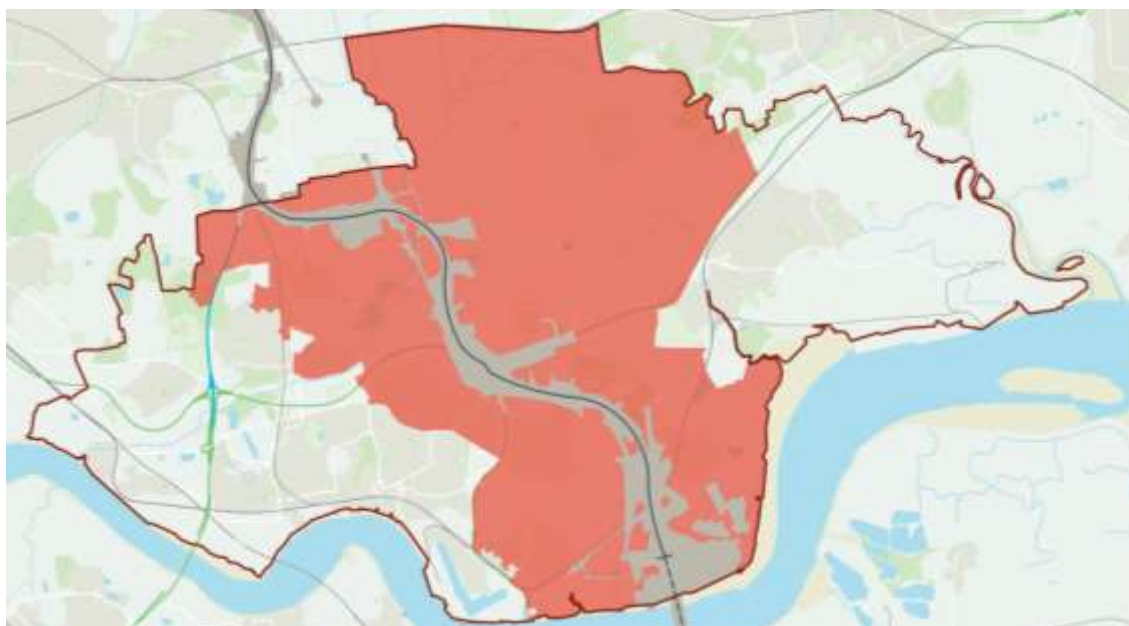


Source: Hatch. Contains OS data © Crown copyright and database right 2020

Study Area Context

- 1.8 The economic, social and environmental characteristics of the area surrounding the LTC were analysed in the Costs Study within a defined 'LTC Corridor' (see Figure 1.2). The corridor surrounds the LTC Scheme alignment and is made up of the smallest available statistical geographies for economic and social data (Lower Super Outputs Areas).

Figure 1.2 LTC Development Boundary and 'LTC Corridor'



Source: Hatch. Contains OS data © Crown copyright and database right 2020

1.9 The key messages from the baseline context analysis are outlined below:

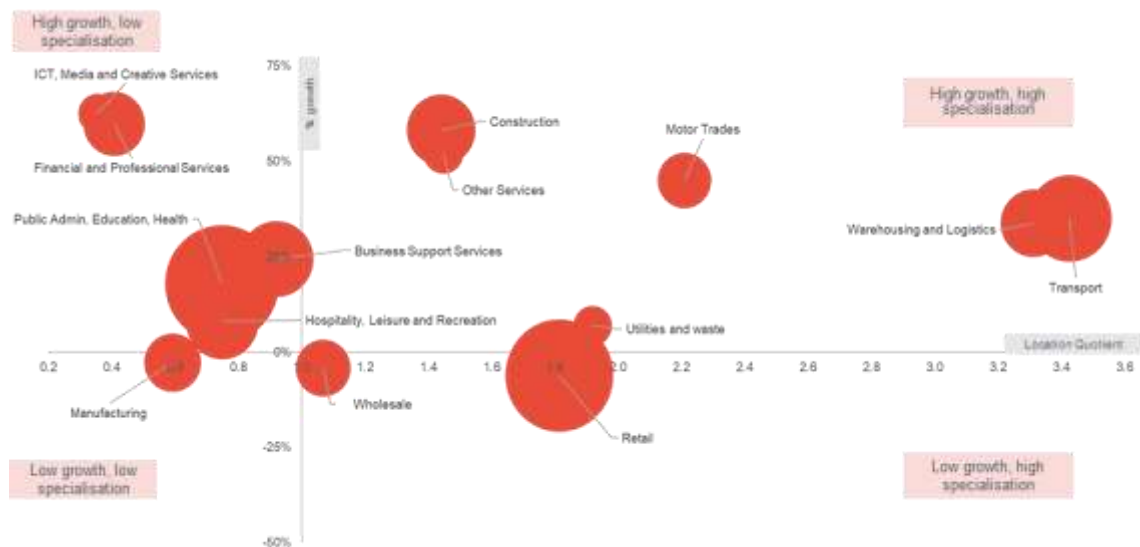
Current Transport Network

- The Strategic Road Network focuses around M25, A13, and the A1089 (providing access to the Port of Tilbury). The A128 is also an important connector. The A13/A1089, A13/A128, and A13/A1014 junctions will be significantly impacted by the LTC Scheme.
- Around 16 local roads or tracks currently cross the proposed LTC alignment and providing connectivity between urban areas and local villages / hamlets, such as routes between Chadwell St Mary and East Tilbury.
- The bus network is focused around connections to/from Grays and Lakeside, with nine services crossing the area potentially affected by the LTC Scheme, at five specific points.
- There is an extensive cycling and PRow network across the area with up to nine cycle routes and 20 PRow / tracks crossing the area potentially affected by the LTC Scheme.

Business and Economy

- Up until the events of 2020, the economy has been performing well and shown strong growth over the previous 5 years (+29% employment, +43% businesses).
- Around 2,200 businesses (employing 12,500 workers), are located within the direct corridor around the LTC Scheme alignment (18% of workers, 34% of businesses).
- As shown in Figure 1.3, the Transport and Logistics sectors are particularly specialist across Thurrock and have been growing strongly in recent years. However, there are aspirations to diversify Thurrock's economy and grow a number of 'opportunity sectors', including the creative industries and environment and energy sector.

Figure 1.3 Sector Size, Specialisation and Growth, Thurrock



Source: BRES 2017

- Thurrock has a strong SME base compared to the South Essex average, and has received a large amount of venture capital investment in recent years.
- There has been investment from major organisations into Thurrock in recent years (Port of Tilbury, DP World, Amazon, UPS, Made.com, Lidl) and the construction of Tilbury2

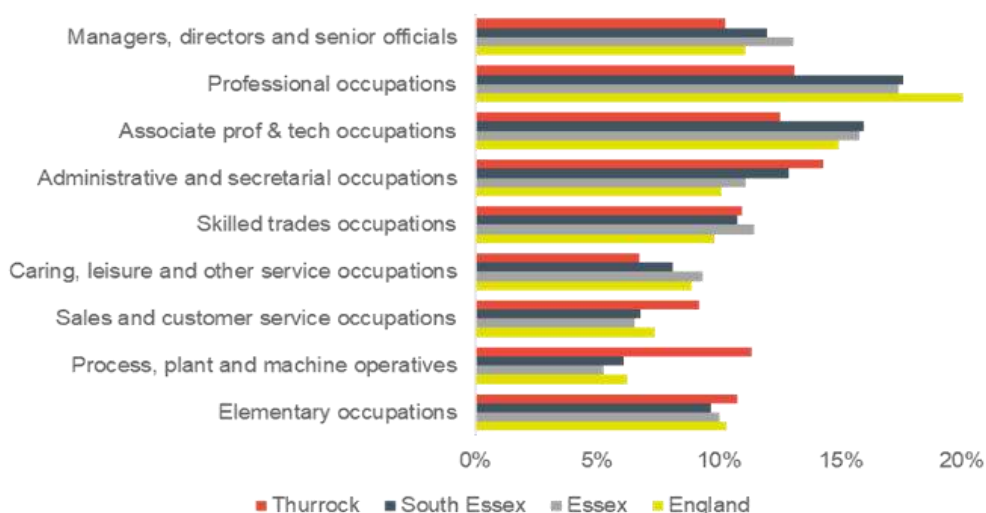
development is progressing rapidly. This recent investment has delivered a large number of jobs, although further investment could secure a higher proportion of skilled jobs in the area.

- Vacancy rates for Industrial, Office and Retail are all higher than average for South Essex.

Community

- Around 57,300 residents are located within the LTC Corridor around the LTC Scheme alignment. Population growth has been higher than the South Essex average over the last 5 years.
- Household income and levels of deprivation vary significantly across the borough. However, a third of the Lower Super Output Areas within the direct corridor around the LTC Scheme are within the top 30% most deprived in the country.
- Some areas of Thurrock struggle with significant health and wellbeing challenges, including obesity, health inequality, social isolation and inadequate service provision. The Council’s Active Travel and Health and Wellbeing strategies are working to improve the situation and reduce inequality.
- Thurrock has a slightly lower economic activity rate than the comparator areas and a higher unemployment rate than the immediate surrounding areas.
- Figure 1.4 shows that Thurrock residents are also overrepresented in lower skill level occupations, which reflects the nature of prominent industries in the area. The focus on diversification of the economy and growth in sectors such as the creative sector will provide residents with an opportunity to upskill and access new employment opportunities. Recent investment in skills and training support this outcome.

Figure 1.4 Occupational Profile, Thurrock



Source: Annual Population Survey 2018 (ONS)

- In summary, the community data clearly shows there are areas of Thurrock with significant local challenges, including those communities living in and around Tilbury and South Ockendon that are characterised by high deprivation, low incomes and poor health outcomes.

Environment

- The area is characterised by a mosaic of landscapes, including coastal grazing marsh, low-lying fenland, farmland and more developed urban areas.
- There are designated Sites of Special Scientific Interest, including Hangman's Wood and the Mucking Flat Marshes, within the LTC Corridor, as well as one Special Protection Area/Ramsar.
- There are 18 air quality management areas across Thurrock where air pollution levels are likely to fall short of national targets, although none are directly within the LTC Corridor.
- Thurrock is home to 17 scheduled monuments, ranging from forts to crop marks. Seven are likely to fall within the 200m buffer of the LTC alignment.
- There are seven Conservation Areas in Thurrock. Three of these are likely to fall within the 200m buffer of the LTC Corridor.
- Three Grade II Listed Buildings are proposed for total demolition.
- Data on open space from the Ordnance Survey² shows there are a number of open space sites in Thurrock. Provision of open space is spread across the borough but tends to concentrate around built up areas and communities.
- Within the direct LTC construction development boundary, there is an allotment, Children's Play Area and areas of semi-natural green space. The LTC Scheme is also likely to pass through/nearby to cycle routes, Coalhouse Fort and golf courses.

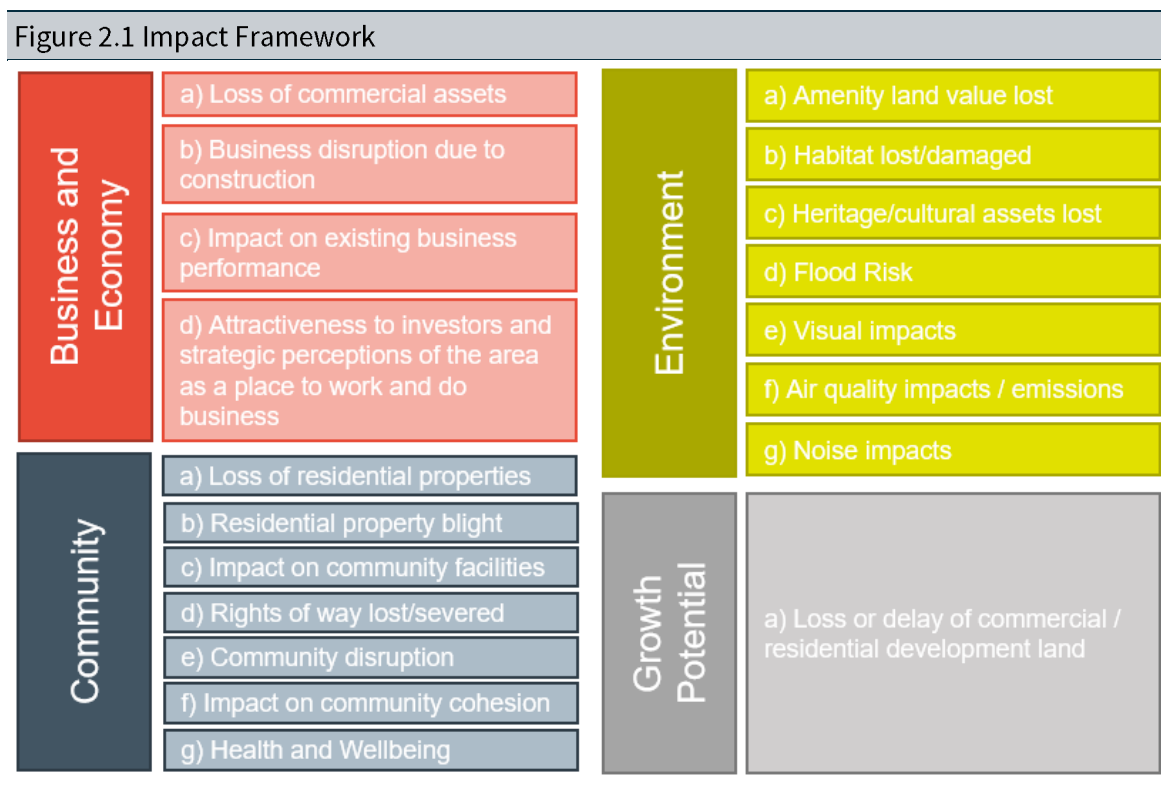
² <https://www.ordnancesurvey.co.uk/business-government/products/openspace>

2. Impact Framework

- 2.1 Hatch undertook the earlier assessment work of the broad economic cost of the LTC scheme³ by developing and applying a bespoke impact framework. The primary aim of the study was to identify the type and scale of potential economic, social and environmental costs upon local business and communities in Thurrock resulting from the construction and operation of the LTC. In order to measure these costs.
- 2.2 There is currently no single set of guidance relating to the assessment of local economic and social impacts of major infrastructure projects in the UK. The guidance which currently exists (such as the HM Treasury Green Book and Department for Transport TAG) is highly technical and focuses predominantly on macro level transport and development (land value uplift) impacts, rather than local economic and social impacts.
- 2.3 As a result, the framework that was developed, whilst taking into account and aligning with standard appraisal and impact assessment methodologies, reflects a highly tailored response to the local conditions and priorities in Thurrock.

Impact Areas and Sub-Areas

- 2.4 The overall impact framework was categorised by four main impact areas and associated sub-areas. These are summarised in Figure 2.1 below.



Source: Hatch LTC Economic Cost Study

³ Lower Thames Crossing Economic Cost Study, Hatch Regeneris on behalf of Thurrock Council (February 2020)

- 2.5 The four impact areas are not independent and there is overlap in impacts amongst them. They are each meant to capture the impacts from different perspectives. For this reason, the outputs are not all additive, in a collective sense.
- 2.6 This framework will continue to be applied within this follow-on work to identify and examine the impact of potential mitigation and legacy measures to off-set the identified costs of the LTC Scheme within Thurrock.

Assumptions

- 2.7 The following overall assumptions informed the development of the impact framework:
- The scope of the study meant that the focus of the framework was on cost impacts.
 - The framework allowed for the collation of both quantitative and qualitative data. Impacts were quantified where possible, but in other places qualitative assessment of the types and magnitudes of potential impacts was necessary.
 - In quantifying impacts, a number of different types of value were considered, recognising that a broad range of different stakeholders will be affected and that each of these will perceive value in different ways. The broad impacts types were: economic impacts (jobs and GVA), commercial impacts (land value uplift and revenue generation), community impacts (loss of housing, personal prosperity, health and wellbeing) and environmental impacts relating to physical environmental changes such as loss of habitat and noise pollution.
 - To ensure truly local assessment of impacts, the framework was designed to allow for a bottom up and 'site by site' approach to the measurement of growth impacts. However, given sensitivities relating to some of the local development and regeneration conditions, all reporting was at aggregated levels: LTC Development Boundary (as set out in the Highways England 2018 Statutory Consultation); 50m / 200m / 500m buffers of the route; and borough level.
 - The impact framework was also designed to assess impacts during both the construction and operational phases.

3. Summary of Findings from the Cost Study

- 3.1 This chapter summarises the key findings of the LTC Economic Cost Study prepared by Hatch in February 2020.
- 3.2 This study examines the range of potential economic, social and environmental impacts that the LTC scheme could have within the Thurrock area, during both the construction of the scheme, as well as once operational.
- 3.3 It should be noted that, as the study was primarily conducted in Autumn 2019, it was based upon the proposed LTC scheme design as set out by Highways England in the 2018 Statutory Consultation. Since then the proposals have developed further and the implications in terms of the overall potential cost impacts are discussed at the conclusion of the chapter.

Headline Economic, Social and Environmental Costs

- 3.4 The key impacts are summarised within Figure 3.1 below within the four core identified impact areas of Business & economy, Community, Environment, and Growth.

Figure 3.1 Identified Cost Impacts of LTC Scheme

Business & Economy Impact	Estimated Cost	Community Impact	Estimated Cost
Commercial Assets / Land Value Lost	c. £4 million	Loss of residential properties	£3.1 million
Business disruption during construction	up to c. £39 million	Residential property blight	£25.4 million
On-going Business Performance	up to c. £18 million	Impact on community facilities	Moderate adverse
Attractiveness to investors	Minor to Moderate Adverse	PRow severance/disruption	Moderate adverse
		Community disruption	Moderate adverse (up to £36 million transport impacts)
Environment Impact	Estimated Cost	Impact on community cohesion	Moderate adverse (up to £21 million transport impacts)
Amenity land value lost	£1.35 million	Health & Wellbeing	Moderate adverse
Habitat lost/damaged	Minor to moderate adverse		
Heritage impact	Moderate adverse	Growth Impact	Economic Cost
Flood risk	Negligible to minor adverse	Land <i>permanently lost</i>	up to £88 million
Visual impacts	Moderate adverse	Land <i>delayed</i>	up to £29 million
Local air quality and emissions	Moderate adverse	Land <i>blighted</i>	up to 41 million
Increase in noise	Moderate to Major adverse		

- 3.5 As the graphic highlights, the construction and operation of the LTC Scheme is forecast to have a range of significant impacts upon residents and businesses located in Thurrock. In summary:
- The Scheme will result in **significant direct loss of land** for current agricultural and amenity uses, as well as future residential and commercial development. The loss of economic value for the area could equate to as much as **£96 million**.
 - The construction phase will **significantly disrupt access and movement**, affecting local business operations and creating community severance. The scale of impacts will depend upon the length of disruptions, but businesses could lose up to **£39 million** in economic value and communities will see a loss in social value equating to in excess of

£36 million. A further **£29 million** will be lost from delayed development, on the basis the project is delivered to programme.

- Once operational, the LTC Scheme will continue to **create blight across the corridor**, affecting current and future property values and creating environmental emissions. This will affect community cohesion and local health and wellbeing. There will also be ongoing impacts upon business operations and affect the attractiveness of the area for investment. Whilst not all of these impacts can be quantified, there is estimated to be a loss of economic value of over **£100m**.

Detail of Core Impact Areas

Business and Economy

3.6 The LTC Scheme will have a significant negative impact upon certain areas of the local economy and businesses in Thurrock as a result of the disruption caused by the construction, and subsequent operation, of the scheme.

- **Permanent loss of one commercial premises in Thurrock** - the Cattery on Springfield Farm. There will also be a **loss of 152ha of agricultural land** that could affect up to 53 farms located within 1 km of the proposed LTC route.
- Construction-related **business disruption** may occur in two ways: disruption to direct access and reduced footfall/turnover due to poor town centre performance. Disruption to direct access is likely around the A13 junctions with the A1089 and A128 due to construction works and could impact upon access to the Port of Tilbury and other businesses located off the A1089. In addition, local temporary and permanent road closures will disrupt the single route of access for a number of farms and other businesses across the borough. This disruption, alongside increased HGV construction traffic, could reduce trips to local retail centres and reduce levels of footfall and turnover for businesses, resulting in up to 115 FTE and £39 million GVA lost. This is likely to particularly impact East Tilbury, West Tilbury and Low Street.
- Once the LTC has been delivered, there may be **on-going adverse impacts to business performance** as a result of physical access constraints in the area. This could result in additional travel time for business-related trips which has an economic cost. In particular, on-going performance could be affected by reduced accessibility from the A128 to the A1089, as well as in the event of concurrent closures of the LTC and Dartford Crossing. This could cost up to £18 million in delays.
- The LTC could also have a temporary adverse impact upon the **attractiveness of the local area to investors**. The negative impacts on business performance discussed above, as well as significant flows of LTC construction traffic (and related congestion) and wider LTC construction related blight (such as noise and visual impacts), may significantly weaken perceptions of the area as a place to do business. This could impact upon local vacancy rates and subsequent levels of business rates and rental incomes.

Community

- 3.7 The LTC will have a number of impacts on Thurrock's communities. This includes the economic costs of lost housing, adverse impacts to community facilities and negative social impacts of increased severance.
- The construction and operation of the LTC Scheme results in a direct, permanent **loss of up to 20 residential properties**. This has two associated costs: the loss of the value of land on which the housing is lost and the cost of relocating the households. The overall impact is £3.1 million.
 - In addition, a further **1,400 residential properties are affected by blight**, with 160 of them located within 200m of the LTC scheme, and a further 1,240 within 500m. Blight refers to the detrimental impacts that the noise, visual and air pollution associated with construction and operation may have on properties. The impact of blight is measured as a one-off loss in value and is estimated to be £24.5 million.
 - Whilst none are lost as a result of LTC, around **14 community facilities are impacted** by the construction or operational of the scheme. Land associated with two facilities is temporarily lost during the construction phase, which will have a significant major adverse effect on the operations and viability of the facilities. A further seven community facilities will experience significant adverse blight during construction, predominantly caused by HGV construction traffic, road closure and delays. A care home (The Whitecroft) and a nursery (Will Garden) will suffer significant adverse blight during the on-going operation of the LTC scheme.
 - There will be significant **disruption to PRowS** during the construction phase with most routes temporarily severed, reducing access to facilities/services, increasing community isolation, and impacting health & wellbeing. There will also be some permanent diversions to routes, increasing distances between communities and community facilities in some instances, and many routes will suffer blight from the LTC Scheme.
 - The construction of the LTC scheme is likely to **disrupt the communities** living around the route through closures to local routes, increased congestion from road closures and diversions, and increased traffic from construction vehicles. Eight communities along the route will be particularly affected (*Southfields, Baker Street, Orsett, East Tilbury, Linford, Low Street, Bulphan, and West Tilbury*), with access to A&E facilities compromised, as well as access to further education and special education facilities. The communities affected are those already struggling with higher levels of poor health, poverty and isolation. There will also be isolated incidences of disruption in access to open spaces and important community assets in the borough, such as Coalhouse Fort that currently plays a key role in supporting the physical and mental wellbeing of residents as it is widely used for exercise, education and social interaction.
 - The delivery of the LTC could result in long-term adverse impacts which have the potential to adversely affect social cohesion within Thurrock. The proposed LTC alignment will bisect wards that are already severed by both road and rail infrastructure, namely East Tilbury, Orsett and Ockendon. **On-going community cohesion** will particularly be affected by reduced access from the A128 to the A1089, the impact of concurrent incidents on the LTC and Dartford Crossing, as well as more general perceptions of isolation created by the physical barrier of the LTC scheme and impacts on PRowS. This will ultimately affect the vibrancy of communities and personal well-being of the local population.

- A number of these impacts have a cumulative effect upon overall **health and wellbeing** of local residents. These include health/stress impacts of enforced relocation, blight, noise/air pollution, disruption to access to healthcare, loss of community assets, loss of PRoW, and severance and community cohesion. There are concerns that the costs of the LTC will disproportionately negatively affect the communities who already suffer from health inequality, such as Tilbury and South Ockendon, where there are already high levels of deprivation, isolation and poor health outcomes. *(It should be noted this assessment was undertaken in Autumn 2019 and predominantly focused on the qualitative health and wellbeing costs associated with the other impact areas. It, therefore, does not cover findings from the recent draft Health Impact Assessment).*

Environmental

3.8 The LTC will have a number of impacts on the environment in Thurrock. This includes the economic costs of lost habitat and heritage assets, visual impacts of the infrastructure, and the effects of increased emissions during construction and operation (air quality and noise).

- The construction of the LTC will result in **direct loss of amenity value** from land lost across 728ha. This results in a loss of £1.35m.
- The requirement of land will result in the **loss, damage or reduced quality of habitat** across the borough. While some habitats will be permanently lost or altered, those located within proximity to the LTC will be affected by environmental effects such as noise, lighting and visual disturbances – ultimately affecting the richness and/or viability of Thurrock’s biodiversity.
- There are numerous **heritage assets** that will be directly impacted, including seven designated assets of national significance. Four of the seven will be completely destroyed, including three Grade II listed residential properties. In addition, there will be blight impacts upon the settings of a further four Grade II listed buildings and numerous undesignated heritage assets.
- Whilst available data on the scheme impacts is relatively limited, the potential impact of the LTC scheme upon **flood risk** is considered likely to be relatively neutral.
- The LTC scheme will have a range of **visual impacts**, in terms of changing the landscape character or impairing views. Tilbury Marshes, Orsett Fen, and the Mardyke Valley will all be impacted visually. Around 160 properties are located within 200m of the LTC and may have their views impaired, whilst at least 14 PRoW routes will be negatively impacted. There are also likely to be issues associated with light pollution during the construction phase given the 24-hour programme of construction. It is likely that lights used to light up the construction compounds will result in visual light pollution impacts at night for the surrounding areas, which could have an adverse impact on the properties, community facilities and habitats located in close proximity to the 8 compounds in Thurrock.
- The construction of the LTC will create significant dust and particulate matter, alongside emissions from construction-related traffic. Once operational, the LTC will also result in significant additional strategic traffic movements across Thurrock, as well as changes to local traffic movements. All of these will impact upon **local air quality and greenhouse gas emissions**. Whilst detailed air quality modelling is unavailable, it is considered likely that there could be issues around the LTC junction with the A13, where there will be changes in vehicle speeds and there are sensitive receptors in close proximity to the

junction. Whilst air quality increases will likely still remain below national limits, the impact on communities located near to the LTC Scheme could be significant.

- Both the construction and operation of the LTC scheme will generate significant **noise impacts**. Whilst strict national guidelines mean that noise from the LTC is unlikely to exceed standards set for construction and operation of major road infrastructure, there is likely to be an increase to the background noise above current levels. Over 250 properties, and a range of other sensitive receptors (e.g. Treetops, Treetops 2 and Orsett Heath Schools), will be in close proximity to the LTC scheme and could be significantly impacted during the construction phase. Whilst detailed noise modelling outputs are not available, there are also likely to be significant impacts of noise on sensitive receptors during the operational phase due to traffic increases, particularly in areas around Tilbury, East Tilbury and the Mardyke Valley.

Growth

- 3.9 The assessment of future growth across Thurrock examined a range of impacts that the LTC scheme could have upon residential and commercial development. Whilst there remains uncertainty around future development proposals, it is clear that land required directly for the construction and final operation of the LTC scheme, as well as sites immediately surrounding the proposed alignment, hold significant economic value in development terms.

Forecast Gross Economic Impacts

- 3.10 Figure 3.1 provides a summary of the estimated maximum gross economic impacts, in terms of lost value of development land.

Figure 3.2 Estimated Loss of Gross Economic Value from Development Impacts

Development Impact	Land Area	Land Impacted	Economic Cost to Thurrock
Permanent Land Lost	Total Development Area *	39 hectares	Up to £88 million *
	Number of new homes #	Up to 840 homes	
Temporary Land Lost	Total Development Area *	285 hectares	Up to £29 million *
	Number of new homes #	Up to 2,660 homes	
Development Land Blight	Total Development Area *	324 hectares	Up to £41 million *
	Number of new homes #	Up to 5,730 homes	

Source: Hatch * commercial and residential land # delivered from residential land allocations

Forecast Net Economic Impacts

- 3.11 Given some of the uncertainties around future development the previous analysis highlighted some of the challenges in assessing the likely net impacts of the LTC Scheme upon development value. Under some potential residential development scenarios nearly all of the defined development land along the LTC alignment may be required to meet the Thurrock's future housing needs. This would imply the net economic cost of loss of residential land could equate to the gross costs set out above.
- 3.12 Under more generous land availability assumptions, the net impacts would be lower (as residential development can take place elsewhere) but it is still estimated that between 3,100 and 4,250 new homes could be affected by blight from the LTC Scheme, with an estimated economic loss of between £17m and £23m.

Additional Key Areas of Focus

- 3.13 Since the completion of the LTC Economic Cost Study in February 2020, the Council has continued to evaluate the impact of the LTC scheme proposals. Whilst the impacts presented above all remain valid, in particular the business, community and environmental impacts, the Council has been examining further some of the more direct impacts in relation to land and property, LTC construction, and LTC operation. These areas of focus are summarised in the sections below.

Land and Property Impacts

- 3.14 The Economic Costs Study identified a number of impacts on land and property that are likely to occur with the construction and operation of the LTC. Across Thurrock, the LTC will result in significant permanent and temporary land take, which will result in:
- 1) Lost commercial and agricultural land;
 - 2) Lost land with amenity value;
 - 3) Sterilisation of development land; and/or
 - 4) Delays in development coming forward for the duration of construction.
- 3.15 This will impact upon local business operations, community accessibility to open space, and affect both residential and commercial development opportunities within the borough, which could (as outlined above) make it challenging for Thurrock to achieve its housing targets.
- 3.16 In addition, the impact on existing property during construction and operation is extensive, with c. 20 homes being permanently lost, the traveller site needing to be re-located and c.1,400 homes being subject to blight. From a heritage perspective, the property impacts are a particular concern given that three of the demolished homes are Grade II listed buildings.
- 3.17 These issues are particularly pertinent around the proposed LTC/A13 junction. The complex design of this junction, including the slip roads between the LTC/A13/A1089, means that large land take is required. This will sterilise a significant quantity of land that could otherwise be used for commercial use or housing development in the future. The proximity of this junction to the residential areas of Baker Street and Chadwell St Mary also means that a majority of the 20 demolished homes in the borough are within the vicinity of this junction.

Direct Construction Phase Impacts

Traffic and Transport

- 3.18 The 'LTC Economic Cost Study' identified a range of direct traffic and transport impacts that are likely to occur within Thurrock during the LTC Construction Phase. These encompass the following broad elements:
- Local road closures and diversions (affecting all modes of travel);
 - Roadworks at major junctions along the A13, in particular with the A1089 and at Orsett Cock;
 - Increased traffic volumes as a result of construction-related traffic; and
 - PRoW closures and diversions (affecting active travel modes).

- 3.19 Highways England have yet to provide any traffic modelling outputs relating to the combined impact of local road closures, roadworks, and increased construction traffic volumes. Whilst they have indicated that disruption will be kept to a minimum, the reality is that the impacts on some parts of the transport network will be significant.
- 3.20 East-west travel movements across the LTC alignment, by all modes, will be significantly disrupted, with major adverse impacts anticipated in relation to Station Road and Muckingford Road, and moderate adverse in relation to Brentwood Road, Stanford Road, Baker Street, Heath Road, and Stifford Clays Road. This will not only affect private car movements, but also public transport provision and active travel modes. Diversions will place additional pressure on other routes, and the potential for rat-running, and affect business and community connectivity, including access to key public amenities (health, welfare, and education).
- 3.21 The roadworks restrictions that will be required to reconfigure the A13/A1089 and Orsett Cock junctions alone could result in increases in travel time of 875,000 hours pa - the equivalent loss of economic value of over £10 million pa.
- 3.22 Previous Highways England data indicated there could be around 11,700 monthly HGV movements to and from compound sites that may increase traffic flows on certain routes by as much as 5%. In addition to this there will also be further traffic movements bringing workers to and from compound sites, particularly if adequate sustainable travel measures are not included as part of the construction management plan. This will further add to constraints for businesses and communities within the vicinity of these routes.
- 3.23 Around 17 PRoWs will be closed for substantial periods of the construction phase. Whilst data is unavailable to determine how many users will be affected, it will inevitably have a significant impact upon current users and reduce accessibility and connectivity between settlements and places of work, as well as discouraging levels of physical activity and the uptake of more sustainable non-motorised vehicle travel to make local journeys.

Environment (Emissions and Noise)

- 3.24 The construction of the LTC will result in significant environmental impacts, particularly in terms of emissions, noise and visual impacts. These impacts are associated with the construction activity itself occurring within the construction compounds, as well as the construction traffic travelling to and from site.
- 3.25 The construction activities to build the LTC will be extensive. The sheer size of the main compound will have a significant visual impact on the otherwise rural setting of south Thurrock, with light and noise pollution from construction activities occurring 24 hours a day during peak construction. Emissions of dust and particulate matter will also be a major concern.
- 3.26 Whilst the construction of the LTC in Thurrock is predominantly concentrated in the compound by the north tunnel portal, there are also other compounds proposed along the route. HGV construction traffic travelling along local roads to these compounds will cause noise pollution, emissions and local traffic/delays. The extended operating hours of the construction activities over a 6-year period will also likely mean prolonged environmental harm to local communities, wildlife and habitats.

Health and Wellbeing

- 3.27 The LTC is likely to result in a number of impacts to human health and equalities. This includes severance, reduced accessibility, loss of green space and disruption to access to green and open space, reduced air quality, noise and visual pollution and negative impacts to mental health and wellbeing. There are also serious concerns regarding the likely cumulative impact of all of these issues, in addition to cumulative impacts with neighbouring projects.
- 3.28 The communities in Thurrock who are likely to be most affected by the LTC scheme are the communities who already suffer from high levels of deprivation and poor health outcomes. Therefore, mitigating against the health and wellbeing impacts of the scheme is particularly important.
- 3.29 In July 2020 Highways England published their draft Health and Equalities Impact Assessment (HEqIA). A HEqIA assesses the issues set out above, including the magnitude, timescale and location of impact. Thurrock Council have reviewed the draft LTC HEqIA and find that it is inadequate for a number of reasons, including:
- The limited information that has been provided, with no reference to timescales for a number of topics and no appendices;
 - The lack of recommendations regarding prevention or mitigation, as well as how to maximise benefits. Specific mitigation for identified impacts have not been included; and
 - No monitoring and evaluation of impacts has been proposed.

Direct Operational Phase Impacts

Traffic and Transport

- 3.30 Whilst the majority of local roads will be re-established once the LTC scheme is fully operational, there will still be some on-going impact upon connectivity, as follows:
- General re-distribution of traffic movements, as well as induced trips, as a result of the LTC Scheme;
 - Reconfiguration of the A13/A1089 and A13/A128 junctions;
 - Loss of the additional third lane being created on the A13, east of the A1014 junction, that will become part of the off-slip for LTC;
 - Loss of southbound route from A128 to A1089;
 - Reconfiguration of access arrangements to Stanford Road from Baker Street and Heath Road;
 - Closure of Hornsby Lane for through movements;
 - Permanent amendments and diversions to at least nine PRow; and
 - Potential risk of significant local transport network disruption in the event of concurrent incidents on the LTC and Dartford Crossing
- 3.31 The reconfiguration of the A13/A1089 and A13/A128 junctions not only has a significant impact upon land availability and blight within the vicinity (as described in paragraph 3.17) but the loss of some local network connectivity will also result in direct transport journey impacts. The

inability for vehicles to travel from the A128 to A1089 southbound is estimated to result in an increase of up to 55,000 travel hours per annum, equivalent to an economic loss of value of £650,000 across a single year.

- 3.32 In addition, the traffic modelling analysis provided by Highways England indicates some significant changes in vehicle flows across the local road network. This will have significant impacts at key junctions throughout the area (including Orsett Cock and Manorway Roundabouts), on the routes leading to these junctions (e.g. A128, A1013, amongst others) and local routes through settlements (e.g. Orsett, Horndon, Chadwell St. Mary, amongst others). Whilst Highways England have indicated that some mitigation has been included to resolve these issues, Thurrock's own analysis demonstrates that the proposals are currently insufficient to keep the network operating effectively.
- 3.33 In addition, increased traffic on key routes and junctions is likely to result in pressure on Thurrock Council to deliver traffic and weight management schemes due to resident complaints. This will add additional financial and management pressures on the council.
- 3.34 The completed LTC infrastructure will create physical, visual, and psychological barriers to movement across Thurrock. Whilst most PRow will be reinstated, in some form, this will often require a diversion of some length and or a bridge crossing over the LTC. There is a clear risk that this will discourage some use of these routes and, by association, reduce levels of physical activity from walking, cycling and horse riding. It will therefore be necessary to routes leading to and from the affecting areas are also enhanced, creating an overall enhancement, to ensure usage can be encouraged.

Climate Change

- 3.35 Whilst the local air quality impacts (as defined by the DfT) in the immediate vicinity of the LTC Scheme may not be high relative to the scale of the scheme, the overall level of greenhouse gas emissions associated with the scheme will be considerable.
- 3.36 It is recognised that a primary role of the LTC is to provide capacity relief to the Dartford Crossing, which is operating above capacity. A significant proportion of trips (83%) using the LTC will be existing trips that have diverted from the Dartford Crossing. The proportion of induced trips crossing the River Thames as a result of the LTC Scheme is, therefore, estimated to be around 13,250 vehicle trips per day, based upon Highways England DCO Cordon Model.
- 3.37 Data on the overall average length of trip undertaken by these additional vehicles is not currently known, but if it assessed across the length of the LTC Scheme within Thurrock then this would account for an additional 32 million miles travelled per year. This is estimated to equate to around 7,500 additional tonnes of CO₂ produced within Thurrock per annum. Given Thurrock Council's commitment to reduce carbon emissions and tackle the climate emergency, this is likely to significantly impact on the ability to achieve climate change targets locally, and nationally. In addition, there are ongoing noise impacts associated with the level of traffic that is modelled to use the LTC.
- 3.38 To negate the increase in carbon emissions, Highways England has suggested that, eventually, the majority of trips on the LTC will be made in electric vehicles (EVs), reducing both carbon and noise emissions. However, it is currently unclear how this ambition will be achieved above and beyond natural shifts towards EVs nationally as there is no incentive scheme or mitigation proposed to encourage EV use. There are also significant concerns regarding the number of HGVs that are likely to use the LTC, and the probable long timescales before HGV fleets become electric.

Design Changes since the 2018 Statutory Consultation

3.39 There have been a number of design changes to the LTC Scheme since the 2018 Statutory Consultation. The main changes to the north of the River Thames that are included in the 2020 Supplementary Consultation and 'D-Con' are set out below:

- Increase in length of tunnels, now 2.6 miles (4.3 km) and corresponding decrease in length of new road, now approx. 14.3 miles (23 km);
- Changes to the northern tunnel entrance layout including a shorter culvert;
- Removal of the Rest and Services Area;
- Removal of the previously proposed junction at Tilbury;
- Re-alignment and re-classification of a number of footpaths, cycle routes and bridleways;
- Relocating the route between Tilbury and the A13 junction approximately 60 metres north-east;
- Changes to a number of slip roads at the junction between the LTC, A13, A1089 and A1013;
- Changes to the traveller site relocation;
- Removal of one southbound running lane between the M25 and A13 junction;
- Changes to the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer;
- Design changes to the re-provided bridges over the LTC – this includes the proposal of 'green bridges' at Muckingford Road, Green Lane, Holford Road, Brentwood Road, Stifford Clays Road;
- Changes to the southbound link from the M25 to the LTC; and
- Changes to the layout of junction 29 of the M25.

Thurrock Council's Position on the LTC Scheme

- 3.40 Given all of the costs identified above, and despite the recent design changes, Thurrock Council's position on the LTC Scheme is that whilst the Scheme may bring strategic connectivity benefits to the South East of England/ South Midlands, the current Scheme configuration will negatively affect the Thurrock area as:
- It does **not meet several national and Highways England strategic policy tests and scheme objectives**, including the delivery of economic growth and achieving sustainable local growth within the Thurrock area.
 - It is **inconsistent with the housing and development potential** for Thurrock
 - It will provide **limited additional connectivity** for residents and businesses of Thurrock.
 - Throughout the construction phase **there will be considerable disruption of local roads and Public Rights of Way** across Thurrock. This will affect access to employment, education, health facilities and local services, as well as delay development opportunities.
 - It includes **very limited options for public transport provision**
 - There are a number of design elements that **do not meet the needs of Thurrock businesses and residents**.
- 3.41 A number of other technical and community significant objections have been raised within the three formal consultation Council responses, in a range of formal correspondence and in response to a range of draft technical documents, which all contribute to the over-riding need for additional mitigation and legacy measures to those currently proposed.

4. Overall Package of Mitigation and Legacy Measures

Introduction

- 4.1 This chapter sets out the Council’s overarching response to the current LTC scheme. This is in relation to the expectations and aspirations to offset the identified negative impacts of the scheme, as well as ensuring a positive legacy from the scheme within the area. It also highlights the core areas where the Council are seeking revisions and amendments to the design and construction process of the LTC scheme, measures to minimise disruption to local businesses and communities, and longer-term legacy measures that should be delivered within and alongside the scheme. Whilst the full list of measures includes a number of schemes that the council expects Highways England to deliver as standard, they have been included within this report as they are priorities for Thurrock Council.
- 4.2 It is recognised that the LTC Scheme has been continually developed by Highways England and that the Council have already made a series of representations both as part of the formal consultation processes and on-going engagement. A range of issues, however, remain outstanding at this time. Furthermore, the level of detail provided by Highways England, particularly in relation to the construction of the scheme and the direct mitigation Highways England intend to provide, does not always permit an accurate assessment of potential impacts.
- 4.3 As a result, there are a number of areas where the Council are seeking further clarifications in relation to the scheme and to work with Highways England to develop appropriate mitigation and legacy measures.
- 4.4 This sections below summarise the process by which the preferred package of mitigation and legacy measures has been generated. It focuses on how the integrated package of measures have been developed to address the breadth of potential economic, social and environmental costs that the scheme could generate within Thurrock.
- 4.5 Chapters 5, 6, and 7 then set out the individual measures and concepts in detail and establish the associated benefits that each of them will deliver.

Development of Measures

- 4.6 The impact assessment of LTC scheme, presented in Chapter 3, was used as the initial basis upon which to develop a list of potential measures to address the identified economic, social and environmental costs. This generated a ‘long-list’ of 72 individual measures and concepts, initially classified within five separate themes:
- **Connectivity:** enhancements to strategic and local transport connectivity to mitigate the impacts that the LTC scheme will have upon network connections and travel patterns, as well as to deliver additional improvements to maximise the opportunities delivered through the LTC scheme
 - **Construction:** measures to mitigate business and community disruptions and blight during the construction phase of LTC, including connectivity, traffic levels, noise, and air quality

- **On-going Business and Community Support:** measures to overcome the potential longer-term challenges of community cohesion that the LTC scheme could otherwise generate within Thurrock and ensure that there continues to be growth in business activity
- **Open Space and Rights of Way:** measures to enhance the quality and biodiversity of open space, as well access to and across these areas, and improvements to the overall pedestrian, cycle and equestrian network to provide connectivity and encourage physical activity
- **Climate and Emissions:** measures to reduce the impact of the LTC scheme upon climate change and emissions across the local areas

4.7 The initial long-list of measures was subject to more detailed review and development. This led to the removal, refinement and combining of schemes, as well as the development of some additional new proposals.

4.8 This iterative process led to the identification of a final preferred package of measures that incorporates 57 defined schemes and concepts.

Preferred Package of Measures

4.9 In identifying the preferred package of measures and recognising the issues and opportunities each group of measures addresses, a revised classification process of measures was adopted, to better reflect the groupings. In broad terms, this identified three overarching ‘themes’ for the measures:

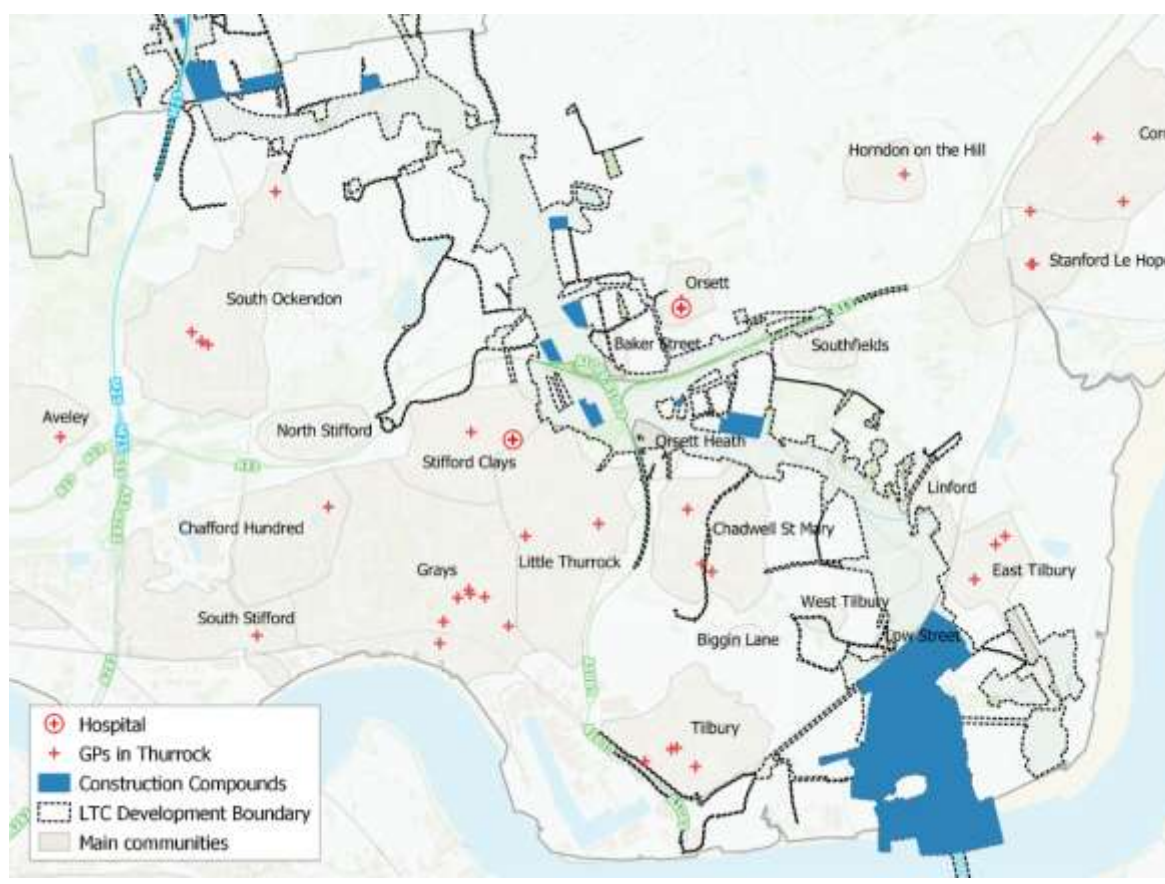
- **Direct Mitigation:** measures that address the direct impact of the construction phase, as well as design of the LTC scheme and the resulting traffic and transport implications
- **Council-led Support:** measures that ensure sufficient local resource is available to support local businesses and communities throughout the construction phase and into the transition of the operating scheme
- **Legacy:** measures that will ensure the LTC scheme delivers a lasting legacy across Thurrock and ensure positive local outcomes

4.10 The aims and approaches adopted to developing each of these ‘themes’ are set out within the respective sections below, including the various ‘sub-themes’ contained within each of them.

Direct Measures

- 4.11 The group of measures within this 'theme' focus upon minimising the level of disruption caused by both the construction and on-going operational phase of the LTC scheme.
- 4.12 Figure 4.1 below provides what is understood to be the latest Highways England proposals for the LTC Development Boundary, as well as the location of the proposed construction compounds. It shows the local communities that will be most impacted by the scheme.

Figure 4.1 Highways England Proposals for the LTC/A13 Interface including land use impacts



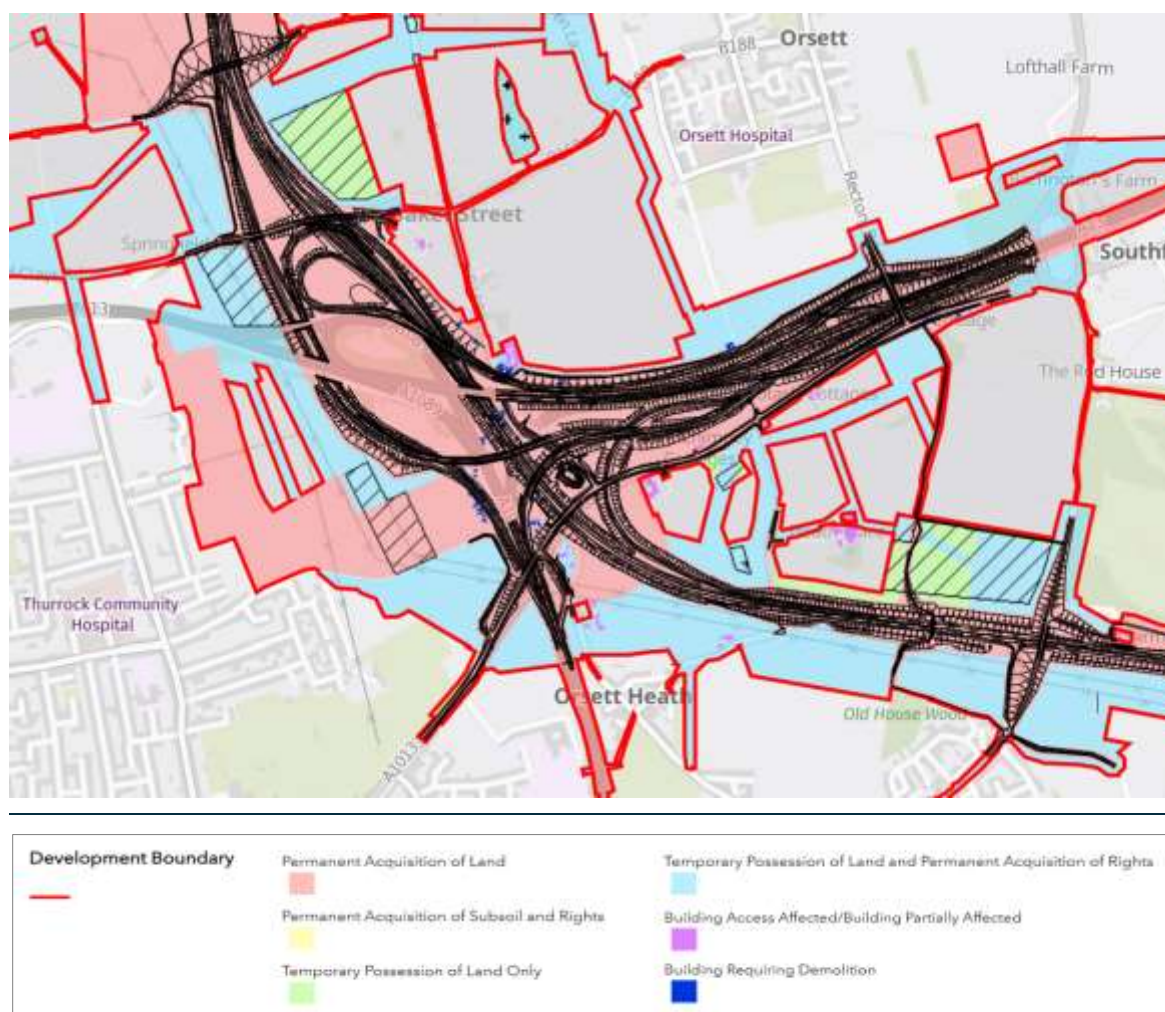
Source: Hatch, 2020 replicating Highways England consultation documentation

- 4.13 As outlined within Chapter 3, the construction phase of the scheme will undoubtedly result in large-scale impacts in terms of the construction boundary land take, traffic and transport disruption, and noise and air quality. Whilst Highways England has provided overarching information in regard to the construction phase, much of the detail remains unknown, and so the extent to which these impacts will be sufficiently mitigated remains unclear.
- 4.14 A number of the proposed measures within this 'theme', therefore, highlight the concepts and standards that the Council expect Highways England to attain throughout the construction phase to ensure disruption and pollution is kept to the absolute minimum.
- 4.15 Similarly, whilst the design of the LTC has developed in detail over time, there remain a number of areas where the Council remain concerned around how the scheme will be delivered in practice, particularly in relation to land sterilisation, potential impacts upon flood risk and water quality, as well as the levels of energy and emissions (noise and air quality) resulting from the operating highway. A range of proposed measures are proposed that seek to ensure the final

design incorporates sufficiently high standards of mitigation to neutralise potential negative impacts.

- 4.16 One of the key elements of the LTC design within Thurrock is the interface between the LTC and the A13. Highways England’s current proposals seek to provide all-way connections between the LTC and the eastern section of the A13, whilst maintaining the existing movements between the A13 and the A1089. To achieve this will not only require considerable land-take, but also the reconfiguration of the Orsett Cock junction on the A13 and would remove the current southbound connection from the A128 to the A1089.
- 4.17 Figure 4.2 presents Highways England’s current design proposals and the required property demolition and land-take.

Figure 4.2 Highways England Proposals for the LTC/A13 Interface including land use impacts



Source: Highways England, 2020

- 4.18 All the areas in light red/pink represent permanent land-take, whilst areas of blue and green would be acquired throughout the duration of the construction phase (up to 7 years), with retention of access rights to all of the blue areas.
- 4.19 Fourteen residential properties and some commercial buildings in vicinity of the A13 / LTC junction would be demolished, along with the requirement to move the traveller site on Gammonfield Road. A range of other properties would be impacted, including 14 residential

properties in Woolings Close and Five Chimney Cottages (located off the Stanford Road) which will be particularly affected as they are located within the LTC development boundary. Many other properties will be affected by additional blight created by the construction and permanent operation of the scheme.

- 4.20 The Council have made a number of representations to Highways England seeking to understand the justification for the proposed scheme design for this junction. However, to date, Highways England have not clearly set out the rationale for the design as it is currently. The Council have highlighted the range of negative impacts for Thurrock residents, workers and businesses, including land and property impacts but also loss of connectivity. The current design offers limited advantages to local Thurrock communities, with access to the LTC only from the A1089 or from the Manorway junction on the A13 (Stanford-le-Hope). This compares to alternative scheme design options proposed by the Council to permit access to the LTC at East Tilbury and at South Ockendon. This option would provide more direct connectivity into the local road network and offer opportunities to support future growth across Thurrock.
- 4.21 The Council, therefore, continue to advocate for alternative proposals to the design of the LTC as it crosses the A13, with the potential to entirely remove the interface between the two roads, and pursue alternative access points to the LTC. This will offer greater benefit to the communities and businesses located across Thurrock. This approach is discussed further below, within the section on 'legacy measures', in conjunction with potential wider infrastructure enhancements including the Tilbury Link Road.
- 4.22 Linked to the impact of the proposed LTC/A13 junction is the potential re-routing of, and induced, traffic movements through surrounding parts of the local road network within Thurrock. Of particular concern are the potential impacts at the Orsett Cock and Manorway junctions on the A13, both already very busy junctions, as well as routes leading to these junctions, e.g. A128 and A1013. There are also potential impacts upon routes leading toward Grays and the Port of Tilbury, including through the Daneholes Roundabout and the Asda Roundabout. In addition, more minor links through local settlements, such as Orsett, Horndon, and Chadwell St. Mary, amongst others, could also be significantly impacted.
- 4.23 The removal of the southbound link from the A128 to A1089 is forecast, within the available traffic modelling, to result in increased traffic flows along local roads and through these key junctions. Whilst Highways England may have proposed some mitigation at junctions, this is not considered sufficient to fully resolve the issues, and further traffic management measures will be required on the approaches to these junctions and along other local roads. There will also be maintenance implications for the Council with associated costs.
- 4.24 At this stage, some of these measures remain conceptual in nature, due to the requirement for further analytical work and to garner local preferences for traffic management measures. They, none-the-less, remain a key element of mitigation that will need to be developed and delivered by Highways England.
- 4.25 Based upon the issues set out above, the proposed measures within the direct mitigation 'theme' have been categorised within the following four 'sub-themes':
- **Construction Related:** measures to limit the impact of constructing LTC in terms of the emissions (dust and other particulate matter, noise), as well as traffic and transport impacts.
 - **LTC Design Elements:** proposed revisions to LTC design to minimise the physical and operational impact of the scheme in terms of the sterilisation of land, flood risk and drainage, and local pollution (air, water, and noise)

- **Key Junctions:** mitigation at junctions impacted by increased traffic movements
- **Traffic Management Measures:** mitigation in areas affected by diversion of traffic movements

4.26 The individual measures included within each ‘sub-theme’, alongside a presentation and discussion of the forecast benefits they will deliver, is set out within **Chapter 5**.

Council-led Support

4.27 The Council recognise that both the construction phase of the LTC scheme, along with its subsequent operational phase, will result in pressures upon the way a range of local businesses can operate and upon the cohesion of local communities and their access to employment, education and public facilities. In turn, this will place additional pressures upon Council resources to support these groups, as well as undertake their continuing statutory duties of maintaining the local transport network and providing public services. Whilst the construction of the LTC may offer opportunities for local employment and supply chains, without appropriate information and support, local residents and businesses could miss out on these opportunities.

4.28 In response to these challenges, the Council are seeking to initiate a number of internal support teams that can work with the local labour market, businesses, and the wider community to ensure they are fully informed of the potential impacts of the LTC scheme and can access support. The Council considers they are best placed to offer this support, given its existing relationships with businesses and the local community; however, this cannot be delivered within existing budgets. In addition, the Council is seeking to ensure that Highways England fully recognise the additional pressures that the Council will incur as a result of the LTC to keep essential services operating effectively and to implement necessary changes to the transport network.

4.29 Alongside these support teams, a series of measures have also been identified to directly support businesses and the local communities most affected by offering the opportunity for grant funding. Whilst it is fully recognised that this will need to be undertaken in a fair and equitable manner, and that investments will clearly need to add economic and social value, this grant funding would also be most effectively administered by Thurrock Council, but would require Highways England funding.

4.30 Based on the issues set out above, the proposed measures within the council-led support ‘theme’ have been categorised within the following three ‘sub-themes’:

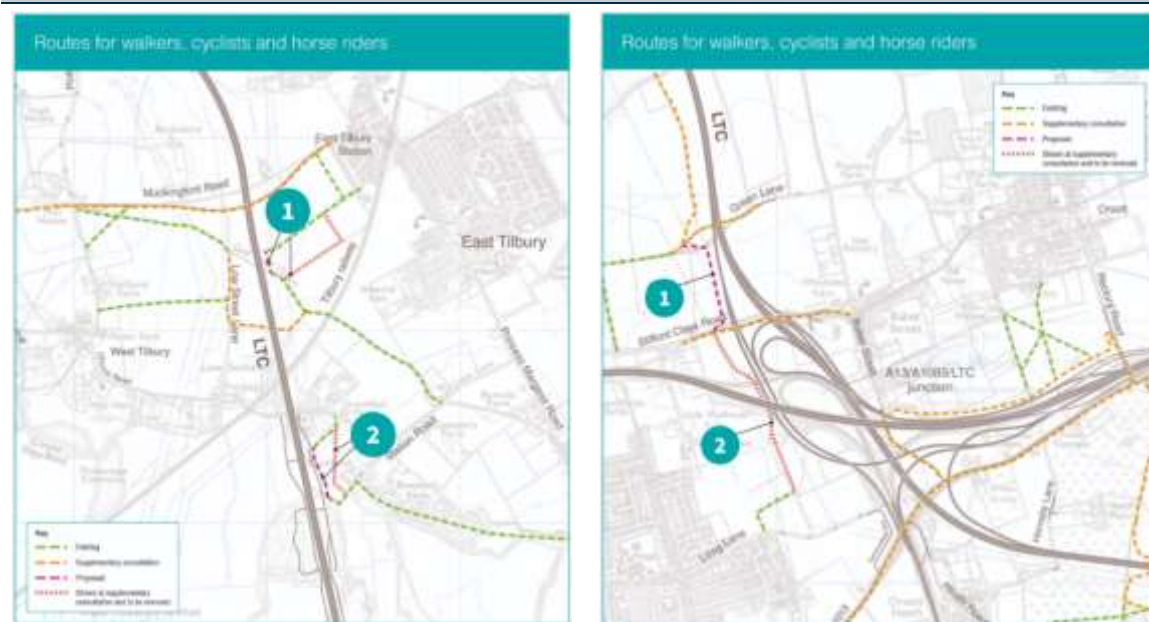
- **Local Labour and Business:** measures to support employment and educational opportunities for local workers/residents and ensure local businesses are not adversely impacted by the disruption created by the scheme
- **Community and Public Health:** measures to support the local community, including access to health and welfare services, as well opportunities to support local improvement projects.
- **Transport Network Management and Development:** additional resource to support the implementation of temporary and permanent TRO’s and on-site works on the local highway network

4.31 The individual measures included within each ‘sub-theme’, alongside a presentation and discussion of the forecast benefits they will deliver, is set out within **Chapter 6**.

- 4.36 This highlights the five key junctions along the A13 (including the potential interface with the LTC), along with key links off these junctions, including:
- A1089 (Dock Approach Road)
 - A128 (Brentwood Road)
 - A1013 (Stanford Road)
 - A1014 (The Manorway)
 - B186 (North Road)
- 4.37 In addition to these, Thurrock have aspirations for the following legacy enhancements:
- East Tilbury Junction and the Tilbury Link Road
 - Multi-modal bridge over the Tilbury Loop Railway Line near East Tilbury
 - Upgrades to parts of Medebridge Road to enhance accessibility to South Ockendon
 - South Ockendon Junction
- 4.38 These additional links and junctions will not only provide more comprehensive access to the strategic road network from within Thurrock, but also open up areas for potential future growth, through which a supporting local road network could be developed in support of the future emerging Local Plan.
- 4.39 The key challenge in optimising the configuration of a future network will relate to the interfaces on and off the LTC and the operation of key junctions. It has already been highlighted earlier within this chapter that Thurrock do not consider the current interface between the LTC and the A13 to be satisfactory, and that the delivery of LTC junctions at East Tilbury (along with the Tilbury Link Road) and South Ockendon could feasibly remove the requirement for the interface at the A13.
- 4.40 Whilst this could have implications for the Asda roundabout on the A1089, and the need to enhance its capacity, this may still represent better value for money from investment. Although Highways England have not indicated how much the proposed LTC/A13 interface will cost, if this were not to proceed, then the funds could be re-directed towards enhancing the Asda roundabout and providing the other junctions onto the LTC. Removal of the LTC/A13 interface could also reduce negative impacts at other junctions, such as Orsett Cock and Manorway roundabouts, as well as the need for traffic management on other parts of the local Thurrock road network. This, again, could release funding that could be spent on alternative measures.
- 4.41 This ultimately highlights the requirement for further options testing to be completed to determine the optimum future configuration of the strategic and local road network to support local communities and the economy, as well as enabling the future delivery of Thurrock's residential and commercial development needs. Alongside the current Highways England proposals, Thurrock would advocate assessment and testing of:
- 1) Current Highways England proposals PLUS East Tilbury junction and Tilbury Link Road, South Ockendon junction and distributor road connecting to A13/A1012 junction
 - 2) As Option 1 PLUS A1089 flyover at Asda roundabout
 - 3) As Option 1 PLUS removal of LTC/A13 interface
 - 4) As Option 3 PLUS A1089 flyover at Asda roundabout

- 4.42 The outcomes of this assessment process should be used to identify the preferred network configuration.
- 4.43 Alongside highway infrastructure, the LTC Scheme also offers opportunities to enhance housing and digital infrastructure provision. The former would respond to the significant demand for additional housing across the borough, whilst the latter will help off-set some of the physical severance created by the LTC Scheme by enhancing digital connectivity for residents and businesses across the affected corridor.
- 4.44 The LTC Scheme will also significantly impact upon Public Rights of Way (PRoW) and open space, particularly during the construction phase, but also post-scheme completion. Highways England have incorporated a range of schemes within their proposals, including walking and cycling provision across LTC road bridge crossings, green bridges along PRoW routes, and some additional PRoW links (see Figure 4.4).

Figure 4.4 Highway England's Proposals for Walkers, Cyclists and Horse Riders around East Tilbury and the A13/LTC interface



Source: Highways England, 2020

- 4.45 The Council have concerns around the detail available in relation to some of these measures and consider that further enhancements should be made to the PRoW network. These should focus on the Council's aspirations for an enhanced coastal route (referred to as the Two Forts Way), which is also part of the England Coastal Path, running from Tilbury station past Tilbury Fort and Coalhouse Fort and up to Thurrock Thameside Nature Park. The route passes to the south of North Portal location, and the associated proposed enhancements to green space, and offers connections into Tilbury, East Tilbury, and Stanford-le-Hope. It would also connect to the permanent multi-model bridge proposed by Thurrock, linking to the Coal Lane bridleway and potential development opportunities.
- 4.46 Alongside this there are a range of opportunities to enhance the existing PRoW network by completing gaps and enhancing the standard of provision. Whilst this would need to be done in an acceptable manner, to ensure appropriate standards of provision for different users, and without creating a significant additional maintenance burden for the Council, it would

encourage active travel, enhance connectivity, and improve community cohesion - all issues that will otherwise be made worse by the LTC infrastructure.

- 4.47 Given the impact the LTC scheme will have upon the landscape, the Council also consider it important that additional measures to enhance open space and heritage assets are delivered. These would link with the PRow network enhancements and ensure the development of green corridors that will support biodiversity and improve the natural environment.
- 4.48 Coalhouse Fort is recognised as a key heritage asset located in close proximity to the North Portal site and the associated development compound. The Fort will suffer from significant severance during the construction phase, and the LTC infrastructure will provide a lasting segregation of the East Tilbury area, including the Fort. The Fort is already in need of significant restoration and without impetus to off-set the negative impact of the LTC there is a significant risk that any future opportunities to restore the asset and create a lasting legacy will be lost. Whilst proposals for the restoration and future use of the Fort remain in development, it is clear that this could become an important hub for the East Tilbury area and so the restoration works should be a strong focus of the LTC project.
- 4.49 Thurrock also have a strong focus upon climate change and levels of emissions across the borough. Whilst Highways England have stated that emission levels from the road itself will become increasingly lower as a result of movement toward low emission vehicles, the details relating to assumed profile of change remains limited. This includes any sensitivity testing of the impact of different profiles. Whilst Thurrock accept that low emission vehicle usage will increase, there will still remain substantial usage of the scheme in the early year of operation by fossil fuel-powered vehicles. The construction of the scheme itself will also have a substantial negative impact. The Council therefore expect significant mitigation measures to be adopted and funded over time to off-set the negative impacts across the borough.
- 4.50 Based upon the issues set out above, the full set of proposed measures within the legacy measures 'theme' have been categorised within the following six 'sub-themes':
- **Infrastructure Facilitation:** enabling works and/or support for future infrastructure and measures to support Thurrock local growth requirements
 - **Infrastructure Provision:** delivery of physical highway, housing and digital legacy infrastructure
 - **Green Corridors:** upgrade and enhancement to bridleways, footpaths and cycleways to create green corridors
 - **Green Space Enhancement:** bringing existing green space up to an appropriate standard and improving accessibility
 - **Heritage Restoration:** improvement and safeguarding of heritage assets
 - **Climate Change Measures:** measures that will offset negative impact of carbon emissions from LTC
- 4.51 The individual measures included within each 'sub-theme', alongside a presentation and discussion of the forecast benefits they will deliver, is set out within **Chapter 7**.

Summary of Overall Package Impacts

- 4.52 The overall package of measures has been developed to ensure that the construction and operational phases of the scheme do not negatively impact upon local business and community activity, as well as the local environment.
- 4.53 To achieve this requires measures that:
- Provide additional direct mitigation of construction impacts;
 - Amend the physical and operational design of the LTC Scheme;
 - Ensure the local transport network is not negatively impacted;
 - Enables the Council to support local businesses and the community and continue to provide high quality services and network provision; and
 - Provide a future legacy for the area in terms of enhanced connectivity, opportunities for growth, access to green corridors and open space, protection of habitats and heritage, and positive climate change action.
- 4.54 **Chapter 5, 6, and 7** present the detail of the 57 schemes and measures proposed by Thurrock Council for incorporation within the LTC Scheme funding programme, for direct mitigation, Council-led support schemes, and legacy measures, respectively.
- 4.55 Each chapter outlines the proposals and establishes the potential benefits that each measure would deliver, alongside an indication the of the scale of costs, where available.

5. Direct Mitigation Measures

5.1 This chapter follows on from the presentation of the overarching package of measures in Chapter 4 and details the direct mitigation ‘theme’, in terms of the following four ‘sub-themes’:

- **Construction Related:** measures to limit impact of constructing LTC in terms of the emissions (dust and other particulate matter, noise) as well as traffic and transport impacts.
- **LTC Design Elements:** proposed revisions to LTC design to minimise the physical and operational impact of the scheme in terms of the sterilisation of land, flood risk and drainage, and local pollution (air, water, and noise)
- **Key Junctions:** mitigation at junctions impacted by increased traffic movements
- **Traffic Management Measures:** mitigation in areas affected by diversion of traffic movements

5.2 As well as providing more detail about the individual scheme and concepts, the chapter identifies the impact area that each measure is seeking to address, assesses the positive impacts, and gives consideration to the scale of potential investment required. It also highlights those measures and interventions identified as high priority by the Council.

Construction-specific Measures

5.3 As discussed in Chapter 4, this sub-group of measures focuses upon minimising the direct impact caused by the construction in terms of the emissions (dust and other particulate matter, noise) as well as traffic and transport impacts.

5.4 Whilst Highway England’s proposals acknowledge the requirement to minimise these impacts, and include some mitigation already, the Council have identified a number of areas where additional mitigation should be provided to ensure negative impacts are kept to a minimum.

Construction-specific measures (emissions)

5.5 An initial set of construction-specific measures target the levels of emissions that will be generated by construction activity (dust, particulate matter, noise) and ways to ensure that these are kept below acceptable levels for nearby residents, communities, and businesses.

Table 5.1: Summary of Construction-specific Measures (Emissions)

Ref.	Scheme Measure	Brief Description
M1	Ensure optimum phasing of construction to minimise impacts	Ensure the construction operations cause the minimum level of disruption by phasing activities to reduce any specific burdens upon individual localities.
M2	Reduce the number and/or optimise the location of construction compounds	Ensure the construction operations cause the minimum level of disruption by locating compound sites away from properties and sensitive receptors
M3	Minimise construction and construction traffic emissions.	Ensure best practice approaches are adopted in relation to dust and emissions.

M4	Real-time air quality and noise monitoring at key receptor sites	Identify list of sensitive sites where sensors should be installed to monitor air quality and noise, with required actions if target limits are exceeded.
M5	Alter construction hours to reduce noise and disruption in residential areas	Ensure the construction operations cause the minimum level of disruption by only applying appropriate on-site working hours
M6	Additional noise mitigation in Chadwell and East Tilbury	Current levels of proposed mitigation are considered insufficient in these sensitive locations.

5.6 The potential impact of each of these six measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure M1	Ensure optimum phasing of construction to minimise impacts	
Additional Description	Working with HE to ensure that peaks in construction activity, including construction traffic, are managed to minimise emissions (dust, particulates, noise etc.) and disruption to local businesses and community activities.	
Type and Scale of Benefits	Impact Areas	Local air quality, noise, health impacts, business & community disruption
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to remove any peaks in noise, emissions, and general traffic levels in small localised areas.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

5.7 It is recognised that Measure M1 will need to be developed in partnership with Highways England, but it is important that the impacts on local residents are fully considered and amendments implemented.

5.8 The council has not received the construction programme from Highways England and so has not been able to conduct a full assessment of the impacts.

Measure M2	Reduce the number and/or optimise the location of construction compounds	
Additional Description	Work with HE to minimise the requirement for compound sites located within 200m to residential properties and other sensitive receptors.	
Type and Scale of Benefits	Impact Areas	Local air quality, noise, health impacts, community disruption
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to reduce high levels of disruption to individual properties and sensitive receptors
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.9 Highways England are currently proposing nine construction compounds either within Thurrock or on the border with Brentwood district. This has increased significantly from the original proposals. Whilst many of these are located in reasonably rural locations, a number of located within 200m of residential properties. This is particularly the case around Baker Street where a number of properties are potentially impacted by noise and air quality issues.
- 5.10 The Council advocates that all compound sites are located at least 200m away from all residential properties.
- 5.11 It is recognised that Measure M2 will need to be developed in partnership with Highways England, once further construction management proposals are available, but the overall levels of construction activities across the LTC development will require careful management.

Measure M3	Minimise construction and construction traffic emissions	
Additional Description	Ensure best practice approaches are adopted in relation to dust and emissions as the plans for the scheme continue to develop.	
Type and Scale of Benefits	Impact Areas	Local air quality, noise, business & community disruption, health impacts
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to reduce the overall levels of dust emissions and noise associated with construction and construction traffic
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	High	

- 5.12 Whilst the latest proposals provided by Highways England around noise and air quality standards during construction appear to be satisfactory, it is important to ensure that this remains the case as the plans for the scheme continue to develop and more information becomes available about the construction phase.
- 5.13 This would include the adoption of best practice approaches including techniques from Mayor of London 2014 'The Control of Dust and Emissions during Construction and Demolition, Draft Supplementary Planning Guidance' and compliance with the London Low Emission Zone requirements for emissions as standard.

Measure M4	Real-time air quality and noise monitoring at key receptor sites	
Additional Description	Sensors to be installed in at least the same locations as the baseline monitoring sites to monitor air quality and noise, with required actions if target limits are exceeded.	
Type and Scale of Benefits	Impact Areas	Air quality (dust and noise)
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to reduce noise and dust emissions associated with direct construction works and changes to traffic flows during construction the phase
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.14 Highways England have set out in the draft Environmental Statement their commitments to air quality and noise monitoring. Baseline monitoring occurred in key sites across Thurrock which were agreed with the council, however construction monitoring sites are yet to be agreed. The council advocates for construction monitoring to take place in *at least* the same locations as baseline monitoring, which will need Section 61 agreement from Thurrock Council.
- 5.15 In relation to operational phase monitoring, Highways England have not committed to undertake any post-completion operational noise or air quality monitoring. However, Thurrock strongly advocate for ongoing monitoring or, at least, a post-opening assessment to check that the Scheme isn't breaching its limits.
- 5.16 In addition, monitoring should be in real-time throughout the construction and operational phases to feedback live alerts when pollution exceeds certain limits. This will inform temporary changes to inform construction practices or road traffic management approaches to reduce air pollution if required (see Measure M12).

Measure M5	Alter construction hours to reduce noise and disruption in residential areas	
Additional Description	Ensure the construction operations cause the minimum level of disruption to local communities and businesses, particularly during unsocial hours	
Type and Scale of Benefits	Impact Areas	Community disruption, noise
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to minimise disruption to the local community with specific focus on reducing construction noise impacts at unsocial hours.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	High	

- 5.17 The Council are aware of the current proposed core working hours between 7am and 7pm on weekdays (excluding bank holidays), and between 7am and 4pm on Saturdays. It is recognised that Highway England are seeking to extend this in ‘during the summer’ to undertake earthworks between 7am and 10pm. In addition, crews may work for up to an hour before and after to prepare and close the site.
- 5.18 The Council have concerns relating to both the definition of ‘summer’ and how much of the year could be subject to works extending till 10pm at night. In addition, the extent of activity in proceeding hour before and after construction works would also need to be understood, particularly if this could extend up till 11pm at night during the ‘summer’.
- 5.19 These concerns are set out in the Council’s response to the CoCP, and the Council are clear that HE should alter construction hours to reduce disruption to residents. In particular,
- Saturday hours should be limited to 7am-1pm only, as is normal practice
 - ‘Normal working hours’ should include site establishment and demobilisation
 - Key support activities which lead to off-site movements such be excluded from 24-hour operations
 - ‘Summer months’ should refer to May-September only

Measure M6	Additional noise mitigation in Chadwell and East Tilbury during construction	
Additional Description	These locations are highlighted as vulnerable to the most significant noise increases during construction and have some of the most vulnerable communities. Current proposed mitigation is not considered to offer sufficient protection.	
Type and Scale of Benefits	Impact Areas	Community disruption, noise
	Qualitative Impact	Whilst the scale of benefits cannot be assessed without more detailed construction arrangements, the aim will be to minimise levels of noise disruption in the residential areas of Chadwell and East Tilbury.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.20 The Council's response to Highways England's Draft Health and Equalities Impact Assessment outlines concerns around the lack of noise mitigation in Chadwell and East Tilbury. These locations are specifically highlighted as they are likely to suffer the most significant noise increases as a result of the LTC and they are home to some of the most vulnerable communities.
- 5.21 Proposals for mitigation in these locations have not yet been developed by Highways England, and so the Council strongly advocates that Highways England undertakes further work to further assess the impact within this area and ensure that appropriate mitigation is in place.

Sub-Theme Summary (Construction-specific measures (emissions))

- 5.22 The construction-specific (emissions) sub-theme proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Local air quality impacts (dust and particulate matter) from construction and construction traffic;
 - Noise impacts from construction and construction traffic;
 - Health impacts associated with air quality and noise impacts;
 - business disruption from construction activity
 - community disruption from construction activity
- 5.23 If implemented, these mitigation measures could lead to significant positive benefits for local residents in terms of reduced risk of poor local air quality and lower levels of disruption from noise. In particular, they would ensure that potential high peaks in emissions are avoided.

Construction-specific measures (transport)

- 5.24 A second set of construction-specific measures relate to the transport proposals and levels of provision that should be considered during the construction phase.

Table 5.2: Summary of Construction-specific Measures (Transport)

Ref.	Scheme Measure	Brief Description
M7	Sustainable public transport access to construction sites	Provide an electric shuttle bus for construction workers between the new interchange at Stanford-le-Hope station and the main construction compounds
M8	Implement innovative public transport measures	Use the construction phase as an opportunity to trial innovative forms of public transport measures.
M9	Enable active travel to construction sites	Ensure construction workers can access construction compounds via active travel modes, as part of the wider Personalised Travel Planning measures
M10	Use of marine transport for the movement of materials	Use river transport to move materials and construction equipment to and from site during the construction phase
M11	Adequate waste management processes in place	Ensure clear waste management processes and mitigation measures during construction including coded bins, appropriate training

- 5.25 The potential impact of each of these five measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure M7	Sustainable public transport access to construction sites	
Additional Description	Provide high quality public transport connections to and from the main construction compounds to encourage sustainable travel. This includes the promotion of an electric shuttle bus link from Stanford-le-Hope Interchange.	
Type and Scale of Benefits	Impact Areas	Connectivity (reduced traffic congestion), air quality
	Qualitative Impact	Reduce overall vehicle trips and emissions by requiring construction workers to travel to compounds by electric shuttle bus.
	Monetary (if applicable)	n/a (requires HE construction traffic modelling)
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 5.26 The Council are already in the process of delivering a separate scheme to promote Stanford-le-Hope Station as an enhanced interchange. Utilising this facility as a focal point for public transport provision for construction workers is considered a key opportunity to manage trips to and from the main compound locations to the north of the River Thames. This will help to promote sustainable transport for construction workers and reduce traffic on the local roads.
- 5.27 This measure links with one of the proposed legacy measures (L10) to deliver temporary housing provision for construction workers on land adjacent to Stanford-le-Hope Interchange, with the shuttle bus providing workers with access to site.

Measure M8	Implement innovative public transport measures	
Additional Description	Use the construction phase as an opportunity to trial innovative forms of public transport measures to support local residents and workers, in addition to construction workers. This includes the aspiration to extend the Thames Clipper to Thurrock and ensure it is fully integrated into the transport network with on-going public transport and active travel connections. Measures could potentially include e-scooter hire, shuttle bus connections, or on-demand bus provision.	
Type and Scale of Benefits	Impact Areas	Connectivity (reduced traffic congestion), air quality
	Qualitative Impact	Reduce overall vehicle trips and emissions by requiring construction workers to travel to compounds by forms of public transport and also providing opportunities for the local community to travel by sustainable modes.
	Monetary (if applicable)	n/a (requires HE construction traffic modelling)
Scale of required Investment	Overall	Low-medium cost interventions
	% request from HE	Thames Clipper may be delivered through London Resort DCO. Other measures financed by HE.
Priority	Standard	

- 5.28 Measure M8 would complement Measure M7 in terms of encouraging sustainable travel options but focus upon using the opportunity of the construction phase to trial innovative public transport measures.
- 5.29 The London Resort (LR) theme park is currently proposed on the Ebbsfleet peninsula, on the south side of the River Thames, opposite Grays. As part of LR's DCO process, they are proposing to provide a 2,500-space car park adjacent to Tilbury Port that will provide access to theme park site via a ferry service. This is to reduce congestion on the QEII Bridge. LR are working with Thames Clipper to extend the Clipper services out to LR, with a reduced spur service between LR and Tilbury Port providing the ferry access service. Thurrock Council are also in conversation with LR and Thames Clipper about adding an additional stop at Purfleet.
- 5.30 Whilst this scheme would go ahead under the LR DCO process, Thurrock Council are keen to ensure that a Thames Clipper Extension to Tilbury Port, via Purfleet happens even if the LR DCO were not to be granted approval.
- 5.31 More importantly, it will be critical to have good interchange with the Thames Clipper at Tilbury Port, with the opportunity for connections to the construction compounds, as well as key settlements affected by LTC Scheme, including Tilbury, East Tilbury, Linford, and Chadwell St. Mary.

Measure M9	Enable active travel to construction sites	
Additional Description	Ensure construction workers have the opportunity to access construction compounds via active travel modes, as part of the wider Personalised Travel Planning measures across the borough. This includes making use of the existing Cycle Hubs in Stanford Le Hope and Tilbury.	
Type and Scale of Benefits	Impact Areas	Connectivity (reduced traffic congestion), air quality, health and wellbeing
	Qualitative Impact	Reduce overall vehicle trips and emissions by encouraging active travel to compounds; support the ongoing operations of the Tilbury and SLH Cycle Hubs to ensure continued use for the community
	Monetary (if applicable)	n/a (requires HE construction traffic modelling)
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.32 The existing Cycle Hubs in Tilbury and Stanford Le Hope were funded by the South Essex Active Travel Fund and are an important part of the active travel infrastructure for local people in the south of the borough.
- 5.33 Funding from Highways England to support the continued operation of the Hubs will secure the infrastructure for the community for the future and provide the infrastructure for LTC construction workers to cycle from the hubs to the construction compounds. This will have positive benefits for local emissions by reducing construction worker vehicle use and have positive physical and mental health benefits for the construction workers and community.

Measure M10	Use of marine transport for the movement of materials	
Additional Description	Use river transport to move materials and construction equipment to and from site during the construction phase, including consideration of how the TBMs will be transported to the north portal site.	
Type and Scale of Benefits	Impact Areas	Connectivity (reduced traffic congestion), Air quality
	Qualitative Impact	Reduce overall vehicle trips and emissions by encouraging active travel to compounds.
	Monetary (if applicable)	n/a (requires HE construction traffic modelling)
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 5.34 Whilst the Council have made a number of representations in relation to the movement of construction materials and equipment to and from the LTC development sites, it is not clear whether Highways England will consider the use of marine transport as part of the final

construction proposals. This measure asks for a firm commitment from Highways England on this issue.

- 5.35 The close proximity of local ports to the main north portal compound site provides a clear opportunity for the movement of bulk and significant materials. This position is promoted by the PLA, which the council supports. The Council also advocate that further analysis is conducted on the feasibility of this approach to ensure that the minimum number of HGV movements are required on the local road network.

Measure M11	Adequate waste management processes in place	
Additional Description	Clear waste management processes and mitigation measures during construction including coded bins and appropriate training.	
Type and Scale of Benefits	Impact Areas	Habitat, water environment
	Qualitative Impact	Ensure any waste generated by the construction of the scheme is adequately managed and prevents impact on the local environment.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost interventions
	% request from HE	100%
Priority	Standard	

- 5.36 As part of their review of the draft Environmental Statement, the Council have already highlighted that Highways England have not proposed any mitigation measures relating to the management of hazardous material or waste during the operational phase⁴. A number of suggestions are made which should be considered. These include:

- The provision of clearly marked and/or colour coded bins to enable easy identification of where waste should be placed during planned/unplanned maintenance to ensure recyclable waste is source segregated.
- Any materials required for planned/unplanned maintenance should be managed in accordance with the best practice procedures.
- Hazardous waste should be source segregated. Hazardous waste such as WEEE may arise during planned/unplanned maintenance and should be stored and collected separately.
- Regular training should be provided for staff and/or sub-contractors. The training should focus on the practices necessary to minimise waste and to facilitate good practice whilst undertaking litter picking and planned/unplanned maintenance.
- Furthermore, Council assumes that during detailed design, opportunities for further re-use of materials will be explored

⁴Taken from *Lower Thames Crossing: Review of Draft Environmental Statement Chapters*, Stantec on behalf of Thurrock Council

Sub-Theme Summary (*Construction-specific measures (transport)*)

- 5.37 The construction-specific (transport) sub-theme proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Reduced connectivity as a result of traffic congestion;
 - Poor air quality associated with vehicular traffic;
 - Impacts of additional traffic and emissions upon health and wellbeing;
 - Reduced habitat and biodiversity;
 - Quality of the local water environment;
- 5.38 If implemented, these mitigation measures could lead to significant positive benefits for local businesses and residents in terms of reducing overall levels of construction-related traffic and ensuring congestion is kept to a minimum. The reduced traffic will also ensure vehicles emissions are lower and increased levels of active travel will have associated health & wellbeing benefits. Ensuring appropriate waste management processes will also minimise any risk of negative impacts of waste upon habitat and water environment.

LTC Design Elements

- 5.39 As discussed in Chapter 4, this sub-group of measures focuses upon refinements and amendments to the proposed LTC design to minimise adverse impacts and deliver optimum longer-term outcomes.

Table 5.3: Summary of LTC Design Elements

Ref.	Scheme Measure	Brief Description
M12	Smart speed limits that can respond to traffic flows and pollutant concentrations	Ensure that the smart and variable speed limits can be utilised to respond to real-time air quality monitoring data and slow traffic during periods of higher pollution
M13	Use of low-noise road surfacing on the LTC and the local network	As well as utilising low-noise surfacing along the LTC, this surfacing should also be applied on local roads to help offset the overall level of noise generated from the LTC scheme
M14	Use of best-in-class energy efficient systems for operations	It is accepted that HE will adopt modern lighting and signage, but it is important to confirm that best-in-class energy efficiency is being provided.
M15	Build sufficient earth bunds and noise barriers along the route to reduce noise impact	Whilst landscaping and noise barrier measures are already proposed, it is important to confirm that sufficient provision is being made across the full alignment
M16	Flood risk mitigation and water quality improvement through SuDS	Greater emphasis should be made on the use of SuDS features within the scheme to deliver water quality benefits
M17	Revised Proposals for A13/LTC Junction	Alternative proposals to minimise the extensive land sterilisation, property demolition and blight creating by the existing proposals
M18	LTC Toll Hypothecation	Ensure a fixed proportion of LTC tolls are hypothecated to support projects within Thurrock

- 5.40 The potential impact of each of these seven measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure M12	Smart speed limits that can respond to traffic flows and pollutant concentrations	
Additional Description	Ensure that the smart and variable speed limits that are to be included as part of Highways England's proposals can be utilised to respond to real-time air quality monitoring.	
Type and Scale of Benefits	Impact Areas	Air quality
	Qualitative Impact	Reduce peak levels of emissions to improve overall air quality
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.41 Smart and variable speed limits are included as part of Highways England's proposals, and will respond to congestion and traffic flows; however, the Council would also wish to see them respond to the air quality along the route, in terms of a real-time response to high pollutant concentrations.

Measure M13	Use of low-noise road surfacing on the LTC and the local network	
Additional Description	As well as utilising low-noise surfacing along the LTC, this surfacing could also be applied on local roads crossing the LTC alignment and on other parallel roads where either traffic levels may be affected or where it can help off-set noise generated from the LTC.	
Type and Scale of Benefits	Impact Areas	Community disruption (noise)
	Qualitative Impact	Reduced traffic noise for local communities, reducing the associated blight
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 5.42 Low-noise surfacing should be used on the LTC route. This is understood to be a standard Highways England approach; however, this surfacing should also be laid on the local roads that will either see an increase in traffic, including HGVs, as a result of the LTC, or on routes where it would help to off-set the impact of the LTC within specific community areas.

- 5.43 This could include:

- All re-connections of roads across the LTC (Station road, Muckingford Road, Brentwood Rd, Stanford Road, Stifford Clays Road, North Road)
- Other local roads directly affected by the LTC construction (Baker Street, Heath Road, Rectory Road)
- Other nearby routes through local communities affected (Princess Margaret Road, Orsett High Road, Prince Charles Avenue, Orsett Road)

Measure M14	Use of best-in-class energy efficient systems for operations	
Additional Description	It is accepted that HE will adopt modern lighting and signage, but it is important to confirm that best-in-class energy efficiency is being provided.	
Type and Scale of Benefits	Impact Areas	Energy Consumption
	Qualitative Impact	Reduce energy consumption required by the operation of the scheme
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 5.44 Further details are required from highways England to confirm the acceptability of proposals for local energy consumption. The Council reserve judgement as to whether enhanced systems should be included as part of the scheme.

Measure M15	Build earth bunds and noise barriers along the route to reduce noise impact	
Additional Description	HE have already proposed a range of landscaping and noise barrier measures along the LTC alignment, but it is important to ensure that appropriate provision is being applied.	
Type and Scale of Benefits	Impact Areas	Business & community disruption (noise)
	Qualitative Impact	Reduce traffic noise for the local community
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 5.45 There's a lack of information around estimated noise levels and impacts without attenuation and once mitigation has been put in place.
- 5.46 The Council has concerns about the design change from the use of cuttings to earth bunds and the impacts this could have on local communities. Therefore, further details are required to confirm the acceptability of proposals for noise reduction.

Measure M16	Flood risk mitigation and water quality improvement through SuDS	
Additional Description	Greater emphasis should be made on the use of Sustainable Drainage Systems features within the scheme to deliver water quality benefits and this should be reflected in the final design.	
Type and Scale of Benefits	Impact Areas	Flood risk, water quality
	Qualitative Impact	Reduce risk of flooding and improve local water quality
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 5.47 As part of their review of the draft Environmental Statement, the Council have already highlighted that Highways England have not placed sufficient emphasis upon SuDS within the current LTC Design. The Council expect to see further opportunities to incorporate SuDS, and enhance water quality, explored within the final design process.

Measure M17	Revised Proposals for A13/LTC Junction	
Additional Description	The current DCO proposals require significant land take around the junction, demolition of buildings, and will cause blight. It will also create traffic disruption during construction, as well as affect local traffic routing during the operational phase. The junction design provides limited benefits for Thurrock residents and businesses. The Council would advocate the full removal of the A13/LTC interface, with access to the LTC via junctions at East Tilbury and South Ockendon instead (see L1 below)	
Type and Scale of Benefits	Impact Areas	Multiple impacts areas affecting business and community disruption during construction and operational phases, minimising land and property impacts, reducing blight
	Qualitative Impact	Significantly reduce land sterilisation around the junction and reduce the number of properties requiring demolition (up to 10), Reduce the extent of blight for surrounding properties, Minimise disruption to the existing highway network during construction Negate journey time increases for trips from A128 to A1089
	Monetary (if applicable)	Circa £155,000 per house retained, Up to £10.5m journey time savings pa Up to £650,000 pa direct transport impacts
Scale of required Investment	Overall	Significant financial saving
	% request from HE	Funds could be reinvested in alternative measures
Priority	High	

- 5.48 Chapter 4 (paras. 4.16 to 4.23) has already set out the importance of the LTC/A13 interface and the pivotal impact it has upon both construction and operational phase impacts, but also how it impacts a wider vision of strategic transport connectivity across the area.
- 5.49 The proposals for this junction affect the requirements for mitigation measures M18, M19, M20, M21, M22 and M23 (see below in sections on ‘key junction mitigation’ and ‘traffic management’), as well as linking to measures L1, L3, and L4 (see Chapter 7 – legacy measures) when considering strategic connectivity.
- 5.50 The Council has continually requested Highways England to demonstrate the benefits of their proposed design for the A13/LTC interface, including to highlight the overall cost of this element. To date no detailed information has been provided. The Council therefore continue to advocate for further consideration of the requirements at this junction and for Highways England to acknowledge the substantial negative impacts it has for Thurrock residents and businesses, with limited positive impact.

Measure M18	LTC Toll Hypothecation	
Additional Description	Ensure a fixed proportion of LTC tolls are hypothecated to support projects within Thurrock	
Type and Scale of Benefits	Impact Areas	Business support, community cohesion, green space and environment
	Qualitative Impact	Ensure that the LTC scheme provides an on-going legacy for Thurrock businesses and communities and off-sets the negative impacts of the scheme on these groups.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Dependent upon agreed fixed proportion
	% request from HE	100%
Priority	Standard	

- 5.51 Whilst the proposals for the LTC include a local residents discount scheme (LRDS) that will mirror the LRDS for the Dartford Crossing, the design of the crossing means it will offer limited accessibility for Thurrock residents and they are unlikely to benefit significantly from the discount. A direct hypothecation of an agreed percentage of the toll revenues would provide a mechanism to fund local business and resident projects and offer a genuine legacy to local people.

Sub-Theme Summary (LTC Design Elements)

- 5.52 The LTC design elements sub-theme proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Negative impact of LTC and re-routed traffic levels upon local air quality
 - Disruption and blight from additional noise levels associated with the LTC and re-routed traffic flows
 - Energy consumption levels associated with the operation of the LTC scheme
 - Flood risk levels

- Risk of changes to water quality
- Business and community disruption during construction and operational phases,
- Sterilised land impacts
- Property blight
- Toll hypothecation

- 5.53 If implemented, these mitigation measures could lead to significant positive benefits by reducing peak levels of particulate and noise emissions, as well as reducing the overall energy consumption of the scheme. They will also reduce the risk of flooding events and associated impacts upon water quality.
- 5.54 The Councils proposals for the A13/LTC interface would also significantly reduce level of disruption to business and community connectivity equating to over £11 million pa, as well as reducing land sterilisation and loss of property and blight to a value of over £1.5 million.
- 5.55 Toll hypothecation will ensure the LTC scheme delivers an on-going financial legacy.

Key Junction Mitigation

- 5.56 As discussed in Chapter 4, this sub-group of measures focuses upon key junctions whose operation will be significantly affected by the LTC Scheme and where it is felt current Highways England proposals are insufficient to mitigate the negative impacts.

Table 5.4: Summary of Key Junction Mitigation

Ref.	Scheme Measure	Brief Description
M19	Orsett Cock Roundabout Mitigation	Additional mitigation to negate the negative impact of the LTC scheme upon the A128 approach to the junction.
M20	Manorway Roundabout Mitigation	Additional lane capacity on the A1014 and A1013 approaches to ensure port and local traffic movements are not impaired by the LTC.

- 5.57 Both junctions have been subject to local junction modelling work, conducted by Stantec on behalf of Thurrock Council.
- 5.58 This modelling took outputs from Highways England's strategy traffic modelling work that forecasts the impact of the LTC Scheme. The underlying flows were then adjusted to more accurately reflect local traffic movements, as it is understood that Highways England strategic traffic modelling was subject to limited calibration and validation against traffic flows on the local road network across Thurrock. The approach adopted by Stantec therefore ensured the modelling more accurately reflects the actual impacts of the LTC upon the local junction operation. This process was done through use of local traffic count data. In a number of cases this identified higher traffic flows on some approaches to the junctions and that this will negatively impact upon the overall operation of the junction.
- 5.59 In response, Stantec examined a range of alternative scheme proposals for each junction, and identified preferred options, to ensure the operation of each junction is not negatively impacted by the LTC Scheme.

- 5.60 Further details of the Stantec modelling work and the proposed additional enhancements can be found within a separate technical report⁵. This also includes a discussion of potential impacts upon Daneholes and Asda Roundabouts. The LTC is forecast to impact upon these two junctions as well; however, there are challenges with delivery direct mitigation measures at both of these sites. Instead, two legacy measures for these junctions have been identified and these are discussed in **Chapter 7**.
- 5.61 A summary of the Orsett Cock and Manorway proposals are outlined within the tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure M19	Orsett Cock Roundabout Mitigation	
Additional Description	Whilst the core LTC scheme proposes a new junction layout at this junction, the local traffic modelling has identified the potential for significant delays on the A128 approach. Additional mitigation is proposed, in terms of signalisation of the A128 arm, with some widening of exist lanes, to ensure local traffic movements are not unduly impaired.	
Type and Scale of Benefits	Impact Areas	Business & community connectivity (reduced congestion)
	Qualitative Impact	Reductions in the queues forecast to form along the A128 approach to the junction, resulting in reduced journey times to and across the junction. Should also reduce the risk of rat-running through nearby villages, such as Orsett.
	Monetary (if applicable)	n/a (requires full strategic modelling outputs)
Scale of required Investment	Overall	Low-medium cost interventions
	% request from HE	100%
Priority	High	

- 5.62 The local junction modelling indicates that the LTC Scheme will cause significant additional delays during the peak periods on the A128 and A13 eastbound off-slip approaches to the junction. This is forecast to be particularly the case during the PM Peak. These additional delays will not only have a negative impact upon business and community trips but could result in increased 'rat-running' through local villages, such as Orsett, causing additional blight to local residents.
- 5.63 By introducing additional signalisation on the roundabout and the A128 approach arm, this enables the additional delays to be significantly eliminated and enhance the overall operation of the junction. A preliminary design of the scheme is provided within the Stantec Junction Assessment and Mitigation Analysis⁵.

⁵ Lower Thames Crossing Consultation: Junction Assessment and Mitigation Analysis (October 2020)

Measure M20	Manorway Roundabout Mitigation	
Additional Description	The LTC will impact upon the volume of traffic using the Manorway junction, which is already a busy junction as it provides access to London Gateway. Additional lane capacity is required on the roundabout itself, as well as along the A1013 approach (widening from 2 to 3 lanes), with reconfiguration of the A1014 approach, to ensure port and local traffic movements are not impaired.	
Type and Scale of Benefits	Impact Areas	Business & community connectivity (reduced congestion)
	Qualitative Impact	Reduce queueing back and delays from the junction along the A1014 and A1013 approach arms and improve the flow of traffic across the junction.
	Monetary <i>(if applicable)</i>	<i>n/a (requires full strategic modelling outputs)</i>
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	High	

- 5.64 The local junction modelling indicates that the LTC Scheme will cause significant additional delays during both peak periods on the A1014 and A1013 approaches to the junction.
- 5.65 By providing additional holding capacity on the east side circulation, alongside widening of the approach lane on the A1013 from 2 to 3, and reconfiguring the lane assignment on the approach on the A1014, this enables the additional delays to be significantly eliminated and enhance the overall operation of the junction.
- 5.66 A preliminary design of the scheme is provided within the Stantec Junction Assessment and Mitigation Analysis¹².

Sub-Theme Summary (Key Junction Mitigation)

- 5.67 The key junction mitigation sub-theme proposes enhancements at two junction locations that would address business and community disruption impacts associated with the LTC Scheme
- 5.68 If implemented, these mitigation measures could lead to significant positive benefits in terms of reduced congestion for local traffic that would benefit connectivity for local businesses and communities.

Traffic Management Measures

- 5.69 As discussed in Chapter 4, this sub-group of measures focuses upon traffic mitigation within local settlements, including Orsett and Horndon, as well as Chadwell St. Mary. The LTC scheme is forecast to result in a range of traffic redistribution impacts across the local network, including HGV movements, and these measures will seek to off-set any negative impacts.

Table 5.5: Summary of Traffic Management Measures

Ref.	Scheme Measure	Brief Description
M21	Traffic Management Measures (Orsett)	LTC scheme is forecast to result in additional traffic movements on local roads through the villages of Orsett and Horndon, as well as Chadwell St. Mary, including HGV movements.
M22	Traffic Management Measures (Horndon)	
M23	Traffic Management Measures (Chadwell St. Mary)	

- 5.70 It is recognised from the outputs of the Highways England traffic modelling, and further risk assessments, that there are number of areas where the LTC Scheme could impact upon the on-going operation of the local highway network.
- 5.71 The closure of the route from the A128 to A1089, along with forecast capacity constraints at the Orsett Cock and Manorway Roundabouts (see section on ‘key junction mitigation’), will lead to local re-routing of traffic through settlements, such as Orsett, Horndon, and Chadwell St. Mary (note: the Council will continue to review potential impacts of the LTC scheme across other local areas as well). Such re-routing impacts are considered to be clear consequences of the LTC Scheme and so the Council anticipate that mitigation measures will form part of the core DCO Scheme mitigation.
- 5.72 A range of potential traffic management measures have been considered but are still subject to on-going development and subsequent local consultation to identify the preferred package of measures for each settlement.
- 5.73 Public consultation is planned during late 2021 (subject to COVID-19 restrictions) to ascertain local priorities for traffic management. A range of different types of measures will be discussed to discourage through traffic movements in residential areas and/or to reduce the speeds. A key consideration is that any measures don’t simply divert traffic flow through alternative settlements.
- 5.74 The potential impact of each of these three measures is presented within a single table below, given the similarities of the proposals. This highlight the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the potential measures.

Measures 21/22/23	Traffic Management Measures (Orsett, Horndon, Chadwell St. Mary)	
Additional Description	Bespoke traffic management measurements to manage the volume and speed of traffic through settlements, without resulting in further diversion of traffic onto other local routes.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity (reduced congestion), air quality, noise, blight
	Qualitative Impact	These measures will improve local accessibility and connectivity by reducing congestion and well as reduce blight and deliver local air quality and noise benefits
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost interventions
	% request from HE	100%
Priority	Standard	

Sub-Theme Summary (*Traffic Management Measures*)

- 5.75 The traffic management measures sub-theme proposes enhancements within and around three local settlements that would address business and community disruption impacts, as well as noise and air quality blight for residential areas, caused by excessive re-routing of traffic.
- 5.76 If implemented, these mitigation measures could lead to significant positive benefits in terms of reduced congestion for local traffic that would benefit connectivity for businesses and communities within those settlements and ensure blight associated with increased traffic levels is removed.

6. Council-led Support

6.1 This chapter focuses on the mitigation measures that provide resources for the new council-led teams and operations that are required due to the construction and operation of the LTC in Thurrock. This includes the areas of:

- **Local Labour and Business**
- **Local Community and Public Health**
- **Transport Network Management and Development**

6.2 As well as providing more detail about the individual scheme and concepts, the chapter identifies the impact area that each measure is seeking to address, assesses the positive impacts, and gives consideration to the scale of potential investment required. It also highlights those measures and interventions identified as high priority by the Council.

Local Labour and Business

6.3 This sub-section focuses on the measures which aim to minimise the impact of the construction and operation of the LTC on local businesses in Thurrock. In particular, these proposed measures address the impacts of blight, business disruption (in relation to access and delays) and reductions in the attractiveness of Thurrock as a place to do business.

6.4 Proposals include the creation of a new Council-led Local Labour and Business team who will oversee a number of the mitigation measures.

Table 6.1: Summary of Local Labour and Business Schemes

Ref.	Scheme Measure	Brief Description
CLS1	Council-led Local Labour and Business Team (LLBT)	A Council team with the responsibility for ensuring that residents and businesses secure economic benefits from the LTC.
CLS2	Business rates holidays for firms affected during construction	Business rates holidays for those businesses most affected by the LTC scheme during construction.
CLS3	Target for local labour and apprentice use	Establish clear targets for engaging local labour and apprentices during the construction of the LTC scheme
CLS4	Employment opportunities small capital grants scheme	Grants to support voluntary and community organisations who are helping local people into employment
CLS5	Social value procurement	Ensure LTC procurement meets with requirements of the Council commissioning, procurement and grant funding strategy
CLS6	Shop shutter/signage creative improvement programme	Grant funding to improve business environments and tackle perceptions of the local area
CLS7	Green business support scheme	Utilising and expanding on existing green initiatives.

6.5 The potential impact of each of these seven measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure CLS1	Council-led Local Labour and Business Team (LLBT)	
Additional Description	Several negative impacts could be addressed by the establishment of a Local Labour and Business Team at Thurrock Council. This team would have responsibility for ensuring the residents and businesses of the borough secured economic benefits through working closely with LTC/Highways England, contractors and sub-contractors.	
Type and Scale of Benefits	Impact Areas	Business disruption, impacts to on-going business performance (reduced footfall and turnover), attractiveness to investors
	Qualitative Impact	The team will create new job and business opportunities for local people, fill construction vacancies, develop a new specialist education offer, train and upskill local people and localise the supply chain
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	£295k per annum over a 10-year period (circa £3 million)
	% request from HE	100%
Priority	High	

6.6 Functions of the LLBT will include:

- Opening a range of work-related learning opportunities for young people in education. This would include supporting the creation of an Institute of Technology in partnership with south Essex College. Highways England would work with Thurrock Council and SE College to take an active role in leading, governing and developing the curriculum for the IoT.
- Facilitate the recruitment of local apprentices
- Build routes into LTC-related employment for local residents, including unemployed and experienced operatives looking to work locally. An agreement with Highways England would mean vacancies would be notified to the team before being advertised more widely, with an agreed timescale for the team to supply suitable candidates
- Commission additional training and support as required using a flexible budget to be used where mainstream budgets cannot cover costs. This would focus on reskilling and upskilling local people to enable them to access employment opportunities
- Support supply chain initiatives that support local businesses and drive up local spend e.g.:
 - Set a target proportion of total spend within the LTC supply chain to be with Thurrock based businesses
 - Support local businesses to be fit to supply by providing business support

6.7 Ambitious but achievable targets would be set for each of the above which are monitored and reported to LTC/Highways England and Thurrock Council. LTC/Highways England would need to actively sign up to and support the delivery of these outcomes, ensuring that requirements are cascaded to contractors and sub-contractors through their procurement processes.

- 6.8 A table of indicative costs is set out below and outlines an initial estimate of resourcing of around £3 million over 10 years, covering pre-construction, during construction, and post-construction phases.

Indicative costs for the LLBT

Position	Indicative cost p.a.	Notes
Co-ordinator/ Manager	£50k	Employed by Thurrock Council within Economic Development, lead on supply chain as well as team oversight
Adult Skills Advisor	£40k	Will co-ordinate access to job opportunities working with local employment and skills providers, including DWP. Based part-time with contractors/on site.
Youth Skills Advisor	£40k	Will co-ordinate access to work-related learning opportunities and apprenticeships, working with local skills providers (schools, FE)
Admin (x2)	£50k	Comprised of one admin (c£30k) plus one apprentice (c£20k)
Commissioned training support	£100k	Adults: PPE, CSCS, specialist training/tickets Young people: support for work-related learning, possible commissioning of e.g. Construction Youth Trust to build engagement with schools.
Events	£15k	Supply chain, information/recruitment events etc
Total annual costs	£295k	

- 6.9 These will continue to be reviewed and refined over the coming months.

Measure CLS2	Business Rates reductions for firms affected during construction	
Additional Description	Businesses located in close proximity to construction sites and therefore most affected by the LTC scheme during construction receive a temporary Business Rates reduction or holiday	
Type and Scale of Benefits	Impact Areas	Business disruption (access restrictions, traffic), ongoing business performance (reduced footfall and turnover)
	Qualitative Impact	Businesses who may be struggling with loss of footfall or turnover as a result of construction receive financial relief to support their business
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-Medium cost intervention (<i>to be determined based on the number of successful applications for Business Rates reductions</i>)
	% request from HE	100%
Priority	Standard	

- 6.10 Business rates holidays, or reductions, are a direct mitigation measure for those businesses who will be most affected by the construction of the LTC. This is primarily businesses who are in close proximity to the construction sites, or who will have their businesses impacted due to construction/construction traffic.
- 6.11 Under the Check, Challenge, Appeal process ratepayers are able to submit a request to the Valuation Office (VO) to have their rateable value (RV) reduced to reflect the impact on their business due to major developments. The VO can either award a rateable value of zero or make a reduction in the RV. This could be until the works are completed and then revert back to the original valuation prior to the reduction. This is an existing mechanism that would remain available to all ratepayers to apply to irrespective of other mitigation packages.
- 6.12 Any potential agreements between businesses and the VO to reduce Business Rates will have negative financial consequences for Thurrock council. Therefore, Highways England should compensate the Council for all successful appeals granted by the VO.

Measure CLS3	Target for local labour and apprentice use	
Additional Description	Establishing targets for Highways England and their supply chain for engaging local labour and apprentices during the construction of the LTC Scheme	
Type and Scale of Benefits	Impact Areas	Community disruption, business disruption
	Qualitative Impact	Supporting local residents and businesses to access jobs and opportunities
	Monetary <i>(if applicable)</i>	n/a
Scale of required Investment	Overall	% of total contract value
	% request from HE	100%
Priority	Standard	

- 6.13 Whilst Highways England have indicated that they will use local labour and apprentices, there has been no firm commitment to any targets. The council requests that Highways England set targets for their use of local labour and apprentices during construction, and that these targets should also be applied to supply chain contractors.
- 6.14 Similar targets have been used elsewhere on other schemes and could be used as a benchmark for LTC targets. For example, Crossrail set a target of hiring one apprentice (or equivalent) for per £3m of contract value in partnership with the Job Centre. This delivered over 1,000 apprentices.

Measure CLS4	Employment opportunities small capital grants scheme	
Additional Description	Small grants available to voluntary and community organisations that are helping workless and/or low skilled residents to move closer to the labour market or into work through the purchase of equipment and/or minor works to improve their facilities.	
Type and Scale of Benefits	Impact Areas	Community disruption, business disruption, perceptions of Thurrock and attractiveness (as a place to live and work)
	Qualitative Impact	Supporting local unemployed residents into jobs, re-skilling and/or upskilling
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Up to £125k per annum
	% request from HE	100%
Priority	Standard	

- 6.15 The Council request that, as part of an overall agreed budget, they are able to manage and prioritise request for grants to best support local businesses adversely affected by the LTC Scheme. Part of the application process would involve demonstration of the negative impacts that businesses are experiencing and how grant funding will help to off-set these negative effects.

Measure CLS5	Social value procurement	
Additional Description	Ensuring the LTC procurement meets with social value requirements of the Council commissioning, procurement and grant funding strategy	
Type and Scale of Benefits	Impact Areas	Business disruption
	Qualitative Impact	Ensuring local businesses have access to opportunities as part of the LTC procurement process and aligning procurement with Thurrock Council's social value policies
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 6.16 Thurrock Council have a social value framework⁶ which guides their procurement processes. This was developed to ensure public service contracts are having a positive social impact.
- 6.17 Therefore, in order to achieve positive outcomes for local communities and increase the scale of benefits locally, Highways England should ensure that all their procurement for the LTC Scheme meets the objectives of Thurrock's social value framework.

⁶Thurrock Council's Social Values Framework
https://www.thurrock.gov.uk/sites/default/files/assets/documents/social_values_framework_201411.pdf

Measure CLS6	Shop shutter/signage creative improvement programme	
Additional Description	Funding for new shutters/business signage adorned with unique artwork/illustrations etc that improve the physical environment and tackle perceptions of the local area.	
Type and Scale of Benefits	Impact Areas	On-going business performance (reduced footfall and turnover), attractiveness to investors
	Qualitative Impact	Improving the business environment to encourage trade during disruption from construction
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	£75k per annum
	% request from HE	100%
Priority	Standard	

- 6.18 As with the small grants scheme, the Council request that, as part of an overall agreed budget, they are able to manage and prioritise request for funding for local businesses.

Measure CLS7	Green business support scheme	
Additional Description	Utilise existing green growth initiatives to engage with local businesses and continue provide green business support, including increased levels of grant funding to businesses or extending eligibility for funds.	
Type and Scale of Benefits	Impact Areas	Climate change (<i>reducing carbon emissions and improving energy use</i>), on-going business performance
	Qualitative Impact	Improving the carbon footprint and energy use of Thurrock's business base. This will have positive benefits for business running costs as well as the environment.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	£250,000
	% request from HE	100%
Priority	Standard	

- 6.19 There are green growth initiatives already in place in Thurrock to support businesses to improve their carbon emissions and energy use by match funding energy projects. One such project offers grants worth 40% of the total project cost if the business can match fund the remaining 60%.
- 6.20 However, in the current climate, not having the available match funding is often a barrier for business to engage. Funding from Highways England could support the increased reach of green growth initiatives in a number of different ways by enabling them to:
- Increase the proportion of grant funding (80,100% etc.)
 - Broaden the eligible business sectors
- 6.21 For example, £250,000 from HE could support an additional 50 businesses in a new sector with a £5,000 grant for an energy use project.

Sub-Theme Summary (*Local Labour and Business*)

- 6.22 The local labour and business sub-section proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Business disruption during construction from road closures and traffic
 - Impacts to ongoing-business performance such as reduced footfall and turnover
 - Reduced attractiveness of the area to investors due to blight, traffic and noise/visual pollution
 - Community disruption and severance during construction due to road closures and traffic
- 6.23 If implemented, these mitigation measures could lead to significant positive benefits for local jobs and businesses. This includes financial savings to protect against turnover loss, pathways to employment and training for local residents, measures to attract trade and support to reduce business carbon emissions.

Local Community and Public Health

- 6.24 The second sub-theme within this chapter focuses on minimising the impact of the LTC on local people and communities. The measures detailed below aim to ensure that residents in Thurrock experience positive benefits as a result of the LTC.
- 6.25 Central to the delivery of these measures is the creation of a new council-led Community and Public Health Team.

Table 6.2: Summary of Community and Public Health Schemes

Ref.	Scheme Measure	Brief Description
CLS8	Council-led Community and Public Health Team (CPHT)	Apply the same principle as the Local Labour and Business Team and create a Local Community and Public Health Team within Thurrock Council.
CLS9	Public Health mitigation during construction	Public Health mitigation measures including the enhancement of public transport to healthcare facilities and the reinforcement of local NHS provision.
CLS10	Community engagement during construction	Support to enable community engagement during the construction of the LTC scheme.
CLS11	Community investment small capital grants scheme	Capital grants to facilitate aesthetic and environmental improvements within the community.

- 6.26 The potential impact of each of these four measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure CLS8	Council-led Community and Public Health Team (CPHT)	
Additional Description	Resource would be given to support the Local Community and Public Health Team within Thurrock Council, who would have the responsibility to work with the local community and ensure local people experience positive social and economic benefits as a result of the LTC. This would encompass the management or oversight of delivering agreed community mitigations, such as a community-led programmes to build cohesion.	
Type and Scale of Benefits	Impact Areas	Community disruption, community cohesion, health and wellbeing
	Qualitative Impact	Financial support so the council can ensure local people are being properly informed during construction and are able to benefit from mitigation that supports public health, wellbeing, cohesion and employment opportunities.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	£200k per annum (£2 million over 10 years)
	% request from HE	100%
Priority	High	

6.27 Whilst Thurrock Council already has an internal team focusing on the local community and public health, additional resource is needed to enable the team to work with local people and Highways England to ensure local residents benefit from the scheme. With this additional resource the team would be able to:

- Ensure that Thurrock's social value objectives are reflected in the procurement of services and works relating to the scheme so that we maximise positive social, environmental and economic benefits for the borough.
- Liaise with public health and HE to ensure mitigations arising from the HEIA are implemented and that community led solutions maximise positive health outcomes. This will include ensuring access to health centres (such as Orsett Hospital) is maintained during the construction phase. HE should also work closely with Thurrock and the NHS to ensure adequate access to the new facilities that will replace Orsett Hospital (as and when they come).
- Liaise with other Council departments to ensure mitigations are quality assessed and provide maximum synergy with wider developments, providing for enhanced opportunities.
- Track progress and liaise with HE regarding mitigation measures agreed as a result of construction and implementation.
- Facilitate Community Liaison Groups and work with HE on community engagement to ensure residents and those most disadvantaged by the scheme have adequate opportunity to influence the design and implementation of the mitigation. This would involve supporting HE with delivering measure CLS10 (community helpline, local website, engagement hub). The proposed Community Liaison Officer could be a part of this team.

- Link with the local business and labour scheme when appropriate opportunities arise to engage communities in job opportunities, STEM (libraries) and the development of community skills when responding to planning proposals.
 - Manage a community investment budget (see details below)
- 6.28 Ambitious but achievable targets would be set for each of the above which are monitored and reported to LTC/Highways England and Thurrock Council. LTC/Highways England would need to actively sign up to and support the delivery of these outcomes, ensuring that requirements are cascaded to contractors and sub-contractors through their procurement processes.
- 6.29 A table of indicative costs is also set out below and outlines an initial estimate of resourcing of £2 million over 10 years, covering pre-construction, during construction, and post-construction phases.

Indicative costs for the CPHT

Position	Indicative cost p.a.	Notes
Co-ordinator/ Manager	£50k	Employed by Thurrock Council within Community Development and Equalities, lead on project and team oversight, including liaison with LLBT and HE as well as Council services.
Community Liaison Officer	£40k	Will co-ordinate engagement with communities including CLGs and liaison with HE.
Community Investment Programme Officer	£40k	Scoping of Investment Programme for communities, development of bidding process and management of funding programmes.
Admin (x2)	£50k	Comprised of one admin (c£30k) plus one apprentice (c£20k).
Events	£20k	Engagement, Community Liaison Group events, outreach.
Total annual costs	£200k	

- 6.30 These will continue to be reviewed and refined over the coming months.

Measure CLS9	Public Health mitigation during construction	
Additional Description	Public Health mitigation measures would include the enhancement of public transport to healthcare facilities and the reinforcement of local NHS provision during the construction phase, in addition to providing welfare facilities for construction workers.	
Type and Scale of Benefits	Impact Areas	Disruption (traffic and delays), health and wellbeing
	Qualitative Impact	Ensuring continued access to and provision of health services for local residents. Supplementing health services where necessary for construction workers to ensure local NHS services aren't overwhelmed
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	
Priority	Standard	

- 6.31 Further analysis of the construction phase is required from Highways England to fully determine the requirements for this measure. Highways England should seek to engage with the Council and local healthcare providers to determine what support may be needed.

Measure CLS10	Community engagement during construction	
Additional Description	Support to enable community engagement during the construction of the LTC scheme including communication between Highways England, the Council and community.	
Type and Scale of Benefits	Impact Areas	Community disruption, impact on community facilities, PRoW severance/disruption, Environment
	Qualitative Impact	Ensuring local people are kept fully up to date with the construction process and are given adequate information and warning of issues such as severance or environmental damage
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	High	

- 6.32 The Council considers that community engagement should occur in three ways:

- 1) Highways England should set up a dedicated community helpline for Thurrock residents that is available during the hours of construction work during the construction phase. This helpline should be available for local residents to report any issues. Highways England should commit to responding to any concerns within a set period.
- 2) Once construction work has started there should be a website/webpage dedicated to updating local people on the latest construction activity in Thurrock specifically.
- 3) Highways England should employ a community liaison officer to be the primary point of information and contact during the construction phase. This officer should be based in a dedicated engagement hub for the construction works north of the river. The officer could be funded through the creation of the Local Community and Public Health Team (CLS8). The engagement hub should be based in Tilbury. As it stands, the Council have concerns about the failure of Highways England to identify the need for community liaison officer within the Draft Code of Construction Practice, and therefore this mitigation is paramount.

- 6.33 These mechanisms should be in place as early in advance of the construction commencing, throughout the whole construction phase, and continue post-construction whilst the impacts of the operational phase become fully understood.

Measure CLS11	Community investment small capital grants scheme	
Additional Description	Capital grants to facilitate aesthetic, public health, cohesion and environmental improvements within the community	
Type and Scale of Benefits	Impact Areas	Environment, community cohesion, health and wellbeing
	Qualitative Impact	Supporting residents to take a lead role in delivering the change they need in their communities, focused on improving community integration, health and the environment
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Up to £100k p.a.
	% request from HE	100%
Priority	Standard	

- 6.34 The Local Community and Public Health Team would also oversee a funding pot that would be available to support local communities. This would be in the form of a Community Investment Programme for community led mitigation and legacy proposals. Examples of the type of project a Community Investment Programme might attract include:
- £30k pa revenue to fund a Community Hub Co-ordinator develop activities to build cohesion within East Tilbury
 - £40k capital to improve access to way finding and safe, accessible access from pedestrian routes in Chadwell St Mary to open spaces.
 - £8k to develop a healthy walking scheme, supporting new walkers build their confidence and stamina including published walking routes and promotion to new walkers.
- 6.35 Bids would be encouraged from any community group actively working with residents within areas of Thurrock affected by LTC. Proposals should evidence mitigation from the impact of LTC including but not limited to access improvements, healthy living, integration within neighbourhoods and environmental improvements. Proposals will be expected to show strong levels of support from a wide range of stakeholders. Additional weighting will be given to bids that provide at least 5% match funding. Successful grants will only be paid into community bank accounts.
- 6.36 Thurrock expects bids of typically between £5k and £50k. Therefore, if a £1.5m pot were available this could support between 40 to 60 projects over a 5 to 10-year period. Key areas for investment for this measure would include:
- Access improvements
 - Healthy living
 - Integration within neighbourhoods
 - Public art, aesthetic and environmental improvements
- 6.37 It is recognised that the LTC Scheme will create physical severance and blight that will impact upon access to open space during the construction phase and continuing to influence behaviour

during operation. Positive measures will be required to encourage use of open spaces and physical activity.

- 6.38 The use of public art and aesthetics improvements could be used to attract use of trails and visits to open spaces. It is recognised that there are examples of artwork already across Thurrock, such as within the Mardyke Valley. There are opportunities to install art to the north and east of East Tilbury on The Thames Estuary Path (FP147 and FP47).

Sub-Theme Summary (*Local Community and Public Health*)

- 6.39 The local community and public health sub-theme proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:

- Community disruption and severance during construction due to road closures and traffic
- Negative impacts to community cohesion as a result of increased severance and isolation
- Poor health and wellbeing outcomes for local people as a result of disrupted access to health care, closures/severance of active travel routes
- Blight and disruption to key local community facilities
- Severance and disruption to important public rights of way routes

- 6.40 If implemented, these mitigation measures could lead to significant positive benefits for local communities. This includes ensuring local people are kept informed and are consulted with during construction, investing in health and wellbeing and community cohesion with communities having a lead role in shaping and delivering mitigation, and protecting local health services.

Transport Network Management and Development

- 6.41 The third sub-section within this chapter focuses on the direct requirements that will be placed upon the Council as a result of the LTC Scheme construction in terms of the Councils responsibilities for transport network management and development.
- 6.42 The implications have been captured under a single measure relating to the additional resource requirements that the Council will be required to source.

Measure CLS12	Transport Network Management and Development Resource (TNMDR)	
Additional Description	Additional Council resource provision to cover the requirements to manage and develop the transport network in response to the impacts of the LTC construction.	
Type and Scale of Benefits	Impact Areas	Connectivity (network management)
	Qualitative Impact	By ensuring the Council can adequately manage the transport network impacts of the LTC scheme, there will be improvements to the overall connectivity for local businesses and residents
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 6.43 The process of delivering the LTC Scheme will have wide ranging impacts upon the local highway network. The Council, with statutory responsibility for the network, will be required to work with Highways England to manage the impacts. This will affect the Council in four areas:
- Temporary and Permanent Traffic Regulation Orders
 - Works within the Thurrock Council managed Highways
 - Abnormal Indivisible Loads (AILs) Notifications and Management
 - Decriminalised Legislation Enforcement (Waiting and Loading Enforcement)
- 6.44 Each particular area is discussed below but in all of them the additional requirements placed upon the Council by the construction of the LTC Scheme will require significant additional resource.
- 6.45 Whilst the full extent of this additional resource requirement will not emerge until the detailed design and construction plans for the LTC scheme are known, they can easily be anticipated to be a significant additional burden upon the Council.

Temporary and Permanent Traffic Regulation Orders (TROs)

- 6.46 The LTC Construction works will engender temporary measures that would be required, such as revisions to waiting and loading restrictions (e.g. to facilitate Statutory Undertakers connections or the movement of Abnormal Loads). There might be periods of peak activity that could require more stringent controls on the roads for certain works (e.g. surfacing works where a high and prolonged demand for HGVs would require the management of parking outside of existing

controls (e.g. evening and weekends). These would be done using temporary TROs which would be advertised and Made by Thurrock.

- 6.47 There will be a number of permanent TROs that will be needed to manage traffic (speeds, routing bans, waiting and loading). These could be required for periods in excess of the 18-month temporary TROs and would equally draw on Thurrock's resources to advertise and Make the TROs. There is an assumption in this that the consent for the TROs and TTROs would not be unreasonably withheld but there could still be a requirement for consultation and Councillor engagement to settle the feedback on the advertisements.
- 6.48 These tasks will impact upon both the Network Management Team and the Transport Development Team, depending on the individual Regulation Orders required, and could have a significant impact upon staff time.
- 6.49 The need to manage wider network impacts whilst temporary TROs are in force will also have to be considered.

Works within the Thurrock Council managed Highways

- 6.50 The Council will be required to continue to undertake its duties under the Traffic Management Act 2004 in managing and maintaining the safe and efficient operation of their network.
- 6.51 Street works, either as part of the delivery of the enabling works for the LTC or as part of the off-site mitigation, will require input and management from the Council. Officers will need to engage with Highways England to review street work proposals; co-ordinate those works with other planned and unplanned works; manage the street works permitting and inspections (including the use of the Street Manager system); and respond to customer complaints relating to those works.
- 6.52 The design and specification of those works will need to be checked and confirmed with Highways England to derive acceptable outputs which can then be adopted by Thurrock Council. This would include measures such as new NMU provisions and adjustments to road layouts and interfaces.
- 6.53 The LTC Scheme DCO could also introduce Articles which will permit Highways England to work on the Council roads without the need for a Highways Act 1980 Section 4 agreement. It remains essential that Council can control the works to be able to manage the wider network, in both the short and longer term. This will require significant dedicate resource throughout the main construction phase of the LTC Scheme.

Abnormal Indivisible Loads (AILs) Notifications and Management

- 6.54 The LTC scheme works will attract a number of AILs for plant and materials, such as the delivery of: large precast structures; large lifting equipment (cranes and ballast); piling rigs and excavators (including swap outs); materials movers and the sections of the Tunnel Boring Machines. These will include AILs leaving the works areas as well as inbound.
- 6.55 The Movement Notices associated with these operations are submitted to the Police and are reviewed by the Highway Authority as part of its Network Management duty and planning for the local network. These can result in the need for TTROs and temporary traffic management measures.
- 6.56 The Council wish to retain the ability to manage AIL's across its network to ensure that appropriate routings are applied.

Decriminalised Legislation Enforcement (Waiting and Loading Enforcement)

- 6.57 The construction works will attract additional parking / waiting and loading acts on the local Highway. These will need to be enforced accordingly, requiring associated additional resource.
- 6.58 Moving traffic violations are managed by the police currently.

Sub-Theme Summary (*Transport Network Management and Development*)

- 6.59 The transport network management and development sub-theme proposes specifically addresses the challenge of resources required to manage the impacts of the construction and operation of the LTC Scheme upon the local highway network.
- 6.60 Providing the Council with adequate resource will ensure that they can adequately develop the necessary network management and network development measures to ensure the local highway network continues to operate effectively and efficiently for local businesses and communities.

7. Legacy Measures

7.1 This chapter follows on from the presentation of the overarching package of measures in Chapter 4 and details the legacy measure ‘theme’, in terms of the following four ‘sub-themes’:

- **Infrastructure Facilitation:** works, and/or support, for future infrastructure and measures to support Thurrock local growth requirements
- **Infrastructure Provision:** delivery of physical highway, housing and digital legacy infrastructure
- **Green Corridors:** upgrade and enhancement to bridleways, footpaths and cycleways to create green corridors
- **Green Space Enhancement:** bringing existing green space up to an appropriate standard
- **Heritage Restoration:** improvement to heritage assets
- **Climate Change Measures:** measures that will offset negative impact of carbon emissions from LTC

7.2 As well as providing more detail about the individual scheme and concepts, the chapter identifies the impact are that each measure is seeking to address, assesses the positive impacts, and gives consideration to the scale of potential investment required. It also highlights those measures and interventions identified as high priority by the Council.

Infrastructure Facilitation

7.3 As discussed in Chapter 4, this sub-group of measures focuses upon measures, or positive actions, that Highways England can undertake to support the future delivery of infrastructure and associated measures.

Table 7.1: Summary of Infrastructure Facilitation

Ref.	Scheme Measure	Brief Description
L1	Passive provision for LTC Junctions	Safeguarding for the future provision of junctions onto the LTC at East Tilbury and South Ockendon.
L2	A13 East-facing Access Support and Facilitation	Whilst this scheme will be delivered in isolation, it is requested that HE acknowledge the importance of this scheme alongside the delivery of the LTC and actively support and enable its delivery.
L3	Tilbury Link Road Enabling Works	Construct any elements of the proposed haul road that will fall within the general alignment of the TLR alignment to a standard to support the subsequent delivery of the Link Road.
L4	Asda Roundabout Enhancement	The requirement for enhancements should be actively examined alongside other potential highway improvements.
L5	Public transport provision on the LTC Scheme	Recognising the long-term aspiration for the LTC to be utilised for cross-river public transport connections.
L6	Distributor Road Facilitation	Maximise opportunities to utilise the construction of the LTC to enable future distributor roads to be more readily delivered.

- 7.4 The potential impact of each of these six measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure L1	Passive provision for LTC Junctions (East Tilbury and South Ockendon)	
Additional Description	Safeguarding for the future provision of junctions onto the LTC at East Tilbury and South Ockendon.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity, enabling growth
	Qualitative Impact	Whilst it is recognised that the junctions themselves will not be delivered as part of the LTC scheme, the passive provision will safeguard their future delivery with the associated benefits of enhancing connectivity to the SRN and enabling local growth.
	Monetary (if applicable)	n/a (benefits only derived when full junctions delivered)
Scale of required Investment	Overall	Medium cost intervention for enabling works
	% request from HE	100%
Priority	High	

- 7.5 Chapter 4 highlighted the importance of passive provision for junction at East Tilbury and South Ockendon as part of the Council aspiration for the future strategic road network, as well as to unlock residential and commercial development within the emerging Local Plan. This will measure will help to support future local development and regional economic growth by safeguarding these areas from any subsequent provision.
- 7.6 The junction at East Tilbury links with 'Measure L3' - the future delivery of the Tilbury Link Road.
- 7.7 For both junctions, the Council is looking to secure the future delivery of the scheme, in terms of the land necessary to deliver the junction, the slip roads to each junction and the flaring of approaches. These 'zones' should be left clear of major utilities, earthworks, permanent structures and should be cleared of all construction and other LTC activities, and the alignment of the LTC should be configured such that an interchange could be readily achieved.
- 7.8 Whilst the precise locations of each junction have not be determined, options should be developed in partnership with the Council to allow that adequate passive provision to be made through the DCO.

Measure L2	A13 East-facing Access Support and Facilitation	
Additional Description	East-facing access off the B186 is a key enhancement to the strategic road network within Thurrock and is important within wider context of the LTC scheme delivery. Whilst the scheme will be delivered in isolation, the request is that HE acknowledge the importance of this scheme alongside the delivery of the LTC and actively support and enable its delivery.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity
	Qualitative Impact	Provide enhanced access to the SRN and improving connectivity for businesses and communities that is not delivered by the LTC.
	Monetary <i>(if applicable)</i>	<i>Business case currently being developed that will identify the economic monetary benefits.</i>
Scale of required Investment	Overall	Medium cost intervention overall but no/limited cost for support and facilitation
	% request from HE	0% - scheme to be delivered through RIS
Priority	Standard	

- 7.9 Whilst it is recognised that this scheme will be delivered in isolation of the LTC Scheme it represents an important enhancement to the accessibility of the strategic road network within Thurrock and its importance should be recognised as part of the LTC DCO process.

Measure L3	Tilbury Link Road Enabling Works	
Additional Description	Ensure that the construction of the haul road to be used within the LTC scheme is to a standard to support the subsequent delivery of the Tilbury Link Road in the most effective and efficient manner.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity, enabling growth
	Qualitative Impact	Whilst it is recognised that TLR will not be delivered as part of the LTC DCO, facilitating and safeguarding the future delivery through RIS3 provides associated benefits of enhancing connectivity to the SRN and enabling local growth.
	Monetary <i>(if applicable)</i>	<i>n/a (transport modelling outputs not available)</i>
Scale of required Investment	Overall	Low-medium cost intervention for enabling works
	% request from HE	100% of any facilitation works <i>(full scheme to be delivered through RIS3)</i>
Priority	Standard	

- 7.10 As discussed in Chapter 4, whilst TLR is scheduled to be delivered as part of RIS3, it remains a high priority scheme for the Council. A Working Group of Thurrock Council, Highways England and the Port of Tilbury have progressed the development of this scheme, with Thurrock Council bringing forward options that have been discussed with the wider group. The Highways England sponsor team has subsequently taken responsibility for progressing the TLR business case through the HE gateway process in order to understand if there is a case to progress TLR for

funding via RIS or an alternative funding opportunity. It is anticipated that Highways England sponsor team will report at end of the 2020.

- 7.11 Any opportunities to facilitate, and accelerate, the delivery of the scheme through the construction works between Tilbury and East Tilbury should be explored as part of the LTC scheme development.

Measure L4	Asda Roundabout Enhancement	
Additional Description	Traffic movements through this junction are forecasted to increase as a result of the LTC, London Resort and Tilbury Link Road schemes. These combined impacts may result in the requirement is a grade separated junction (or other enhancement) at the Asda roundabout.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity (reduced congestion), enabling growth
	Qualitative Impact	Significantly enhance north-south flow of traffic along the A1089, removing the delay at the junction, as well as improving access from the other local roads at the junction by reducing conflicts of movements with north-south traffic on the A1089.
	Monetary (if applicable)	n/a (requires full strategic modelling outputs)
Scale of required Investment	Overall	High cost intervention
	% request from HE	100% (already forms part of SRN)
Priority	Standard	

- 7.12 As discussed in Chapter 4, additional option testing is required to fully understand the implications of LTC, London Resort, and the TLR upon the operation of the Asda Roundabout and the requirement for enhancement.

Measure L5	Public transport provision on the LTC Scheme	
Additional Description	Once the TLR has been delivered providing access onto the LTC at East Tilbury, it will become viable to pursue options for bus services leading over LTC providing cross-river public transport connectivity.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity (public transport), Air quality (reduced vehicle emissions)
	Qualitative Impact	Provide cross river public transport connectivity increasing sustainable journey to work opportunities for residents/workers on both side of the Thames, including increasing the labour market catchment for firms like the Port of Tilbury and Amazon.
	Monetary (if applicable)	n/a (requires full strategic modelling outputs)
Scale of required Investment	Overall	No direct cost
	% request from HE	0%
Priority	Standard	

- 7.13 Whilst there is a strong aspiration within the Council to utilise the LTC river crossing to provide additional bus connections, without the junction at East Tilbury and the TLR, effective cross-river bus provision is unviable due to excessive routing via the A13/LTC interface. This measure, therefore, remains a longer-term aspiration once sufficient additional infrastructure has been delivered.

Measure L6	Distributor Road Facilitation	
Additional Description	The Council is in the process of developing their Local Plan. This is likely to incorporate the designation of significant development land within the south east of the borough. Opportunities to utilise the construction of the LTC to facilitate, accommodate and/or accelerate future distributor roads should be pursued throughout the construction phase, once the Local Plan has been finalised.	
Type and Scale of Benefits	Impact Areas	Enabling growth (unlocking access)
	Qualitative Impact	Facilitating the delivery of future distributor roads that will open up housing development and enable the delivery of the Council's local Plan.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low cost intervention
	% request from HE	100%
Priority	Standard	

- 7.14 Based upon the current status of the Local Plan, it is not feasible to present any conceptual plans for distributor roads at this stage. The Council will seek to work in partnership with Highways England throughout the LTC construction work to maximise opportunities to facilitate the delivery of these routes in terms of ground works, flood protection and drainage.

Sub-Theme Summary (*Infrastructure Facilitation*)

- 7.15 This sub-section on infrastructure facilitation proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Reduced business and community connectivity as a result of reduced congestion and limitations to public transport provision;
 - Poor air quality resulting from increased traffic levels and associated emissions
 - Restricting the opportunities for future growth
- 7.16 These mitigation measures, whilst not directly delivering enhancements, would facilitate the future delivery of strategically important infrastructure and measures that will enhance local and strategic connectivity and help to deliver improved business and community connectivity and unlock residential and commercial growth.

Infrastructure Provision

- 7.17 As discussed in Chapter 4, this sub-group of measures focuses upon the physical delivery of highway, housing and digital legacy infrastructure that will provide a lasting legacy for the businesses and communities across the area to off-set the constraints imposed by the LTC Scheme.

Table 7.2: Summary of Infrastructure Provision

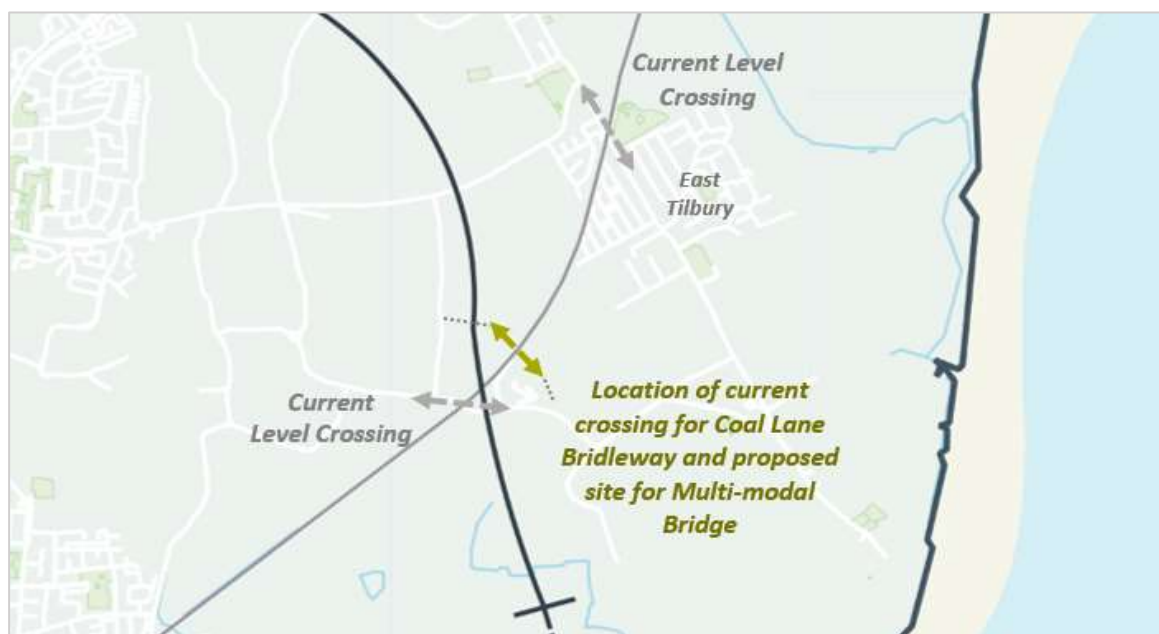
Ref.	Scheme Measure	Brief Description
L7	Permanent Multi-modal rail crossing	Construct a multi-modal bridge over the Tilbury Loop Line near East Tilbury to a width and standard that would enable it to be permanently adopted as part of the future local highway, walking and cycling network.
L8	A1012 Junction and Medebridge Road Improvement	Deliver the proposed construction haul road along the current Medebridge Road alignment from the A13 to Grangewater to a sufficient width and standard to enable it to be adopted by the Council.
L9	Daneholes Roundabout Enhancement	Provide a bus lane on the outside lane on the A1013 Stanford Road approach to the roundabout to give enhanced priority to buses across the junction
L10	Improve Internet / 5G Connections	Utilise the construction phase of the LTC as an opportunity to lay down internet and 5G cables.
L11	Building Legacy Housing Provision	Provision of worker accommodation that can be left as a legacy for Thurrock Council to use.

- 7.18 The potential impact of each of these five measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure L7	Permanent Multi-modal rail crossing	
Additional Description	Construction of a multi-modal bridge over the Tilbury Loop Line near East Tilbury, providing relief to nearby level crossings, support future development, and form part of the Coal Lane bridleway.	
Type and Scale of Benefits	Impact Areas	Business & community connectivity, encouraging sustainable and active travel, enabling growth
	Qualitative Impact	Provide free flow crossing of Tilbury Loop Line for vehicular and non-vehicular movements opening access to future development opportunities and providing a high quality, and safe, PRoW link from Chadwell St. Mary to Coalhouse Fort.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium additional cost over temporary bridge already proposed
	% request from HE	100%
Priority	High	

- 7.19 Highways England previously proposed to construct a temporary bridge over the railway line during the LTC construction phase. Thurrock Council had advocated that this could be made permanent and left as a legacy measure, however it is understood that this no longer forms part of the DCO plans.
- 7.20 Nevertheless, the Council still strongly advocate for a permanent crossing in this location to tackle isolation and severance in East Tilbury. Therefore, this measure (L7) asks that Highways England reconsider their construction plans and build permanent structure to a high standard and acceptable width to provide a multi-modal bridge that can be left as a legacy. This would aid connectivity in the local area and support growth and development opportunities.
- 7.21 There are currently level-crossing facilities over the Tilbury loop Line on Station Road and by East Tilbury Railway Station, as well as a basic pedestrian crossing as part of the Coal Lane bridleway (see Figure 7.1). Whilst the frequency of trains along this section of the Tilbury Loop Line is relatively low, these remain a barrier to movement across the area, particularly north-south traffic through East Tilbury.

Figure 7.1 Current Level Crossing Facilities and Proposed Multi-Modal Bridge Location



Source: Hatch 2020

- 7.22 The provision of a permanent bridge over the rail line would both remove delays to vehicular and non-vehicular movements, but also reduce the risk of incidents and closures of the rail line.
- 7.23 The bridge would link to the existing Coal Lane bridleway, the main PRow route from Chadwell St. Mary to Coalhouse Fort and connecting into the Two Forts Way route. Vehicular connection would also be delivered as part of the delivery of housing growth.

Measure L8	A1012 Junction enhancement and Medebridge Road Improvement	
Additional Description	Delivery of the existing Highways England plan to upgrade Medebridge Road to use as a haul road to allow permanent adoption by the Council.	
Type and Scale of Benefits	Impact Areas	Business and community connectivity, Enabling growth
	Qualitative Impact	Provide new access into South Ockendon to enhance connectivity to existing uses, such as Grangewaters Outdoor Education Centre, and unlock future opportunities for growth.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium additional cost over temporary haul road proposed
	% request from HE	100%
Priority	High	

- 7.24 Highways England have stated (both in within the Supplementary Consultation and ‘D-Con’ consultation materials) that they will be using Medebridge Road near South Ockendon as a route to access the LTC works. This will involve the building of a temporary access road to reach the LTC site. The Council consider there is potential for Highways England to build a higher quality access road which is then left as legacy infrastructure for Thurrock Council.
- 7.25 The section from the A13 to Grangewater forms part of the Council aspirations to improve access and unlock future development in South Ockendon (see Figure 7.2).

Figure 7.2 Medebridge Haul Road Upgrade Proposals



Source: Hatch 2020

- 7.26 This section of the haul road should be delivered to a sufficient width and standard to enable it to be adopted by the Council, who could add lighting, etc. to make it fully functional for general traffic. Proposals realign the junction with the A13, giving priority movement to the new road over High Road and sufficient capacity at the junction with the A13, should be incorporated within the scheme.

- 7.27 Eventually the link could form part of a wider network that would connect the A13 with the passive junction provision at South Ockendon (Measure L1) and would support Local Plan aspirations for growth in this area.

Measure L9	Daneholes Roundabout Enhancement	
Additional Description	The HE traffic modelling indicates there could be additional flows along the A1013 leading to this junction and this could impact upon congestion. This is an important route for buses leading into Grays and so it is proposed that a bus lane is added (as an outside lane) to the A1013 approach.	
Type and Scale of Benefits	Impact Areas	Business & community connectivity (enhanced public transport)
	Qualitative Impact	Improved flow of buses across the junction from A1013 (Stanford Road) arm across to Lodge Lane.
	Monetary <i>(if applicable)</i>	<i>n/a (requires detailed public transport modelling)</i>
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 7.28 As outlined within the Stantec Junction Assessment and Mitigation Analysis⁷, the LTC scheme is forecast to induce additional traffic movements along the A1013 Stanford Road, including through the Daneholes roundabout. The Council is concerned that these flows could be higher than currently predicted by the Highways England modelling as the journey times on this route to Grays and the Port of London will be faster than alternatives. The route is currently an important bus connection and additional congestion at the junction will impact upon bus reliability.
- 7.29 This measure is therefore, in part, mitigating the potential impact of the LTC upon local traffic re-routing and associated congestion, but it also represents a legacy measure to enhance east-west public transport connectivity across the LTC alignment, along Stanford Road.
- 7.30 The design of the scheme is outlined within the Stantec Junction Assessment and Mitigation Analysis⁷ and would include the creation of a bus lane on an outer lane on the A1013 approach to the roundabout. This will enable buses to bypass queues on the approach and travel directly across the junction in towards Grays.

⁷ Lower Thames Crossing Consultation: Junction Assessment and Mitigation Analysis (Stantec, October 2020)

Measure L10	Improve Internet / 5G Connections	
Additional Description	Utilise the construction phase of the LTC as an opportunity to lay down internet and 5G cables, in particular to areas with poor connectivity, e.g. West Tilbury, parts of Linford and South Ockendon.	
Type and Scale of Benefits	Impact Areas	Community disruption, community cohesion and severance, on-going business performance
	Qualitative Impact	Opportunity to improve internet connection in parts of the borough which are currently isolated and have poor provision. This will support community and business activity
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	Contribution to be discussed amongst delivery partners
Priority	Standard	

- 7.31 Highways England should coordinate with the Council and the relevant delivery partners to ensure there is provision (by means of ducting for example) in structures and along routes for subsequent provision of utilities and their upgrading, such as broadband.
- 7.32 This would be particularly beneficial in areas where there is currently poor digital connectivity, such as West Tilbury, parts of Linford and South Ockendon. These areas have a high proportion of premises unable to receive the minimum requirement of internet speed (known as Universal Service Obligation).

Measure L11	Building Legacy Housing Provision	
Additional Description	The Council advocate for the provision of accommodation suitably located within proximity to suitable amenities. A site adjacent to Stanford-le-Hope interchange has been identified where high-quality temporary housing could be provided and then left as a legacy for the Council to utilise.	
Type and Scale of Benefits	Impact Areas	Growth (housing provision), disruption (traffic from construction workers), air quality (construction worker traffic), off-set loss of residential properties
	Qualitative Impact	Providing housing for construction workers to reduce pressure on accommodation in Thurrock and support the council to meet their future temporary accommodation needs.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium cost intervention
	% request from HE	100%
Priority	Standard	

- 7.33 Highways England have stated that they need housing provision for 480 workers on the main northern compound during the construction phase.
- 7.34 Thurrock Council strongly supports the provision of accommodation for workers in a suitable location to reduce pressures upon existing accommodation, and to reduce the number of vehicle trips to and from the area. This position is also set out within the council's response to the Highways England's Worker Accommodation report, where the council has raised concerns about how the local private rental sector and local services may be over-stretched due to the large numbers of construction workers. The Council advocates a 'campus-based' approach with accommodation clustered in an appropriate location within proximity to amenities. The housing should also be of sufficient quality so it can be left for the council to use once the construction phase is complete. Thurrock Council have identified a location adjacent to Stanford-le-Hope interchange, which would link with the proposals for a shuttle bus from this location to the main compound site (see measure M7 in Chapter 6).
- 7.35 Highways England should explore the use of easy-to-build modular housing on the Stanford-Le-Hope site that could be used by the council for temporary accommodation in the future.

Sub-Theme Summary (*Infrastructure Provision*)

- 7.36 This sub-section on infrastructure provision proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Business and community disruption resulting from increased traffic flows across the local road network
 - Permanent and temporary land sterilisation limiting growth, as well as permanent housing loss
 - Disruption and severance to active travel routes
 - Negative impact to community cohesion due to severance
 - Impacts to ongoing business performance due to blight
- 7.37 If implemented, these mitigation measures would enable significant growth and development in a number of key locations, improve strategic connectivity across Thurrock and provide new housing and internet infrastructure for the benefit of local people.

Green Corridors and PRow Enhancements

- 7.38 As discussed in Chapter 4, this sub-group of measures focuses upon the upgrades and enhancements to bridleways, footpaths and cycleways to create effective and attractive green corridors that encourage usage and associated physical activity.

Table 7.3: Summary of Green Corridors and PRow Enhancements

Ref.	Scheme Measure	Brief Description
L12	Optimising bridge crossing provision	Ensuring that the proposed re-provision of bridges across the LTC, along existing corridors, deliver sufficient legacy provision to encourage active travel and support future growth.
L13	Two Forts Way Project (TFWP)	The TFWP is a comprehensive masterplan for the coastal area extending from Grays Railway Station via the Forts, toward Thurrock Thameside Nature Park. The project will need to consider future maintenance requirements.
L14	Complete and improve the PRow network	A range of other improvements to complete gaps and enhance the current network of bridleways, footpaths and cycleways to complement the TFWP and the LTC bridge crossings. All improvements will need to consider future maintenance requirements.

- 7.39 The potential impact of each of these three measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure L12	Optimising bridge crossing provision	
Additional Description	Ensure that re-provided road connections and green bridges are designed to sufficiently encourage active travel, as well as to accommodate future growth aspirations. This includes ensuring appropriate provision on the approaches to the crossings, creating an effective PRow network.	
Type and Scale of Benefits	Impact Areas	Encouraging sustainable and active travel, health, enabling growth
	Qualitative Impact	Delivers integrated provision for active travel modes encouraging active travel usage, with associate physical and mental health benefits. Ensures sufficient transport capacity to support future housing growth aspirations.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium additional cost over current bridge proposals
	% request from HE	100%
Priority	Standard	

- 7.40 Whilst Highways England have responded to Thurrock's requests regarding the bridge crossings and are now proposing to re-provide a number of the road connections over the LTC alignment as green bridges with PRow provision, the Council wish to ensure that they are designed to sufficiently encourage usage and accommodate future growth aspirations.

- 7.41 This includes ensuring the width of bridges are sufficient to accommodate necessary future transport provision, including for bus and non-motorised users, as well as also ensuring the active travel connections to and from the crossing points are sufficient (e.g. along Muckingford Road, Stifford Clays Road and North Road in South Ockendon, amongst others).

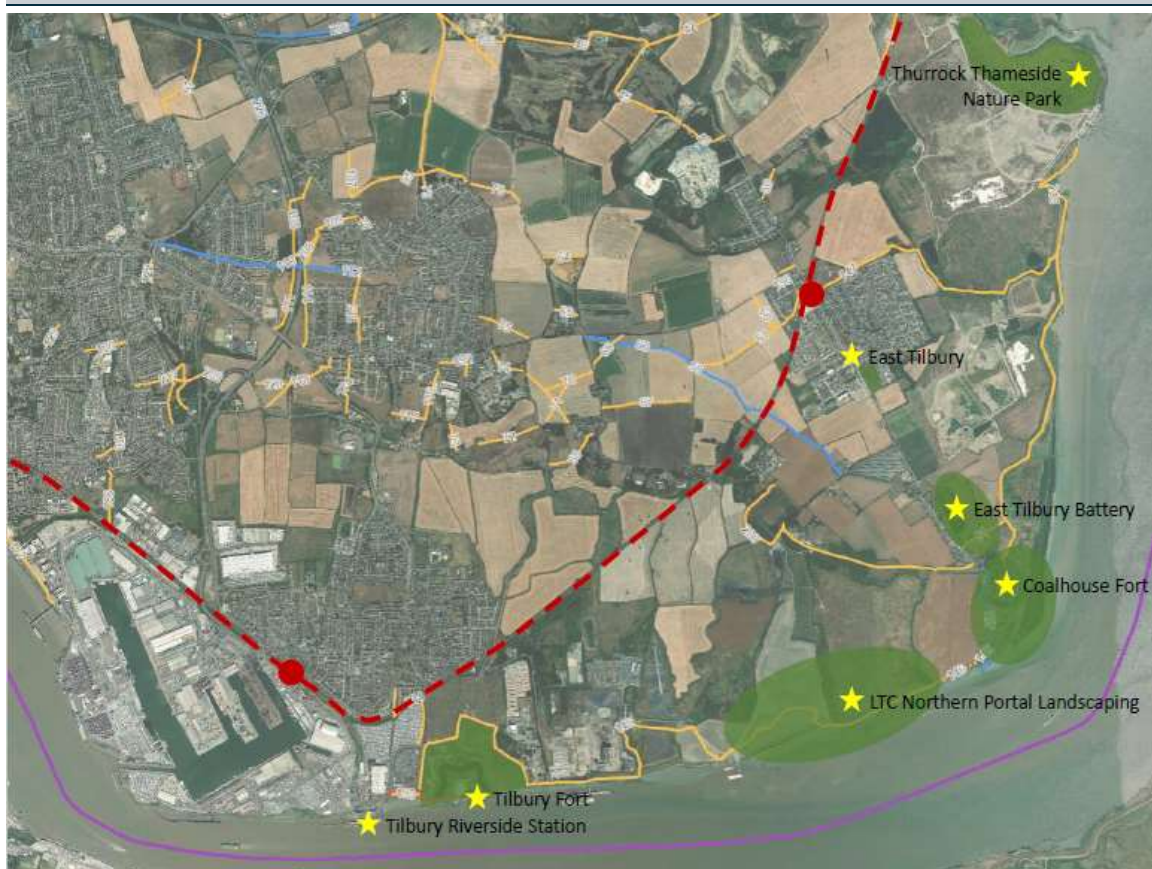
Measure L13	Two Forts Way Project (TFWP)	
Additional Description	This would incorporate habitat restoration and establishment, creation of new ecological park around the tunnel portal, addressing breached sea wall, improvements to cycling and footpath provision, creation of a heritage landscape, and providing connections to other key locations.	
Type and Scale of Benefits	Impact Areas	Encouraging sustainable and active travel, health, access to green space, enabling growth
	Qualitative Impact	Encourage active travel, and associated health benefits. Support the local tourist industry. Safeguard and promote local heritage assets. Support local development areas through enhanced connections.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium cost intervention
	% request from HE	100%
Priority	High	

- 7.42 The Two Forts Way is the name of the public footpath route running from Tilbury Fort to Coalhouse Fort. It was promoted as a route linking two important visitor destinations, providing a non-vehicular route for residents from Tilbury to reach Coalhouse Fort Park, one of the best open spaces in the borough. Historically the route has suffered from physical barriers, poor quality surfacing and lack of promotion. As a result, it has been primarily a local asset and was not widely publicised.
- 7.43 The purpose of the TFWP is to review the existing designations, land holdings, planning permissions and future uses of key sites to inform the development of a comprehensive masterplan for the area through which the Two Forts Way runs. It will demonstrate how the area can become a key green infrastructure asset within the borough and complement the emerging Local Plan objectives.
- 7.44 There are a number of opportunities which should be explored:
- Restoration of the area adjacent to the north tunnel portal during the construction phase and creation of a new ecological park
 - Restoration and enhancement of existing habitats along the route, such as Tilbury Marshes
 - Improving access on a number of footpaths on the route e.g. the footpath north of Coalhouse is generally walkable however a section outside the southern boundary of the Thurrock Thameside Nature Park is permanently flooded due to drainage issues associated with the landfill site
 - Addressing the breached sea wall by Coalhouse Fort. This is a key part of the TFW route that is currently unpassable. Restoring this section will provide an important improvement and connection for the National Cycle Network Route 13, linking to

Tilbury and Dartford Crossing. One option would be to utilise excavated material during LTC construction to repair the sea wall. Conversations with Natural England and the Environment Agency are ongoing in relation to the potential improvements.

- The creation of a heritage landscape with active travel linkages between heritage sites (including Coalhouse Fort [see below for further commentary on Coalhouse Fort, Tilbury Fort, East Tilbury Battery and Bowater Battery) and new landscaped areas. Figure 7.3 below shows the potential locations of these heritage sites and landscaping.
 - Willow planting at Buckingham Hill landfill site (see scheme Measure L20)
 - Facilitate the restoration of the East Tilbury Landfill site by working collaboratively with the partnership of organisations delivering the works. This involves ensuring access to the site isn't disrupted by LTC construction
- 7.45 These opportunities would link in with existing plans and sites in the area, including restorations to the Thameside Nature Park, restoration of the East Tilbury Quarry and the RSPB-run Stanford Wharf Nature Reserve.
- 7.46 The vision for the TFWP needs to be formalised and adopted. Highways England need to be a key partner in achieving this to ensure the project can be delivered. A more detailed note on the project has been developed and can be shared.
- 7.47 An important consideration for the project will be the on-going maintenance requirements. This could be funded through Measure CLS12 'Transport Network Management and Development Resource'

Figure 7.3 Two Forts Way Project Map – key heritage and landscape locations



Source: Thurrock Council. Yellow stars = heritage sites, green areas = landscaped locations

Measure L14	Complete and improve the PRow network	
Additional Description	A range of other improvements to complete and enhance current bridleways, footpaths and cycleways to complement the TFWP and the LTC bridge crossings. Ensure any potential severance created by the LTC Scheme is overcome through the completion of a comprehensive and high-quality PRow network.	
Type and Scale of Benefits	Impact Areas	Encouraging active travel, enabling growth
	Qualitative Impact	Encourage active travel, and associated health benefits. Support local development areas through enhanced connections.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost interventions
	% request from HE	100%
Priority	Standard	

- 7.48 Highways England have proposed a range of amendments and diversions to the PRow network. Whilst this does include some additional routes, the Council has had limited opportunity to input into the proposals and some of the routes appear unviable. A more comprehensive legacy provision could be provided to ensure the overall network is sufficiently enhanced to off-set the inevitable negative perceptions against walking and cycling created by the LTC infrastructure.
- 7.49 We note within the LTC Designated Funding Sub-Regional Walking, Cycling and Horse-Riding Strategy that Highways England have proposed a primary route connecting Stanford-le-Hope to West Thurrock (Route NP2). The mapping accompanying the proposal has an indicative alignment running alongside the Tilbury Loop Rail Line from Stanford-le-Hope to Tilbury and on through Grays. Whilst the Council supports the concept of enhanced NMU connectivity between Stanford-le-Hope, East Tilbury, Tilbury, and Grays, the alignment of this route need to be carefully considered and would need to support and complement the TFWP, as well as other elements of the current NMU network
- 7.50 The opportunities for all users (pedestrians, cyclists, and horse-riders) across the NMU network should be properly considered, as well as the potential future needs, including new technologies, such as e-scooters, e-bikes, charging points, etc. The identified local needs, in particular health inequalities, should form a central focus of provision with greater consideration in terms of new walking and cycling provision in areas that currently have the worst health outcomes. Access for all users must also be considered across the network, and anti-social behaviour suitably designed-out of provision (e.g. motorbike use).
- 7.51 As well as current needs, the link to future growth is also important and should be reflected within the development of the network.
- 7.52 The Council has concerns that no design detail has been provided on the format for the PRow network changes and the various NMU mitigation facilities. The right balance needs to be considered between the needs of walkers, cyclists and equestrians who will use these facilities for utility or recreational use. For example, bitumen bound surfaces are not popular with equestrians, whilst surfaces that are liable to rutting are far from suitable for walking and cycling.

- 7.53 Furthermore, the type of surface is also important because of the long-term ramifications for maintenance. The Council needs to understand the design principles for the routes and to confirm it is able to take on any management and maintenance role for those routes. In addition, the proposal must also conform to current and emerging PRow Policy.
- 7.54 Specific measures will need to be developed in close partnership with the local community, with linkages between Highways England and Thurrock's Local Access Forum. Enhanced connections to the Mardyke Valley and links from Orsett Heath / Chadwell St. Mary across to the Stanford-le-Hope represent areas where improvements could be implemented.
- 7.55 Thurrock would expect to sign off any construction principles/drawings for existing assets either affected or to be passed back to the Council. This will impact upon the Council's PRow Team resourcing, with respects to the review process and creation of orders, amongst other roles. The on-going maintenance requirements for any improvements will also be a major consideration. This could be funded through Measure CLS12 Transport Network Management and Development Resource.

Sub-Theme Summary (*Green Corridors and PRow Enhancements*)

- 7.56 The green corridors and public rights of way sub-section proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Permanent or temporary severance to PRow as well as disruption
 - Disruption to active travel routes affecting local health and wellbeing
 - Limiting housing and employment growth due to land sterilisation and poor connectivity/severance into growth areas
- 7.57 If implemented, these mitigation measures could lead to significant positive benefits for local people and the environment. This includes providing a network of active travel routes for walking/cycling/horse-riding, delivering a comprehensive masterplan for the Two Forts Way Project and providing bridge crossings over the LTC to support active travel and enable growth.

Green Space Enhancements and Heritage Restoration

7.58 As discussed in Chapter 4, these two sub-groups of measures focus upon enhancing areas of green space and open space across Thurrock, as well as ensuring that opportunities to safeguard and maximise the use of heritage assets are addressed.

Table 7.4: Summary of Green Space Enhancement and Heritage Restoration

Ref.	Scheme Measure	Brief Description
L15	Enhanced Green Space	Enhance key sites that are in close proximity to the LTC, are of low quality, and are in need of investment.
L16	Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project	Securing the legacy of Coalhouse Fort and the surrounding natural and cultural landscape.
L17	Historic Landscape Restoration	Restoration of Belhus Woods including a site survey and Conservation Management Plan
L18	Enabling the restoration of the historic landfill site and cleaning the marine habitat	Support and facilitate the collaborative partnership of organisations seeking to deliver the restoration of the site at East Tilbury Landfill.

7.59 The potential impact of each of these four measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure L15	Enhanced Green Space	
Additional Description	A number of green spaces in close proximity to the LTC are of low quality and are in need of upgrading and investment. Koala Park, King George's Playing Field, Wickham Fields, Orsett Heath and Chadwell Heath have all been identified as priorities, as well as Blackshots Nature Area	
Type and Scale of Benefits	Impact Areas	Community, health & wellbeing
	Qualitative Impact	Increase community access to green space, improving physical and mental health outcomes and improve wellbeing of residents.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

7.60 The 2020 Thurrock Open Space Assessment highlights key sites in close proximity to the LTC that are of low quality and are in need of investment. This includes Wickham Fields (also known as St. Francis Way Field), Orsett Heath and Chadwell Heath.

7.61 In addition, the public realm and open space vision study undertaken for the London Resort DCO identifies the need for interventions in Tilbury, including in Koala Park and King George's playing

field. Therefore, LTC mitigation should align with this work and support the delivery of these interventions.

- 7.62 Blackshots Nature Area will also be directly affected by the LTC and there is opportunity to link the compensation land being proposed by Highways England with other green space in the area and the Local Plan to re-create a nature area. However, more detail is needed from Highways England on the plans for replacement open space and HE should work closely with Thurrock Council to ensure the mitigation land meets the council's needs and aspirations.

Measure L16	Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project	
Additional Description	Coalhouse Fort and the surrounding heritage assets (including the East Tilbury Battery) are in a poor state of repair and need investment to secure their legacy. Given the close proximity of the LTC construction compound and the likely impact on the assets, Highways England should work in partnership with Thurrock Council to determine how the area should be restored over the coming months and years. There is also potential to improve access to the smaller sites if access can be provided through the LTC mitigation land.	
Type and Scale of Benefits	Impact Areas	Heritage impact, Blight, Impact on community facilities
	Qualitative Impact	Securing the legacy of important community and heritage assets for future use.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium-high cost intervention
	% request from HE	A significant contribution towards the restoration work
Priority	High	

- 7.63 Coalhouse Fort and the wider East Tilbury natural and cultural heritage area are very important community and historic assets in Thurrock. They provide leisure, exercise, education, heritage and social functions which play a key role in the mental and physical wellbeing of the local community.
- 7.64 Coalhouse Fort is owned by the Council but is in a serious state of disrepair. The large financial investment needed to secure the structure of the fort makes it unviable for development and continued use. Therefore, there is a real concern that the site will have to permanently close to public use if it cannot be repaired. In addition, the close proximity of the LTC route and construction compounds to the site mean it is likely to suffer from blight and noise and visual pollution.
- 7.65 Therefore, the construction of the LTC provides a significant opportunity to repair and restore Coalhouse Fort and the surrounding area to secure its legacy. Highways England should work closely with Thurrock Council during pre-construction and construction phases to determine the most appropriate mitigation for the site. This should start with a study covering condition and potential options for a range of future uses and funding sources. This measure links very closely to L13 (Two Forts Way Project), in which the wider natural landscape around Coalhouse fort will be restored.

Measure L17	Historic Landscape Restoration	
Additional Description	Restoration of the woods and wider landscape in Belhus Park, including a site survey and the production of a Conservation Management Plan for the site.	
Type and Scale of Benefits	Impact Areas	Environment, green space, heritage impact
	Qualitative Impact	Restoring important historic landscape, restoring biodiversity through tree planting,
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium
	% request from HE	100%
Priority	Standard	

7.66 Belhus Park is an important strategic site of green infrastructure in Thurrock. It is located to the north of Aveyley and straddles the M25. The site has been identified by Thurrock Council and Historic England as a key location for landscape restoration, and there are a number of priority projects that could help to achieve the restoration of both the woods and the historic parks and gardens. These include:

- New specimen tree planting to replace lost trees. This would be focused in areas where existing parkland trees remain (a short-term opportunity)
- A full site survey to record key historic features and the development of a Conservation Management Plan to identify priority issues and set out a programme of repair and restoration (a longer-term opportunity).

7.67 Designated funds from Highways England could be used to deliver these projects and secure the future of the site.

Measure L18	Enabling the restoration of the historic landfill site and cleaning the marine habitat	
Additional Description	A collaborative partnership of organisations is already working to achieve restoration of the historic landfill site at East Tilbury Landfill. The site will be surrounded by the LTC Development Area and so ensuring that access can be maintained, and that the LTC construction and operation timescales to align with the East Tilbury Landfill project is critical.	
Type and Scale of Benefits	Impact Areas	Environment (contamination/pollution), green space, PRoW
	Qualitative Impact	Cleaning up contaminated land and leaching into the Thames to create a new green space for public use. Forms part of the Two Forts Way project. Improvements to biodiversity and restoration of habitat
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium cost intervention overall
	% request from HE	Minimal – only partnership support required
Priority	High	

- 7.68 The historic landfill site at East Tilbury Landfill needs to be restored as it is currently contaminating the River Thames as a result of leaching. Conversations are underway between Thurrock Council, a Landfill Mining Company and Queen Mary College to clean the site and prepare it for restoration as part of the TFWP. There are a number of similar sites along the Thames Estuary, and so the restoration of this site is being promoted as a potential best practice case study for the area, making it an important legacy project.
- 7.69 The location of the landfill site puts it at risk of being boxed in by the construction of the LTC, therefore it is important to co-ordinate the restoration works and LTC construction works to ensure restoration can go ahead. This requires Highways England to join the partnership of organisations working to achieve restoration and work collaboratively with all involved.

Sub-Theme Summary (*Green Space Enhancements and Heritage Restoration*)

- 7.70 The green space and heritage sub-section proposes a number of mitigation measures to address the following costs associated with the LTC Scheme:
- Blight to heritage assets including visual and noise pollution
 - Impact on community facilities and assets such as green space
 - Continued pollution and contamination of the environment as a result of losing access for restoration at East Tilbury Landfill
- 7.71 If implemented, these mitigation measures could lead to significant positive benefits for local people and the environment. This includes securing the continued use of Coalhouse Fort and surrounding area for the future, improving green and open space assets for local people with associated positive physical and mental health benefits and cleaning up the contaminated land at East Tilbury Landfill.

Climate Change Measures and Incentives

- 7.72 As set out in Chapter 4, this set of measures focuses on mitigation of the impacts of the LTC scheme upon climate change and the environment. It examines long-term initiatives such as targets and incentives for low-emissions vehicles, and carbon offsetting measures such as willow planting and mini-forests.
- 7.73 Benefits associated with the mitigation approaches include reduced greenhouse gas emissions and improved local air quality, with positive impacts for the local communities, businesses and wildlife located alongside the LTC. In particular, local communities such as Tilbury and East Tilbury suffer from health inequalities (e.g. respiratory disease) which mitigation measures such as these could help to reduce. Noise reduction is also likely to have positive benefits for wildlife, habitat and homes.

Table 7.5: Summary of Climate Change Measures and Incentives

Ref.	Scheme Measure	Brief Description
L19	Incentives for ultra-low emission vehicles to use the LTC	Ensure that electric and/or ultra-low emission vehicles are incentivised to use the LTC with discounted or free use of the new crossing.
L20	Target (with penalties) for ultra-low emission vehicle usage on the LTC	Electric car usage targets with financial penalties payable to Thurrock in the event of exceedance to offset local air quality and impacts.
L21	Carbon offsetting of the LTC scheme	Carbon offsetting measures across Thurrock that offset the CO ₂ produced by the construction and operation of the LTC
L22	Tree Planting across Thurrock	Street tree planting initiatives and delivery of LTC Forest aspirations.

- 7.74 The potential impact of each of these four measures is presented within the individual tables below, highlighting the impact areas and potential scale of benefits, alongside available information around the scale of investment that would be required to deliver the measure.

Measure L19	Incentives for ultra-low emission vehicles to use the LTC	
Additional Description	Ensure that electric and/or ultra-low emission vehicles are incentivised to use the LTC with discounted or free use of the new crossing.	
Type and Scale of Benefits	Impact Areas	Air quality
	Qualitative Impact	Reduce harmful emissions from the traffic using the LTC
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	100%
Priority	Standard	

- 7.75 The emission strategy for the operational LTC scheme is based upon the assumed trend towards greater usage of electric vehicles. However, the Council advocate that this is reinforced and accelerated by incentivising the use of ultra-low emissions vehicles to use the route. This will help to ensure that assumed emissions levels are achieved.
- 7.76 As set out in the Department for Transport's 'The Road to Zero'⁸ document, encouraging and accelerating the uptake of ultra-low emission vehicles is an important way in which the government will achieve its broader ambitions for cleaner road transport across the network. This measure directly ties into DfT's policy but asks for LTC-specific interventions and incentives

⁸ The Road to Zero: Next steps towards cleaner road transport and delivering our industrial strategy. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

to ensure ultra-low emission and electric vehicles are being used on this part of the network in particular to protect local air, noise and emission pollution.

- 7.77 It is important that any schemes put in place on the LTC are also implemented on the Dartford crossing to avoid one crossing becoming more desirable to use than the other. To date, there have been no incentives to encourage low emission vehicle usage on the Dartford crossing. DfT have stated this is largely due to the Dartford crossing already regularly being over capacity. Therefore, if the LTC was delivered and relieved the Dartford capacity issues, both crossings could have new incentives implemented.
- 7.78 Measure L20 (below) links closely to this with a proposal to establish clear annual targets for low emission vehicle usage to ensure emissions levels along the route are kept to a minimum. This could be monitored using the toll information, with financial penalties in place if targets are not met. This money would then fund green, sustainable carbon-reduction initiatives in the borough to off-set the impacts. Similarly to L18, this measure would also need to be implemented on the Dartford crossing to ensure both crossings are equally attractive for drivers to use.

Measure L20	Target (with penalties) for ultra-low emission vehicle usage on the LTC	
Additional Description	Ensure high levels of low-emission vehicle usage through establishing clear annual targets with financial penalties payable to the Council in the event of exceedance to offset local air quality impacts.	
Type and Scale of Benefits	Impact Areas	Air quality
	Qualitative Impact	Reduce the negative impacts of higher emissions traffic and use any shortfall towards targets to fund green and sustainable initiatives
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Dependent on target being met
	% request from HE	100%
Priority	High	

Measure L21	Carbon offsetting of the LTC scheme	
Additional Description	Generation of energy through willow planting to offset the carbon cost of the LTC scheme	
Type and Scale of Benefits	Impact Areas	Environment, air quality, climate change
	Qualitative Impact	These measures would offset the carbon created through the construction and operation of the LTC scheme and provide financially self-sustaining initiatives which contribute to a more sustainable Thurrock
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Medium - Initial £77,500 to establish coppice and willow plus upfront site restoration
	% request from HE	100%
Priority	Standard	

- 7.79 This measure promotes the planting of Short Rotation Coppice (SRC) and Short Rotation Forestry (SRF) willow in Thurrock to generate biomass for energy is a primary way for carbon from the LTC scheme to be offset.
- 7.80 The Council commissioned a feasibility study in early 2020 looking at possible sites for planting, which can be shared with Highways England. The study finds that SRC could be planted on the former landfill site at Buckingham Hill, and that this site has sufficient area to produce a significant quantity of biomass fuel.
- 7.81 It is likely this site would need to be restored before planting could occur. Spoil from the LTC tunnelling works could be used by Highways England or a partner organisation to restore the site.
- 7.82 A business case for the planting has been prepared and finds:
- Establishment costs for 18ha of SRC/SRF on the site would be £77,500 (after the site has been restored)
 - Once established, SRC/SRF planting on the site would be revenue-generating and self-sufficient
 - Planting could be underway from 2021 and the SRC could be ready to harvest starting from winter 2024/2025
 - Substitution of fossil fuel derived heat with biomass heat from the SRC and SRF produced could lead to a saving of over 3,500 tonnes of CO₂ over a 22-year period
- 7.83 A joint venture delivery model between a commercial company and the Council would be sought to plant and manage the willow.
- 7.84 If Highways England funded the establishment costs of £77,500 this could kick-start willow planting in Thurrock and provide an immediate benefit of c.15,000 trees being planted on the Buckingham Hill site (very close to the LTC). The establishment of this first site with the help of Highways England would then make smaller, more strategic planting sites viable across the borough.

Measure L22	Tree Planting across Thurrock	
Additional Description	Tree planting across Thurrock through street tree planting initiatives and the phased delivery of the LTC Forest.	
Type and Scale of Benefits	Impact Areas	Air quality, Environment, Habitat loss
	Qualitative Impact	Street tree planting and the creation of a new forest would provide aesthetic and environmental benefits across Thurrock and contribute to carbon offsetting and air quality improvement.
	Monetary (if applicable)	n/a
Scale of required Investment	Overall	Low-medium cost intervention
	% request from HE	£412,500
Priority	Standard	

- 7.85 Thurrock Council have aspirations to plant approximately 2,750 trees (both street trees and woodland) in areas that are identified as below air quality standards. Tree planting will firstly be prioritised in locations where trees have previously been removed, which the council will identify using their Arbortrack tree management system. All planting will follow current British Standards and industry best practice as a minimum standard. Species which improve air quality and are suitable for planting on the highway will be used, and native species will be utilised as appropriate.
- 7.86 Street tree planting can also contribute to carbon offsetting of the LTC Scheme, as well as providing aesthetic benefits to local streets. There are also likely to be local environmental benefits associated with improvements biodiversity and habitat.
- 7.87 Thurrock estimate that the average cost to purchase and plant a new tree that has a high chance of reaching maturity is approximately £150. This means that Thurrock need £412,500 to plant 2,750 trees.
- 7.88 In addition, delivering on the aspirations for an LTC Forest in Thurrock would bring significant, environmental, social and economic benefits. Highways England should continue to work closely with Forestry England, the Thames Chase Trust and Thurrock Council to deliver the forest legacy within Thurrock's boundaries. Thurrock Council are currently in the process of investigating suitable sites for delivering the early phases of the LTC Forest.

Sub-Theme Summary (*Climate Change Measures and Incentives*)

- 7.89 This sub-section has focused on mitigation measures relating to climate change to address the negative impacts on local air quality and emissions as a result of the construction and operation of the LTC Scheme. There are likely to be significant increases in greenhouse gas emissions, as well as reductions in local air quality, due to construction activities, construction traffic and car use on the LTC.
- 7.90 If implemented, these mitigation measures could lead to significant positive benefits for the local environment in Thurrock and would support Thurrock Council in achieving its climate change objectives. Benefits include carbon offsetting, shifts to low emission vehicles, the planting of trees across Thurrock and the creation of a new forest with associated environmental, social and economic benefits.

8. Summary and Conclusions

Introduction

- 8.1 This report has set out a list of potential mitigation and legacy measures that Highways England should put in place to address the costs identified in the February 2020 LTC Economic Cost Study. The Council consider that this package of measures will adequately offset the negative economic and social impacts of the LTC Scheme within Thurrock.
- 8.2 In identifying the preferred package of measures, and recognising the issues and opportunities each group of measures addresses, a revised classification process of measures was adopted, to better reflect the groupings. In broad terms, this identified three overarching ‘themes’ for the measures:
- **Direct Mitigation:** measures that address the direct impact of the construction phase, as well as design of the LTC scheme and the resulting traffic and transport implications
 - **Council-led Support:** measures that ensure sufficient local resource is available to support local businesses and communities throughout the construction phase and into the transition of the operating scheme
 - **Legacy Measures:** measures that will ensure the LTC scheme delivers a lasting legacy across Thurrock and ensure positive local outcomes
- 8.3 This chapter summarises the measures that sit within each of these themes, as well as the costs which they are intending to address. It also sets out the list of measures which are seen by the Council as critical and therefore should be implemented as a priority.

Summary of Benefits by Themes

- 8.4 This section provides an overall summary of the identified benefits that will be engendered by the groups of measures within each of the three ‘themes’.

Direction Mitigation

- 8.5 This group of measures focuses upon minimising the level of disruption caused by both the construction and on-going operational phase of the LTC scheme.
- 8.6 A number of the proposed measures within this ‘theme’ highlight the concepts and standards that Thurrock expect Highways England to attain throughout the construction phase to ensure disruption and pollution is kept to the absolute minimum. Other seek to ensure that the final design incorporates sufficiently high standards of mitigation to neutralise potential negative impacts.
- 8.7 The Council also continues to have a number of specific concerns around the LTC alignment and interface around the A13 and continue to advocate for alternative proposals to reduce the impact of construction around the A13 but also to prevent and mitigate against re-routing of traffic through key junction and local settlements.

Construction-specific measures (emissions)

8.8 The construction-specific (emissions) sub-theme proposes a number of mitigation measures to address the costs associated with the LTC Scheme, as set out in the diagram opposite.

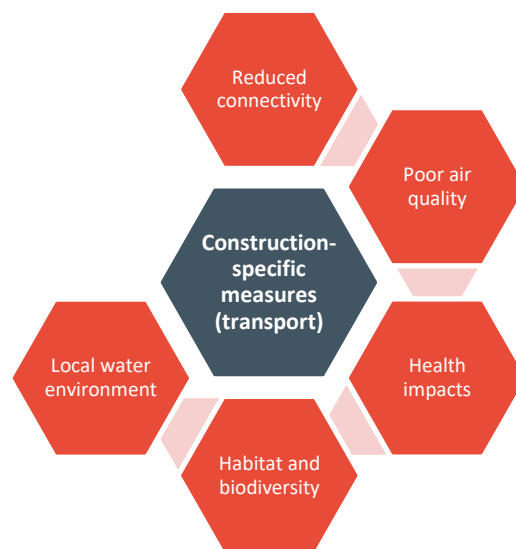
8.9 The proposed mitigation measures could lead to significant positive benefits for local residents in terms of **reduced risk of poor local air quality** and **lower levels of disruption from noise**. In particular, they would ensure that potential high peaks in emission levels (associated with concurrent high levels of construction activity) are avoided.



Construction-specific measures (transport)

8.10 The construction-specific (transport) sub-theme proposes a number of mitigation measures to address the costs associated with the LTC Scheme, as set out in the diagram opposite.

8.11 The proposed mitigation measures could lead to significant positive benefits for local businesses and residents in terms of reducing overall levels of construction-related traffic and **ensuring congestion is kept to a minimum**. This will also ensure **vehicles emissions are lower**, whilst increased levels of active travel will have associated **health & wellbeing benefits**. Ensuring appropriate waste management processes will also **minimise any risk of negative impacts of waste upon habitat and water environment**.

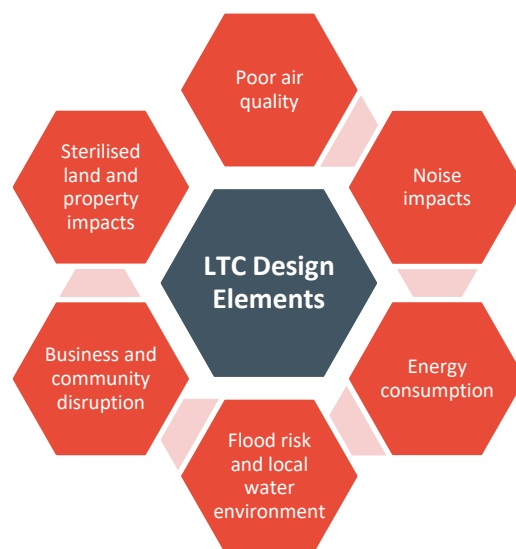


LTC Design Elements

8.12 The LTC design elements sub-theme proposes a number of mitigation measures to address the costs associated with the LTC Scheme, as set out in the diagram opposite.

8.13 The proposed mitigation measures could lead to significant positive benefits for **reducing peak level of particulate and noise emissions**, as well as **reducing the overall energy consumption** of the LTC scheme. They will also **reduce the risk of flooding events and impacts upon water quality**.

8.14 The Councils proposals for the A13/LTC interface would also significantly **reduce level of disruption to business and community** connectivity equating to over £11 million pa, as well as **reducing land sterilisation and loss of property and blight** to a value of over £1.5 million.



Key Junction Mitigation and Traffic Management Measures

- 8.15 The key junction mitigation and traffic management measures sub-themes propose enhancements at two junction locations, and around three local settlements, that would address business and community disruption impacts associated with the LTC Scheme, as well as noise and air quality blight for residential areas caused by excessive re-routing of traffic.
- 8.16 The proposed mitigation measures could lead to significant positive benefits in terms of **reduced congestion for local traffic** that would benefit connectivity for local businesses and communities and ensure **blight associated with increased traffic levels is removed** from local settlements.



Council-led Support

- 8.17 This group of measures focuses on providing resources for new council-led teams and operations that are required to minimise the impact and maximise the benefit of the LTC for local people and businesses.
- 8.18 This includes the creation of a new local labour and business team, a community and public health team and additional resource in the council to manage the transport network. There are also a number of small grant schemes proposed.

Local Labour and Business

- 8.19 The local labour and business sub-theme proposes a new local labour and business team within the council, business rates holidays and a number of grants schemes for local businesses. These would address the costs of the LTC set out in the diagram.
- 8.20 These mitigation measures could lead to significant positive benefits for local jobs and businesses. This includes **financial savings for businesses to protect against turnover loss, pathways to employment and training for local residents**, measures to **attract trade** and support to **reduce business carbon emissions**.



Local Community and Public Health

8.21 The local community and public health sub-theme proposes a new community and public health team within the council, strong community engagement during construction, public health mitigation and a community investment grant. These measures would address the costs of the LTC set out in the diagram on the right.

8.22 These mitigation measures could lead to significant positive benefits for local people including **improved community cohesion** and **health and wellbeing**, ensuring **local people are appropriately informed and consulted with** and **communities play a lead role in shaping and delivering mitigation**.



Transport Network Management and Development

8.23 The transport network management and development sub-theme specifically addresses the challenge of resources required to manage the impacts of the construction and operation of the LTC Scheme upon the local highway network.

8.24 Providing the Council with adequate resource will ensure that they can adequately develop the necessary network management and network development measures to ensure the local highway network continues to operate effectively and efficiently for local businesses and communities.

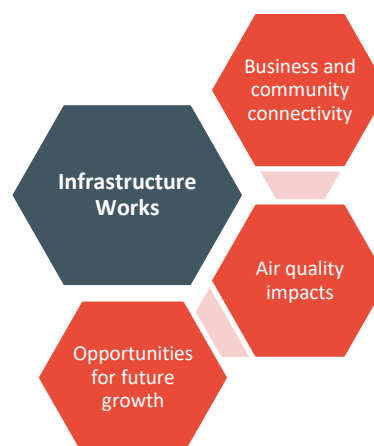
Legacy Measures

8.25 This group of measures focuses on maximising the legacy of the LTC across a number of themes, including infrastructure, connectivity, heritage, green space and climate change.

8.26 This focuses on positive actions that Highways England can take to ensure Thurrock benefits from the construction and operation of the LTC Scheme, such as provision for junctions and enabling and facilitation works, road network and roundabout enhancements, housing and internet provision, green space and heritage enhancements and carbon offsetting.

Infrastructure Facilitation

8.27 The infrastructure facilitation sub-theme proposes a number of actions to facilitate the future delivery of schemes and measures that will address the identified costs of the LTC Scheme set out in the adjacent diagram. The measures include passive junction provision, supporting East-facing Access at A13/B186, enabling TLR, considering improvements at the Asda roundabout, and facilitating a future distributor road network.



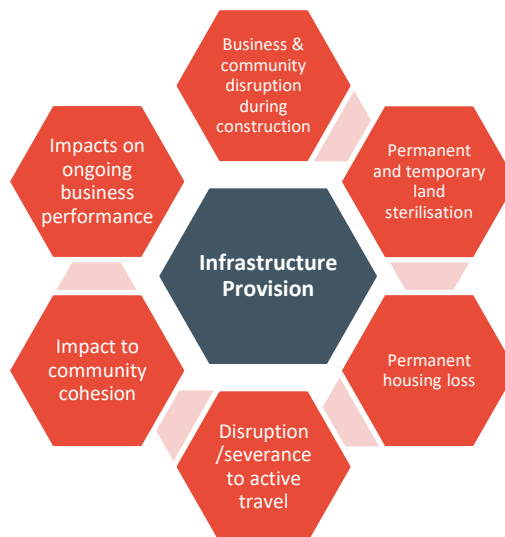
8.28 These mitigation measures, whilst not directly delivering enhancements, would **facilitate the future delivery of strategically important infrastructure and measures** that will enhance local and strategic connectivity and help to deliver improved business and community connectivity and unlock residential and commercial growth.

Infrastructure Provision

8.29 The infrastructure provision sub-theme proposes a number of mitigation measures to address the costs set out in the diagram to the right.

8.30 The measures include legacy housing and internet provision, roundabout and junction enhancements and new bridge infrastructure.

8.31 These mitigation measures would enable significant growth and development in a number of key locations, improve strategic connectivity across Thurrock and provide new housing and internet infrastructure for the benefit of local people.

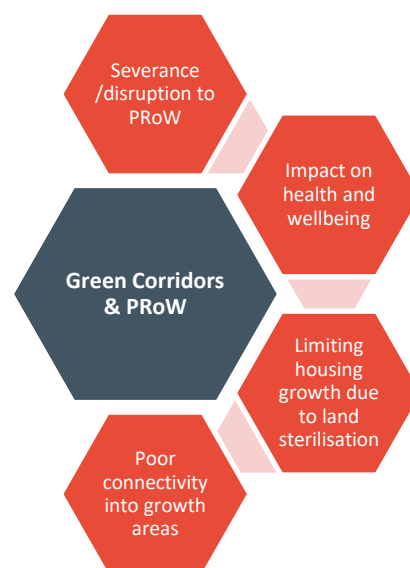


Green Corridors and PRoW Enhancements

8.32 This sub-section focuses on addressing the impacts of the LTC on severance, connectivity and active travel, along with the wider impacts set out within the adjacent diagram.

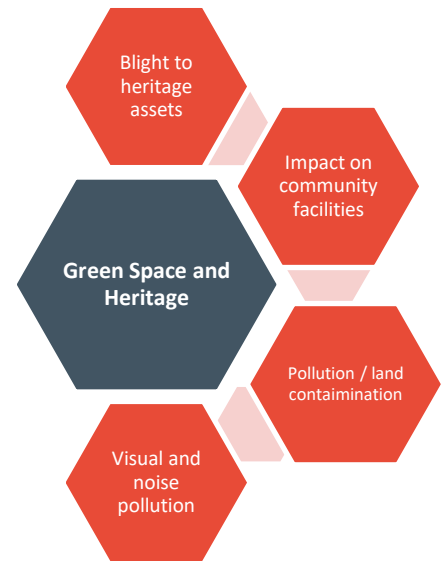
8.33 Proposed measures to combat these issues include optimising bridge crossings, the Two Forts Way project and enhancing the PRoW network across Thurrock.

8.34 These mitigation measures could lead to significant positive benefits for local people and the environment. This includes providing a new, complete network of active travel routes for walking/cycling/horse riding with associated benefits to mental and physical health, delivering a comprehensive masterplan for the Two Forts Way Project and providing enhanced bridge crossings over the LTC to support active travel and enable growth.



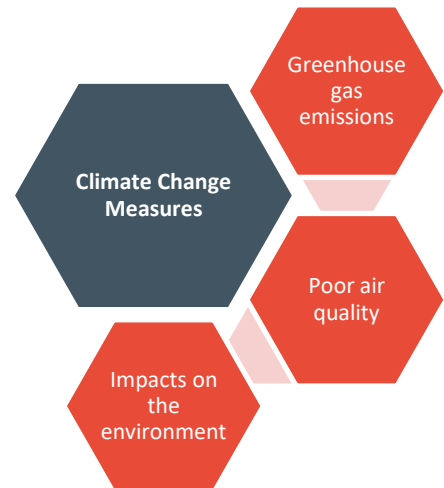
Green Space Enhancement and Heritage Restoration

- 8.35 The measures within the green space and heritage sub-theme focus on enhancement and restoration in order to address the negative impacts of the LTC highlighted in the diagram.
- 8.36 The measures includes enhancements to a number of key sites, as well as the Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project and facilitating the adjacent mitigation of East Tilbury Landfill site.
- 8.37 These mitigation measures would have a number of positive benefits, including securing the continued use of Coalhouse Fort and surrounding area, improving green and open space assets for local people, and cleaning up the contaminated land at East Tilbury Landfill.



Climate Change Measures

- 8.38 The climate change sub-theme includes measures to offset carbon emissions across Thurrock, encourage low-emission vehicles to use the LTC and plant trees and create a new forest. Together these measures will help to address the negative impacts of the LTC summarised in the diagram.
- 8.39 These mitigation measures could lead to significant positive benefits for the local environment in Thurrock and would support Thurrock Council in achieving its climate change objectives.



Prioritisation of Measures

8.40 Whilst all of 57 measures identified within Chapters 5, 6, and 7, represent the Council's prioritisations for mitigation and legacy provision, some of the individual concepts were designated as 'high' priority. This reflects the measures that are considered by the Council to be critical elements of the overall package (lynchpin measures).

8.41 These are summarised in table 8.1 below.

Table 8.1: High Priority Measures

Ref.	Scheme Measure	Brief Description
Direct Mitigation		
M3	Minimise construction and construction traffic emissions	Ensure best practice approaches are adopted in relation to dust and emissions.
M5	Alter construction hours to reduce noise and disruption in residential areas	Ensure the construction operations cause the minimum level of disruption by only applying appropriate on-site working hours
M17	Revised proposals for A13/LTC junction	Alternative proposals to minimise the extensive land sterilisation, property demolition and blight creating by the existing proposals
M19	Orsett Cock roundabout mitigation	Additional mitigation to negate the negative impact of the LTC scheme upon the A128 approach to the junction.
M20	Manorway roundabout mitigation	Additional lane capacity on the A1014 and A1013 approaches to ensure port and local traffic movements are not impaired by the LTC.
Council-led Support		
CLS1	Council-led local labour and business team	A Council team with the responsibility for ensuring that residents and businesses secure economic benefits from the LTC.
CLS8	Council-led community and public health team	Apply the same principle as the Local Labour and Business Team and create a Local Community and Public Health Team within Thurrock Council.
CLS10	Community engagement during construction	Support to enable community engagement during the construction of the LTC scheme.
Legacy Measures		
L1	Passive provision for LTC Junctions (East Tilbury and South Ockendon)	Safeguarding for the future provision of junctions onto the LTC at East Tilbury and South Ockendon.
L7	Permanent multi-modal rail crossing	Construct a permanent bridge over the Tilbury Loop Line near east Tilbury to a width and standard that would enable it to be adopted as part of the future local highway, walking and cycling network.
L8	A1012 Junction and Medebridge Road Improvement	Deliver the proposed construction haul road along the current Medebridge Road alignment from the A13 to Grangewater to a sufficient width and standard to enable it to be adopted by the Council.

L13	Two Forts Way Project (TFWP)	The TFWP is a comprehensive masterplan for the coastal area extending from Grays Railway Station via the Forts, toward Thurrock Thameside Nature Park.
L16	Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project	Securing the legacy of Coalhouse Fort and the surrounding natural and cultural landscape.
L18	Enabling the restoration of the historic landfill site and cleaning the marine habitat	Support and facilitate the collaborative partnership of organisations seeking to deliver the restoration of the site at East Tilbury Landfill.
L20	Target (with penalties) for low-emission vehicle usage on the LTC	Electric car usage targets with financial penalties payable to Thurrock in the event of exceedance to offset local air quality and impacts.

HATCH



www.hatch.co.uk

London: 0207 336 6188 Manchester: 0161 234 9910

Lower Thames Crossing

Thurrock Council Local Impact Report

Appendix G - Annex 2: Hatch Economic Costs Study



HATCH
REGENERIS

Lower Thames Crossing Economic Costs Study

Final Report

A Report by Hatch Regeneris
February 2020

Thurrock Council

Lower Thames Crossing Economic Costs Study

Final Report

This report contains the expression of the professional opinion of Hatch Regeneris (the trading name of Hatch Associates UK). It is based upon information available at the time of its preparation. The quality of the information, conclusions and estimates contained in the report is consistent with the intended level of accuracy as set out in this report, as well as the circumstances and constraints under which this report was prepared.

The report was prepared for the sole and exclusive use of Thurrock Council. Hatch Associates Limited shall only be liable to Thurrock Council and is not liable to any third party who intends to rely on or has relied or is currently relying upon this report (in whole or part).

February 2020

www.hatchregeneris.com

Contents Page

1.	Introduction	1
	Overview of LTC Scheme	1
	Thurrock's Position	2
	Research Aims	3
	Study Methodology	3
	Report Structure	7

2.	LTC Scheme	8
	Scheme Development	8
	Defined Scheme and Assessment Assumptions	8

3.	Study Area Context	12
	Current Transport Network	14
	Business and Economy	23
	Community	30
	Environment	38
	Growth	44

4.	Transport and Connectivity Impacts	46
	Construction Phase Connectivity Impacts	46
	Operational Phase Connectivity Impacts	55

5.	Impact Framework	62
	Development of Impact Framework	62
	Impact Themes and Sub-Themes	63

6.	Business and Economy Cost Impacts	66
	Overview	66
	Impact Assessment	66
	Summary - Business and Economy	75

7.	Community Cost Impacts	76
	Overview	76
	Impact Assessment	76
	Conclusions – Community	103

8. Environmental Cost Impacts	104
Overview	104
Impact Assessment	104
Conclusions – Environment	122

9. Impact upon Growth	123
Overview	123
Impact Assessment	123

10. Summary and Conclusions	130
Summary	130
Conclusions	134

Appendix A - Assessment of Community Facilities

Appendix B - Designated Heritage Assets

Appendix C - LTC Buffer Zones

Appendix D - Qualitative Assessment Scale

Glossary

AQMA	Air Quality Management Areas
COPD	Chronic Obstructive Pulmonary Disease
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
GVA	Gross Value Added
HGV	Heavy Goods Vehicle
HS2	High Speed Rail 2
IMD	Index of Multiple Deprivation
LSOA	Lower Super Output Area
LTC	Lower Thames Crossing
MHCLG	Ministry of Housing Communities and Local Government
NCR	National Cycle Route
NEET	A person not in employment, education or training
NPPF	National Planning Policy Framework
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way
RASA	Rest and Service Area
SME	Small and Medium-Sized Enterprises
SSSI	Site of Special Scientific Interest:
TAG	Transport Analysis Guidance (developed by the DfT)
WHO	World Health Organisation

1. Introduction

- 1.1 Hatch Regeneris has been commissioned by Thurrock Council to undertake an assessment of the local economic and social costs of the Lower Thames Crossing scheme (LTC Scheme hereafter).
- 1.2 The primary aim for the study is to identify the type and scale of potential economic, social and environmental costs upon the local community and area that can be expected as a result of the construction and operation of the LTC Scheme.

Overview of LTC Scheme

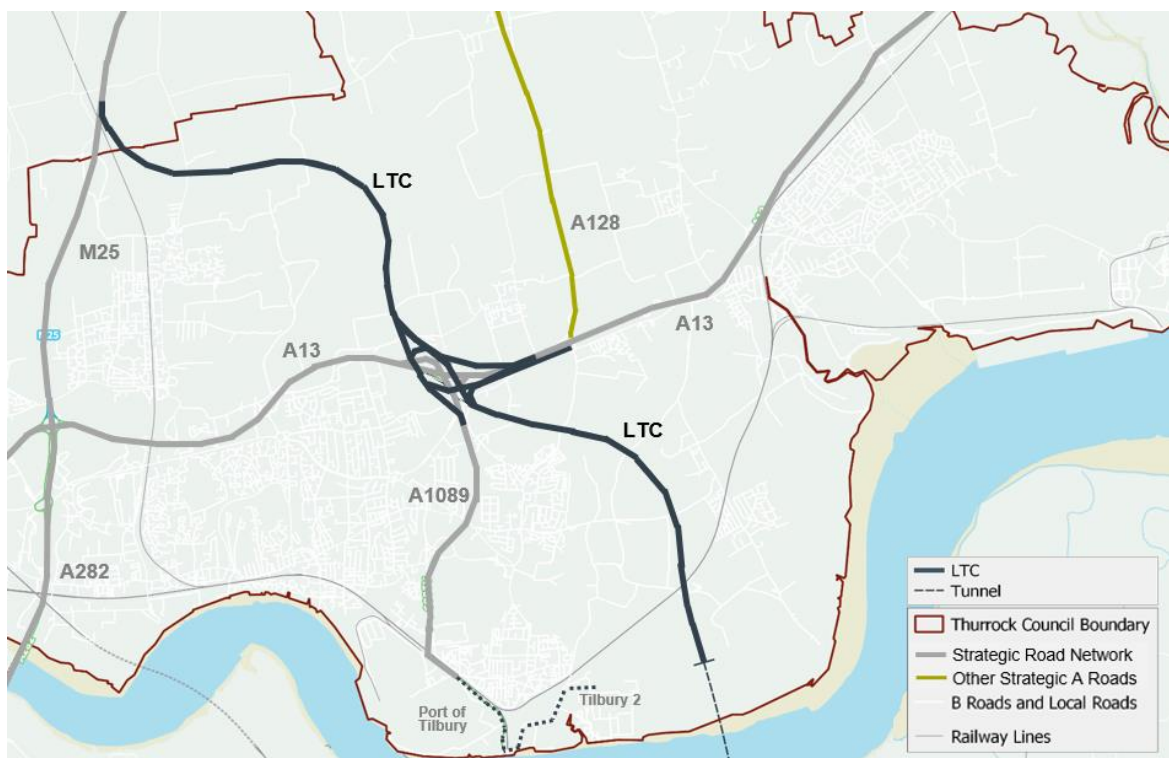
What is the LTC?

- 1.3 The proposed LTC Scheme is a nationally significant infrastructure project developed by Highways England. It consists of a tunnel crossing beneath the Thames to provide additional strategic capacity across the Thames Estuary.
- 1.4 The LTC will have:
 - approximately 23km of new roads connecting the tunnel to the existing road network
 - three lanes in both directions with a 70mph speed limit (with the exception of the southbound section from the M25 to the A13 that will be 2-lane only)
 - two 4km tunnels, one for southbound traffic, one for northbound traffic crossing beneath the river
 - a free-flow charging system
 - upgrades to existing roads (M25, A2 and A13) where the LTC meets them

LTC Configuration within Thurrock

- 1.5 Within Thurrock, whilst the alignment cuts directly across the area, the current proposals incorporate relatively limited interactions with the current road network.
- 1.6 The A13 junctions with the A1089 and A128 will be reconfigured to incorporate some additional movements to and from the LTC, but even these will be limited in scope, and will restrict some local traffic movements (discussed further in the sections below).
- 1.7 Figure 1.1 provides an overview of the general LTC Scheme alignment within the Thurrock area, including the configuration of the proposed junction with the A13.

Figure 1.1 LTC Alignment within Thurrock



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Thurrock's Position

- 1.8 Whilst it is recognised that the LTC Scheme may bring a range of strategic transport connectivity benefits to the South East of England and South Midlands, a range of limitations have been identified within the current configuration of the scheme that will negatively affect the Thurrock area.
- 1.9 As set out within their 2018 Statutory Consultation Response¹, Thurrock Council considers the current LTC Scheme does not meet several national and Highways England strategic policy tests and scheme objectives, including the delivery of economic growth and achieving sustainable local growth within the Thurrock area. Furthermore, the LTC Scheme is inconsistent with the housing and development potential for Thurrock and further engagement is required to assess the negative health and environmental impacts of the scheme, including noise, air quality and visual impact during both construction and operational phases.
- 1.10 From a direct transport perspective, the LTC provides limited additional connectivity for residents and businesses of Thurrock. The only means of accessing the LTC Scheme is through the reconfigured A13 junctions with the A1089 and A128, but even these will have constraints, e.g. restricting current access from the A128 to the A1089 southbound.
- 1.11 Throughout the construction phase there will be considerable disruption of local roads and Public Rights of Way across Thurrock. This will affect access to employment, education, health facilities and local services, as well as delay development opportunities.

¹ <https://democracy.thurrock.gov.uk/ieListDocuments.aspx?CId=134&MIId=5512>

- 1.12 Once operational, the LTC Scheme will result in the permanent loss of property and valuable development land, as well as giving rise to on-going blight to surrounding properties and land.
- 1.13 All of these issues will impact upon the prosperity of residents and businesses within Thurrock, both in terms of direct financial impacts but also across a wide range of economic and social criteria.

Research Aims

- 1.14 The purpose of the research is to support on-going assessments by Thurrock Council of the cost impact of the LTC Scheme proposals upon the local area. This will feed into representations by the Council to Highways England, as part of the formal Development Consent Order (DCO) process, as well as inform wider engagement processes to raise awareness of the issues with local businesses and communities across Thurrock.
- 1.15 At this stage, the research has been restricted to assessing the LTC Scheme proposals as they have been presented by Highways England. It does not consider potential amendments to the scheme to improve the impacts upon Thurrock's economy, local communities, environment, or future growth potential.

Study Methodology

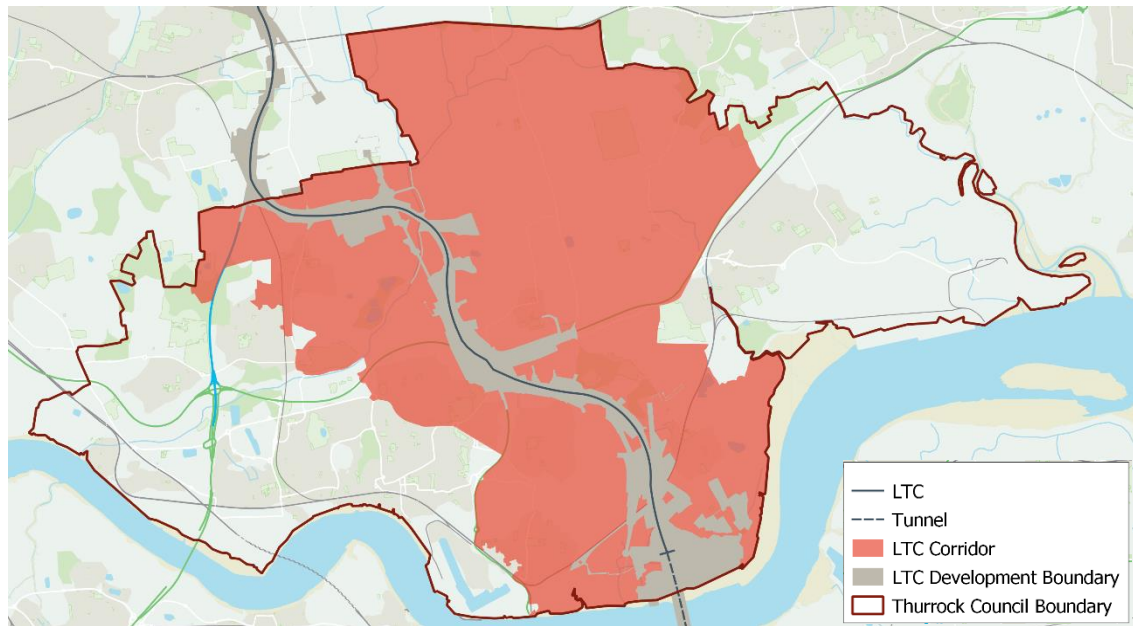
Overview

- 1.16 The study has adopted a range of quantitative and qualitative assessment methodologies, utilising a range of economic, societal, commercial and financial data. It has considered the potential economic, social and environmental costs to the Thurrock area arising from both the construction and operational phases of the LTC Scheme.
- 1.17 The construction phase has been assumed to commence in 2021, with a six-year duration. The operational phase would then commence from 2027.
- 1.18 As well as understanding the costs within the context of current economic and social activities across the borough, the assessment also focuses upon future year scenarios and how the LTC Scheme will impact over time and constrain growth potential.

Assessment Geographies

- 1.19 The economic, social and environmental characteristics of the Thurrock area, as well as the subsequent assessment of the costs of the LTC Scheme, have been considered at a range of different geographies. These have been systematically built upon from small-scale statistical geographies located directly around the proposed LTC Scheme and development area, through to borough-wide impact areas.
- 1.20 For the construction phase the geographies include:
 - Within the proposed LTC Development Boundary (see Figure 1.2)
 - Within the defined LTC Corridor (see Figure 1.2): this is an area surrounding the LTC Scheme alignment made up of the smallest available statistical geographies for which economic and social data is presented (Lower Super Output Areas);
 - Within hamlets/settlements, villages, and urban areas served by local roads and Public Rights of Way that will be affected by the construction of LTC; and
 - The borough as a whole.

Figure 1.2 LTC Development Boundary and defined LTC Corridor

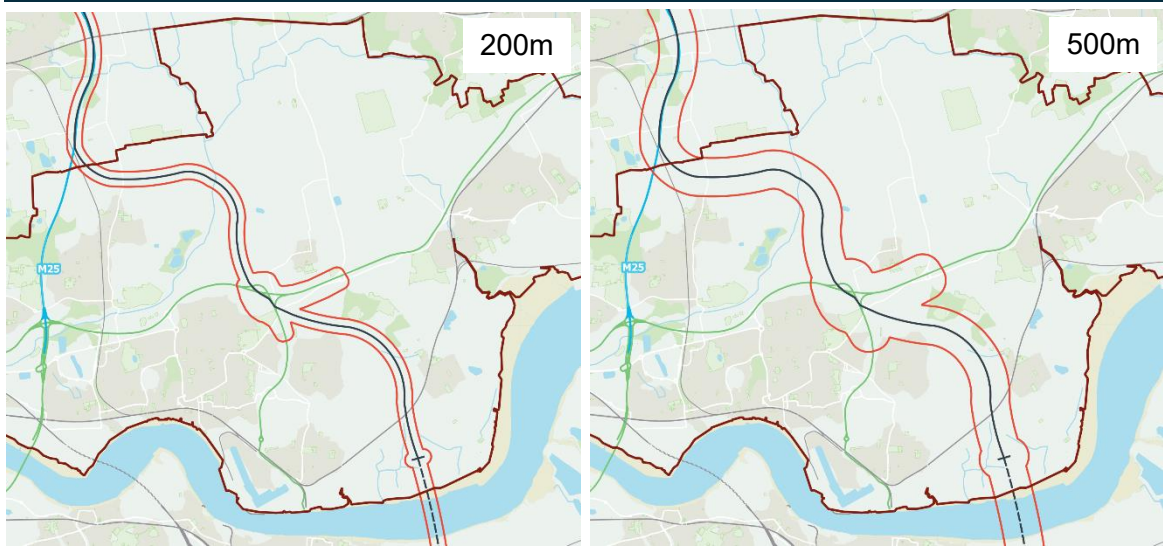


Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

1.21 For the operational phase the geographies include:

- Permanent land take for the LTC Scheme alignment (see Figure 1.1);
- 'Buffer zones' within 200m and 500m of the LTC alignment (see Figure 1.3);
- Within the defined LTC Corridor (see Figure 1.2); and
- The borough as a whole.

Figure 1.3 200m and 500m 'Buffer Zones' around LTC Alignment



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Methodological Approach

1.22 The key elements of the methodological approach are based around three phases of assessment process:

- 1) Gaining an understanding of current and projected future economic and social activity across Thurrock in a scenario without the delivery of the LTC Scheme. This includes:
 - Understanding current characteristics through reference to existing studies and available data sources
 - Forecasting future growth and development over time, through assessment of underlying trends and the Emerging Local Plan, and the definition of future year growth scenarios
- 2) Demonstrating the direct impacts of LTC Scheme during the construction and operational phases of the scheme, utilising transport modelling outputs, in terms of:
 - Local connectivity impacts (access and journey times)
 - Physical impact (amount of land take, severance)
 - Environmental impacts (levels of emissions, blight, and effect on habitats)
- 3) Translating these direct impacts into social and economic costs:
 - Applying HM Treasury Green Book, DfT TAG, MHCLG, DMRB guidance, as well as case study evidence, to robustly assess impacts;
 - Estimating the economic costs of increased travel times;
 - Forecasting the proportional loss in economic and social activity; and
 - Calculating environmental cost impacts.

1.23 This approach is considered to embody rigour throughout the assessment process, with a clear understanding of both the current and future context of Thurrock's economy and local communities; a demonstration of the direct impacts of the LTC Scheme; and then the application of robust government appraisal guidance techniques to quantify the economic, social and environmental costs.

1.24 Where feasible, the analysis seeks to quantify and monetise the identified costs, but for elements where there is an absence of robust mechanisms for doing so a qualitative assessment process is undertaken. In summarising overall potential impacts this applies a standardised assessment scale, outlined in Appendix D.

Study Limitations

1.25 It is recognised that there are a range of limitations with the extent to which the cost impacts of the LTC Scheme can be assessed at this stage. These limitations are based around two main aspects:

- 1) **Data availability from Highways England.** Whilst a range of information around the LTC Scheme has been made available, the level of detail is not always sufficient to accurately assess the likely direct and indirect cost impacts. Furthermore, there are a range of areas where further impact analysis is required from Highways England. Identified areas of data limitations include:

- GIS plans of the scheme alignment;
- Local traffic modelling outputs;
- Air quality assessment;
- Noise assessment;
- Flood risk assessment and mitigation;
- Health Impact Assessment; and
- Heritage impacts.

2) **Alternations to the LTC Scheme Plans.** We are aware that the LTC Scheme design and implementation plans continue to evolve. It was necessary to undertake this analysis upon a defined scheme, based upon the information available at a specific point in time.

On this basis, the assessment has been conducted based upon Thurrock Council's understanding of the proposed LTC Scheme at the end of October 2019. This definition of the LTC Scheme is set out in Chapter 2. It does not include some of the latest design changes released by highways England in January 2020.

1.26 It is also worth recognising that in conducting the assessment it has been necessary to assume that the baseline characteristics of Thurrock presented in Chapter 3 will remain largely unchanged. However, where it is possible to predict change, or to identify planned developments, these are considered as part of the assessment.

Research Phases

1.27 The core element of the research work has comprised three main phases of work, as follows:

- **Phase 1: Baseline Assessment:** To lay the basis for the assessment, the initial phase of the research involved the collation of existing information and evidence on the performance of the local economy, the characteristics of local communities and status of the environment across Thurrock. This included the forecast future social and economic evolution of the area and the potential for growth.
- **Phase 2: Assessment Framework:** The second phase of the research generated, and tested, the framework that captures the range of potential economic, social and environmental costs of the LTC Scheme within the Thurrock area. This has focused upon four key themes (described in detail in Chapter 5):
 - Business and Economy
 - Community
 - Environment
 - Growth
- **Phase 3: Cost Impact Assessment:** the final phase of the project then applied the assessment framework to quantify the magnitude of cost impacts of the LTC Scheme and set out the manner in which business and community activities will be affected.

1.28 The analytical processes adopted, and the subsequent outputs produced, are documented within this report, alongside an Executive Summary.

Report Structure

1.29 This report represents the main output from the study and sets out the findings from the research in the following sections:

- Section 2** *LTC Scheme:* provides a brief overview of the development of the LTC Scheme and defines the exact design iteration that has been applied within this study
- Section 3** *Area Context:* provides an overview of key economic and social characteristics of the study area
- Section 4** *Connectivity Impacts:* examines the direct impact of the LTC Scheme upon local transport provision and connectivity across Thurrock during both the construction and operational phases
- Section 5** *Impact Framework:* establishes the framework and approach for assessing the range of potential cost impacts of the LTC Scheme within the study area
- Section 6** *Business and Economy Impacts:* presents the analysis of potential cost impacts upon business operations and current and future economic performance
- Section 7** *Community Impacts:* presents the analysis of potential cost impacts upon the health, well-being and sustainability of local communities across the study area
- Section 8** *Environmental Impacts:* presents the analysis of potential cost impacts upon the local environment within the study area
- Section 9** *Growth Impact:* presents the analysis of potential cost impacts upon future growth potential within the study area
- Section 10** *Summary and Conclusions:* provides a summary of the key cost impacts and an overall conclusion on the extent of the cost impact of the LTC Scheme within study area

2. LTC Scheme

Scheme Development

Work undertaken by Highways England to date

- 2.1 Consideration of an additional strategic transport crossing of the River Thames has been a long-standing aspiration of the Department for Transport, with detailed work on-going since 2009. A preferred route was announced by the Secretary of State for Transport in 2017, identified as tunnel under the River Thames east of Grays. This was subject to statutory consultation in 2018.
- 2.2 Appendix A provides a summary of the overarching scheme development process and the evolution of the scheme specifications.

Defined Scheme and Assessment Assumptions

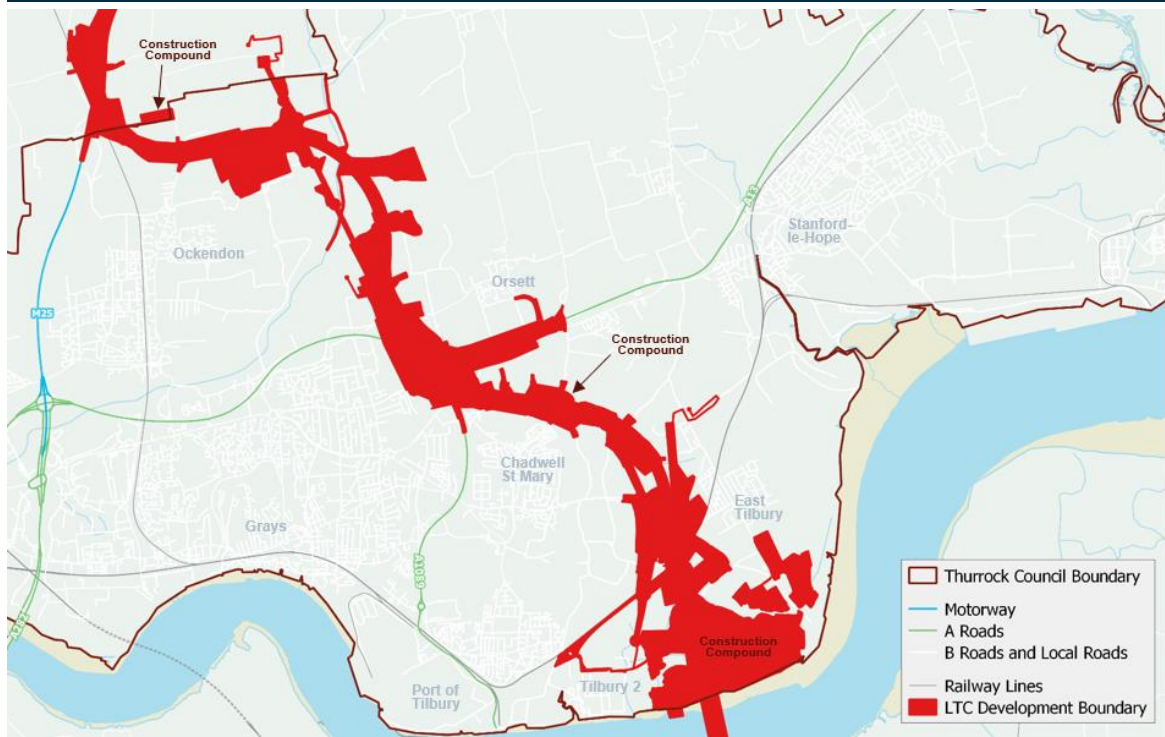
- 2.3 The analysis contained within this report is based upon Thurrock's understanding of the proposed LTC Scheme in Autumn 2019 and related to data made available by Highways England at that time. This specifically includes the following documents:
- The 2018 **Statutory Consultation Preliminary Environmental Information Report**² (PEIR), which provided some insights into the potential construction plans for the LTC, albeit these remain relatively high level at this stage
 - Lower Thames Crossing **Map Book 1: General Arrangements**, 2018, which provided detailed maps of the route and development boundary alignments
 - Lower Thames Crossing **Map Book 2: Land Use Plans**, 2018, maps on the permanent and temporary land take
 - Lower Thames Crossing: **Design, Construction and Operations** 2018, some high-level information on the development of the route, construction compounds, phasing etc
 - The Lower Thames Crossing **Project Update**, Summer 2019, high-level insights from the 2018 statutory consultation
- 2.4 The defined scheme elements that have formed the basis of the assessment of the construction and operational phases of the LTC Scheme are set out below.

Construction Plans

- 2.5 The LTC development boundary applied within the analysis is presented in Figure 2.1 and was provided by Highways England as part of the 2018 Statutory Consultation Process.
- 2.6 Whilst we are aware there have now been subsequent updates in January 2020, Highways England did not provide advanced copies to enable us to include it within the analysis.

² https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/LTC%201%20PEIR%20Volume%20One.pdf

Figure 2.1 LTC Development Boundary (as applied within study analysis)



Source: Hatch Regeneris replication of Highways England boundary from the 2018 Statutory Consultation. Contains OS data © Crown copyright and database right 2019

2.7 The following additional information forms the basis of the assessment of the construction phase:

- LTC Construction Phase will commence in 2021 and will be completed within a six-year period;
- There will be three construction compounds to the north of the River Thames. The main one will be located around the proposed tunnel portal location between Tilbury and East Tilbury. A second will be located off the Brentwood Road to the north east of Chadwell St Mary. The final compound is located just outside the Thurrock boundary to the north of Ockendon and in close proximity to where the LTC will join the M25 (*Source: PEIR*)
- There will be around 11,700 monthly HGV movements going to and from the three construction compounds. In addition, there are estimated to be around 1,900 construction workers located to the north of the River Thames, with around 800 of these working on the Tilbury construction compound. (*Source: PEIR*) The implications of additional traffic movements on local roads during the construction phase is examined within Section 4.
- A number of local roads within Thurrock, that currently cross the proposed LTC alignment, will be subject to disruption during the LTC construction phase. (*Source: PEIR*). The extent to which individual routes are impacted is explored within Chapter 4.
- All Public Rights of Way (PRoW) and tracks that currently cross the proposed LTC alignment will be closed during the LTC construction phase. (*Source: PEIR*) The routes affected are set out within Section 4.

Operational Configuration

- 2.8 Figure 2.2 presents the LTC scheme alignment that has formed the basis of this cost study assessment. It is based around the LTC scheme defined within Highway England's 2018 statutory consultation, with the exception that it excludes the Rest and Service Area, and associated junction, at East Tilbury that were proposed at that time.

Figure 2.2 LTC Alignment in Thurrock (as applied within study analysis)



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 2.9 The following additional information forms the basis of the assessment of the operational phase:
- The only direct interaction of the LTC Scheme with the Thurrock highway network will be at the reconfigured A13 junctions with the A1089 and the A128 (*Source: Highways England Route Plans*). The implications of this reconfiguration are examined in Section 4 but include restricted movements from the A128 to the A1089, as well as limitations in the way in which the LTC can be accessed.
 - All local roads affected during the construction phase will be reinstated via bridges or underpasses across the LTC Scheme, with some minor re-alignments. The exception will be Hornsby Lane, which will be closed to through traffic movements, but will retain access to local properties. Some other access arrangements to local properties will also be subject to minor alterations where local roads are required to change alignment to pass over the LTC scheme. (*Source: PEIR*).
 - The majority of PRow and tracks affected during the construction phase will be reinstated, via overbridges or underpasses, although a number of them will be subject to diversions (*Source: PEIR*). The implications of these changes are examined in Chapter 4.

Scheme Revisions

- 2.10 For the avoidance of doubt, the assessment does not include any subsequent revisions to the proposed LTC Scheme published in January 2020 as part of the Supplementary Consultation process.
- 2.11 This includes revisions to the proposed layout of the LTC junction with the A13; changes to the overall alignment; changes to the development boundary; and changes to the construction plans and number of construction compounds.

Scheme Variations

- 2.12 Thurrock Council has advocated for alternative access arrangements from the local Thurrock highway network to the LTC Scheme. This includes support for the Tilbury Docks Link Road, from a junction to the north of the proposed tunnel portal, as well as additional junctions around Chadwell St Mary and to the east of Ockendon to support potential future growth and development.
- 2.13 Whilst none of these proposals are included within current Highways England plans, there have been discussions between Thurrock Council and Highways England around including 'soft provision' within the design to enable junctions to be constructed at a future date.
- 2.14 For the purposes of the analysis included within this report, these potential scheme variations have not been included.

3. Study Area Context

Key Features of the Study Area

Current Transport Network in area of LTC

- Strategic Road Network focuses around M25 and A13, with A1089 spur providing access to Port of Tilbury. The A128 is also an important connector from Basildon.
- Around 16 local roads or tracks currently cross the proposed LTC alignment and provide connectivity between urban areas and local villages / hamlets.
- The bus network is focused around connections to and from Grays, with nine services crossing the area potentially affected by LTC, at five specific points.
- There is an extensive cycling and PRow network across the area with up to nine cycle routes and 20 PRow / tracks crossing the area potentially affected by LTC.

Business and Economy

- The local economy has been performing well and shown strong growth over last 5 years, but vacancy rates for industrial, office and retail remain higher than the South Essex average.
- Around 2,200 businesses (employing 12,500 workers) are located within the direct corridor around the LTC alignment.
- Across the wider Thurrock economy, the Transport and Logistics sectors are particularly specialist; however, there are aspirations to diversify and grow a number of 'opportunity sectors', including the creative industries and environment and energy sector.
- There have been investments from major organisations into Thurrock in recent years, including London Gateway DP World and the Tilbury2 port development. This recent investment has delivered a large number of jobs, although further investment could secure a higher proportion of skilled jobs in the area.

Community

- Around 57,300 residents are located within the direct corridor around the LTC alignment. Population growth has been higher than the South Essex average over the last 5 years.
- Thurrock has a slightly lower economic activity rate than the comparator areas and a higher unemployment rate. Thurrock residents are also overrepresented in lower skill level occupations, which reflects the nature of prominent industries in the area. The focus on diversification of the economy and growth in sectors such as the creative sector will provide residents with an opportunity to upskill and access new employment opportunities. Recent investment in skills and training will also support this.
- Household income and levels of deprivation vary significantly across the borough. However, a third of the Lower Super Output Areas within the direct corridor around the LTC are within the top 30% most deprived in the country.
- Some areas of Thurrock struggles with significant health and wellbeing challenges, including obesity and Chronic Obstructive Pulmonary Disease, health inequality, social isolation and inadequate service provision. The Council's Active Travel and Health and Wellbeing strategies are working to improve the situation and reduce inequality.

Environment

- The area is characterised by a mosaic of landscapes, including coastal marsh, low-lying fenland, farmland and more developed urban areas.
- There is one designated Site of Special Scientific Interest, including Hangman's Wood and the Mucking Flat Marshes as well as one Special Protection Area/Ramsar.
- There are 18 air quality management areas across Thurrock where air pollution levels are likely to fall short of national targets, although none are directly within the LTC Corridor
- Thurrock is home to 17 scheduled monuments, ranging from forts to crop marks. Seven are likely to fall within the 200m buffer of the LTC.
- There are seven Conservation Areas in Thurrock. Three of these are likely to fall within the 200m buffer of the LTC Corridor.
- Three Grade II Listed Buildings are proposed for total demolition.
- Data on open space from the Ordnance Survey shows there are a number of open space sites in Thurrock. Provision of open space is spread across the borough but tends to concentrate around built up areas and communities.
- Within the direct LTC construction development boundary, there is an allotment, Children's Play Area and areas of semi-natural green space. The LTC is also likely to pass through/nearby to cycle routes, Coalhouse Fort and golf courses.

Introduction

- 3.1 This chapter examines the current transport, economic, social, and environmental context of Thurrock and the areas directly around the proposed LTC alignment. It provides the baseline characteristics that have been used to analyse the potential impact of the LTC in Thurrock.
- 3.2 The analysis focuses upon the range of geographies set out in Chapter 1, with data presented at for small statistical areas within the LTC Corridor; as well as for key settlements, villages, towns and urban areas within Thurrock; and, finally, for the borough as a whole. Where relevant, comparisons are made with data available for South Essex and Essex.
- 3.3 To understand the characteristics of the LTC Corridor and borough as a whole, both social and economic datasets have been used focusing on the following themes:
 1. **Business** - jobs, sectors, business and enterprise.
 2. **Community** - population, health, deprivation, labour market conditions, housing access, prosperity
 3. **Environment** – air quality, wildlife sites, heritage sites, access to open space
 4. **Growth** – Thurrock's Emerging Local Plan and housing need assessments
- 3.4 In addition, current accessibility levels in Thurrock, by all modes of travel, have been assessed through analysis of the existing transport network. This has particularly focused upon connections that will either cross over the proposed LTC Alignment or will be affected by either the construction or operational phases of the scheme.
- 3.5 This data provides a baseline understanding of characteristics of Thurrock, both now and with future growth, in the absence of the LTC Scheme.

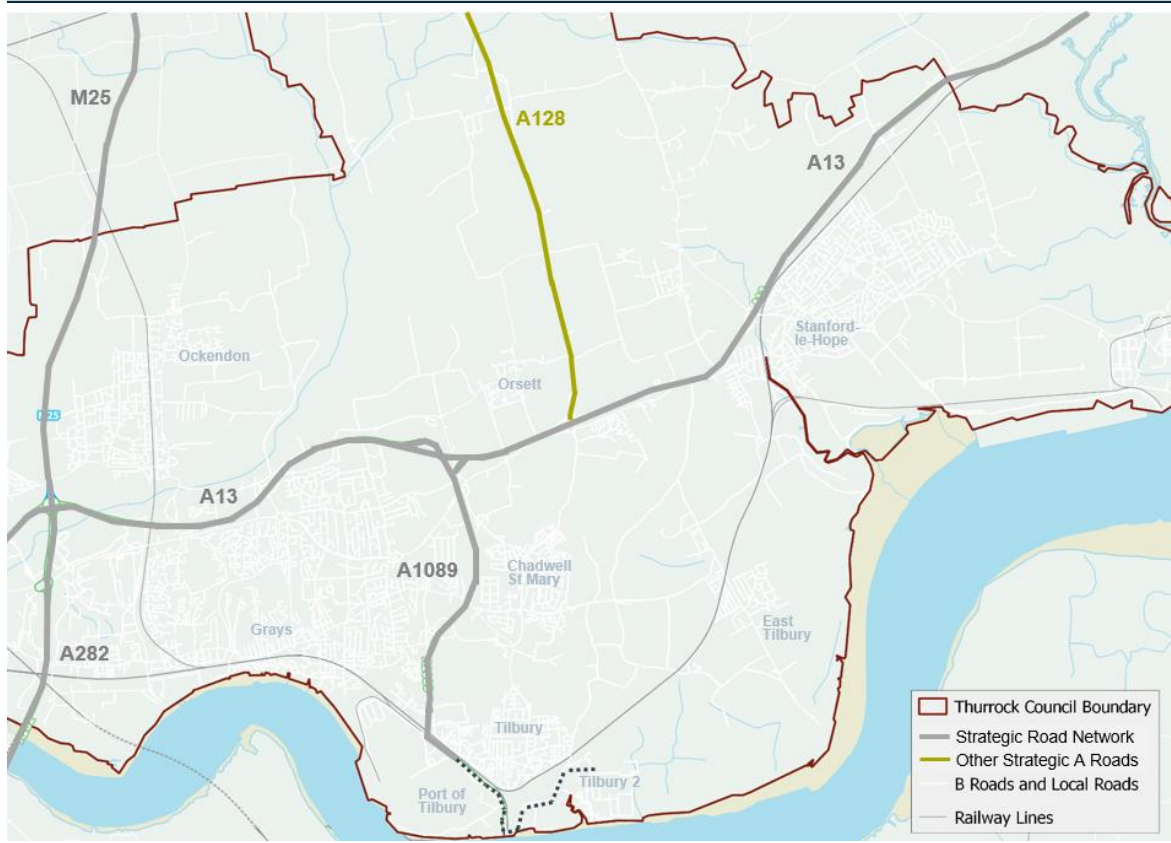
Current Transport Network

Highway Network

Strategic and Major Roads

- 3.6 The current Strategic Highway Network (managed by Highways England) across Thurrock comprises the M25, that leads into the A282 / Dartford Crossing, the A13 from the western borough boundary to the A1089, as well as the A1089 connecting to Tilbury, at the A1089 Asda roundabout and onward connection through to Port of Tilbury gate entrance and Tilbury2.
- 3.7 In addition, the A13 to the east of the A1089 represents part of the Major Road Network of the borough, along with the A128, which connects from the A13 up towards the A127 and Basildon.
- 3.8 The combined strategic and major road network is depicted in Figure 3.2 below.

Figure 3.1 Strategic and Major Road Network



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

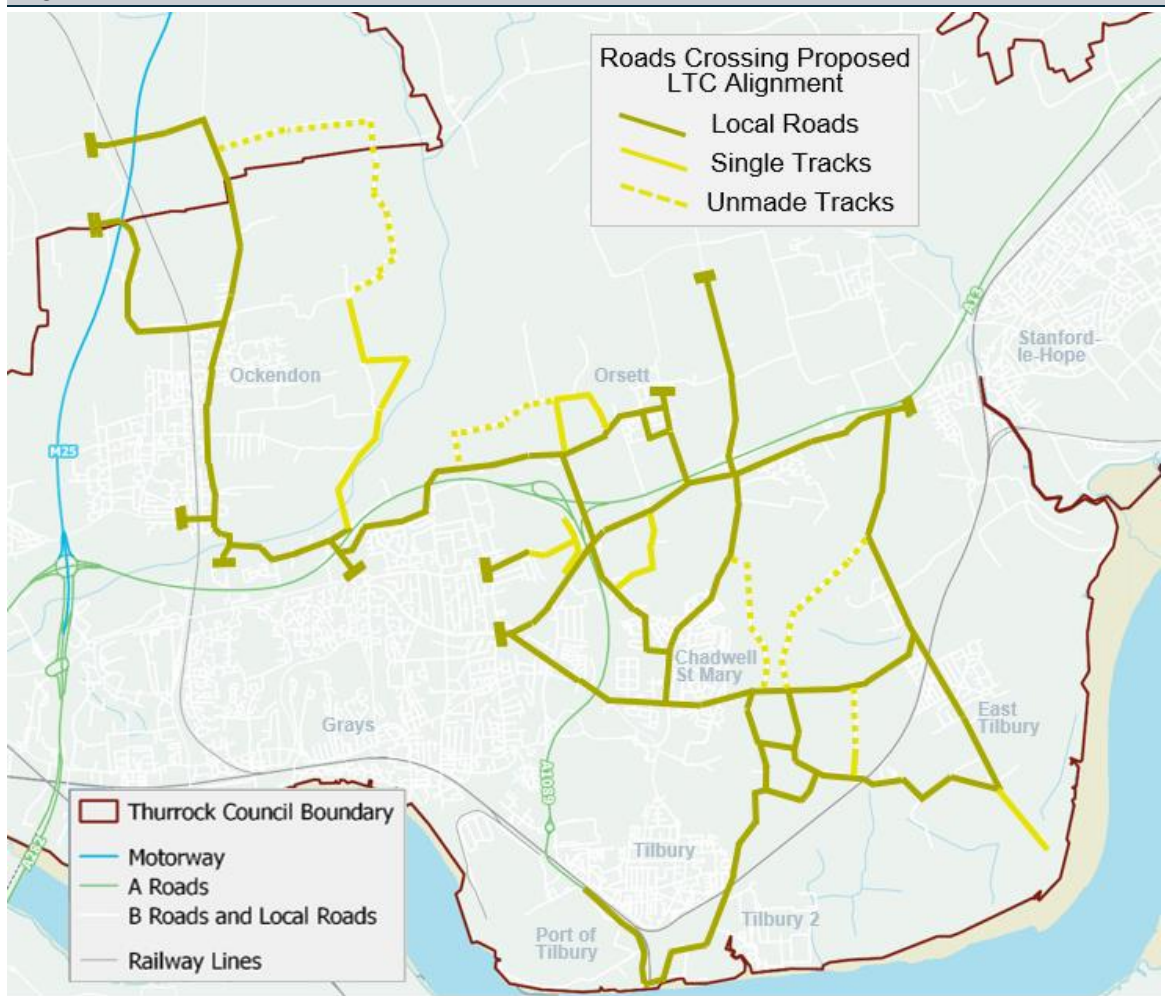
- 3.9 If constructed, the LTC Scheme will represent a significant additional element of strategic road network across the borough, partially connecting with the A13 and A1089 within the Thurrock, as well as the M25 to the northeast of the borough boundary.

Local Highway Network

- 3.10 There is an extensive network of local roads across Thurrock, providing connections to, from, and across local centres. Whilst many of them would not be directly impacted upon by the LTC Scheme, there are a number of roads that directly cross the proposed LTC alignment.

- 3.11 These consist of local connector roads, single track lanes, as well as some un-made tracks (nearly all of which are public rights of way), and they are highlighted in Figure 3.3.

Figure 3.2 Local Roads within the LTC Corridor



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 3.12 We have identified 16 local roads, or tracks, that will potentially be impacted by the LTC Scheme. These are described below (ordered from south of the borough to the north).

- **Coopers Shaw / Low Street Lane / Station Road**
A local east-west road link from West Tilbury across to East Tilbury (south), crossing the 'Tilbury Loop' rail via a level crossing to the east of Low Street. This route offers secondary access to East Tilbury over the rail level crossing to c. 2,100 homes.
- **Low Street Lane (partial track)**
A minor road providing access to properties from the southern end but no longer permitting through movements to the north for vehicular traffic.
- **Muckingford Road**
A key local east-west link between the centres of Chadwell St Mary to Linford / East Tilbury (north), connecting into East Tilbury Road to the north of East Tilbury Rail Station.
- **Hoford Road (track)**
An untarmacked lane from Muckingford Road to Buckingham Hill Road, providing access to Mill Farm and Clearserve Landfill and Recycling
- **High House Lane (track)**
An unmade lane from Muckingford Road to Brentwood Road, providing access to Mill Farm

- **Brentwood Road**
A local north-south link from Chadwell St Mary to the A13 Orsett Cock roundabout, also providing access to A1013 Stanford Road and the A128 Brentwood Road. This is a vital north / south link running parallel to the A1089 from A13 to Tilbury.
- **Hornsby Lane**
Single track, tarmacked lane connecting Orsett Heath village up to Stanford Road (A1013) and providing access to Heath Place.
- **Stanford Road (A1013)**
A major local link (northeast-southwest) from A13/A128 Orsett Cock Junction, across the A1089 (but without interchange), and into Little Thurrock and on into Grays. This is a secondary east/west route parallel to the A13, linking Grays to Orsett Cock / A128.
- **Heath Road**
A local north-south link from A1013 Stanford Road down into Orsett Heath village
- **Baker Street**
A local north-south link from A1013 Stanford Road, under the A13 (with no interchange) and into Baker Street village.
- **Gammonfields Way**
A local access off the A1013 Stanford Road providing access to a traveller site
- **Long Lane (track)**
A single track, tarmacked lane connecting Gammonfields Way to Milford Road
- **Stifford Clays Road**
A local east-west link that originates from Stifford Clays and passes under the A13 (with no interchange) and turns east to head into Baker Street village.
- **Green Lane (track)**
An untarmacked east-west track from Stifford Clays Road to Fen Lane (Orsett Village)
- **Unknown (track)**
An untarmacked north-south lane from Veolia Landfill Access Road to Fen Lane (Fen Farm)
- **North Road (B186)**
A key local north-south link from A127 to South Ockendon Chafford Hundred and Lakeside Basin

3.13 These local routes are particularly important connectors to a number of the villages and hamlets around Thurrock, including East Tilbury, Linford, Low Street, West Tilbury, Orsett Heath, Baker Street, and Orsett. They also provide important links to the urban areas of Tilbury, Chadwell St Mary, Chafford Hundred and Ockendon.

Traffic Flows

3.14 High level traffic flow data on the current transport network is available via Highway England's Strategic Transport Model. The model replicates existing traffic flows across the strategic transport network and key local routes and enables forecast for future years, based upon predicted traffic growth and committed road schemes. It is known, however, not to include up-to-date data on freight movements, an important element of traffic across the Thurrock network.

3.15 Figure 3.4 provides an overview of the type of traffic flow data available.

Figure 3.3 2026 Forecast Traffic Flows – AM Peak Hour



Source: Stantec

3.16 The model provides key flow data along local routes potentially impacted by the LTC Scheme. Using data from the AM, Inter-peak, and PM peak models, we have estimated the flows on these key routes, and these are presented in Table 3.1.

Table 3.1 Forecast Traffic Flows on key Local Routes

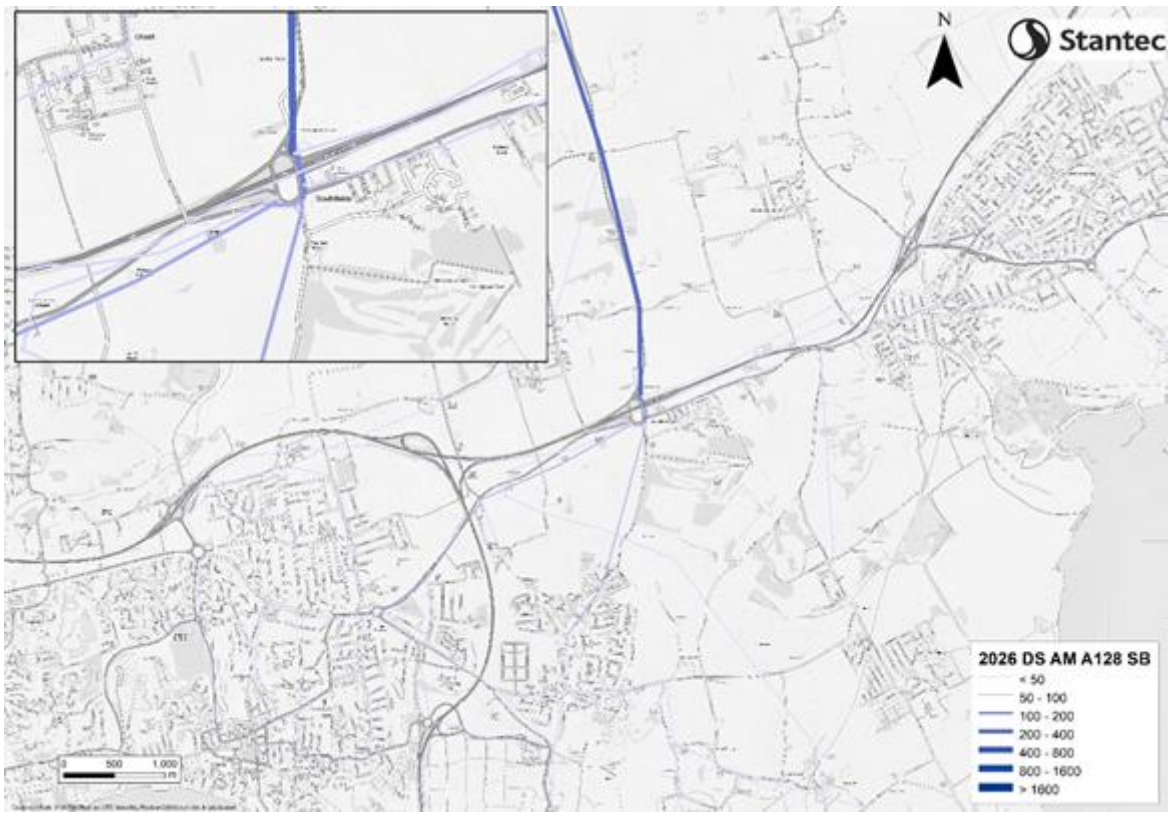
Route	Forecast 2026 Daily Traffic Flow
Station Road	3,350
Muckingford Road	750
Brentwood Road	9,600
Stanford Road	9,400
Baker Street	2,250
Heath Road	3,350
Stifford Clays Road	4,750
North Road	12,450

Source: Stantec

3.17 This indicates that many of the local routes have reasonably high levels of daily traffic flows and that any disruption to these routes would affect a considerable number of journeys and individuals.

3.18 Along with individual traffic flows on specific roads, the transport model is also able to determine flows along particular combinations of routes. Figure 3.5 provides outputs from the model showing the southbound flow of traffic from the A128 and what routes these vehicles continue on to.

Figure 3.4 Analysis of Southbound Traffic Flows along the A128



Source: Stantec

- 3.19 Given the proposed reconfiguration of the A13 junction, this is particularly useful information to understand the level of traffic that currently travels from the A128 to the A1089 – a movement that would be prevented under the current LTC proposals. The outputs from the transport model forecasts that around 1,100 vehicles will make this movement by 2026 and so would be directly affected by the reconfigured A13 junction.

Public Transport Network

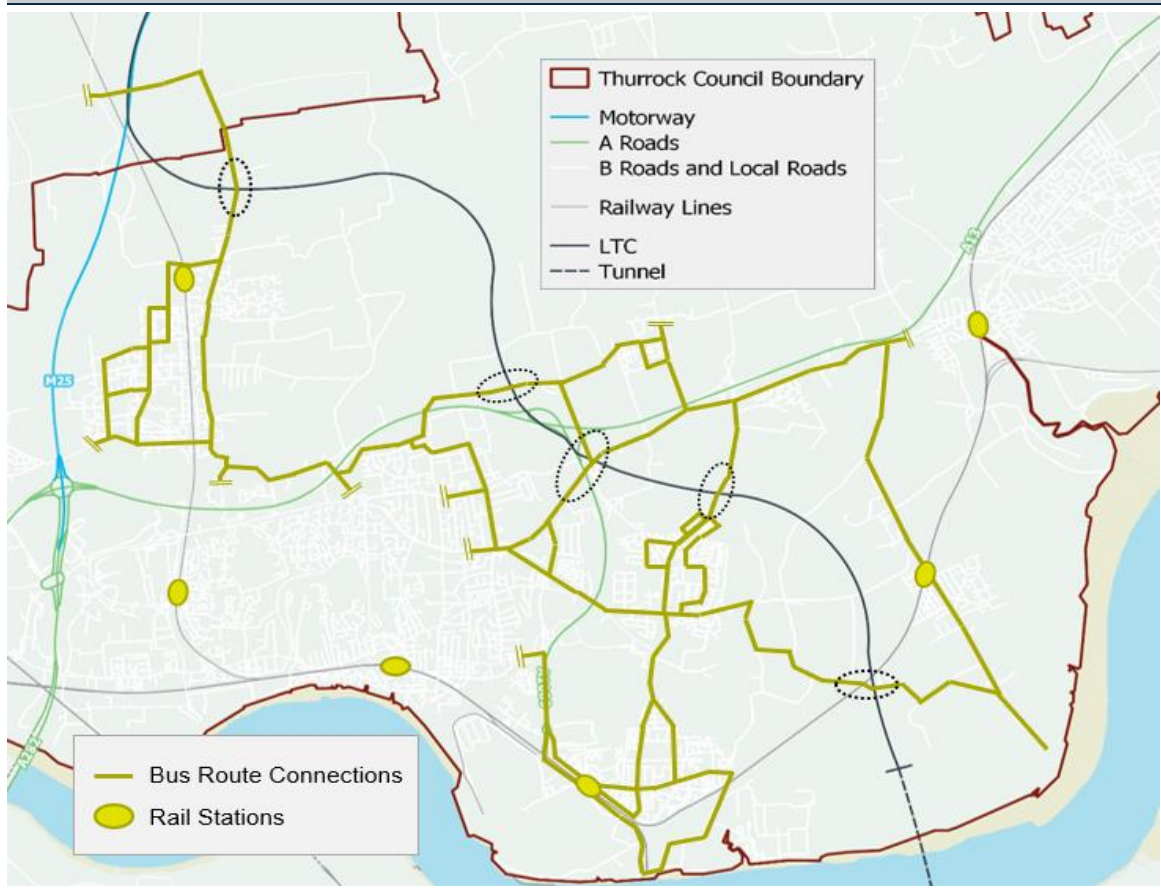
Local Rail Provision

- 3.20 Thurrock is served by two rail routes from Central London, one via Purfleet, and the other via Upminster, South Ockendon and Chafford Hundred. These provide connections to Grays Station, with the route then continuing east to Tilbury Town, East Tilbury and Stanford-le-Hope Stations. There are four peak hour train services from Stanford-le-Hope to Grays, reducing to a half hour service in the off-peak, which includes Saturdays and Sundays.
- 3.21 There are seven rail stations in Thurrock, with six within 5 kms of the proposed alignment of the LTC Scheme (see Figure 3.6). The LTC Scheme will cross over the rail line between Tilbury Town and East Tilbury Stations, to the east of Low Lane Village.

Local Bus Provision

- 3.22 Thurrock also has a network of bus provision, centred around services to and from Grays Town Centre and Lakeside. The routes that could be directly impacted by the proposed LTC Scheme are highlighted in Figure 3.6.

Figure 3.5 Public Transport Network in Thurrock potentially affected by LTC Scheme



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Nine bus routes run along five local highway routes that will be impacted upon by the LTC Scheme, including:

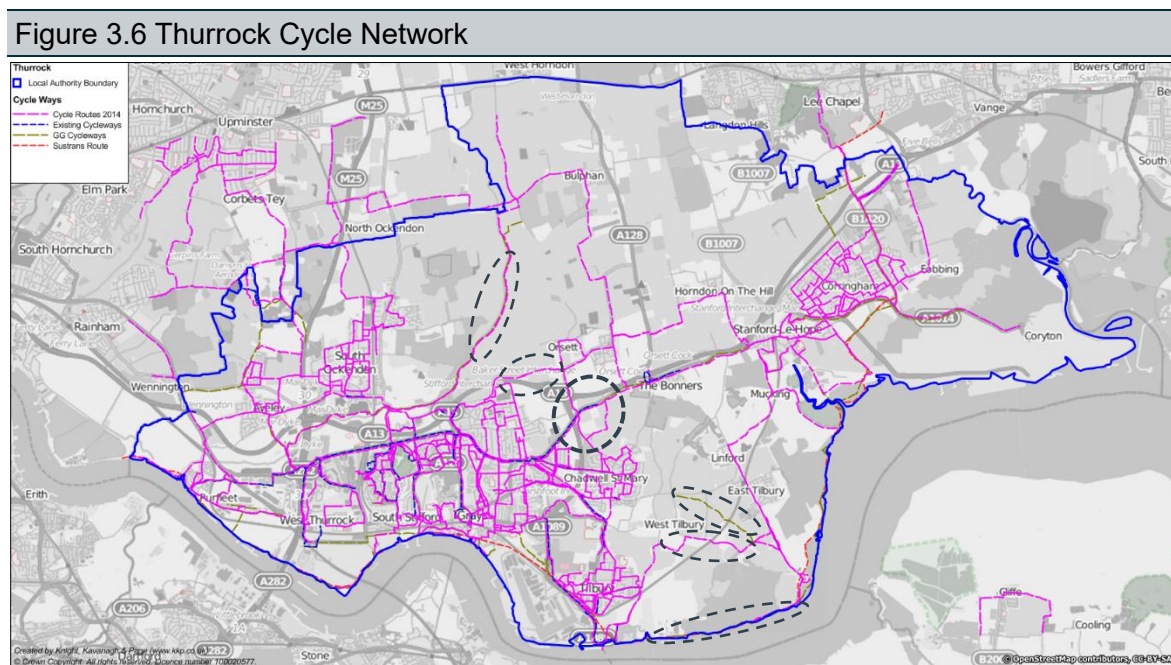
- **Route 12:** running east from Grays, through Chadwell St Mary and the eastwards along Linford Road before turning down Turnpike Lane and Rectory Road to serve West Tilbury. It then proceeds along Church Road, Low Street Lane and Station Road, crossing the 'Tilbury Loop' rail line before joining Princess Margaret Road and serving Coalhouse Fort. It then travels back up Princess Margaret Road to serve East Tilbury, Stanford-le-Hope, and on to Basildon Town Centre.
- **Route 11:** starting at either Purfleet Station or Aveley Usk Road, the service runs via Ockendon Station, Stifford Clays and Chadwell St Mary and the out along the Brentwood Road to Orsett Cock and then via Stanford Road and Rectory Road to Orsett Hospital. It then makes its way to Horndon-on-the-Hill and onto Basildon Town Centre.
- **Route 100:** running north east from Grays along Southend Road the service then travels along the A1013 Stanford Road to Orsett Cock and on to Stanford-le-Hope and then Basildon Town Centre.
- **Routes 200 and 201:** running east from Grays, out along the Chadwell Road and turning north along King Edward Drive, the service then travels along the A1013 Stanford Road and Baker Street to serve the village of Orsett and Baker Street. It then travels along Rectory Road back south to Orsett Cock and on to Stanford-le-Hope and then Basildon Town Centre. On Sundays only, the 201 service runs via Stifford Clays and along Stifford Clays Road across to Orsett.

- **Route 265:** running north east from Grays along Southend Road the service then travels along the A1013 Stanford Road and then turns north up Baker Street to serve the Baker Street and Orsett, before continuing north to Bulphan and West Horndon.
- **Route 269:** running north from Grays via Stifford Clays, South Ockendon, and Ockendon Station, the service then runs north along the B186 North Road to North Ockendon and on to Brentwood Town Centre
- **Route 99:** running north from Lakeside along the eastern side of South Ockendon and then north along the B186 North Road to North Ockendon and on to Upminster
- **Route 347:** running north from Ockendon Station along the B186 North Road to North Ockendon and on to Upminster.

Active Travel Network

Cycling

- 3.23 There is a network of cycle routes of different classifications across Thurrock, as shown in Figure 3.7.



Source: Knight, Kavanagh & Page.

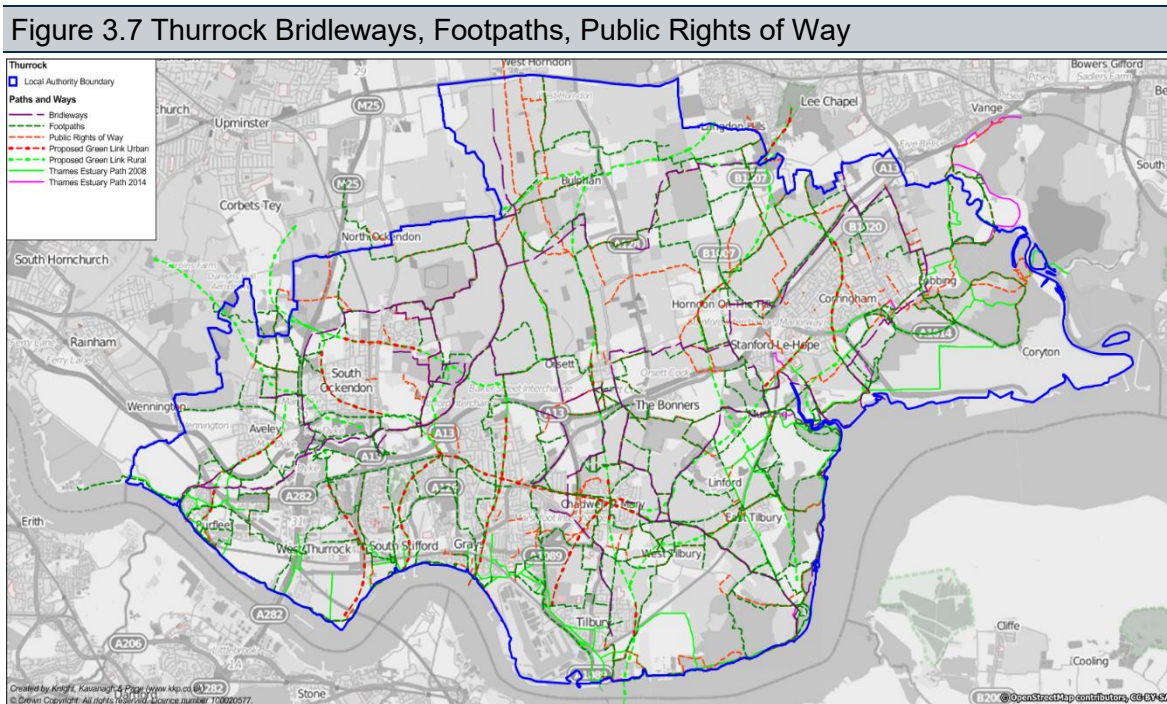
- 3.24 The National Cycle Network designates two routes within Thurrock.

- Route 13 incorporates three separate sections across Thurrock. The first two elements follow the river, from east to the west side of Grays, and then from, effectively, Tilbury Town Rail Station all the way round to Coalhouse Fort. The gap between these sections relates to the location of the Port of Tilbury. The final section runs from the southwest of Stanford-le-Hope across the southern side of the town and then north to Basildon Town Centre.
- Route 137 spurs off Route 13 and runs from Purfleet under the A282, to the south of Mar Dyke Interchange, and follows the Mar Dyke River to North Stifford, crosses over the A13, and continues east across Chafford Hundred through to Little Thurrock. This route will not be directly impacted upon by the LTC Scheme, although cyclists may continue up the A1013 Stanford Road towards Baker Street, Orsett, or Southfields and would, therefore, be affected by the scheme.

- 3.25 The A1013 and A1306 provide a link between Route 137 and Stanford le Hope urban conurbation via an adjacent shared route.
- 3.26 Other designated cycle routes that cross the proposed LTC alignment include:
- Station Road (from Low Street to East Tilbury)
 - Coal Road - Bridleways 63 and 58 (leading from Chadwell St Mary to East Tilbury)
 - Hornsby Lane
 - Heath Road
 - Baker Street
 - Stifford Clays Road
 - Bridleway 219 (along the Mardyke Valley)
- 3.27 All of these routes will be impacted during the proposed LTC construction phase, with the bridleways closed for prolonged periods and many of the roads also subject to disruption and potential closures. This is examined further in Section 4.

Walking / PRowS

- 3.28 There is an extensive network of bridleways, footpaths and Public Rights of Way (PRow) across Thurrock, outlined in Figure 3.8.

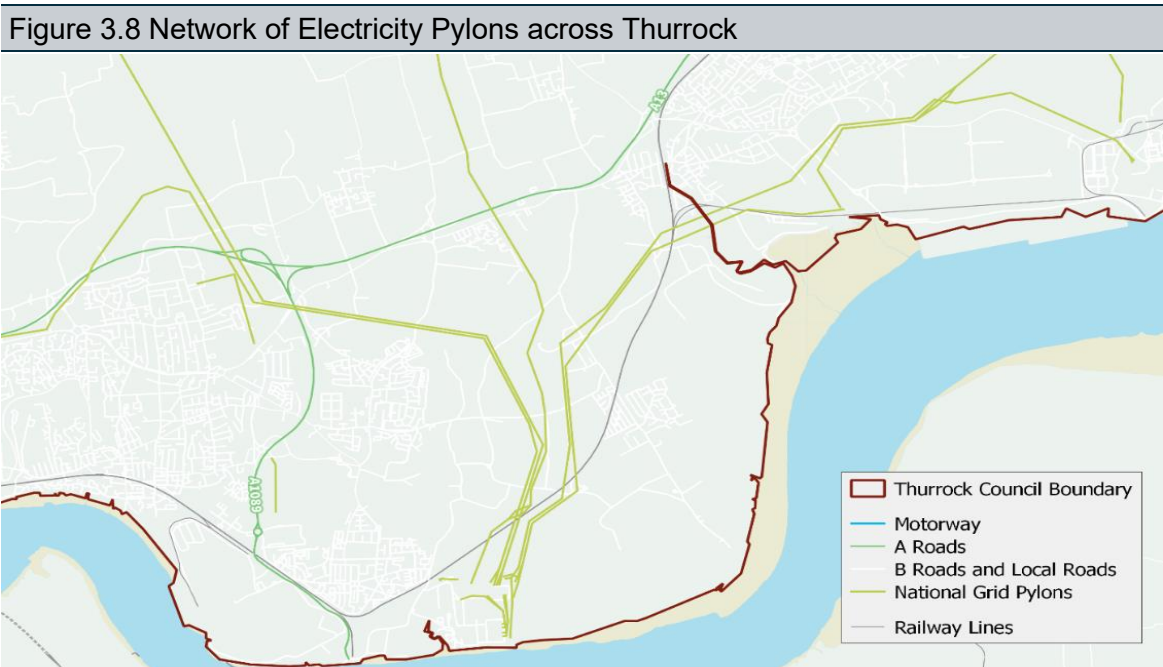


Source: Knight, Kavanagh & Page.

- 3.29 The LTC alignment will impact upon up to 20 routes, creating temporary severance during the construction phase and permanent diversions and blight once operational. This is examined further in Section 4.
- 3.30 FP14 is known locally as the Two Forts Way. It is also part of the Thames Estuary Path and is part of the proposed England Coastal Access route. This follows the Thames close to the proposed northern portal entrance. It is unclear at this time if the route would be directly affected during construction; it would however be subject to significant disturbance even if it were to remain open.

Electricity Pylons and Overhead Lines

- 3.31 Alongside the existing transport network across Thurrock, there is also an extensive corridor of electricity pylons that run from the site of the old power station at Tilbury, north towards the A13 before splitting along different routes. These pylons are in the same corridor as the LTC alignment and so add to the infrastructure that will impact upon the local environment. Figure 3.9 provides an overview of the corridor of pylons.



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Committed and Planned Transport Interventions

- 3.32 There is currently one committed transport scheme in development within the study area. Work is underway to widen the A13 from 2 to 3 lanes in both directions between the A128 (Orsett Cock roundabout) and the A1014 (The Manorway, Stanford-le-Hope).
- 3.33 When complete, the widened section will join with the existing 3-lane section of the A13, west of the A128, providing a continuous 3-lane road in both directions between the M25 and Stanford-le-Hope.
- 3.34 Feasibility work has also been undertaken to enhancements to the A1013 Treetops roundabout to the west of Gammon Fields.
- 3.35 Future capacity improvements are also likely to be required to the the A13/A1014 junctions, particularly in the context of the LTC scheme.



Business and Economy

- 3.36 There are currently estimated to be around 12,500 people employed in the LTC Corridor in 2,200 businesses. This means the Corridor is home to 18% of total employment in Thurrock and 34% of Thurrock's business base.
- 3.37 The Corridor's economy has been performing well and has experienced strong growth in recent years. Between 2013 and 2018 there was a 29% increase in employment, which is significantly higher than any of the comparator areas (see Figure 3.10). The business base has also grown very strongly (+43%), increasing the number of businesses by around 660.

Figure 3.9 Employment and Businesses

	Employment		Businesses	
	No. (2018)	% change 2013-18	No. (2019)	% change 2014-19
LTC Corridor	12,500	+29%	2,200	+43%
Thurrock	68,500	+13%	6,500	+42%
South Essex	303,000	+8%	32,500	+23%
Essex	611,000	+12%	65,500	+18%
England	26,841,500	+10%	2,360,800	+21%

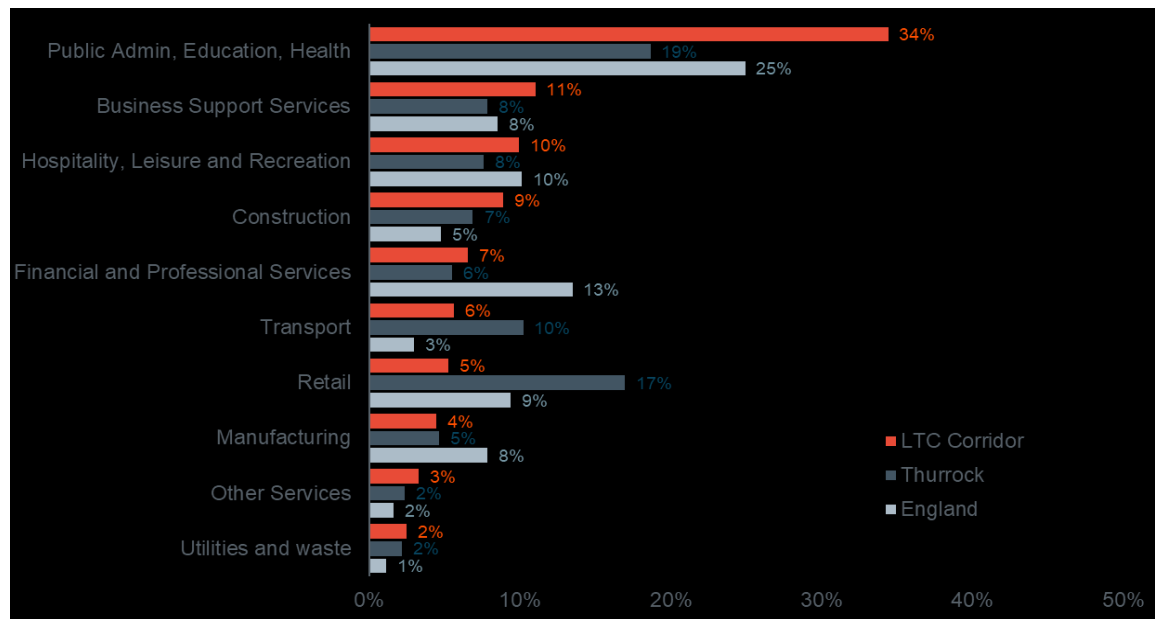
Source: BRES 2018, 2013; UK Business Count 2018, 2013

- 3.38 As highlighted in the 2015 Economic Profile of Thurrock, the strong economic links with London and transport connections to the south east of England are a key driver for this strong growth.

Sector Profile

- 3.39 As shown by Figure 3.11, employment in the Corridor is very heavily skewed towards public admin, education and health, with 34% of all jobs in the Corridor falling within these sectors compared to 19% across Thurrock's economy and 25% in England. This is likely to be a result of the presence of large public sector employers in the Corridor, including the only hospital in the borough - Orsett Hospital.
- 3.40 The reliance on sectors such as these, as well as business support services and hospitality, leisure and recreation, means the Corridor's economy is heavily service focused, with jobs tending to be lower value and often lower skilled as a result.

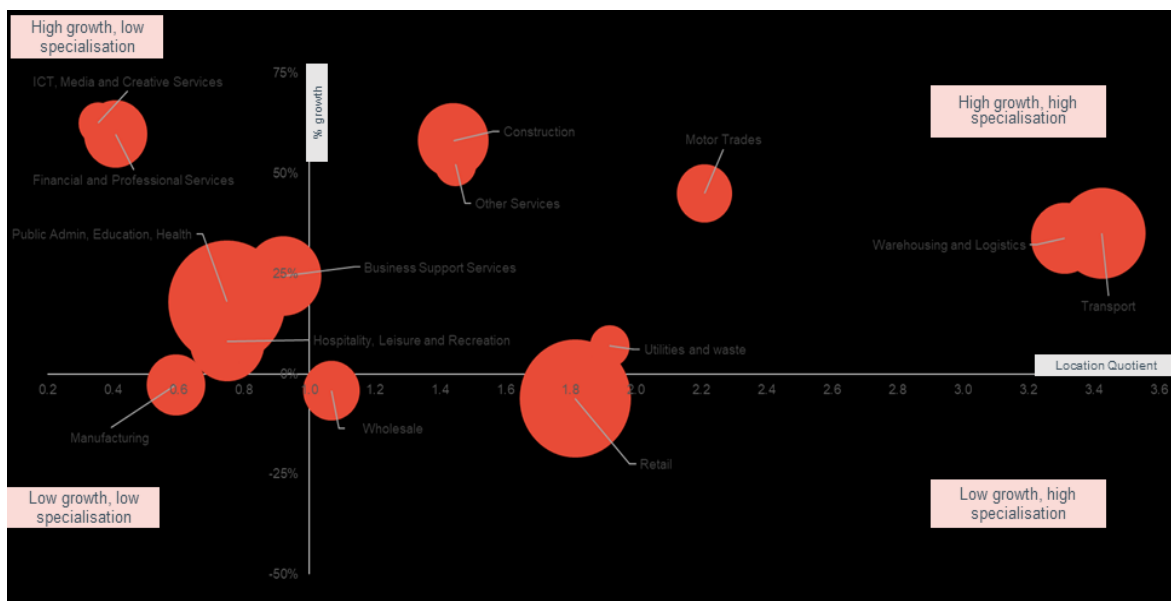
Figure 3.10 Top 10 Employment Sectors



Source: BRES 2018

- 3.41 Across the wider Thurrock economy, the Transport and Logistics sectors are prominent. Figure 3.12 shows there is a significant sector specialism in these sectors and that they've been growing in the last five years. This is likely to be due to the presence and growth of the Port of Tilbury and London Gateway ports.
- 3.42 However, given the nature of activities, these sectors tend to employ lower skilled workers and offer lower value jobs which are often lower paid and less secure.

Figure 3.11 Sector Size, Specialisation and Growth, Thurrock



Source: BRES 2018, 2012

- 3.43 Given the reliance of Thurrock's economy on a few key sectors, the aspiration for economic growth in Thurrock includes sector diversification and a growth in higher-value, knowledge

intensive employment. As a result, a number of sectors have been highlighted as 'opportunity sectors', including the creative industries, environment and energy sector and business services.

Enterprise and Investment

3.44 Whilst entrepreneurship is currently below the national average in Thurrock, there has been considerable growth in the business base in recent years. In particular, Thurrock has a strong SME base compared to some of the other of authorities in south Essex. As shown in Figure 3.13, employment in SME's accounted for just under half of total employment. This could be a result of the relatively large amount of venture capital investment into SME's in recent years.

	Thurrock	Basildon	Castle Point	Brentwood	Southend	Rochford
Number of SMEs	5,710	6,925	3,250	4,180	6,695	3,510
SME Employment	27,726 (around 43% of total employment)	38,032	13,128	19,097	31,505	16,075
Number of new businesses starting in 2016	1,528 (27% of total)	1,277 (18% of total)	567 (17% of total)	722 (17% of total)	1,316 (20% of total)	519 (15% of total)
5-year survival rate	42%	40%	41%	44%	38%	44%
Venture capital investment into SMEs	£2.5 million	-	-	£1.46 million	£0.95 million	-

Source: State of Small Business, Nesta 2016

3.45 In addition to SME investment, there have been a number of investments from major organisations into Thurrock in the last 1-2 years, alongside on-going expansion plans, including:

- New distribution centres including Amazon, UPS, Made.com, Lidl
- High House and the National Opera House
- Investment in Tilbury Port includes a CO2 terminal for Nippon gases and a new rail connected distribution terminal handling international steel distribution
- Investment also confirmed for Tilbury2
- Investment plans for LGDP World

3.46 However, these high-profile investments into Thurrock have predominantly focused on the logistics and port sectors which are already dominant in the area. As stated in the Thurrock Economic Growth Strategy, whilst this investment has delivered a high number of jobs, a significant share of these are low skill. If economic growth in Thurrock is going to fulfil the

aspiration for diversification and new types of employment, investment into the area will need to diversify.

- 3.47 Vacancy rates can give an indication of the economic performance of an area and attractiveness to investors. As shown in Figure 3.14, vacancy rates for Thurrock are slightly higher than the south Essex average, however the office vacancy rate is significantly higher at 5.5%.

	Thurrock	South Essex
Industrial	2.2%	2.0%
Office	5.5%	1.4%
Retail	2.3%	2.0%

Source: Co Star 2019

- 3.48 There is also significant local variation in town centre vacancy rates across the main town centres and retail areas in Thurrock. In particular, Tilbury and Stifford Clays have very high vacancy rates, suggesting challenges with the high street and retail sectors.

Centre	% Town Centre Vacancy 2018
Grays Core	8.5
South Ockenden	10.6
Corringham	6.6
Stanford-le-Hope	10.0
Tilbury	18.3
East Tilbury	0.0
Chadwell St Mary	9.1
Little Thurrock	7.1
Stifford Clays	17.6
Chafford Hundred	0.0
Linford	0.0

Source: Thurrock Town Centre Health Check. Bold text indicates the vacancy rate is at or above the national average.

Key Local Businesses

Port of Tilbury

- 3.49 The Port of Tilbury is a key local business within Thurrock located to the west of the proposed LTC tunnel portal. It is a major employer within the area and serves markets across London and the South East, generating significant levels of transport movements to and from the site.
- 3.50 The port has multimodal transportation links by road, rail and barge. Three onsite railheads provide main line connections directly into London or on to the rest of the UK. The A1089, part of the Strategic Road Network, connects directly to the port and provides dual carriageway access to the A13 and on to the M25.

3.51 The port handles a varied set of cargoes spread across an estate in excess of 1,000 acres, with 5 million square feet of undercover warehousing and 20 acres of HGV parks. Some key services and metrics related to the port are as follows:

- An **annual throughput** of 16 million tonnes with an estimated value around £8.7 billion
- A **key local employer**, offering substantial apprenticeship programmes and has an award-winning **Logistics Training Academy**
- The **London Container Terminal**, the fourth largest in the UK, has an annual throughput of 500,000 units and ships to 96 ports and 50 countries worldwide
- Hosts 16 **ro-ro freight services** per week from Europe, including two daily ferries from Zeebrugge for P&O, a bi-weekly service serving Scandinavia, and weekly calls from Africa and South America.
- The historic **International Cruise Terminal** is a listed building and over 100,000 passengers travel through the terminal per year
- Plays a vital role in the **automotive sector** with over 100,000 cars moving through the port each year and the UK's only import centre for Hyundai vehicles
- The port plays a vital role in the UK **grain market** through the largest combined import and export grain terminal in the UK.
- The port has two **paper terminals**, making it a leader in the import and export of paper for short sea markets.
- Handles 750,000 tonnes of **bulk aggregates** and 2 million tonnes of **recycled products**
- Acts as a **gateway for major projects**, including the London 2012 Olympic Games, Thames Tideway Tunnel, the building of Canary Wharf and Crossrail
- Offers **heavy lift services** to a range of sectors handling everything from generators, wind turbines, tunnel boring machines to modular units

Figure 3.15 Ports of Tilbury and Tilbury2



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

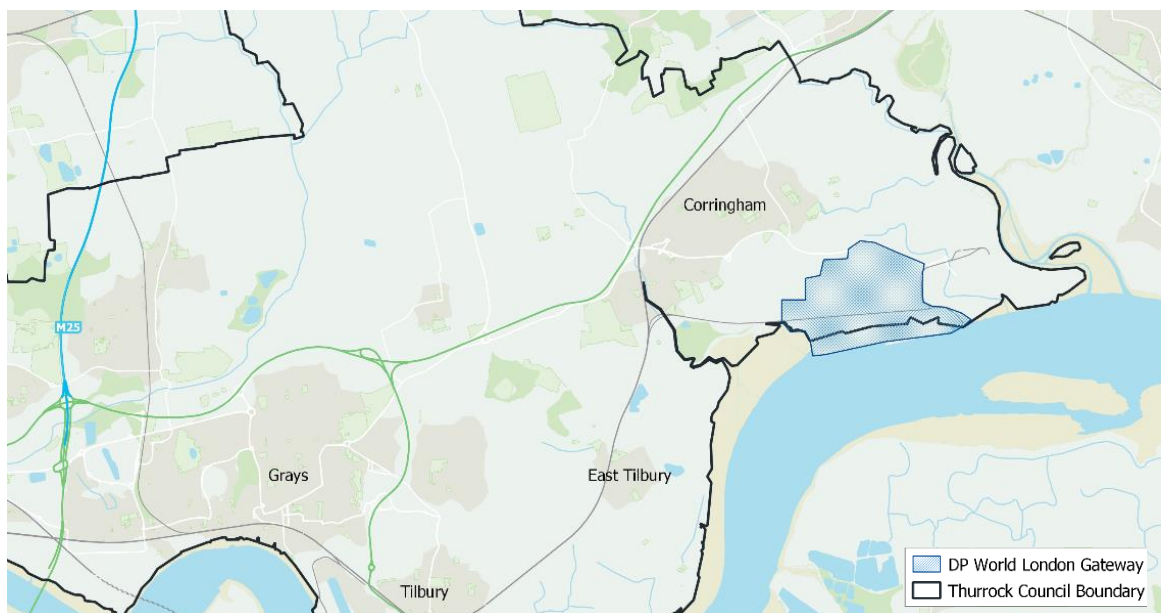
Tilbury2

- 3.52 In February 2019, the Port of Tilbury obtained approval under a Development Consent Order (DCO) from the Secretary of State for Transport to build a new terminal adjacent to the current port in Thurrock. The proposed new port, known as Tilbury2, will be built on a 152-acre site which was part of the former Tilbury Power Station. It is envisaged that Tilbury2 will act as a satellite of the main port, comprising of a:
- Roll on/roll off ferry terminal for importing and exporting containers and trailers, with a new deep-water ro-ro river berth.
 - Construction Materials and Aggregate Terminal (CMAT) for importing, processing, manufacturing and distributing construction materials, with a new deep-water aggregate river berth
 - New nationally strategic rail and road connection into the site
- 3.53 In addition, the existing Grain Terminal is currently expanding to include a flat store with capacity for a further 15,000 tonne capacity.

London Gateway DP World

- 3.54 The London Gateway Port is owned by DP World and built on a 607 hectare site. It opened in November 2013 and cost £1.5bn to build. The port is capable of handling the largest deep-sea container ships and runs almost 3km along the Thames Estuary in the east of Thurrock. The port is highly efficient, it is highly automated and has excellent road, rail and sea links enabling the quicker, cheaper and more environmentally friendly transportation of goods.
- 3.55 Currently, the port has one berth open, but once completed it will have six deep sea berths and feature a 2,700m long container quay. It will also offer a 90 hectare logistics park for the distribution, manufacturing and high-tech sectors. Once completed, 2,000 people will be employed at the port, and a further 10,000 jobs will be created at the nearby logistics park.

Figure 3.16 Location of London Gateway Port in Thurrock



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Other Major Businesses

- **Amazon UK** – opened one of its largest warehouses at the London Distribution Park, adjacent to the Port of Tilbury. The four-storey warehouse 18.6 hectares of floorspace and is expected to create over 3,500 jobs when fully operational.
- **High House Production park** – located on a 5-hectare site, the park is focused on creative and cultural businesses and activities. The first phase of the development opened in 2010 and included the Royal Opera House’s set production workshop. Since then, a number of other facilities have opened including studios, performance spaces, rehearsal venues and costume making workshops.

Community

3.56 The LTC Corridor is currently home to around 57,300 people, which is approximately 34% of Thurrock’s total population. The population in the Corridor grew by +7.0% between 2012-2017. This is in line with the Thurrock average, but above the growth rates for the other comparator areas.

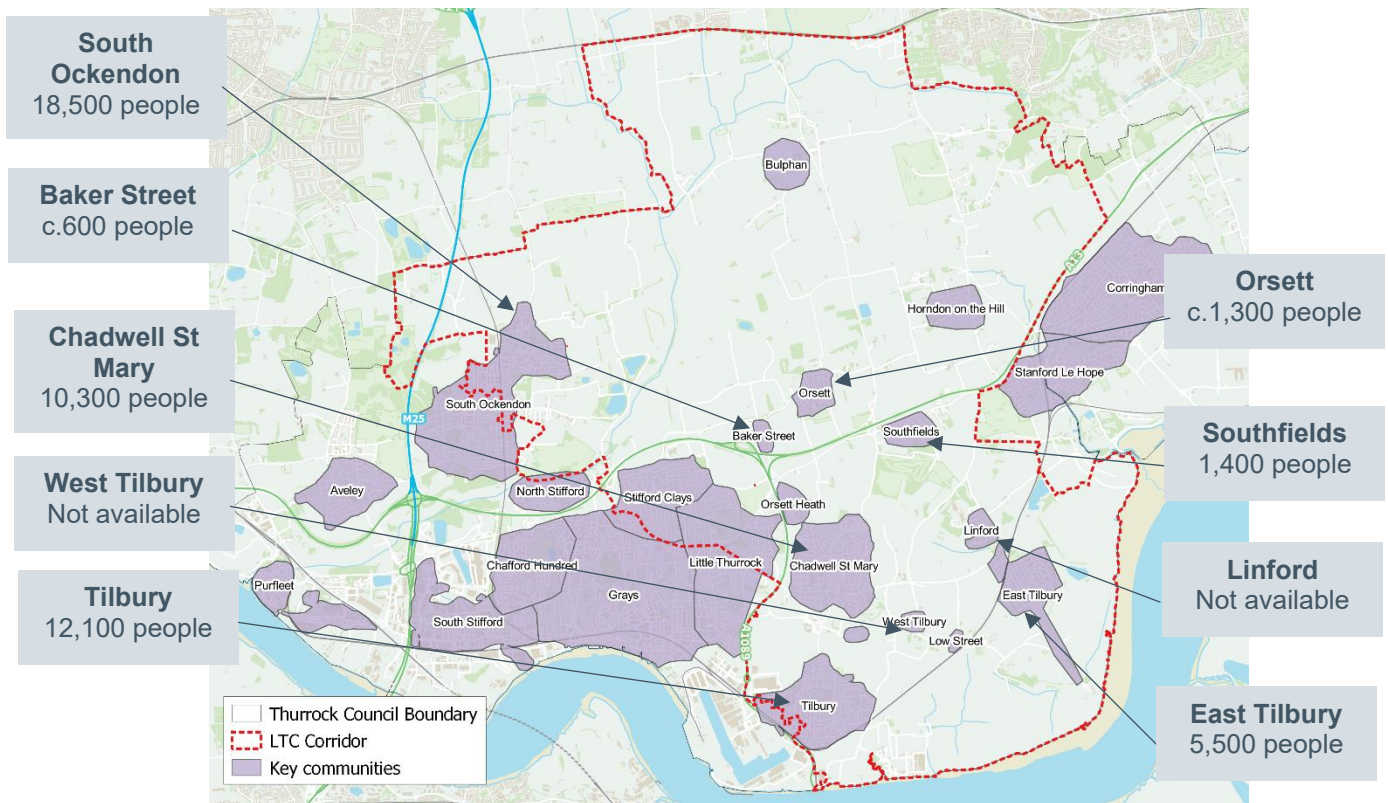
Figure 3.17 Population

	Population (2017)	% Growth 2012-2017
LTC Corridor	57,300	+7.0%
Thurrock	170,400	+6.6%
South Essex	780,300	+4.2%
Essex	1,468,200	+4.3%
England	55,619,400	+4.0%

Source: ONS 2017, 2012

3.57 The LTC Corridor is made up of a number of key communities. These include Tilbury, East Tilbury, West Tilbury, Linford, Chadwell St Mary, Southfields, Baker Street, and South Ockendon. The map below shows the location and the population of each community.

Figure 3.18 Key communities in Thurrock

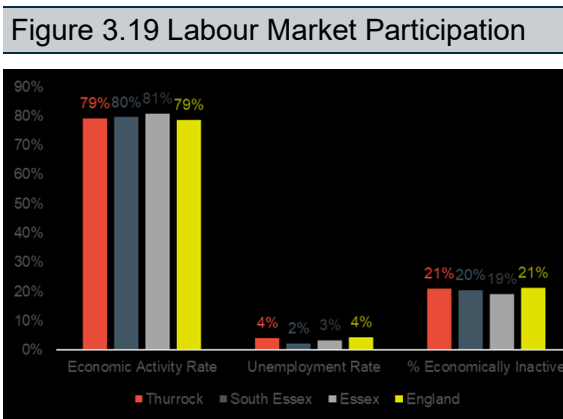


Source: Hatch Regeneris. Data from the ONS, 2017. Contains OS data © Crown copyright and database right 2019

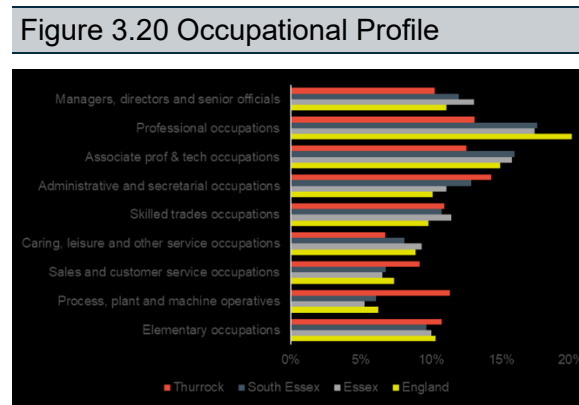
3.58 There are a number of community facilities and amenities in and around these communities. Community facilities are defined as public or publicly funded resources that provide for the physical, social, cultural and/or intellectual development or welfare of the community. These include schools, care homes, village halls, leisure centres, and other community facilities. Maps created by Highways England³ show the extent and location of these within 1km of the LTC boundary.

Economic Participation and Labour Market

3.59 Figures from the Annual Population Survey give an insight on the economic participation of residents living in an area. Figures 3.19 and 3.20 show that Thurrock has a slightly lower economic activity rate than the comparator areas and a higher unemployment rate than the immediate surrounding areas. Thurrock residents are also overrepresented in lower skill level occupations.



Source: Annual Population Survey 2018



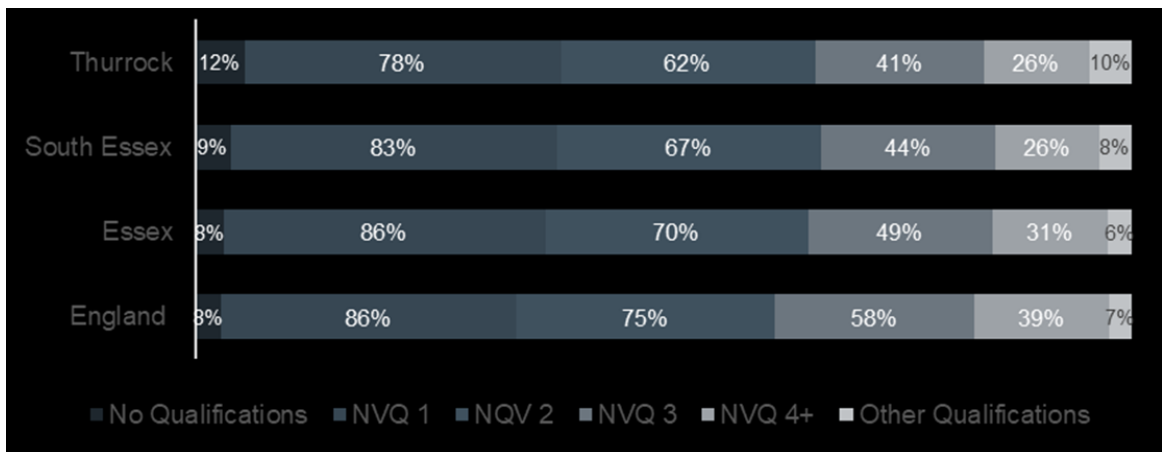
Source: Annual Population Survey 2018

3.60 Whilst there have been improvements in qualifications and educational attainment in recent years, Thurrock still has a higher proportion of people with no qualifications than the comparator areas (see Figure 3.21). The area also struggles with lower proportions of residents with NVQ 3+. However, in recent years the proportion of young people who are NEET ('not in education, employment or training') has improved, with Thurrock now lower than the average for the East region and England.

3.61 Given that there are few high skilled employment opportunities in Thurrock, there needs to be continued investment in both skills training to improve the quality of the local skills base, and to attract businesses with higher skilled employment opportunities into the area.

³ Lower Thames Crossing Preliminary Environmental Information Report: Figures (Highways England, 2018) <https://hatchengineering.sharepoint.com/:b:/r/sites/UrbanSolutionsUK/ajobs/H360739/Input/Documents%20from%20the%20Client/LTC%20Scheme/PEIR%20Figures%20%20Chapter%2014%20People%20and%20Communities%20complete.pdf?csf=1&e=2xfjzG>

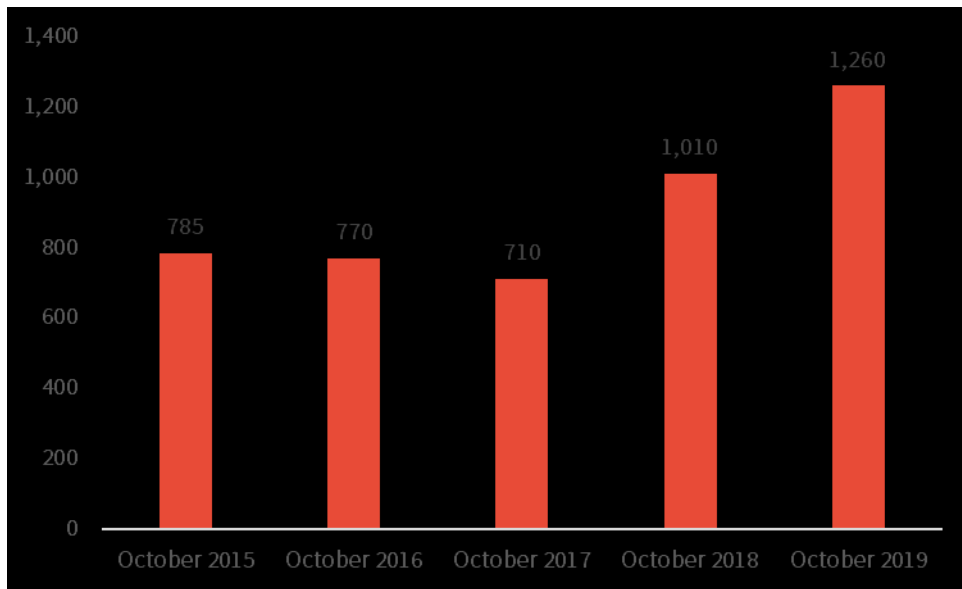
Figure 3.21 Qualifications Levels



Source: Annual Population Survey 2018

3.62 In addition, claimant count data suggests that in October 2019 the LTC Corridor had 1,260 claimants. This has been increasing over the last 5 years, which suggests the population in the Corridor is experiencing increasing levels of unemployment and economic inactivity.

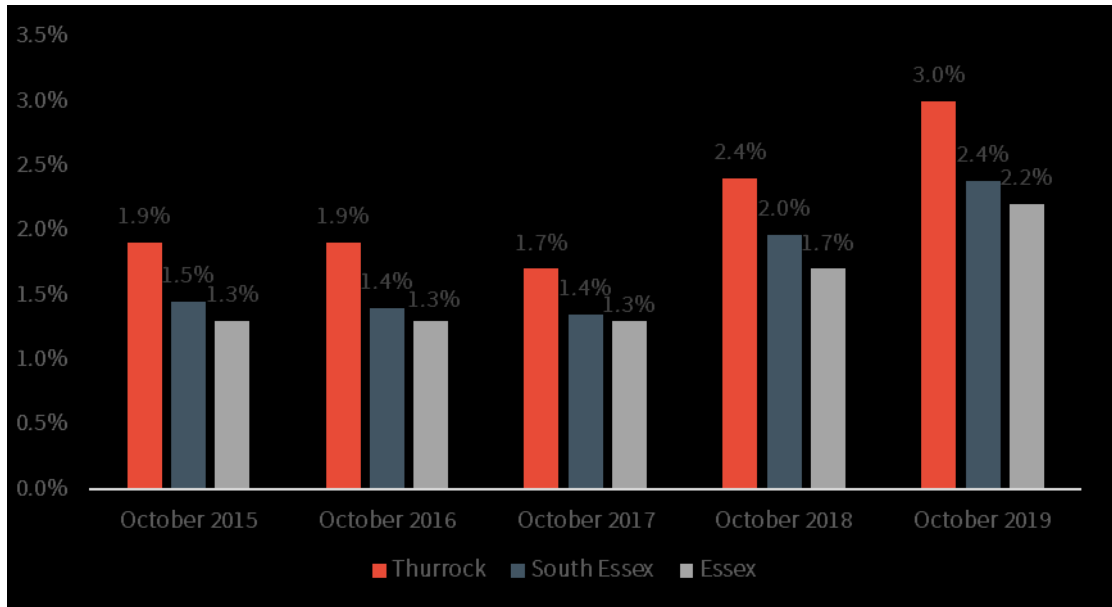
Figure 3.22 Claimant Count in the LTC Corridor, October 2015-2019



Source: Hatch Regeneris. Data from 'Claimant Count', ONS, 2015-2019

3.63 Claimant rates in Thurrock and the wider region have increased over the past five years, and claimant rates in Thurrock have remained consistently higher than both the South Essex and Essex average.

Figure 3.23 Claimants as a proportion of residents aged 16-24 across comparator areas, October 2015-2019

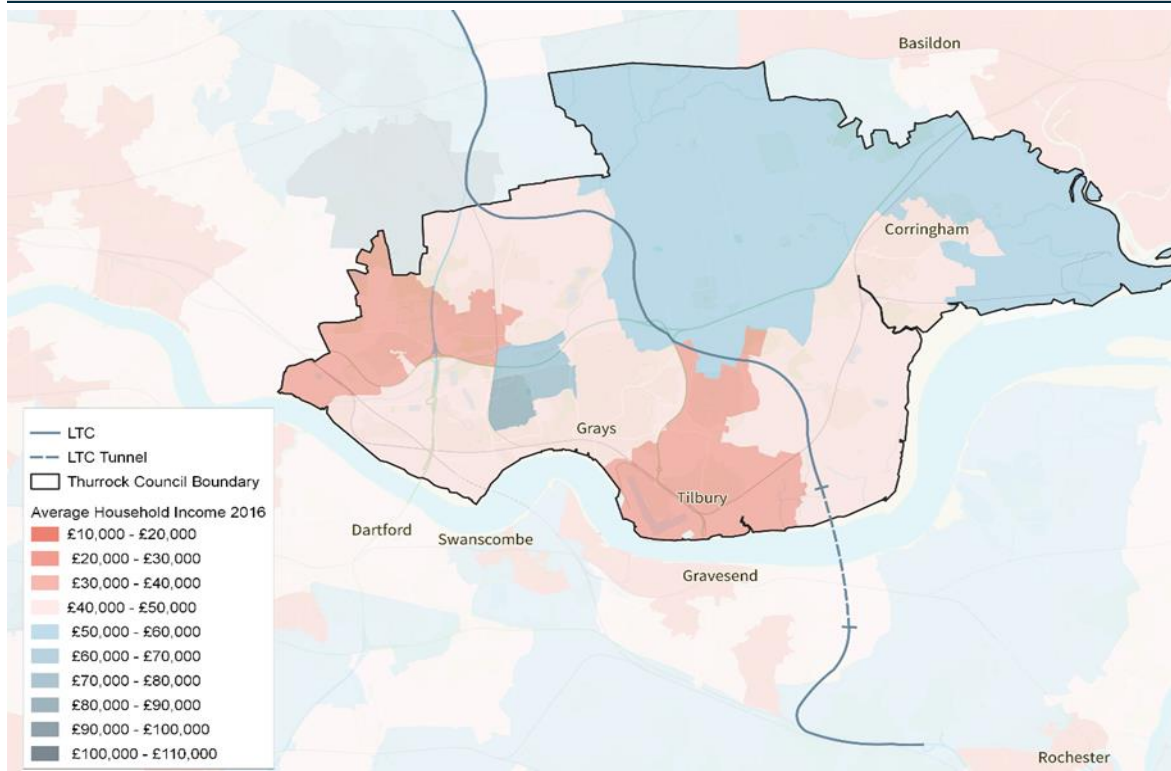


Source: Hatch Regeneris. Data from 'Claimant Count', ONS, 2015-2019

Income and Prosperity

3.64 In 2016, the average annual household income for Thurrock was £46,200. However, Figure 3.24 shows how this varies significantly across the borough, with pockets of very low average annual household income levels to the south of Thurrock around Tilbury.

Figure 3.24 Household Income, 2016



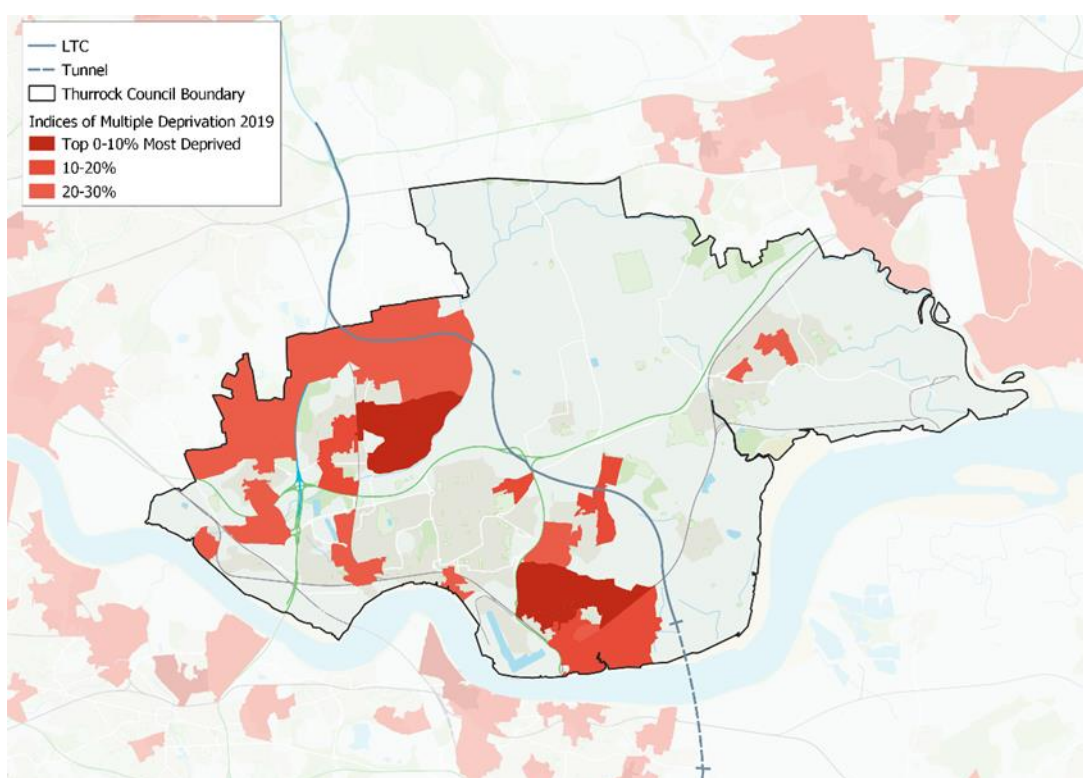
Source: Hatch Regeneris. Data from ONS 2016. Contains OS data © Crown copyright and database right 2019

3.65 Partly reflecting the pockets of low household income and poor performance in other metrics, Thurrock is also characterised with areas of high deprivation. As shown in Figure 3.25, the LTC Corridor has 35% of LSOAs in the top 30% most deprived nationally. This is compared to just 17% in Essex. Figure 3.26 shows that much of this deprivation is concentrated in the south of the borough around Tilbury and in South Ockendon.

	% LSOAs in the Top 30% Most Deprived 2019
LTC Corridor	35%
Thurrock	26%
South Essex	24%
Essex	17%

Source: MHCLG, 2019

Figure 3.26 Index of Multiple Deprivation - Top 30% Most Deprived LSOAs Nationally



Source: Hatch Regeneris. Data from MHCLG 2019. Contains OS data © Crown copyright and database right 2019

3.66 The Index of Multiple Deprivation comprises the following metrics: barriers to housing and services; employment; income; education, skills and training; health and disability; crime; environment.

3.67 Further interrogation of these different metrics highlights some of the specific challenges facing Thurrock. These include:

- **Employment deprivation:** an LSOA in Tilbury is in the top 900 most deprived in the country for employment
- **Skills deprivation:** 54% of LSOAs within Thurrock are within the top 30% of most deprived for Education, Training and Skills Deprivation. This is compared to 41% in South Essex and 31% in Essex. As shown in Figure 3.27, there's a strong concentration of skills deprivation in and around Tilbury, East Tilbury, Corringham and South Ockendon/the western edge of the borough.

- **Crime:** 38% of LSOAs within Thurrock are within the top 30% of most deprived for Crime Deprivation, compared to 31% South Essex and 22% Essex. Figure 3.28 suggests crime is a particular challenge in Tilbury, South Ockendon and Aveley.

Figure 3.27 Education, Skills and Training Deprivation – Top 30% Most Deprived LSOAs Nationally

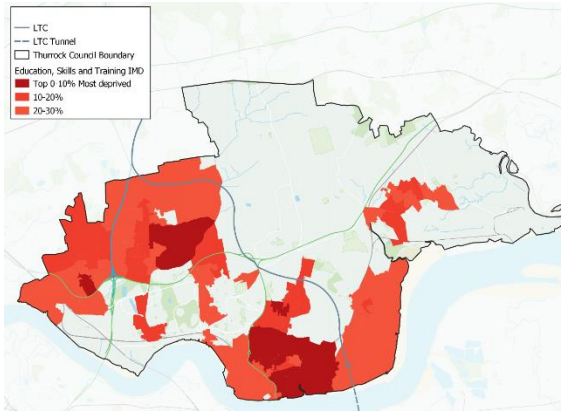
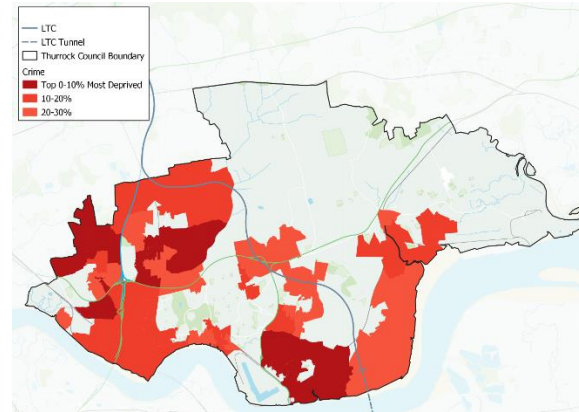


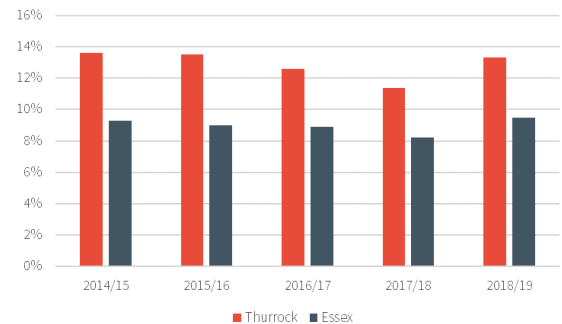
Figure 3.28 Crime Deprivation – Top 30% Most Deprived LSOAs Nationally



Source: Hatch Regeneris. Data from MHCLG 2019. Contains OS data © Crown copyright and database right 2019

- 3.68 Data on the proportion of children who qualify for Free School Meals can also give an indication of levels of poverty and deprivation.
- 3.69 For the most recent academic year 2018/19, the proportion of pupils with free school meals is 13% for Thurrock and 10% for Essex. The proportion of secondary school pupils with free school meals over the past five academic years is consistently higher within Thurrock than Essex as a whole.

Figure 3.29 Percentage of Secondary School Pupils with Free School Meals



Source: Hatch Regeneris. Data from LG Inform.

Housing and Affordability

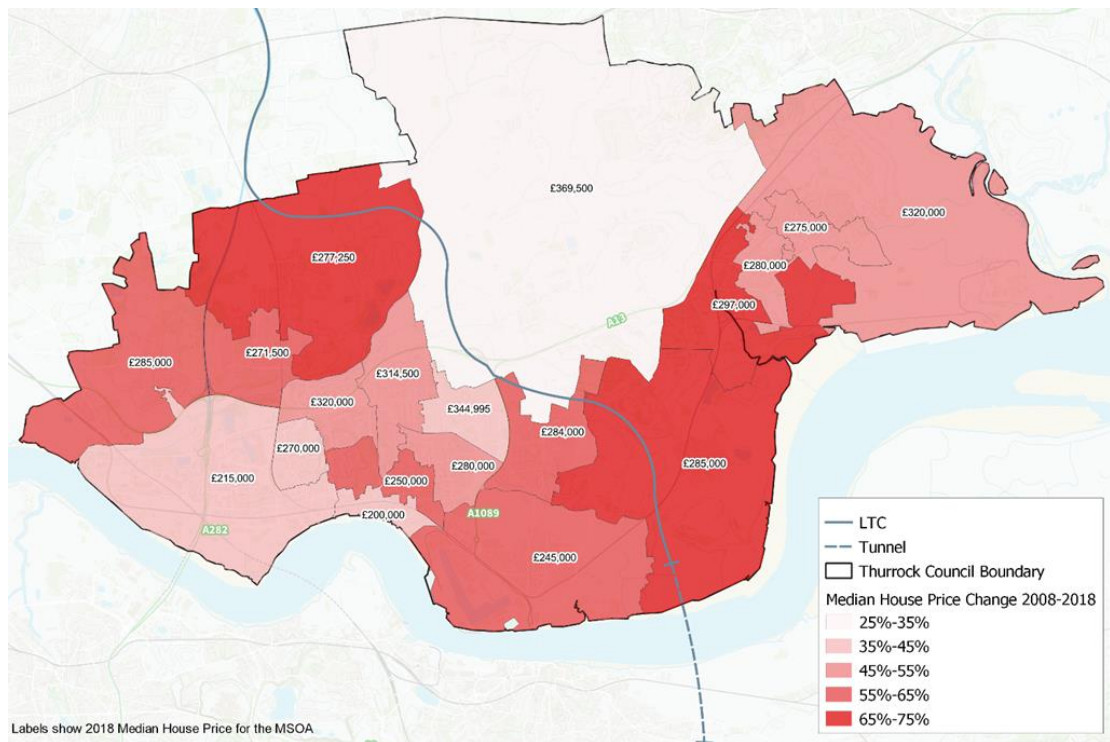
- 3.70 Across the LTC Corridor, the median house price is £302,900. This is slightly higher than the Thurrock average, however the Corridor is characterised by significant variation in prices with higher house prices found in the north of Thurrock in and around Orsett. Median house prices here are almost £100,000 higher than in the southern parts of the Corridor around Tilbury.
- 3.71 As shown in Figure 3.30, median house prices in the LTC Corridor have grown significantly over the last decade (+52%), in line with growth seen across the rest of Thurrock.
- 3.72 However, the spatial variation in median house price growth shows that the areas in the Corridor with the lowest median prices have grown the most over the last 10 years. The most significant increases of above +65% have been in and around East Tilbury.

Figure 3.30 Median House Price and Change

	Median House Price 2018	House price change 2008-2018
LTC Corridor	£302,900	+52%
Thurrock	£283,400	+51%

Source: ONS 2008, 2018

Figure 3.31 Median House Price change 2008-2018

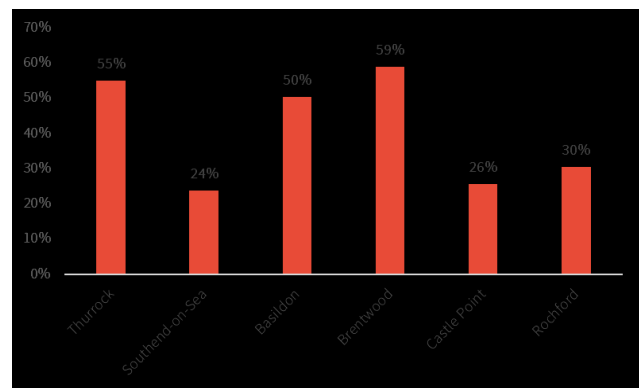


Source: Hatch Regeneris. Data from the ONS 2008, 2018. Contains OS data © Crown copyright and database right 2019

3.73 The house price affordability ratio is used to indicate the gap between resident's earnings and house prices. This gives an indication of the likelihood for residents to be able to afford to buy a house in the area in which they live. Data shows that house prices are around 9 times the annual earnings of residents in Thurrock, which is just below the South Essex average of 9.5 times.

3.74 Affordability has weakened considerably over the past 5 years (see Figure 3.32). Since 2013, house prices relative to income have increased by 55% in Thurrock, the second highest increase of the South Essex boroughs. This means residents have to find an extra 3 times their income to afford a house in 2018 compared to 2013.

Figure 3.32 Childhood Obesity Levels three-year average, 2015/16 - 17/18



Source: Hatch Regeneris. Data from National Child Measurement Programme, Public Health England.

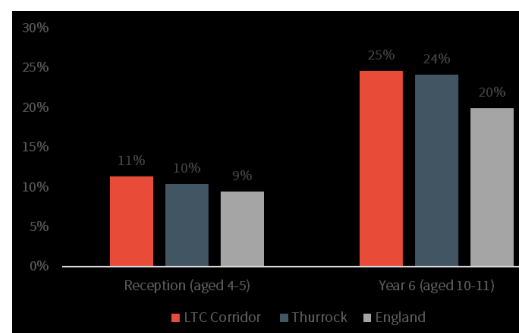
Health and Wellbeing

3.75 It is recognised that Thurrock has a range significant health and wellbeing challenges. The recent Joint Strategic Needs Assessment summarised in the Thurrock Health and Wellbeing Strategy highlights the following issues across the borough.

Obesity

- 3.76 Thurrock has high obesity levels in both children and adults. More than 7 out of 10 adults in Thurrock are either overweight or obese.
- 3.77 As shown in Figure 3.33, obesity levels in children in Thurrock at both age 4-5 years and 10-11 years are higher than the national average.
- 3.78 In addition, for the period 2015/16-2017/18, the obesity rate for children aged 4-5 years within the LTC Corridor is 11% compared to a national average of 9%. Childhood obesity rates for 10-11 years in the LTC Corridor are 25% compared to a national average of 20%.

Figure 3.33 Childhood Obesity Levels three-year average, 2015/16 - 17/18



Source: Hatch Regeneris. Data from National Child Measurement Programme, Public Health England.

Health Inequalities

- 3.79 One of the biggest health challenges facing Thurrock is the large differences in health and wellbeing between different communities. Health inequalities exist in relation to life expectancy, obesity, cardio-vascular disease etc, which is driven by factors such as deprivation, low incomes and unemployment.
- 3.80 In Thurrock 20% of children grow up in poverty and there's a 10-year difference in life expectancy between children born in Orsett and Tilbury. The Health and Wellbeing Strategy also finds that employment is one of the biggest factors shown to improve health and wellbeing in Thurrock.

Loneliness and Social Isolation

- 3.81 Social isolation is a major concern for some areas of Thurrock. For example, 39% of people experience social isolation in Tilbury, compared to a national average of 32%. This is driven by the high proportion of elderly people living alone in the area. In Ockendon, 38% of people experience social isolation.

Inadequate Service Provision

- 3.82 Thurrock struggles with too few GPs for the size of the population. Given the levels of population growth, Thurrock will need to transform its primary care services to ensure good quality and fit-for-purpose services are provided. It will also need to create a positive perception of the area, as a place to live and work, to recruit and retain GPs.
- 3.83 In addition, Thurrock has no A&E provision within the borough and instead relies on Basildon Hospital. This means that Thurrock residents are very reliant on good access to, and the continued provision of, services in Basildon.

Summary

- 3.84 The data in this section demonstrates that there are specific areas of Thurrock which struggle significantly with multi-faceted challenges. In particular, the communities living in and around Tilbury, and South Ockendon are characterised by high deprivation, low incomes and poor health outcomes.
- 3.85 The Council is responding to these challenges through a range of mechanisms, including their Active Place Strategy designed to ensure local resident have sufficient access to open space and sports facilities, and that they are encouraged to travel by active modes through appropriate infrastructure provision and promotion.

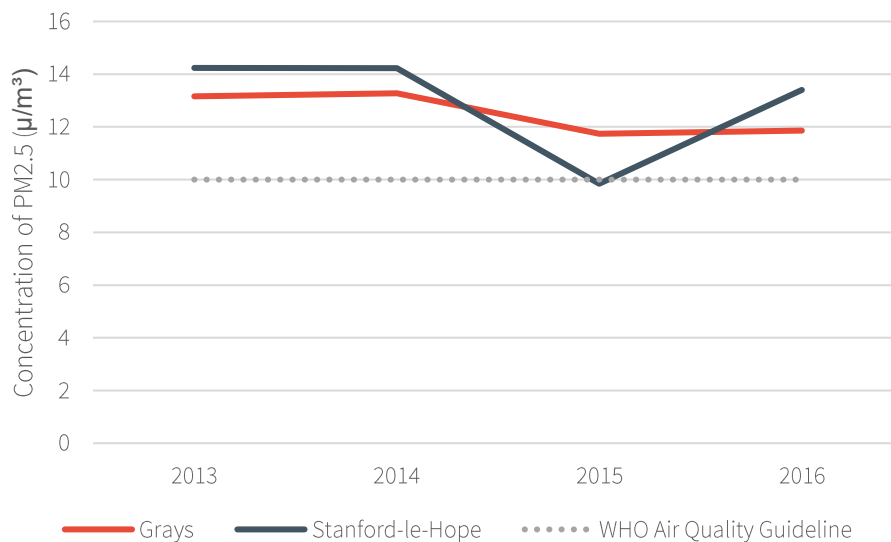
Environment

3.86 The LTC Corridor is characterised by a mosaic of landscapes, including coastal marsh, low-lying fenland, farmland and more developed urban areas. Landscapes of 'strategic scale' in Thurrock (as defined in the Integrated Landscape Character Assessment⁴) include the River Thames which runs along the southern edge of the borough and forms part of the wider Thames Estuary and the Thames Estuary and Marshes Special Protection Area. In addition, Thurrock is home to the Mar Dyke River Valley which runs through the north east of the borough.

Air Quality

- 3.87 There are 18 sites within Thurrock currently designated as Air Quality Management Areas (AQMAs) in which air pollution levels are likely to fall short of national targets. All 18 sites are AQMAs for Nitrogen dioxide (NO₂) pollution and of these, four are also monitored for particulate matter (PM₁₀).
- 3.88 The LAQM Annual Status Report 2018 by Thurrock Council attributes these AQMAs to traffic related pollution along busy roads. Two AQMAs within Thurrock were declared for breaching the annual mean objective for NO₂.
- 3.89 As shown in Figure 3.34, the World Health Organisation (WHO) Ambient Air Quality Database 2018 recorded PM_{2.5} and PM₁₀ measurements in Grays and Stanford-le-Hope that exceeded WHO Air Quality Guidelines for maximum annual mean levels. Whilst the EU Air Quality Standards have a higher limit for PM_{2.5} (23 μ /m³), the prevalence of respiratory diseases amongst residents in Thurrock suggests a strong need to be ambitious with air quality targets.

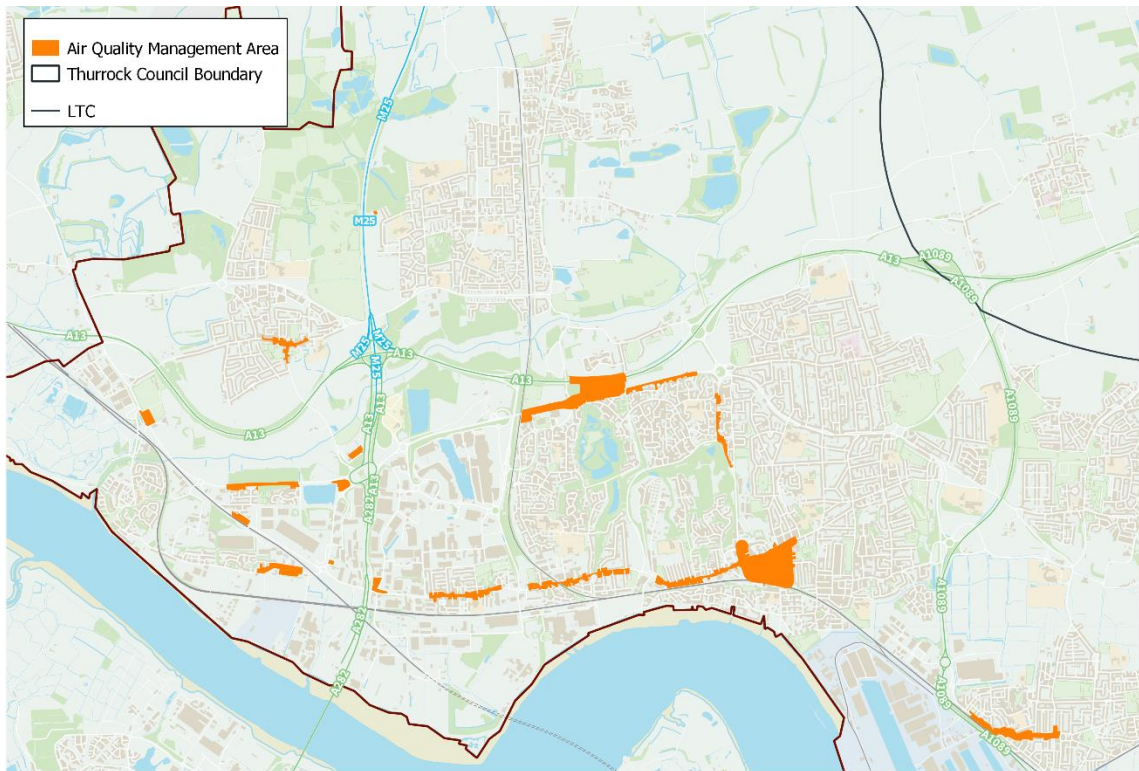
Figure 3.34 WHO Ambient Air Quality PM_{2.5}



Source: Hatch Regeneris. Data from WHO Ambient Air Quality Database 2018.

⁴ Thurrock Integrated Landscape Character Assessment, LUC 2018

Figure 3.35 Thurrock Air Quality Management Areas



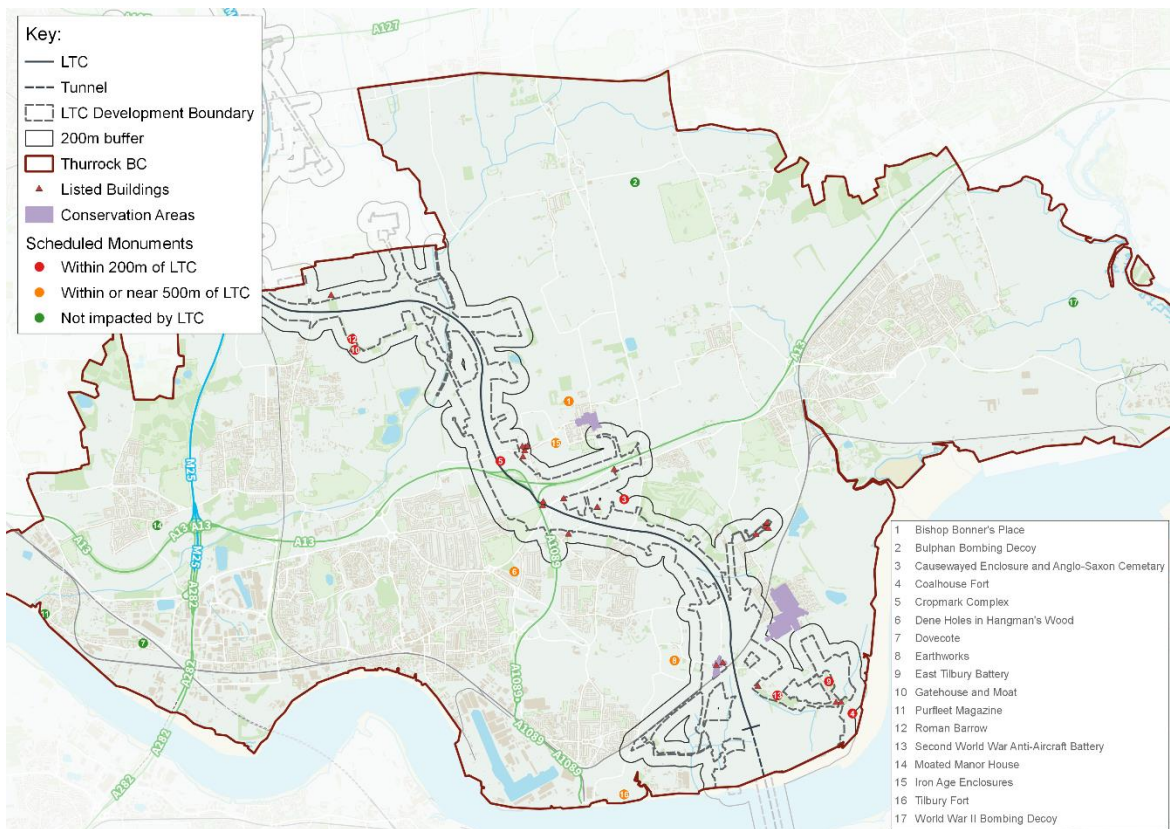
Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Heritage Assets

- 3.90 Thurrock has extensive heritage assets situated across the borough. Within 200m of the LTC route alone, the Historic Environment Record identifies 182 designated heritage sites. There are 17 scheduled monuments distributed across the borough's landscape ranging from Neolithic sites to World War II bombing decoys. All of the monuments are of national importance, either because of the type of monument or because they are a rare survival of that monument form. As stated in the Thurrock Scheduled Monuments assessment⁵, "*all significantly contribute to the understanding and enjoyment of the archaeology and history of Thurrock and provide an important and tangible link with the past*".
- 3.91 As shown in Figure 3.36, 7 out of the 17 scheduled monuments in Thurrock fall within 200m of the LT, and a number are already identified as 'at risk'. The Scheduled Monuments assessment found that at least 4 of the monuments are likely to be subject to major or detrimental impacts as a result of the LTC, and that LTC could destroy all or part of the Cropmark monument (no. 5).

⁵ Thurrock Scheduled Monuments: Assessment of Settings, 2018

Figure 3.36 Designated Heritage Assets in Thurrock

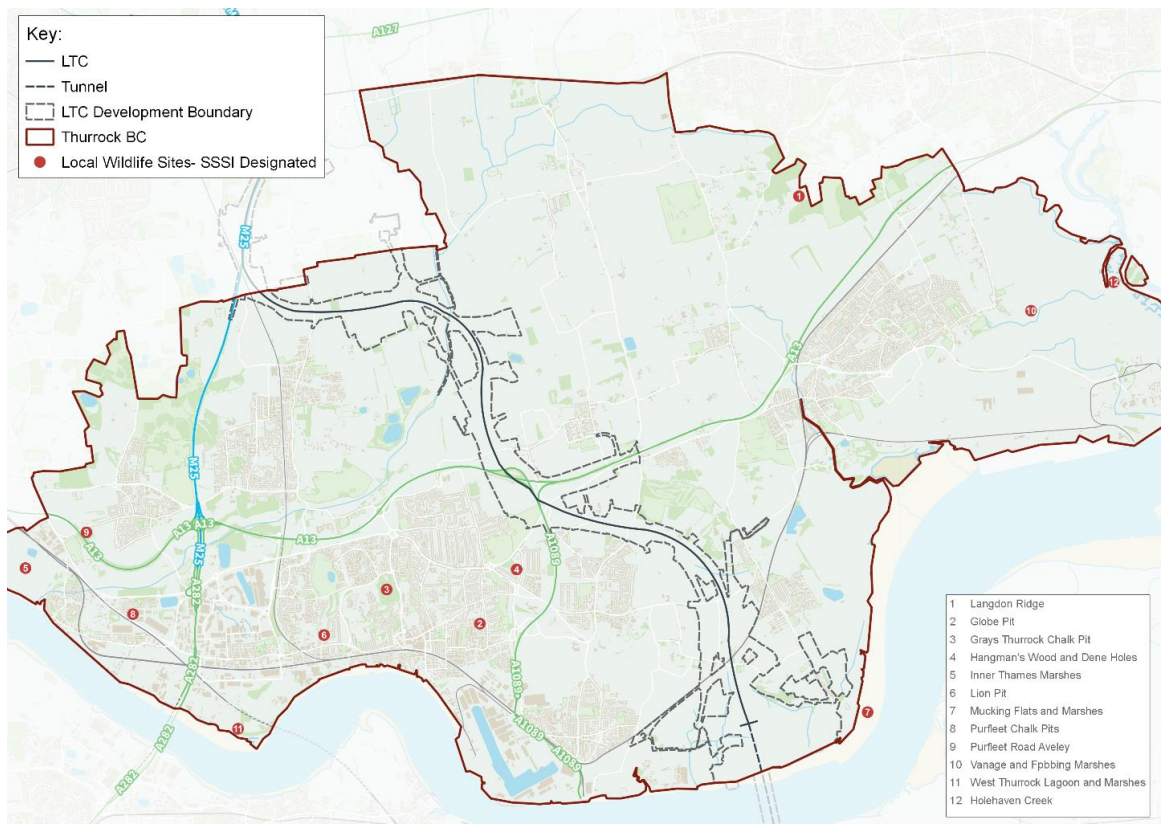


Source: Hatch Regeneris. Data from Thurrock Scheduled Monuments: Assessment of Settings Report, 2019 and Historic England 2019. Contains OS data © Crown copyright and database right 2019

Wildlife Sites

3.92 In addition to heritage assets, there are a range of sites important for wildlife across Thurrock. There are 12 sites designated as Sites of Special Scientific Interest (SSSI) (see Figure 3.33), which means they support habitat species or geological features of national importance and are considered some of the best sites for wildlife in the country. This includes sites such as Hangman's Wood and the Mucking Flat Marshes which run along the bank of the river from Mucking to Coalhouse Fort. Mucking Flats Marshes are part of the Thames Estuary and Marshes Special Protection Area/Ramsar which is of international significance due to their populations of overwintering wildfowl and waders. Surrounding sites including land near form functionally linked habitat.

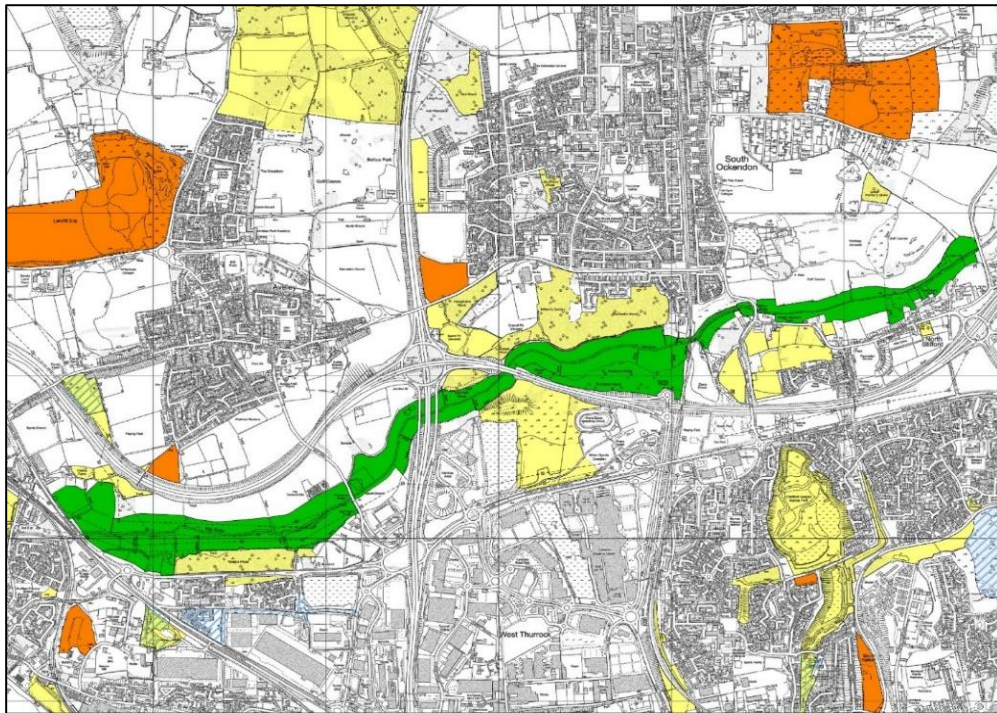
Figure 3.37 Wildlife Sites in Thurrock



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

3.93 In addition, Thurrock supports wildlife through its network of non-statutory Local Wildlife Sites, which include woodland, green areas and open spaces. This can create 'wildlife corridors' such as the Mardyke Valley Wildlife Corridor which is an extensive river floodplain grassland system running across Thurrock (see Figure 3.34). This acts as both a wildlife corridor and a 'green wedge' separating urban developments. As a result, this, and other corridors, could be subject to severance and disturbance with the development of new homes and infrastructure. The borough also significant assemblages of rare invertebrates which are often found in undesigned sites

Figure 3.38 Mardyke Valley Wildlife Corridor

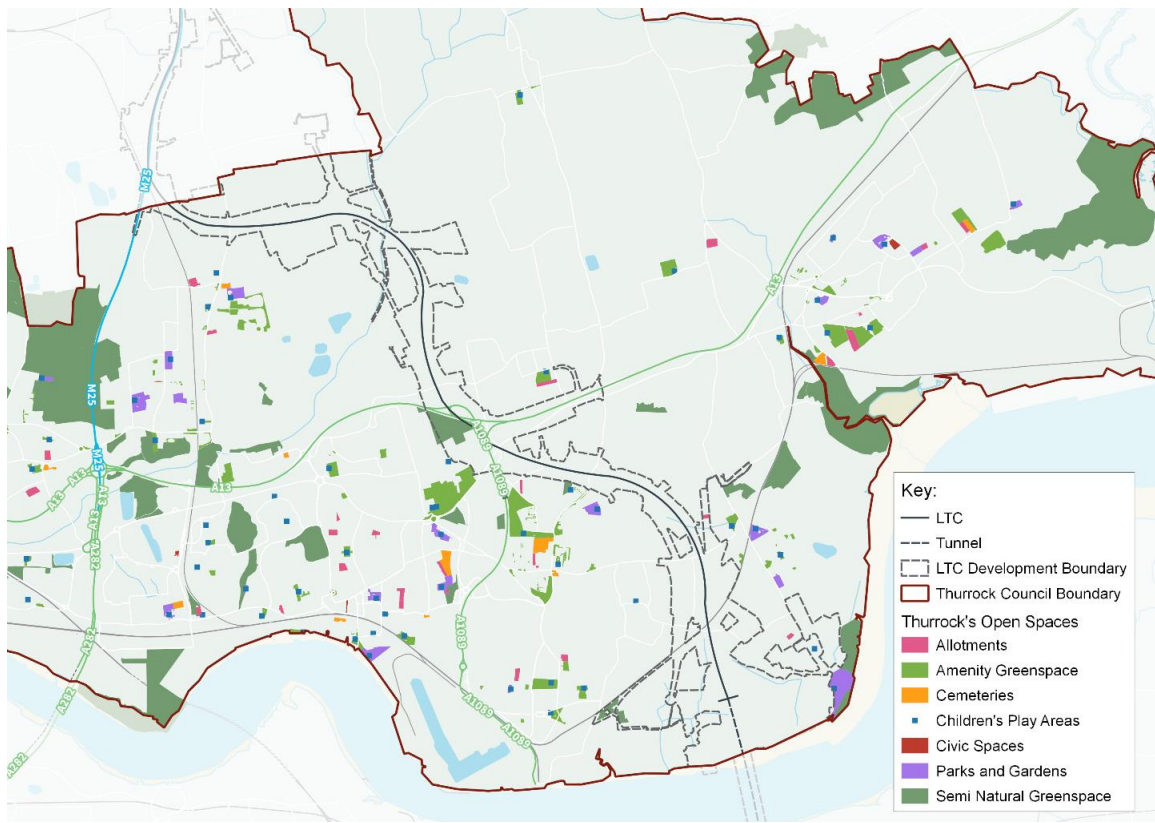


Source: Thurrock Local Wildlife Sites Review

Open Spaces

- 3.94 There are diverse mix of open space sites in Thurrock (see Figure 3.31). Provision of open space is spread across the borough but tends to concentrate around built up areas and communities.
- 3.95 Within the LTC development boundary, there is an allotment, Children's Play Area and areas of semi-natural green space. The LTC also likely to pass through/nearby to:
- National Cycle Route NCN Route 13
 - Coalhouse Fort
 - Thames Chase Community Forest
 - Orsett Golf Course
 - Stubbers Outdoors Pursuit Centre
 - Grangewaters Outdoor Pursuits Centre
 - Common land such as West Tilbury Marshes and Orsett Fen
 - Blackshots recreation ground
 - Blakshots Nature Park
 - Orsett Heath
 - The open spaces are important areas for informal recreation within a borough with high levels of adult and childhood obesity.

Figure 3.39 Open Spaces in Thurrock



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Growth

- 3.96 This section sets out the policies and factors which will influence economic growth and development in Thurrock. It establishes a future year growth scenario that can be applied within the assessment of cost impacts over time.

Local Plan Process

- 3.97 Thurrock Council is currently progressing with the preparation of a single Local Plan covering the whole of the Council's administrative area. This will replace, when adopted, all the existing development plan documents and policies, including those within:
- Thurrock Core Strategy and Policies for Management of Development Local Plan, as amended, (January 2015); and
 - Thurrock Borough Local Plan (1997)
- 3.98 The Emerging Thurrock Local Plan (TLP) will determine the amount and distribution of new development, providing a comprehensive and long-term planning framework for the period up to 2038. A single Policies Map will define geographically the development proposals and have notations to allow for the application of planning policies.
- 3.99 The emergence of the LTC proposals has created a series of challenges to the Local Plan process and disrupted progress towards the development of a draft Local Plan. The Issues and Options (Stage 2) process has been completed and was consulted upon between December 2018 – March 2019.
- 3.100 On the basis of the work completed to date, the Council has identified a comprehensive list of sites that have commenced; that have been approved or allocated within the LDF; or that have been received through a Call for Sites or identified from previous site assessments. The Council is now in the process of evaluating all of these sites in the context of statutory requirements, stakeholder and public consultation and engagement, and in co-operation with neighbouring local authorities.

Housing Need and Employment Land

- 3.101 The National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) set out a requirement for a standard method to be used to assess future local housing need in each local authority area. The standard method calculation currently identifies a need for 1,167 new homes per year in Thurrock. If this figure were to be projected over a typical 20-year plan period (2022-2041), it would result in a minimum requirement for 23,340 new homes over the plan period across the borough.
- 3.102 The PPG indicates that the local housing need calculated by the standard method should be considered a minimum starting point and it can be appropriate to plan for a higher housing need figure than the standard method calculation indicates in certain circumstances. These include where there are:
- growth strategies for the area that are likely to be deliverable;
 - strategic infrastructure improvements that are likely to drive an increase in the homes needed locally;
 - previous assessments of need (such as a recently-produced Strategic Housing Market Assessment) that are significantly greater than the outcome from the standard method.
- 3.103 All these circumstances are relevant to the calculation of local housing need in Thurrock. The previous assessment of housing need was set out in a technical document called the

'Strategic Housing Market Assessment' (SHMA) published in May 2017. This assessment identified a jobs-led need for 1,381 new homes per year in Thurrock, to be delivered between 2014 – 2037. This equates to a housing requirement of 31,763 new homes over this period. Around 2,810 homes have been delivered within the period 2014 – 2019, still leaving a requirement for a further 28,953 homes up to 2037. Extending this forward to encapsulate a typical 20-year plan period (2022-2041) would equate to a requirement for around 33,000 new homes.

- 3.104 The NPPF requires local plans to be internally consistent when planning for growth. Critically, the standard method's minimum starting point does not take account of any adjustments which will need to be made to the housing need figure to ensure the provision of new homes matches and supports the projected level of economic growth in the borough. Current evidence concludes that the housing requirement falls within the range of 1,167 - 1,381 new homes per year; however, the Council anticipates that additional technical work due to be carried out through ongoing work on the Local Plan, will support a housing requirement at the higher end of the identified range.
- 3.105 In terms of assessing housing land supply, based upon the current identified list of potential development sites, and assuming an average housing density across the area of between 35 and 40 dwellings per hectare (dph), there is an unconstrained potential to deliver over 90,000 homes within the area.
- 3.106 The reality, however, is that a significant proportion of the available land will not be suitable, or viable, for development, for a wide variety of reasons and so will not meet the NPPF's definition of sites which are deliverable and developable within the plan period. This will include issues of contaminated sites, physical viability, insufficient supporting infrastructure, and access constraints. Furthermore, large proportions of the sites are within designated Green Belt, whilst overarching statutory requirements and planning policies necessitate consideration of green space and protection of the character of settlements.
- 3.107 In addition, many sites will take a significant period of time to develop out and may extend beyond a plan period of 2022 - 2041.
- 3.108 Until a new Local Plan is adopted, there remains uncertainty in the land availability for new residential and commercial development. However, the Council's continuing work to progress the new Local Plan means that the position is becoming clearer. This is something that the Council is sharing with the scheme promoters as the part of the DCO pre-application technical engagement with Highways England.
- 3.109 In the interim, Hatch Regeneris have undertaken a theoretical exercise to develop a scenario that reflects the potential scale of available land for residential and commercial development. This has used the broad quantum of total identified sites, and applied the constraints of suitability and viability, to produce a magnitude of potential development opportunities across the Thurrock area. Through this analysis, we estimate that Thurrock has the potential to deliver between 38,100 and 43,500 homes by 2050.
- 3.110 This analysis indicates that, despite high theoretical land availability upon which to deliver housing and commercial development, the area is likely to have a range of constraints upon overall land availability. As such, the differential between the future housing target and deliverable and developable land supply is substantially narrower.

4. Transport and Connectivity Impacts

- 4.1 This chapter examines the direct impact of the LTC Scheme upon local transport provision and connectivity across Thurrock.
- 4.2 It considers these impacts within two phases:
- **Construction phase:** how temporary road and PRow closures, or reductions in operating capacity, could affect transport provision and connectivity and accessibility between localities through the course of the 6-year construction phase.
 - **Operational phase:** how permanent changes to the local transport network related to the final LTC configuration could have on-going impacts on connectivity and accessibility between localities.

Assessment Approach

- 4.3 The assessment has considered how access, movement, and travel times will change in comparison to the current, and future transport network, without the LTC Scheme. This includes the use of traffic modelling data (provided by Stantec) to assess the current and future year performance of the highway network across Thurrock in scenarios both with and without the LTC Scheme.
- 4.4 Information on the current bus, cycle and PRow networks has been taken from the baseline assessment presented within Chapter 3.
- 4.5 The assessment has utilised available information provided within the PEIR to understand how the LTC Scheme will be developed, temporary transport network impacts, and permanent changes during the operational phase.
- 4.6 Where there is currently insufficient information available from Highways England assumptions have been applied and are highlighted.

Construction Phase Connectivity Impacts

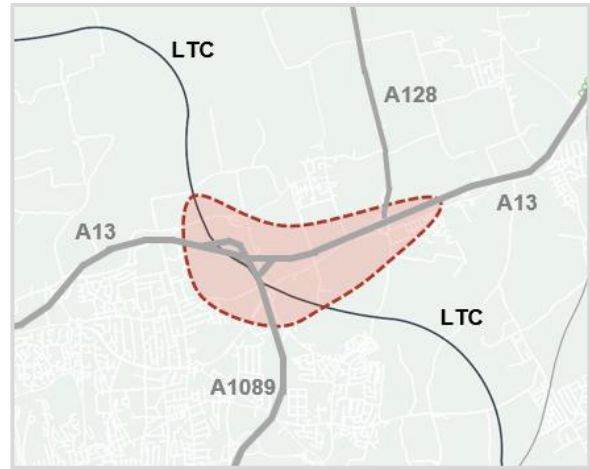
- 4.7 The construction of the LTC Scheme will require the physical closure of a number of local roads and PRow for varying lengths of time. In addition, it is likely that some of the more major routes through the area will also suffer periods of disruption and loss of capacity as part of delivering the LTC Scheme, in particular around the proposed junction with the A13/A1089.
- 4.8 Alongside the direct physical impacts, the construction of the LTC Scheme will engender significant HGV movements to and from work sites across the area, as well as additional vehicle movements associated with bringing workers to and from these sites. There will be particular impacts on routes to compounds accessed from B186 Stifford Clays Road and the A1089 Asda Roundabout.

Physical barriers created by LTC Construction

A13 Junction

4.9 The proposed LTC Scheme requires a major reconfiguration of the current A13 junction with the A1089, as well as the adjacent junction to the east with the A128. As well as the LTC alignment itself, a range of additional slip roads will be constructed to enable certain movements between the LTC and the A13, as well as some movements from the A1089 onto the LTC.

4.10 During the construction phase for the junction works, there will, therefore, be disruption to the operation of the key strategic routes of the A13, the A1089, and the A128, alongside the local roads, including the A1013 Stanford Road, the B188 Baker Street, Heath Road, Stifford Clays Road, Hornsby Lane, and Gammonfields Way / Long Lane.



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

4.11 As outlined within Section 2, the details of levels of disruption to each of these routes is not identified by Highways England. For the strategic routes, it is anticipated that any required road closures will be kept to a minimum; however, recent experience of the A13 widening project has required overnight closures, weekend, and some weekday on-line closure, causing significant disruption to the network. If a similar approach is adopted for LTC there would be significant disruption to the strategic and local highway network. The duration of lane closures and speed restrictions on these routes also remains unclear but could feasible be for an extended period of time.

4.12 For the purposes of our analysis, we have made the following central case assumptions:

- General speed restrictions of 50 mph from a point 1 mile west of the current A13/A1089 junction to a point 1 mile east of the current A13/A128/Brentwood Road junction.
- General speed restrictions of 40 mph upon the connections between the A13 and A1089, with periods of lane reductions to a single lane operation, and some overnight road closures
- Speed restriction upon all approaches to the A13/A128/Brentwood Road junction, with reductions in junction capacity
- Temporary closures to A1013 Stanford Road, B188 Baker Street, Heath Road, and Stifford Clays Road.
- Hornsby Lane permanently closed from the commencement of construction phase.
- Gammonfields Way / Long Lane closed throughout the construction phase

4.13 In reality, recent experience of the A13 widening works has demonstrated that actual average speeds are likely to be considerably lower as a result of congestion, potentially more like 40mph on the A13 and 30mph on connections between the A13 / A1089.

4.14 These assumptions will be subject to revision should additional details on the construction phase of the LTC Scheme become available from Highways England.

4.15 The impacts of the closures to the local roads are considered further in the section below.

- 4.16 The potential speed restrictions and capacity reductions on the strategic routes will significantly impact upon all trips to, from, and within Thurrock, as well as through trips across the area. Based upon the traffic modelling outputs⁶, it is estimated that by 2026 there will be up to 115,000 two-way trips along the A13 passing through the junction with the A1089 during a typical day. A further 44,000 daily trips will travel between the A13 and the A1089. This represents the type of magnitude of trips on the strategic road network that could be affected by delays during the construction phase of the LTC project⁷.
- 4.17 On the basis of the assumed speed reductions set out above, we have estimated the following impacts:
- A reduction in speed restrictions from a maximum of 70mph to a range of 40mph to 50mph on the A13, across a 4.1-mile section of carriageway. This is estimated to equate to an average daily increase in vehicle journey times of between 2,650 to 5,000 hours, or up to 1.6 million hours per annum.
 - a reduction in average speeds from 50mph to a range of 30mph to 40mph on movements between the A13 and A1089, across a 3.3-mile section of carriageway. This is estimated to equate to an average daily increase in vehicle journey times of between 730 to 1,925 hours, or up to 620,000 hours per annum.
- 4.18 Further interrogation of the traffic model indicates that around 16% of the trips passing along the A13 through the A13 / A1089 junction have an origin or destination within Thurrock. All of the trips passing along the A1089 have an origin or destination within Thurrock. On this basis, it is estimated that around 62,000 trips with an origin or destination in Thurrock would be affected by LTC construction at the A13, accounting for an average daily increase in vehicle journey times of up to 2,750 hours, or over 875,000 hours per annum.

Temporary road closures

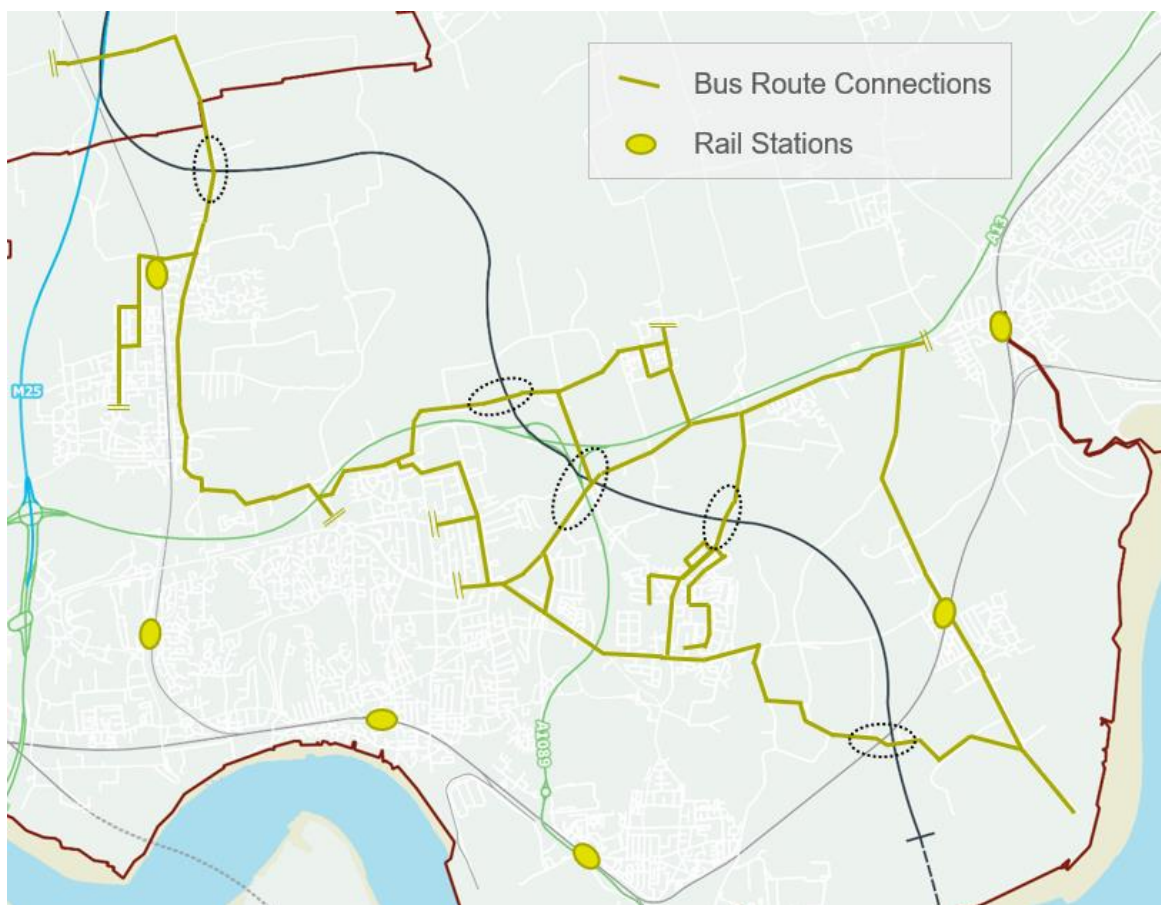
- 4.19 In addition, the four temporary local road closures that may occur around the A13 junction, highlighted in the section above, a further four local roads will be affected by the LTC Scheme:
- Station Road
 - Muckingford Road
 - Brentwood Road
 - North Road
- 4.20 Whilst it is not yet clear over what time periods these roads may be closed, it is stated within the Highways England PEIR⁸ that some links will be closed for prolonged period. This is assumed to be a period of over 6 months, potentially up to a year. The timing and management of closures will be critical in managing the overall operation of the network.
- 4.21 As well as providing for local traffic movements, some of these routes are also used by local bus services, as presented in Figure 4.1 and outlined below.

⁶ Source: Stantec 2019

⁷ It is noted that the construction phase will be from 2021 to 2026 during which period there will be growth in trips up to 2026. The average traffic volumes during the period will, therefore, be marginally lower. A factor of 0.95 has been applied to account for this difference.

⁸ Source: Lower Thames Crossing Preliminary Environmental Impact Report (Highways England 2018)

Figure 4.1 Bus Routes Impacted by Temporary road Closures



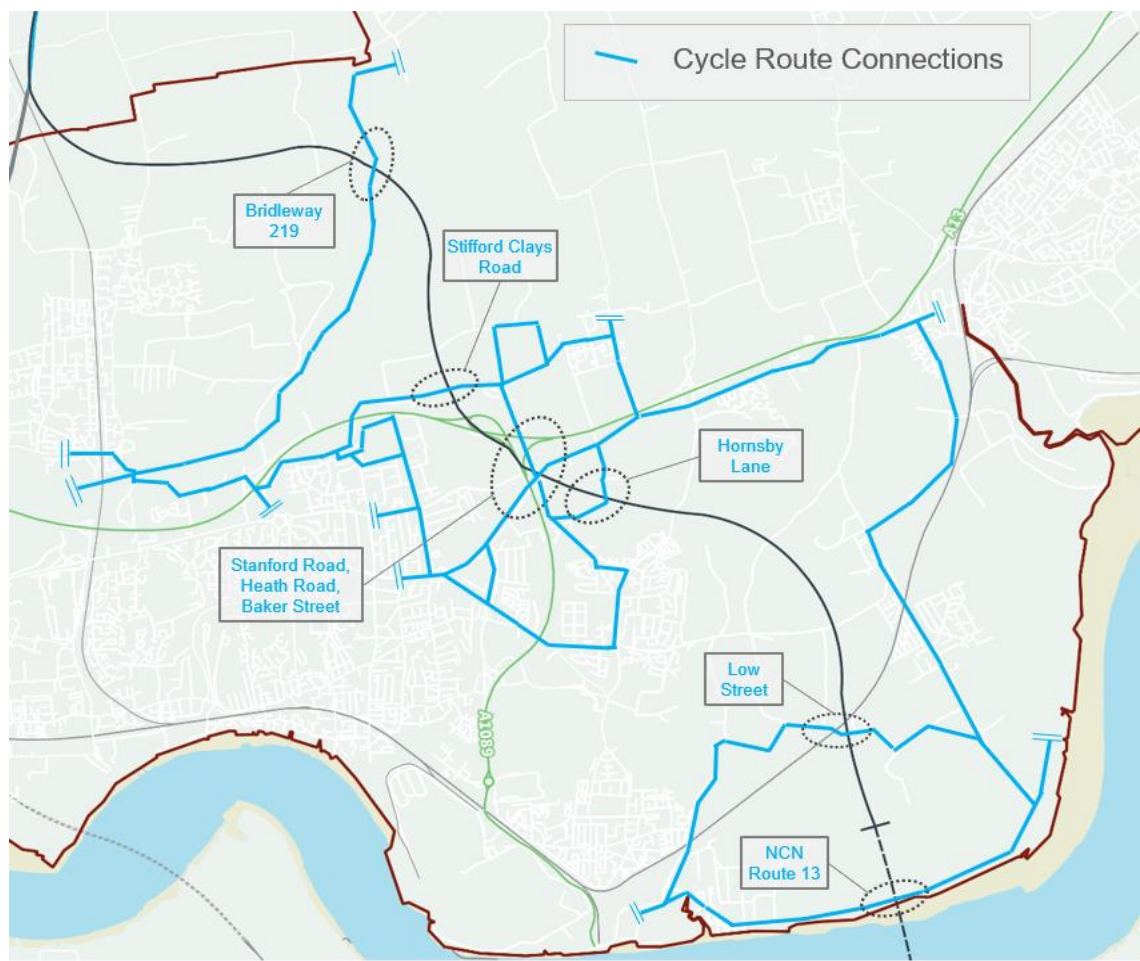
Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- **Station Road:** Route 374 (Grays to Stanford-le-Hope, via Coalhouse Fort)
- **Brentwood Road:** Route 11 (Ockendon to Horndon-on-the-Hill, via Stifford Clays, Chadwell St. Mary, Orsett Hospital)
- **Stanford Road / Baker Street:** Route 200/201 (Grays to Stanford-le-Hope, via Palmers College / South East Essex Colleges, Baker Street, and Orsett Hospital), Route: 265 (Grays to Bulphan via Baker Street and Orsett Hospital)
- **Stanford Road:** Route 100 (Grays to Stanford-le-Hope, via Orsett Cock)
- **Stifford Clays Road:** Route 201 (Sundays only. Grays to Stanford-le-Hope, via Stifford Clays and Orsett Hospital)
- **North Road:** Route 269 (Grays to Brentwood, via Thurrock Community Hospital, Stifford Clays, North Stifford, Ockendon), Route 347 (Ockendon to Upminster), Route 370 (Lakeside to Upminster, via Ockendon)

4.22 In the event of temporary road closures, all of these routes would need to be diverted and could be subject to significant diversions. A number of these routes provide connections to Orsett Hospital (the only minor injuries clinic in Thurrock), Basildon Hospital (A&E provision for the borough), and to a number of educational facilities, and so provide important public transport routes.

4.23 The following routes presented in Figure 4.2 are also highlighted as local on- and off-road shared cycle routes.

Figure 4.2 Cycle Routes Impacted by Temporary Road Closures



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 4.24 Any route closures would also affect connectivity by cycling, with diversions adding significant journey times to trips made by this mode. Even if routes are not closed, any reductions in carriageway widths through roadworks would put cyclists at increased danger along these routes and may deter trips.
- 4.25 Table 4.1 provides a summary of the estimated impact of a closure upon journey distances and travel time via the next best alternative route⁹. A forecast of the likely duration of any road closure is presented on the basis of information presented within the Highways England PEIR documentation.

⁹ This has been based upon a typical route between two centres that uses the road that will be closed and on the assumption that diversionary routes will be signposted well in advance of the road closure.

Table 4.1 Estimated implications and durations of road closures

Route	Alternative Diversionary Routes		Forecast Closure Duration
	Additional Distance (miles)	Additional Time (mins)	
Station Road	1.4	3	High
Muckingford Road	1.2	3	High
Brentwood Road	0.7	2	Medium
Stanford Road	1.4	6	Medium
Baker Street	1.3	3	Medium
Heath Road	1.4	3	Medium
Stifford Clays Road	1.7	5	Medium
North Road	1.5	4	Short

Source: Hatch Regeneris

4.26 Based upon the combination of i) role of route for general traffic, bus services, and cyclists; ii) the scale of diversionary impact; and iii) the potential duration of any closure, the overall impact on each route has been classified on a four-level scale¹⁰:

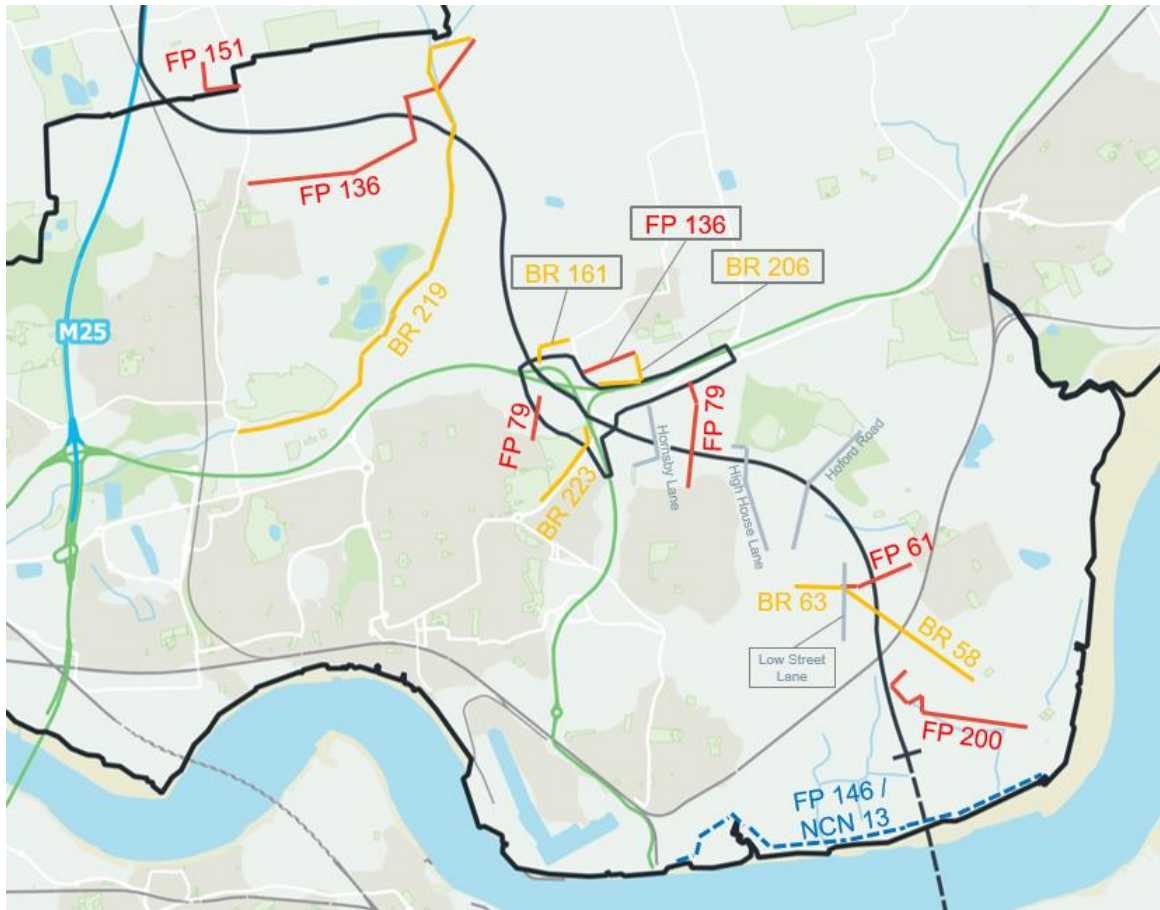
- **Station Road: Major adverse** impact either through road closure (predicted high duration) or construction-related traffic (forecast up to 14% increase in flows from construction traffic and significant HGV turning movements along the route)
- **Muckingford Road: Major adverse** impact either through road closure (predicted high duration) or construction-related traffic (forecast up to 11% increase in flows from construction traffic)
- **Brentwood Road: Moderate adverse** impact either through road closure (medium duration) or construction-related traffic (forecast up to 7% increase in flows from construction traffic)
- **Stanford Road: Moderate adverse** impact either through road closure (medium duration) or construction-related traffic (forecast up to 1% increase in flows from construction traffic)
- **Baker Street: Moderate adverse** impact through road closure (medium duration)
- **Heath Road: Moderate adverse** impact through road closure (medium duration) and loss of alternative route options through permanent closure of Hornsby Road
- **Stifford Clays Road: Moderate adverse** impact through road closure (medium duration)
- **North Road: Minor adverse** impact either through road closure (predicted short duration) or construction-related traffic (forecast up to 4% increase in flows from construction traffic)

¹⁰ Scale: **neutral** = no noticeable impact on travel; **minor adverse** impact = a relatively small effect on travel over a long duration of time (months) or a medium to high impact for a very short time period (a few days); **moderate adverse** impact = a medium effect on travel over a long duration of time (months) or a high impact over a short time period (a few weeks); **major adverse** impact = a relatively large effect on travel over a long duration of time (months)

Public Rights of Way (PRoW) closures

- 4.27 The Highways England PEIR documentation provides a list of PRoW that will be closed during the LTC construction phase. Whilst a specific time period is not stated, it is assumed it will encompass the majority of the construction phase. Figure 4.3 indicates the routes that will be impacted within Thurrock.

Figure 4.3 PRoWs and Tracks subject to temporary closure during LTC construction



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 4.28 The concurrent closure of all PRoW will create semi-permanent, east-west severance across LTC alignment during construction phase. This is particularly the case for the section of the LTC in Thurrock to the north of the A13, where there are no alternative road options for PRoW users to use to travel across the area. To the south of the A13, whilst some local roads may still provide non-motorised connections across the LTC alignment, these will be subject to closures themselves (as highlighted in the section above).
- 4.29 The construction phase will, therefore, create significant severance and disruption for PRoW users. A Countryside Agency consultation¹¹ found that 62.4% respondents use Rights of Way to walk, demonstrating the widespread value of these assets. It is understood that Highways England has some information on potential usage of these routes but this has not been made available at this time. Should this data become available then additional analysis could be undertaken to assess the scale of potential impacts.

¹¹ Source: Countryside Agency Use and Demand Study cited in the Rights of Way Improvement Plan 2007, Thurrock Council (p10) https://www.thurrock.gov.uk/sites/default/files/assets/documents/row_improvementplan_2007.pdf

Construction-related traffic

HGV movements to / from construction compounds

- 4.30 At the time of this assessment, the construction phase of the LTC Scheme was proposed to utilise three construction compound sites to the north of the River Thames. It is understood that this proposal may be subject to change, but full details were not available from Highways England at this time of this analysis. The assessment below is based upon the previously assumed three compound sites.
- 4.31 The most significant of the proposed compound sites will be in and around the proposed portal location for the tunnel leading under the River Thames (Tilbury site). This will encompass a significant area of land to the west of East Tilbury. A second proposed compound site is located off Brentwood Road, to the south of the A13 (Orsett Heath site), and the third located just outside Thurrock where the LTC will join the M25 (North Ockendon site).
- 4.32 Highways England provided indicative monthly profiles of HGV movements to each of the three compound sites. Whilst the profile of these movements is not broken down any further, e.g. by time-of-day, they provide an overarching understanding of the level of HGV vehicle trips that will be generated. At this stage it is unclear how any of the proposed temporary road closures (outlined in Section 4.19 above) could impact upon the routing of HGV traffic and so the assessment does not take this into account.
- 4.33 Overall there are estimated to be a peak of around 11,700 HGV movements per month within Thurrock. These are forecast to be distributed between the three compound sites, as set out in Table 4.2

Table 4.2 Forecast HGV Movements per Month to Compounds

Compound Site	Percentage of HGV Movements	HGV Movement per Month
North Ockendon	29.6%	3,460
Orsett Heath	37.9%	4,430
Tilbury	32.6%	3,810
Total	100.0%	11,700

Source: Hatch Regeneris. Data from Highways England PEIR.

- 4.34 By mapping out the routes to and from the compound sites, the impact this will have upon overall levels of traffic movements has been estimated. Figure 4.2 provides a representation.
- 4.35 It can be seen that there could be an increase in excess of 5% of current inter-peak traffic flows on routes leading to the main compound near Tilbury. This represents a significant increase in traffic on these routes, particularly as they will all be HGV or bus movements. Increases of between 2% and 3% are forecast around the other two compounds.

Operational Phase Connectivity Impacts

- 4.40 Post-construction phase of the LTC Scheme, the majority of the local road connections and PRow are planned to be restored, albeit not necessarily on precisely the same alignments.
- 4.41 For most of the local roads, bridges will be installed over the LTC Scheme (Muckingford Road, Brentwood Road, Stanford Road, Stifford Clays Road, North Road) but, in the case of Station Road, the LTC will pass over the local road.
- 4.42 Most of the PRow will have bridges over the LTC Scheme but some will be subject to significant diversions, described in more detail below and in Chapter 7.

Impacts upon Strategic Transport Movements

- 4.43 As a major strategic piece of infrastructure, most of the transport and connectivity impacts of the scheme have focused upon its role in supporting strategic traffic movements.
- 4.44 The LTC Scheme is designed to provide relief to the Dartford Crossing, at least in the short term. The Dartford Crossing is already operating above design capacity and is forecast to become further congested over time. The delivery of the LTC Scheme is forecast to reduce flows on the Dartford Crossing, albeit that background growth will have, effectively, consumed all spare capacity on the Dartford Crossing by 2027/28.
- 4.45 It is recognised that the Dartford Crossing is subject to frequent incidents that result in lane closures (1.8 times a day, on average¹²). These incidents have a major impact upon the operation of the M25 and linking roads, such as the A13 through Thurrock. Furthermore, when the Strategic Road Network becomes congested, driver attempt to take alternative routes via local roads across Thurrock and this creates large-scale congestion across the local road network and, particularly at peak travel times, this can cause gridlock.
- 4.46 The delivery of LTC would provide an alternative strategic crossing point across the River Thames. Based upon the Highways England traffic modelling outputs, the LTC will carry between 90,000 and 100,00 daily traffic movements across the River Thames by 2026. The section to the north of the A13 will carry between 75,000 and 80,000 daily vehicle trips.
- 4.47 The Highways England traffic modelling indicates that there will be an overall reduction in trips along the A13 on the section between the M25 and LTC of around 11%. Conversely, on the section of the A13 between A128/Brentwood Road and Stanford-le-Hope, traffic levels are forecast to increase by 19% as a result of LTC, making this section much busier for strategic and local traffic movements alike.
- 4.48 As explained earlier in this chapter, the re-design of the A13 / A1089 junction to incorporate the LTC Scheme creates a highly complex layout that incorporates the adjacent A13 / A128 / Brentwood Road junction. There are a limited range of traffic movements permitted through the proposed junction, as outlined in Table 4.3 and Figure 4.3.

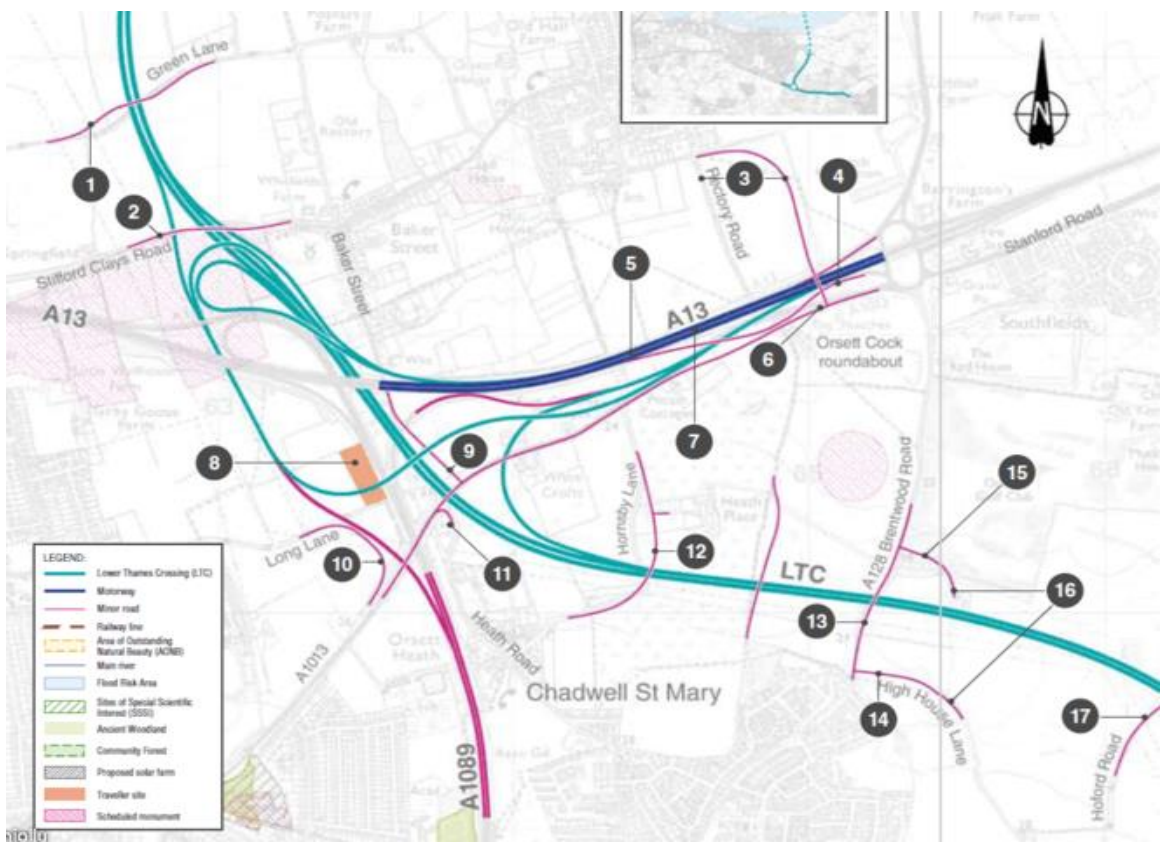
¹² Source: Freedom of Information request (Essex Live)

Table 4.3 Permitted and unpermitted strategic traffic movements through A13 / LTC Junction

	LTC Northbound	LTC Southbound	A13 Eastbound	A13 Westbound	A1089 Southbound	A128 Northbound
LTC Northbound	-	-	Yes	No	No	Yes
LTC Southbound	-	-	Yes	No	No	Yes
A13 Eastbound	No	No	-	-	Yes	Yes
A13 Westbound	Yes	Yes	-	-	Yes	Yes
A1089 Northbound	Yes	Yes	Yes	Yes	-	Yes
A128 Southbound	No	No	Yes	Yes	No	-

Source: Hatch Regeneris

Figure 4.5 Proposed A13 / LTC / A1089 / A128 junction layouts



Source: Highways England, 2018

4.49 This demonstrates that trips from the LTC Scheme will only be able to directly access the A13 eastbound (towards Stanford-le-Hope) and the A128 (towards Brentwood via the following junction). There are no links from the LTC to either the A13 westbound (towards the M25) or the A1089 (towards the Port of Tilbury).

- 4.50 Trips travelling westbound along the A13 (from Stanford-le-Hope) will be able to make the reverse movements back onto the LTC, but this is not the case for trips travelling south down the A128 (from Brentwood). This is due to reconfigurations to the A13 / A128 / Brentwood Road junction that do not enable access to the slip road leading to the LTC.
- 4.51 The same issue applies for trips travelling south down the A128 (from Brentwood) trying to access the A1089 (discussed further in the section below).
- 4.52 There is no access for trips travelling eastbound on the A13 (from the M25) to the LTC. All trips travelling to and from the north side of Greater London are expected to connect to the LTC at its direct junction with the M25. Trips coming out of Greater London on the A13 are expected to continue to use the Dartford Crossing to travel south into Kent. Whilst this might be a reasonable assumption in the short term, forecast background traffic growth means that post 2027/28 the levels of trips crossing the Dartford Crossing will return to current levels. In these circumstances, trips from Greater London may wish to utilise the LTC Scheme but would have restricted access to the scheme from the A13.
- 4.53 Any trips accessing the A13 from the junction with the A1012 from Chafford Hundred, Stifford Clays or Grays are also unable to access the LTC.
- 4.54 There are questions around how navigable the A13 junction with the LTC will be and whether its complexity will confuse and frustrate drivers. The route to and from the A1089 is a good example, with traffic able to access the LTC from the A1089 but not vice versa. Vehicle travelling along the LTC southbound from the M25, or northbound from the River Thames may be unaware that there is no direct access to the A1089 towards the Port of Tilbury. They may end up travelling onto the A13 and return at the next junction (A1014), causing unnecessary additional vehicle mileage and adding to congestion at junctions and an increase risk of accidents. Highways England have already indicated that upgrades to the A13/A1014 junction are likely to be required, as this is already an important junction providing access to London Gateway DP World.
- 4.55 It is still unclear as to the Highways England justification as to why an interface with the A13 / A1089 is required. Proposals limit the Council's Local Plan growth and will extend congestion points further east of junction 30. It remains the officer view that no interface with A13/A1089 should progress. However, potential future passive access points along the LTC alignment at South Ockendon / East Tilbury should be considered with direct major links to A13. This would better align with the Local Plan and would significantly enhance resilience on the network.

Impacts upon Local Transport Movements

- 4.56 As highlighted in the section above, there are a number of limitations to the strategic highway network around the junctions of the A13 with the LTC Scheme that will impact upon local transport movements.

A128 to A1089

- 4.57 The restricted movement from the A128 southbound (from Brentwood) to the A1089 (leading to the Port of Tilbury) represents a significant constraint. Whilst the A128 is not a formal part of the Strategic Highway Network, it provides an important link down from the A127 and centres such as Brentwood, Basildon and Billericay. It is estimated from the Highways England traffic modelling outputs that around 28,000 vehicles will use this route by 2026, in a scenario without LTC.
- 4.58 The introduction of the LTC, as proposed, would significantly restrict movements along this route. To access the A1089, vehicles would have to first travel eastbound to the A13 junction at Stanford-le-Hope, to the travel back westbound. This would equate to an

additional 4.2 miles and around 8 minutes, depending upon traffic levels, particularly at the A13/A1014 junction (as discussed in Section 4.54 above).

- 4.59 The Highways England traffic model indicates that around 1,100 vehicles may make this movement every day. This could equate to lost travel time of up to 55,000 hours pa, which would equate to around £650,000 lost value pa (in 2026 in 2019 prices).
- 4.60 The Highways England traffic modelling with LTC Scheme indicates that the number of trips using the A128 will fall by nearly 30%, demonstrating this route becomes considerably less attractive to use. Whilst this may have some benefits along the route, it comes at a cost to wider local connectivity.

Local Road Realignment

- 4.61 The LTC Scheme will result in the realignment of a number of local roads (to a greater or lesser degree), including A1013 Stanford Road, Station Road, Low Street Lane, Heath Road, and Baker Street. The realignments to Heath Road and Baker Street are relatively minor, to accommodate the design of the junction of the LTC with the A13. Low Street Lane is current closed to general traffic and so the realignment will only impact upon non-motorised modes of travel (discussed further below and in Section 7).
- 4.62 A13 Stanford Rd will be significantly diverted to accommodate LTC. Local requirement to improve capacity and access (for 2x school access) must be incorporated into the LTC design / delivery.
- 4.63 Station Road currently passes through the location that was proposed for the Rest and Service Area (RASA) that would have included a junction from the LTC. In order to accommodate this construction, Station Road would require a significant diversion around the northern and eastern edges of the site. This is estimated to marginally increase the route from Low Street to East Tilbury (south) but is only likely to add around 15 to 20 seconds per trip. Reference Case (without LTC) daily traffic flows in 2026 along the route are forecast to be around 4,000 vehicles per day. Bus route 374 also uses the route.
- 4.64 Whilst it is understood that this RASA is no longer part of Highways England plans, there is still the potential to provide 'soft' provision for a junction in this location. At this stage, it is unclear how this would impact upon the requirement to re-align Low Street. This will need to be considered further when revised Highways England plans become available.

Hornsby Lane

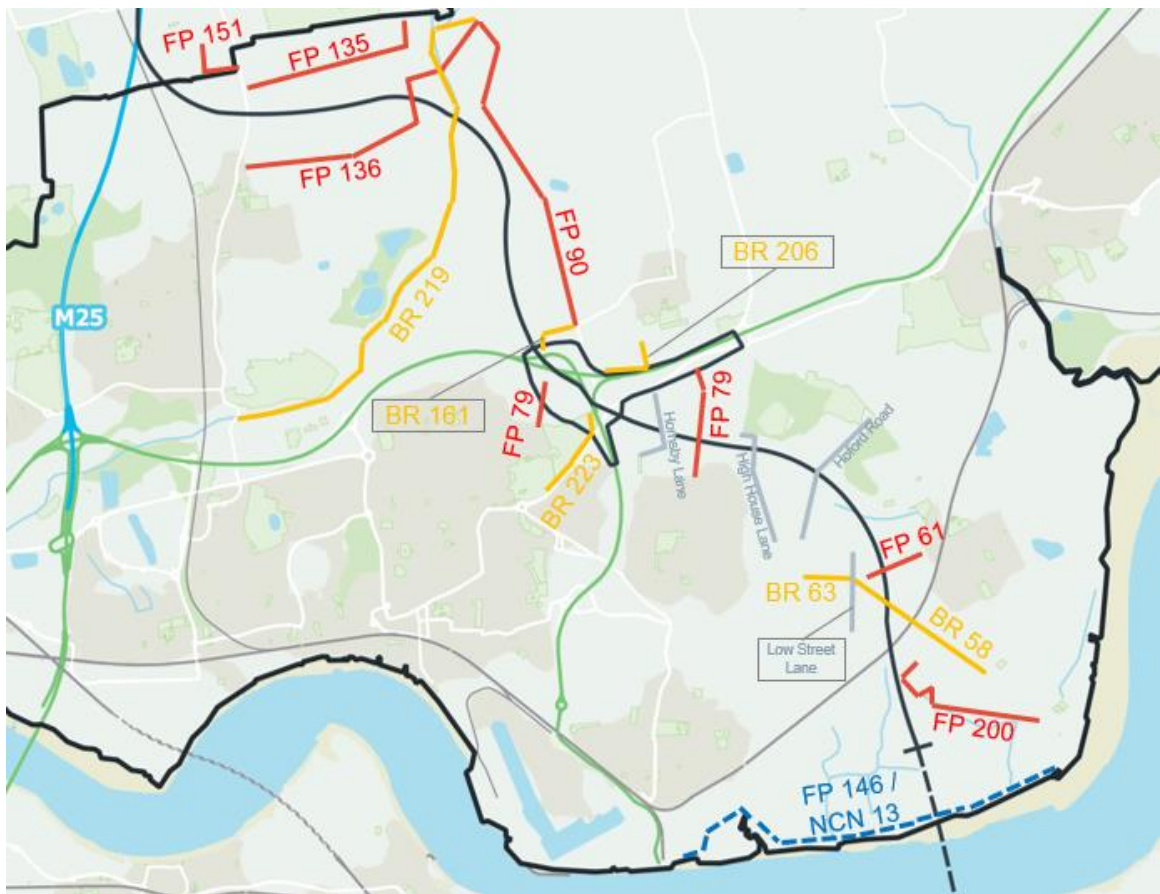
- 4.65 Alongside the realignment of local roads, one road will be permanently closed as a through route by LTC. This is Hornsby Lane. It is a single-track route that provides an alternative connection from Orsett Heath to Stanford Road and gives access to some local properties. There is no traffic flow data available for this route, but flows are likely to be minimal. The closure of the route to through traffic may have a minor adverse impact on local access to properties and residents in Orsett Heath, but it is not considered likely to generate any significant economic cost.
- 4.66 The route is also classified as a bridleway, as part of wider non-motorised connections, and it is assumed that the through route will be lost for these modes as well. This is discussed further in the following section.

Public Rights of Way (PRoW)

- 4.67 The operational phase of the LTC Scheme is not stated to entail any closures of PRoW; however, the status of Footpath 61 is currently unclear. Whilst this is a signposted route, and included within Thurrock's PRoW mapping, it would not appear to be well maintained or heavily utilised. None-the-less, there would appear to be no provision within the LTC Scheme proposals for this route to be retained and so it will be permanently severed.

- 4.68 A large number of other PRow will be subject to amendments and permanent diversions under the proposed operational phase of LTC. These are presented in Figure 4.6 and summarised underneath.

Figure 4.6 PRow and Tracks affected by LTC in Operational



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- NCN 13 / Footpath 146 (Coastal Route)
 - Retains general alignment but runs behind tunnel portal and new control buildings
- Footpath 200 (Coalhouse Fort to Station Road)
 - Diverted to join new Station Road alignment
- Bridleway 58 (Coal Road)
 - Diverted by 900m to pass under project embankment through new underpass
- Low Street Lane
 - Diversion west to retain access to Muckingford Road, adding 120m to 180m (depending on route)
- Bridleway 63 (Coal Road)
 - Retains general alignment but affected by realignment of Low Street Lane and Bridleway 58
- High House Lane (track)
 - Diversion west (along similar alignment to Footpath 78) to retain access to Brentwood Road, adding 180m to equivalent point-to-point distance

- Footpath 79 (Chadwell St Mary to Orsett)
 - Diverted about 600 m to cross project route on new overbridge, also carries realigned farm track
- Hornsby Lane (single track / bridleway)
 - Assumed it is closed as a through route (as with general traffic)
- Bridleway 223 (Gammonfields Way / Long Lane)
 - Realignment of route
- Footpath 79 (Long Lane leading to the north east into rough ground)
 - Shortened due to presence of new A1089 to LTC northbound slip road)
- Permissive Bridleway 206 (Baker Street to Mill Lane)
 - Realignment of route
- Bridleway 161 (Green Lane)
 - Realignment of route
- Footpath 90 (from Fen Lane running north towards Bulphan Fen)
 - Not directly impacted by LTC Scheme but will run alongside LTC alignment
- Bridleway 219 (alongside Mardyke)
 - Retains alignment but route under the LTC Scheme
- Footpath 136 (South Ockendon to Bulphan Fen)
 - Diverted about 650 m and raised about 9.5 m above existing level to cross project route on a new footbridge
- Footpath 135 (from North Road running east towards Bulphan fen)
 - Not directly impacted by LTC Scheme but will run alongside LTC alignment
- Footpath 151 (west from North Road - mainly located outside of Thurrock area)
 - Diversion of about 650 m and raised 3 m above ground level to cross project route to M25 link roads and to railways on new footbridge

4.69 We understand that Highways England has some usage data for PRoW that will be impacted but this has yet to be made available. The scale of the direct impact of these permanent diversions is not known, but it could be considered in due course.

4.70 Section 7 provides a further assessment of the potential impacts, in terms of community connectivity, resulting from the diversions.

Thames Crossing Closures

4.71 As highlighted earlier in this chapter, data collected on the frequency of closures of the Dartford Crossing¹³ indicates there are currently estimated to be around 1.8 closures of the Dartford Crossing per day. Whilst closures can vary significantly in duration, closures for emergency repairs are, typically, estimated to take 30 minutes. This would indicate that there is disruption on Dartford Crossing for 54 minutes of every 24-hour period (3.75% of the time).

4.72 Whilst the delivery of the LTC Scheme will provide more resilience to strategic crossing provision over the River Thames in this area, the combined LTC Scheme and Dartford Crossing are forecast to have significantly higher overall flows in the future.

¹³ Source: Freedom of Information request (Essex Live)

- 4.73 It might reasonably be anticipated that emergency repair works will be considerably lower on the LTC Scheme in early years of operation, in comparison to the Dartford Crossing. There are, however, considered to be elements of the LTC Scheme design that increase the risk of potential incidents. This includes the gradient of the incline from the tunnel portal into Thurrock, which is required to be relatively significant (in motorway terms) to be able to reach sufficient height to bridge across the Tilbury Loop Railway Line. Whilst it is recognised the incline is within relevant design standard, the design will increase the risk of incidents related to fully laden HGV traffic.
- 4.74 On the basis of the current level of closures on the Dartford Crossing, the redistribution of traffic flows, the increasing flows of traffic, and the design standards of the LTC Scheme, we have assumed the following level of closures could occur:
- Estimated 1.5 incidents per day on Dartford Crossing
 - Assumed to be an incident every 4 to 8 days on the LTC Scheme
- 4.75 On the basis of these incident rates, and an average duration of 30 minutes, the estimated probability of an incident occurring on both crossings, at some point in the same 30-minute period (not necessarily concurrently), as 4.9% on days when an incident occurs on each crossing.
- 4.76 On the basis that an incident occurs every day on the Dartford Crossing, and every 4 to 8 days on the LTC crossing, it is estimated that there could be an overlap in incidents between once every 80 to 160 days.
- 4.77 The impact of a concurrent closure of the Dartford Crossing and LTC Scheme has not been investigated by Highways England, however, given how significant an impact the closure of the Dartford Crossing alone has upon the local Thurrock road network, it is only reasonable to assume that it will be of a magnitude higher. The impact on local roads between the M25 and the A1089 is likely to be particularly severe. The impact upon business and communities is examined within Chapters 6 and 7, respectively, including the major risks it would present to accident and emergency response times across the network.

5. Impact Framework

Development of Impact Framework

- 5.1 The baseline research summarised in chapter 3 and the transport and connectivity impacts discussed in chapter 4 have supported the development of a bespoke impact framework to assess the adverse impacts of the LTC in Thurrock.
- 5.2 There is no single set of guidance relating to assessment of local economic and social impacts of major infrastructure projects. The guidance which currently exists (such as the HM Treasury Green Book and Department for Transport TAG) is highly technical and focuses predominantly on macro level transport and development (land value uplift) impacts, rather than local economic and social impacts.
- 5.3 As a result, while the framework takes into account and aligns with standard appraisal and impact assessment methodologies, it also reflects a highly tailored response to the local conditions and priorities in Thurrock.

Assumptions

- 5.4 The following overall assumptions have informed the development of the impact framework:
- The scope of this study means that the focus of the framework has been on cost impacts.
 - The framework allows for the collation of both quantitative and qualitative data. Impacts are quantified where possible, but in other places qualitative assessment of the types and magnitudes of potential impacts is necessary.
 - In quantifying impacts, a number of different types of value have been considered, recognising that a broad range of different stakeholders will be affected and that each of these will perceive value in different ways. The broad impacts types are: economic impacts (jobs and GVA), commercial impacts (land value uplift and revenue generation), community impacts (loss of housing, personal prosperity, health and wellbeing) and environmental impacts relating to physical environmental changes such as loss of habitat and noise pollution.
 - To ensure truly local assessment of impacts, the framework has been designed to allow for a bottom up and 'site by site' approach to the measurement of growth impacts. However, given sensitivities relating to some of the local development and regeneration conditions, all reporting has been at aggregated levels: LTC Development Boundary¹⁴; 50m / 200m / 500m buffers of the route; and borough level.
- 5.5 The impact framework has been designed to assess impacts during both the construction and operational phases. This occurs at a number of different impact geographies, including:
- Construction phase*
- LTC Development Boundary (shown in Figure 2.4 with Chapter 2)
 - 200m buffer around the Development Boundary

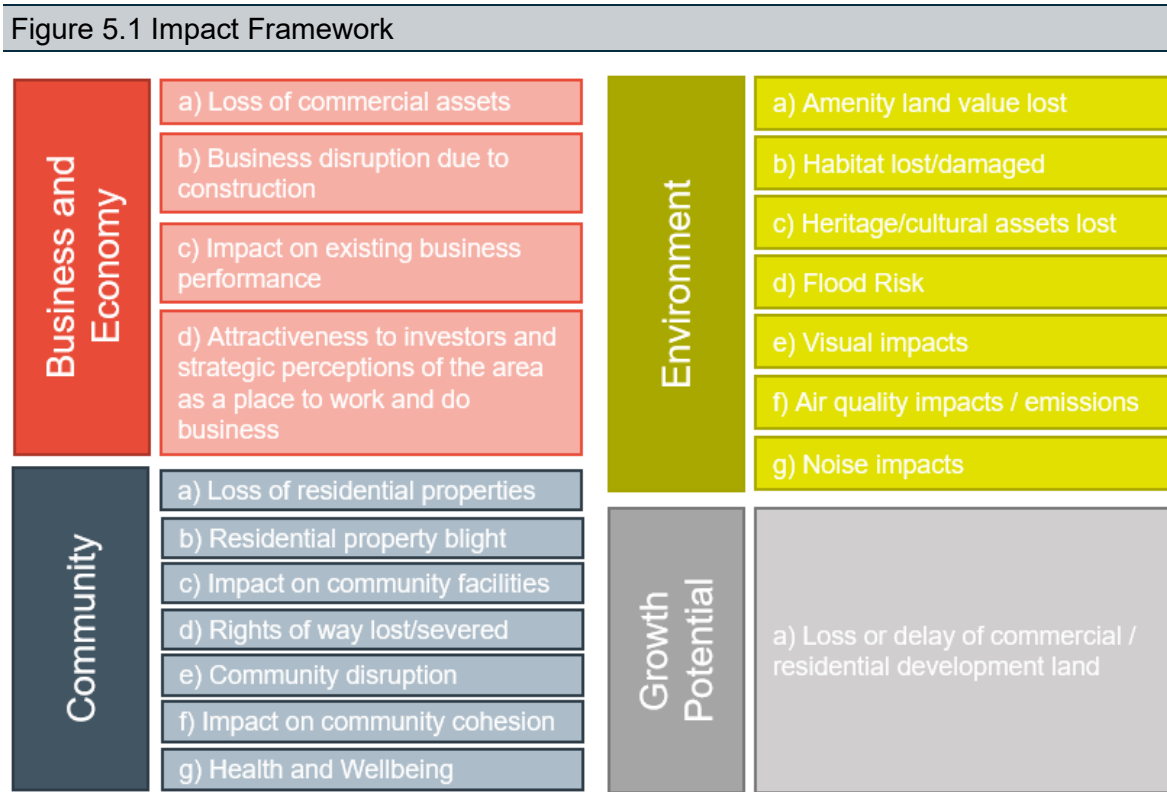
¹⁴ As set out in the Highways England 2018 Statutory Consultation

Operational phase

- The LTC alignment (shown in Figure 2.3 within Chapter 2)
- 50m, 200m and 500m buffers around the LTC alignment (shown in Figures C1, C2, and C3 within Appendix C)

Impact Themes and Sub-Themes

5.6 The overall impact framework has been categorised by four main themes and associated sub-themes. These are summarised in Figure 5.1 below.



Source: Hatch Regeneris

5.7 The four themes are not independent and there is overlap in impacts amongst them. They are each meant to capture the impacts from different perspectives. For this reason, the outputs are not all additive, in a collective sense.

Business and Economy

- 5.8 The business and economy theme focuses on understanding the impact of LTC on the Thurrock economy and business base. By assessing this impact across a range of sub themes, including on existing business operations and the potential for on-going investment after the LTC has been delivered, an overall assessment can be made on the costs (monetary and otherwise) of the LTC to the economy.

Key metrics for measuring impact:

- Productive land value lost
- Turnover lost
- Jobs lost
- GVA lost
- Delay to journey times for business trips
- Investment Potential

Community

- 5.9 The impact of the LTC on the people and communities in Thurrock is multi-dimensional and requires interrogation of a number of different sub-themes in order to understand the overall impact. These sub-themes include both qualitative and quantitative assessment of impact, ranging from the cost of demolished properties to community disruption and severance.

Key metrics for measuring impact:

- Economic cost of lost housing
- Blight to the value of housing
- Impact on community facilities
- Disruption to the communities' ability to access key assets and services
- Severance and community isolation
- Journey time increases due to PRow diversions
- Health and wellbeing impacts

Environment

- 5.10 The environment theme captures the Impact of LTC on the landscape and environment in Thurrock. This includes an assessment of the potential impacts to habitat and wildlife, heritage assets, landscape blight and increased noise and air pollution.

Key metrics for measuring impact:

- Loss of amenity value of land
- Loss of habitat and impacts to wildlife
- Adverse impacts to heritage
- Increased risk of flooding
- Visual blight
- Impacts of increased noise
- Reduction in air quality / increased emissions

Growth Potential

- 5.11 The delivery of the LTC is likely to impact upon the future residential and commercial development potential in Thurrock due to the land take required. A significant sterilisation of space as a result of the LTC will have implications for the delivery of Thurrock's Emerging Local Plan and could prevent the council from achieving its housing and employment land targets.

Key metrics for measuring impact:

- Number of potential housing units lost or delayed
- Amount of potential commercial space lost or delayed
- Loss of land value for potential lost/delayed housing
- Loss of land value for potential lost/delayed commercial space
- Land value blight for residential and commercial land

6. Business and Economy Cost Impacts

Overview

- 6.1 This chapter assesses the impact of LTC on Thurrock's businesses and economy, including the loss of commercial assets, business disruption, and adverse impacts on the strategic perceptions of the area as a place to invest and do business.
- 6.2 The impacts considered within this chapter fall into two main categories:
- **Direct impacts:** as a result of demolition and / or direct loss of land
 - **Indirect impacts:** on the wider economy and businesses in the borough as a result of congestion from construction traffic and LTC operations
- 6.3 As a result, the assessment study areas for this chapter include:
- **LTC Development Boundary¹⁵:** businesses that fall within or around the LTC Development Boundary will experience *direct effects* during construction;
 - **Thurrock Borough:** businesses located in the towns and villages around the LTC route, the wider Thurrock economy and perceptions of the borough may be *indirectly* impacted during the construction and operational phases.

Impact Assessment

- 6.4 The impacts assessed under the Business and Economy costs theme are:
- a) Loss of commercial assets
 - b) Business disruption due to LTC construction
 - c) Impact on existing business performance
 - d) Attractiveness to investors and take up of space as well as strategic perceptions of the area as a place to work and do business

a) Loss of Commercial Assets

- 6.5 The delivery of LTC will require the temporary and permanent loss of commercial assets in Thurrock. Commercial assets include business premises or land used for commercial purposes, such as agriculture.

Scope and Methodology of Assessment

- 6.6 Understanding the impact of LTC on commercial assets has been guided by the scope of assessment below.

¹⁵ As set out in the Highways England 2018 Statutory Consultation

Figure 6.1 Loss of Commercial Assets – Scope of Assessment



Source: Hatch Regeneris

- 6.7 The information presented in the Highways England 2018 PEIR suggests that no businesses will be lost as a result of LTC. However, local information from Thurrock Council finds that the compulsory purchase of Springfield Farm on Stifford Clays Road will result in the closure of a small local business – Springfield Cattery. The purchase of the farm and Cattery means that commercial premises will be permanently lost as a result of LTC.
- 6.8 In addition, productive agricultural land in Thurrock will be permanently lost as a result of the construction and operation of LTC.
- 6.9 The impact of the loss of commercial assets has been calculated using a land value approach to determine the cost of land lost. To calculate this impact, the following assumptions have been used:
- Commercial land is assumed to be lost in the first year of construction of LTC (2021)
 - MHCLG appraisal guidance¹⁶ on the value of industrial or agricultural land per ha in the South East LEP region has been used to determine the value of land lost:
 - Agricultural: £22,500 per ha in 2017 prices
 - Industrial: £1,800,000 per ha in 2017 prices
 - The amount of commercial land lost due to the closure of the Cattery has been determined by calculating the area of Springfield Farm
 - The amount of agricultural land lost has been determined by looking at all the non-development land within 50m of the LTC route. This is to prevent double counting with the growth impacts captured in chapter 9.

Assessment of Impacts of the Loss of Commercial Assets

- 6.10 Around 0.3ha of commercial land will be permanently lost due to the closure of the Cattery. This equates to £546,000 lost in present value (2019 prices).
- 6.11 Analysis also shows that there could be around 152 ha of agricultural land loss due to the construction and operation of LTC. This equates to a value of £3.5m in present value (2019 prices).
- 6.12 In addition to this cost, the loss of productive agricultural land will impact upon farm productivity and the farming sector in Thurrock, with implications for the future of jobs and

¹⁶ Land Value Estimates for Policy Appraisal

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710539/Land_Values_2017.pdf

livelihoods. Assessment by Highways England for the LTC Preliminary Environmental Impact Report found that there are 6 farms located within the LTC development boundary and a further 16 farms within 200m of the boundary (as shown within mapping¹⁷ created by Highways England).

- 6.13 Many of these farms are likely to experience direct loss of land or significant disruption (explored further below in impact 6b) as a result of the construction of the LTC. In total there are 53 farms within 1km of the LTC development boundary.

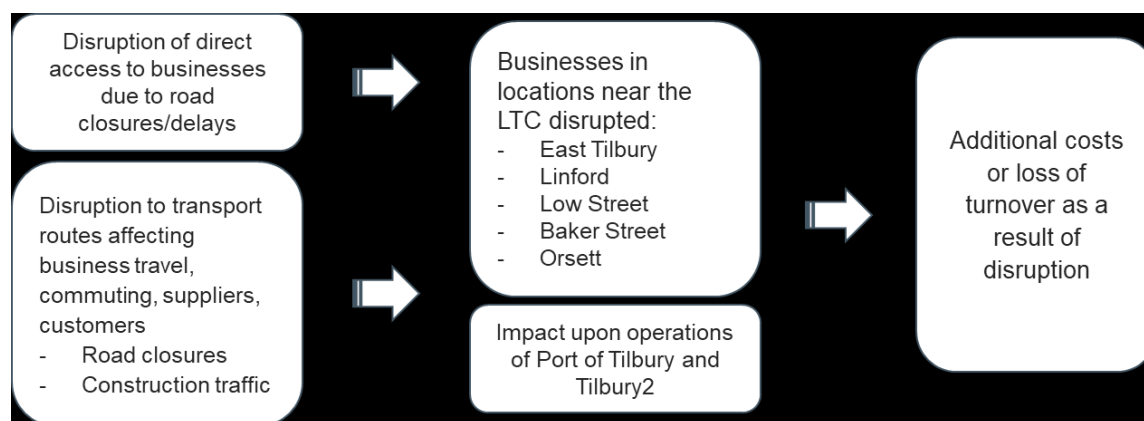
b) Business Disruption due to LTC Construction

- 6.14 A number of businesses are located in close proximity to the LTC route and main construction work sites. It is likely that these businesses will be adversely impacted due to the disruption associated with LTC construction.
- 6.15 As noted in Chapter 4, our assessment of the construction phase of the LTC Scheme is based upon information available within the PEIR, and does not take into account any recently updated proposal by Highways England in January 2020.

Scope and Methodology of Assessment

- 6.16 Businesses located in and around the towns and villages near the LTC may be subject to disruption in two ways as a result of construction:
- 1) Disruption of direct access to businesses
 - 2) Negative impacts to town centre performance as a result of disruption, and therefore reduced footfall and turnover for businesses
- 6.17 To understand this impact, the following scope of assessment has been used:

Figure 6.2 Business Disruption – Scope of Assessment



Source: Hatch Regeneris

Assumptions to underpin (1) disruption of direct access

- 6.18 The details of road closures during the LTC construction phase is discussed in Chapter 4. The limited information that is available, has been used to assess potential disruption to access to specific businesses located in close proximity to the LTC development boundary.

¹⁷ Lower Thames Crossing Preliminary Environmental Information Report: Figures (Highways England, 2018) <https://hatchengineering.sharepoint.com/:b:/r/sites/UrbanSolutionsUK/ajobs/H360739/Input/Documents%20from%20the%20Client/LTC%20Scheme/PEIR%20Figures%20%20Chapter%2014%20People%20and%20Communities%20complete.pdf?csf=1&e=2xfjzG>

Assumptions to underpin (2) negative impacts to town centre performance

- 6.19 Firstly, business turnover was determined using turnover data by sector for Thurrock from the ONS in combination with business location data from the VOA.
- 6.20 The magnitude of impact on business turnover was then determined using information on:
- the footprint of LTC construction works (see Figure 1.2);
 - proposed LTC construction movements (as set out in Chapter 4); and
 - information on existing town centre catchment areas.
- 6.21 This enabled an assessment of which areas around the LTC are most susceptible to adverse impacts on turnover, as shown in Figure 6.3 below.
- 6.22 The assessment suggests that businesses in East Tilbury, West Tilbury and Low Street are particularly at risk given their proximity to LTC construction worksites and traffic routes.
- 6.23 The impact of construction traffic on local roads is set out in Chapter 4. This highlights the highest impacts are predicted to be on Station Road and Muckingford Road, followed by Brentwood Road, Stanford Road, Baker Street, Heath Road, and Stifford Clays Road. Lower level impacts are also forecast for North Road. Using this assessment, alongside the proximity of the LTC construction boundary, as well as underlying characteristics of each area, an overall assessment of the scale of likely impact upon turnover has been generated.

Figure 6.3 Likelihood of LTC Impact

Area	Distance from LTC Development Boundary	Character	Likelihood of LTC Impact on Turnover
East Tilbury	0.5km	Village	High
Southfields	0.6km	Settlement/Hamlet	Medium
Linford	0.2km	Settlement/Hamlet	Medium
West Tilbury	0.3km	Settlement/Hamlet	High
Low Street	0.1km	Settlement/Hamlet	High
Baker Street	0.1km	Settlement/Hamlet	Low
Orsett	0.65km	Village	Low
Tilbury	2km	Small Town	Medium
Chadwell St Mary	1km	Small Town	Medium

Source: Hatch Regeneris

- 6.24 To model the sensitivity of local businesses to changes in turnover, we have examined two scenarios with different levels of impact (summarised in Figure 6.4 and described below):
- Under the small turnover impact scenario, we have modelled the possible economic impact of a 1% decline in footfall in the high impact town centres and a 0.5% decline in footfall in the lower impact town centres. A conservative medium / central case scenario of 3% is applied.
 - Under the moderate turnover impact scenario, we have modelled the impacts of 5% and 2.5% declines in footfall in the respective town centres. A conservative medium / central case scenario of 3% is applied.

Figure 6.4 Turnover Impact Scenarios		
Scenario	Likelihood of Impact	Reduction in turnover
Moderate	High	-5%
	Medium / Central Case	-3%
	Low	-2.5%
Small	High	-1%
	Medium / Central Case	-0.75%
	Low	-0.5%

Source: Hatch Regeneris

Assessment of Impacts of Business Disruption

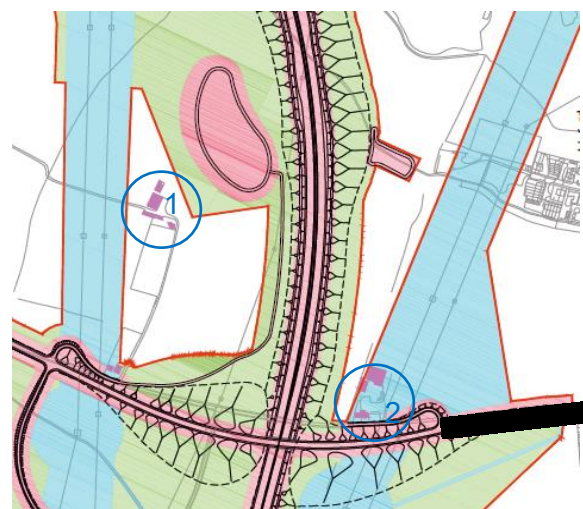
6.25 As stated in the scope of assessment, businesses located near to the LTC may be subject to disruption during LTC construction in two ways:

1) Disruption to direct access

6.26 A number of local roads will be subject to prolonged delays during LTC construction, particularly the east-west running local roads south of the A13 junction and north of the Tilbury loop railway line. This has the potential to directly disrupt businesses due to the closure or diversion of their main access route.

6.27 Analysis of the proposed road changes suggests that at least 6 farms and businesses in Thurrock could have their single direct route of access temporarily disrupted during construction or permanently re-routed/diverted. Disruption to 4 of those businesses is likely to be particularly heightened during the construction of bridges to divert local roads over the LTC due to their proximity to the LTC route. The re-routing of Muckingford road is a key example of this:

Figure 6.5 Muckingford Road Re-routing



Source: Highways England. 1: Becksland Farm, 2: Ashlea Farm

- Two farms (Ashlea Farm and Becksland Farm) currently have direct access routes off the Muckingford road. Both farms are located in close proximity to the LTC route. As shown in Figure 6.5, the diversion of Muckingford road over the LTC will result in new access routes to the two farms. The construction of these is likely to cause disruptions to the farm operations.

6.28 Other examples of businesses likely to be disrupted include:

Port of Tilbury/Tilbury 2

The closure of roads and increased congestion in the south of Thurrock are likely to result in adverse impacts to the Port of Tilbury, the largest employer in the borough. In particular, there could be moderate adverse delays to movements to and from the Port of Tilbury and Tilbury 2 via the A13/A1089 junction during construction (see section 6.30 below).

Fox Inn

- 6.29 The Fox Public House is located within 100m of the development boundary on Heath Road, between Chadwell St Mary and the A13 junction. The creation of the new A1089 slip road onto the LTC will result in significant construction work directly adjacent to the pub, as well as closure and disruption to the roads that serve it. Given the customer facing nature of the business and reliance on customers accessing it by car, it is likely that the Fox Inn could be subject to moderate adverse impacts.

A13 Junction Impacts

- 6.30 Section 4 outlines the potential construction related impacts of LTC on the operation of the current A13 / A1089 junction. Whilst specific traffic management plans are unavailable it has been assumed that some speed restrictions, lane reductions, and occasional road closures will be in place during certain points in the construction phase.
- 6.31 Based on the same approach adopted in Chapter 4 for all general traffic, it is estimated that around 20,000 business trips per day pass through the junction with an origin or destination within Thurrock.
- 6.32 The delays that will be incurred at the junction will translate into an additional 360 to 900 business hours per day, or 116,000 to 288,000 per annum, depending upon actual average journey times through the roadworks.
- 6.33 Depending upon the duration that traffic restrictions are in place around the A13 junction works takes, this level of delay translates to an estimated monetised economic cost of between £2.4 million (1 year) to £18.3 million (3 years) in present values (2019 prices) to the Thurrock business economy.
- 6.34 Nearly 65% of these impacts will be associated with business trips along the A1089 and will include all traffic heading to and from the Port of Tilbury, as well as other businesses located along this corridor, such as Amazon and Uniserve.

2) Negative impacts on town centre performance

- 6.35 The table below highlights the economic impact of business disruption. Under the small impact scenario, there could be a loss of £4m in turnover, 26 FTE jobs and £1.5m in GVA in one year and up to £8.8m over 6 years. This could increase to up to £18m turnover, 115 FTE jobs and £6.6m GVA (1 year) / £28.9m GVA (6 years), under the moderate impact scenario. Included in Figure 6.6 below is also the GVA impacted costed over 3 and 6 years.
- 6.36 These figures are intended to illustrate the sensitivity of businesses and the local economy to adverse impacts, rather than a robust assessment of impact. However, the sensitivity testing suggests there's will be a need for appropriate mitigation measures to be put in place in Thurrock to protect businesses if the LTC goes ahead.

Figure 6.6 Business Disruption Impact

Impact Measure (over x number of years)	Small Impact			Moderate Impact		
	1 year	3 years	6 years	1 year	3 years	6 years
Turnover Loss	£4.03m	-	-	£18.15m	-	-
Employment Loss (FTE)	26	-	-	115	-	-
GVA Loss from Employment	£1.5m	£4.4m	£8.8m	£6.6m	£19.6m	£38.9m

Source: Hatch Regeneris

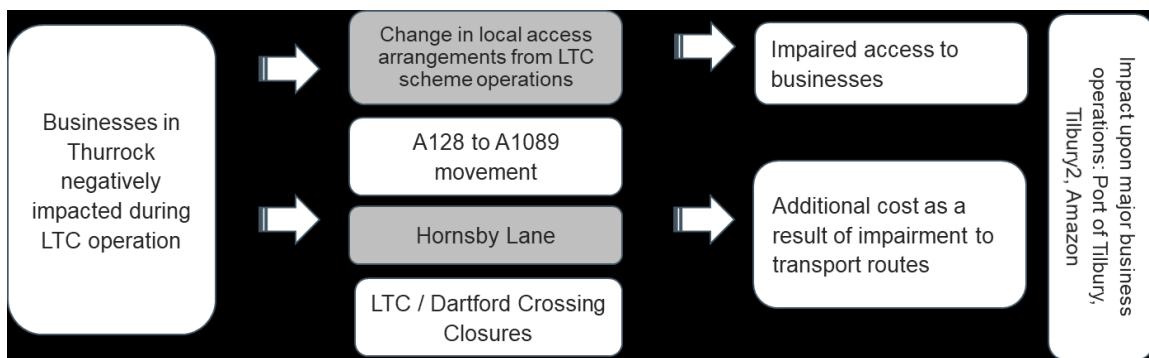
c) On-going business performance

6.37 Once the LTC has been delivered, there may be on-going adverse impacts to business performance as a result of physical access constraints in the area. This could result in additional travel time for business-related trips which has an economic cost.

Scope and Methodology of Assessment

6.38 The logic map below (Figure 6.7) details the areas included in the assessment of the impact to on-going business performance.

Figure 6.7 On-going business performance – Scope of Assessment



Source: Hatch Regeneris

6.39 The two main outcomes are:

- Constraint to physical access in the area as a result of the scheme
- Additional costs due to transport impacts, measured by the cost of additional travel time. Travel time impacts are assessed over a 60-year appraisal period, which is standard for UK Department for Transport assessments. Journey times are assumed to increase as a result of:
 - Re-configuration to the A13 junction resulting in a loss of direct access between the A128 and A1089 (as set out in Chapter 4).
 - Simultaneous incidents to the LTC and Dartford Crossing which would significantly increase congestion and impair transport accessibility in Thurrock. The baseline used in this assessment (as set out in Chapter 4) is an average of 1.8 closures a day on the Dartford Crossing.

Assessment of Impacts of On-going Business Disruption

6.40 Despite the closure of Hornsby Lane and localised disruption to roads around the LTC, there is unlikely to be any major ongoing impact for businesses as a result of these issues due to the absence of businesses within a close catchment to the LTC.

6.41 There will, however, be costs associated with increased travel time during LTC operation which will affect some business trips within Thurrock:

- 1) The additional travel time associated with reduced access onto the A1089 from the A128 could cost up to £14.5 million. It is estimated that 40-50% of this impact is linked to movements to and from the Port of Tilbury and Tilbury 2, costing £5.8m-

£7.25m. Given the reliance of the port, and surrounding businesses such as Amazon, on road freight and distribution, this is likely to negatively impact on business operations.

- 2) It is estimated that there could be concurrent incidents (whereby there is at least a 5-minute overlap in incidents) of the LTC and Dartford Crossing between every 80 to 160 days. Whilst average closures associated with incidents on the Dartford Crossing are around 30 minutes, the impact they can have upon traffic disruption on the M25 and approach roads can last significantly longer, in some instances well over an hour.

The impact of a concurrent incident on both the Dartford Crossing and LTC could result in widespread disruption within the local vicinity. This will include the A13 through Thurrock, as well as knock-on impacts to the local road network across Thurrock. It is envisaged that the scale of potential delays could be exponentially high with both crossing points closed.

To assess these impacts would require detailed traffic modelling of the area, which is unavailable. An indicative analysis has been undertaken to demonstrate the scale of potential impacts.

If a concurrent closure resulted in delays along key routes running parallel to the A13 (A1306, B186, A1013) and the A1089 then the traffic modelling data available indicates this could affect up to 1,200 business trips. If delays average were an average of 30 to 45 minutes per vehicle then the impact would equate to £15,000 to £23,000.

Allowing for a concurrent closure of between every 80 to 160 days, these delays are the equivalent to an economic loss of between £1.2m and £3.5m over the full appraisal period.

d) Attractiveness to Investors and Strategic Perceptions

- 6.42 It is possible that LTC construction will have an adverse impact on business investment into existing (vacant) business premises due to reduced investor confidence. The negative impacts on business performance discussed above, as well as significant flows of LTC construction traffic (and related congestion) and wider LTC construction related blight (such as noise and visual impacts), may significantly weaken perceptions of the area as a place to do business.
- 6.43 As discussed in Chapter 3, Thurrock requires significant investment in new sectors and skills training if it is going to achieve its aspiration of economic diversification. However, the addition of a major piece of infrastructure, with its associated blight and disruption, may create additional challenges in attracting investment and people to live and work in the area. As a result, adverse impacts of the LTC could result in missed opportunities to support the development of Thurrock and ensure growth across its economy. This is particularly important given the recent publication of the Thames Estuary Growth Commission report¹⁸ and the governments agenda to support economic growth in the region.

¹⁸ Thames Estuary Growth Commission 2050 Vision, 2018
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718805/2050_Vision.pdf

Attractiveness to Investors – take up of vacant space

- 6.44 Currently, parts of Thurrock have high town centre vacancy rates which is often a marker of a struggling economy. Research presented in the House of Commons High Streets and Town Centres 2030¹⁹ report finds that empty shops can cause a ‘negative feedback loop’, discouraging investment and re-enforcing low consumer confidence in an area.
- 6.45 Whilst it is not possible to quantify the impact of the LTC on reduced investor confidence, it is likely that the LTC could have a moderate adverse effect on the vitality of the areas surrounding the route and the inward investment in these areas.
- 6.46 As shown in Figure 6.8, Stifford Clays, Tilbury, Stanford-Le-Hope have high vacancy rates. To ensure these town centres, and others, grow and are more prosperous and resilient in the future, there needs to be an increased take up of space and better utilisation of current capacity. This requires inward investment and an ability to attract more visitors to increase demand and footfall. However, these locations are in close proximity to the LTC and will be subject to disruption, as discussed in impact 6b.
- 6.47 In particular, the disruption associated with local road closures and diversions over the 6-year LTC construction period could have a major impact on accessibility to these town centres, reducing the attractiveness of these locations as a place to do business. This could impact on investor confidence and, as a consequence, the levels of inward investment.

Centre	% Town Centre Vacancy 2018
Grays Core	8.5
South Ockenden	10.6
Corringham	6.6
Stanford-le-Hope	10.0
Tilbury	18.3
East Tilbury	0.0
Chadwell St Mary	9.1
Little Thurrock	7.1
Stifford Clays	17.6
Chafford Hundred	0.0
Linford	0.0

Source: Thurrock Town Centre Health Check. Bold text indicates the vacancy rate is at or above the national average.

- 6.48 Whilst some of the smaller centres near the LTC have very low vacancy rates (East Tilbury and Linford have 0%) and therefore may appear less vulnerable to the disruption associated with LTC, it is worth noting that these retail centres have very low numbers of units (e.g. 6 in East Tilbury). Therefore, any impact of LTC on business closures (even if small) could see vacancy rates jumping to at least 16%.

¹⁹ High Streets and Town Centres in 2030
<https://publications.parliament.uk/pa/cm201719/cmselect/cmcomloc/1010/1010.pdf>

Strategic perceptions of Thurrock

- 6.49 There is limited direct evidence to establish the extent to which current perceptions of Thurrock may constrain strategic investment within the area. This is due to a lack of business and other attitudinal surveys about Thurrock. However, a number of issues strongly characterise Thurrock, including poor infrastructure and accessibility, low paid employment and poor community wellbeing. The delivery of the LTC is likely to exacerbate these issues of perception, in turn potentially making the area a more challenging location to recruit employees and retain staff, for example. This could have additional impacts upon the overall competitiveness of the area and, in particular, may affect the ability to diversify the economy and generate jobs within higher value sectors.
- 6.50 The severance impacts to Thurrock residents (explored in Chapter 7) and business communities, created by LTC, could also add to this challenge. In the longer term, this could potentially have some impact upon property values.

Summary - Business and Economy

- 6.51 It is clear that the LTC could significantly impact upon the local economy and businesses in Thurrock, particularly in relation to disruption as a result of LTC construction and operation.
- 6.52 The overall impacts of the themes discussed above are summarised in Figure 6.9.

Figure 6.9 Summary of Key Business and Economy Impacts

Impact Area		Estimated Cost to Thurrock
a) Commercial assets / land value lost		c. £4 million
b) Business disruption during construction	Jobs loss	115 FTE
	GVA Impact	up to c. £39 million
c) On-going business performance		up to c. £18 million
d) Attractiveness to investors & strategic perceptions		<i>Minor to Moderate Adverse</i>

Source: Hatch Regeneris

7. Community Cost Impacts

Overview

- 7.1 This chapter covers the impact of LTC on communities located within Thurrock, including effects on residential properties, community facilities and public rights of way (PROW).
- 7.2 Impacts considered within this chapter fall into two main categories:
- **Direct impacts:** demolition / loss of residential properties and land; and
 - **Indirect impacts:** blight on communities (residential properties) and community facilities caused by the construction and operation of LTC, such as changes in noise, air quality and visual effects. The disruption of the LTC on the community cohesion is also considered.
- 7.3 Study areas have been established based on the following assumptions:
- **LTC Development Boundary²⁰:** residential properties / community assets that fall within the LTC Development Boundary will experience *direct effects*;
 - **200m from the LTC Development Boundary:** residential properties / community assets that fall within 200m of the LTC Development Boundary will experience potential *blight effects during the construction phase*; and
 - **450m from the LTC alignment:** residential properties / community assets that fall within 450m of the LTC alignment will experience potential *permanent blight effects during the operational phase*.

Impact Assessment

- 7.4 A number of impacts have been identified under the Community Costs theme. These are:
- a) Loss of residential properties
 - b) Residential property blight
 - c) Loss of community facilities
 - d) Public rights of way lost or severed
 - e) Community disruption due to LTC construction
 - f) On-going impact on community cohesion
 - g) Health and wellbeing

²⁰ As set out in the Highways England 2018 Statutory Consultation

a) Loss of Residential Properties

7.5 In order to construct the LTC, permanent land take is required. As a result, there will be a physical loss of housing, with 20 homes being demolished. All these homes are located within the LTC Development Boundary. This loss of housing has a permanent impact, spanning both the construction and operational phases of the LTC.

Scope and Methodology of Assessment

7.6 The impact of the loss of housing is calculated through the assessment of two costs. These are:

- 1) the loss of the value of the land on which housing is lost
- 2) the cost of relocating the households

7.7 Both costs have been included in the assessment to capture both the capital and revenue cost of the loss of housing. As a result, the overall impact of the loss of residential properties is determined by combining the value of 1) and 2).

7.8 In order to calculate these costs, a number of assumptions have been made:

- The Highways England PEIR 2018 reports that 20 properties will be demolished to the north of the River Thames. As a full Environmental Impact Assessment has not yet been carried out, the exact location of these 20 properties is unknown. However, the report states that the majority will be lost around the A13 junction in Thurrock. Therefore, for the purposes of this assessment, it is assumed that all 20 properties are within the Thurrock boundary.
- Given the lack of detail on construction timescales, it has been assumed that the housing will be lost in the first year of LTC construction (2021).
- To calculate the value of land lost, the approach to calculating land value uplift in the MHCLG Appraisal Guide²¹ has been used. This uses the Thurrock residential land value of £3.42m per ha in 2017 prices and assumes a density of 35 dwellings per ha. The value was then inflated to 2021 (first year of construction) prices.
- The cost of relocation has been calculated using the cost of re-housing households in rental accommodation over the 6-year construction period. Average monthly rental values in Thurrock have been used for this calculation.

Assessment of Impacts of the Loss of Residential Properties

7.9 The overall impact of the loss of residential properties to the Thurrock economy is £3.1m in present value (2019 prices). This is the combination of:

- 1) £1.97m cost of lost residential land
- 2) £1.15m cost of relocating households

²¹ Land Value Estimates for Policy Appraisal

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710539/Land_Values_2017.pdf

b) Residential Property Blight

7.10 It is likely that residential properties in close proximity to the LTC will be affected by blight resulting from visual impacts, noise impacts and traffic impacts. Blight tends to have an adverse impact on property prices, resulting in an economic cost for local residents.

Scope and Methodology of Assessment

7.11 The assessment of blight considers the economic cost to properties within a 500m buffer of the LTC during the operational phase. This includes both the number of properties that will be affected and the monetary impact of reduced residential prices, as shown in Figure 7.1 below.

Figure 7.1 Residential Property Blight – Scope of Assessment



Source: Hatch Regeneris

7.12 The monetary impact of blight has been determined based on research from similar major infrastructure schemes. In particular, evidence of property blight impacts emerging in relation to HS1 and HS2 have been used to estimate the impact of LTC blight upon local house prices.

7.13 Analysis by PwC²², based upon discussions with DfT and HS2 Ltd, forecasts on-going blight from transport infrastructure ranging up to 10% within 120m and up to 6% within 500m. Further research from Hampton International²³ linking the housing market to major transport infrastructure estimated that properties outside London within 500m of the HS2 alignment fell by 4.5% in absolute terms, but 8.9% in relative terms to wider house price trends.

7.14 Therefore, on the basis of this wider evidence base, we have applied a 10% loss of value to properties within 200m of the LTC, whilst for properties between 200m and 500m, a 5% loss in value has been applied.

7.15 In addition, a number of other assumptions underpin this assessment:

- The number of properties within 200m, and 500m buffers was calculated using the 2018 VOA Stock of Properties dataset. This data is at the LSOA geography, and therefore a best-fit match between the buffer and LSOAs was used.
- Property value has been calculated using the average house price of a semi-detached house in Thurrock in 2019; £325,250.

²² HS2 Property Bond Cost Report, PwC (2014)

²³ Linking Housing Markets: The effect of transport infrastructure on housing, Hamptons International (2014)

Assessment of Impacts of Blight to Residential Properties

- 7.16 Properties within 200m and 500m of the LTC currently have a combined property value of around £455m. Based upon the above research, this could result in a (theoretical) loss of value to residents of around £25.4m across that area (see Figure 7.2).
- 7.17 Whilst blight impacts are measured as a one-off loss in value, and therefore the potential differential impacts of the LTC construction vs operational phases cannot be captured in monetary terms, it is likely that construction will have a detrimental impact on properties close to the route. The noise, visual and air pollution associated with construction activities and construction traffic will temporarily make properties in close proximity to the boundary unattractive to the market.

Figure 7.2 Blight Impacts on Residential Property Prices

Buffer Zone	Number of Properties	Estimated Property Value	Estimated Reduction in Value	Estimated Loss of Value
200m	160	£52m	10%	£5.2m
500m	1,240	£403m	5%	£20.2m
Total	1,400	£455m	-	£25.4m

Source: Hatch Regeneris

- 7.18 In addition to the direct monetary loss of value resulting from blight to properties, it is recognised that there will be broader impacts of blight upon the 'sense of place' that result from a 6-lane motorway being constructed through the middle of the borough. Villages and hamlets surrounding the alignment will become less attractive places to live, work and visit. Whilst it is challenges to quantify this type of impact, it remains an important consideration in the context of blight.

c) Impacts on Community Facilities

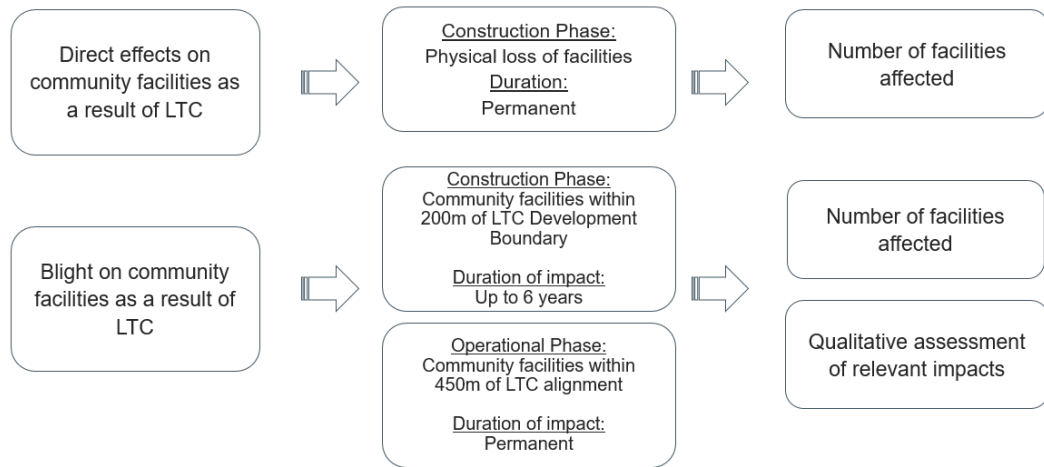
- 7.19 Within this report, community facilities are defined as public or publicly funded resources that provide for the physical, social, cultural and/or intellectual development or welfare of the community. This includes, but is not limited to, resources such as educational facilities care homes, health services, places of worship, community halls, libraries and sports and recreational facilities.
- 7.20 Due to the limited availability of alternatives within rural communities, privately owned resources which provide key community functions have also been considered as part of the assessment – for example public houses and community shops.

Scope and Methodology of Assessment

- 7.21 The assessment of impacts on community facilities will consider effects during the construction and operation of LTC. Impacts on community facilities could include:
- Demolition;
 - Temporary or permanent loss of land from community facilities;
 - Blight effects such as adverse changes in noise, air quality, accessibility, visual impacts and isolation.

The scope of the assessment is summarised in the Figure 7.3 below:

Figure 7.3 Community Facilities – Scope of Assessment



Source: Hatch Regeneris

7.22 There are no industry-wide accepted methods for assessing community effects on infrastructure projects. Determining the significance of impacts on community facilities has therefore been developed using existing guidance and methods established for other nationally significant infrastructure, e.g. HS2 and Silvertown Tunnel.

7.23 The significance of a community effect has been determined by the magnitude of the impact and the sensitivity of the community facility or users of the community facility.

Magnitude

7.24 The magnitude of an impact is its severity or scale considering the spatial extent, the number of people affected and the duration of the impact. To determine the magnitude, the characteristics of the impact will be assessed and classified as high, medium, low or negligible.

Table 7.1 Magnitude of Cost Impact

Impact magnitude	Definition
High	A very adverse cost impact that is very likely to affect large numbers of people (with the number depending on the local context and nature of the impact) and that will usually constitute a long-term impact on baseline conditions
Medium	A cost impact that is likely to affect a moderate number of people (with the number depending on the local context and nature of the impact)
Low	A cost impact that is likely to affect a small number of people and/or the base case in not affected beyond the short or medium-term duration
Negligible	A cost impact that is temporary in nature and/or is anticipated to have a slight or no effect on the well-being of people

Source: HS2 Ltd (2018): HS2 Phase 2b - Scope and Methodology Report

Sensitivity

7.25 The sensitivity of the community facility will be determined by the extent to which users of the facility have the capacity to adapt to any adverse impacts. This will relate to the importance, scarcity and size of the community facility. Sensitivity will be classified as high, medium or low.

Table 7.2 Sensitivity of effects	
Impact magnitude	Definition
High	Individuals or user groups that have little or no capacity to experience the impact without incurring a significant effect
Medium	Individuals or user groups that have a limited or average capacity to experience the impact without incurring a significant effect
Low	Individuals or user groups that generally have adequate capacity to experience impacts without incurring a significant effect

Source: HS2 Ltd (2018): HS2 Phase 2b - Scope and Methodology Report

Significance of effects

- 7.26 The significance of a community effect is the product of the magnitude of the impact and the sensitivity of users of the affected community facility.
- 7.27 Significant impacts are those considered to have major adverse or moderate adverse effects. Major adverse effects occur if both the magnitude and sensitivity are high or medium. Effects are moderate adverse if the magnitude is high and the sensitivity is low (or vice versa).
- 7.28 Other effects, equating to minor adverse or negligible, are not considered to be significant.

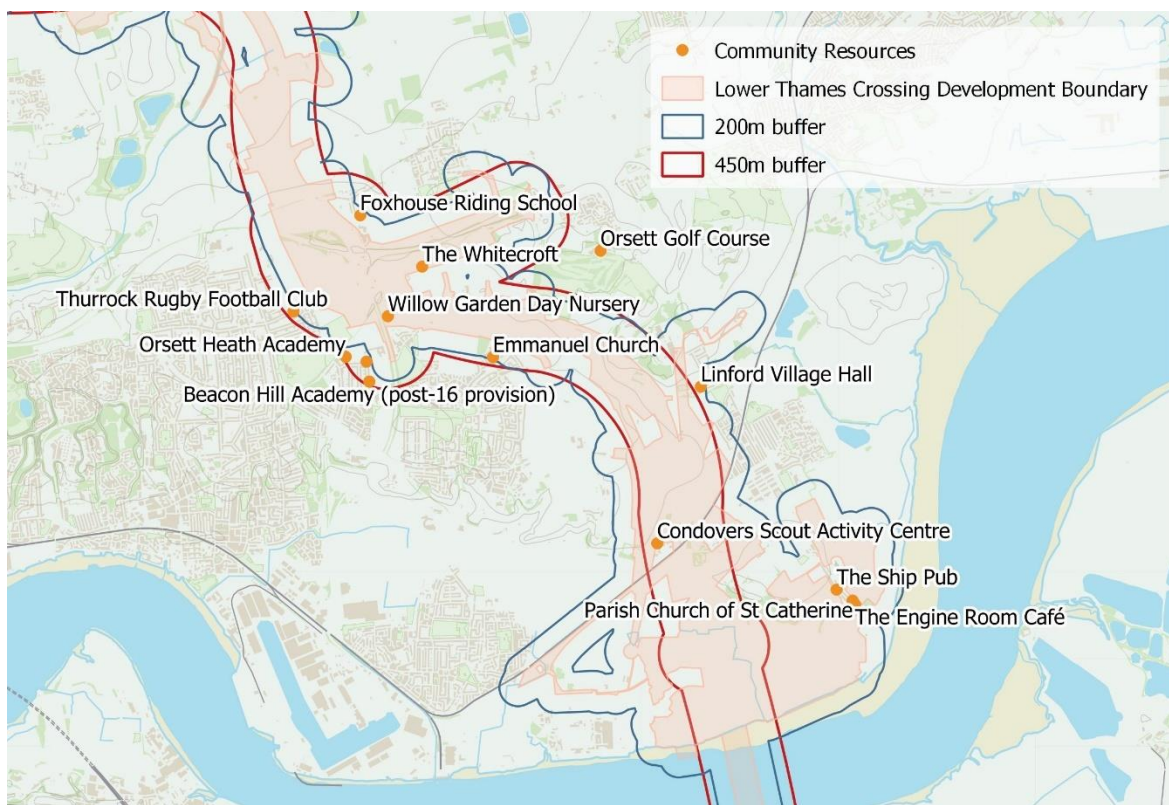
Table 7.3 Significance of effects					
Significance		Impact magnitude			Negligible
		High	Medium	Low	
Sensitivity of users	High	Major adverse (significant)	Major adverse (significant)	Moderate adverse (significant)	Minor adverse (not significant)
	Medium	Major adverse (significant)	Moderate adverse (significant)	Minor adverse (not significant)	Negligible (not significant)
	Low	Moderate adverse (significant)	Minor adverse (not significant)	Negligible (not significant)	Negligible (not significant)

Source: HS2 Ltd (2018): HS2 Phase 2b - Scope and Methodology Report

Assessment of Impacts on Community Facilities

- 7.29 This section describes where there are forecast to be significant direct and indirect (blight) impacts of LTC Scheme on community facilities within Thurrock. The assessment of impact does not take into account any potential mitigation measures that may be introduced alongside the scheme. Appendix A - provides a full assessment of all community facilities within the study area.
- 7.30 Figure 7.4 shows the location of all community resources considered as part of this study. A total of 14 community facilities have been identified within the construction and / or operational study areas.

Figure 7.4 Map of Community Facilities



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Impact Assessment

Direct Impacts

- 7.31 Two community facilities are located within land required for the LTC Development Boundary.

Condovers Scout Activity Centre

- 7.32 Land required for the diversion of utilities spans across the entire site of the Condovers Scout Activity Centre. Located on Church Street, the Centre is a formal 3.5-acre site with accommodation, a campsite, wash facilities and facilities for a wide range of sport and game activities for children and young people.
- 7.33 The temporary requirement for land is likely to result in the loss of the Centre throughout the six-year construction period – potentially impacting the viability of the facility permanently. As there are no other scout activity centres between the River Thames and the A127, the construction of LTC is considered to have a **significant major adverse effect** on this community facility and children in the local community.

Thurrock Rugby Football Club

- 7.34 Land required for the construction of LTC and realignment of Long Lane will temporarily require land intended for the reconfiguration of the Thurrock Rugby Football Club. The Club currently has 20 teams including men's, women's, youth and children teams. To accommodate the construction of a new secondary school, Thurrock Rugby Football Club is to be reconfigured to the east of its current site. The temporary requirement for land will result in the loss of four pitches (comprising two Junior U11-U12 pitches, one Junior U9-U10 pitch and a mini pitch) for the duration of the construction phase. As the pitches lost

are purpose built for the use of children, and the nearest alternative pitches are located in Stanford-Le-Hope and South Ockendon, the loss of these facilities will result in a **significant major adverse effect**.

Blight during construction

- 7.35 During the six-year construction phase, seven community resources will experience significant adverse effects.

The Engine Room Café

- 7.36 The LTC Development Boundary, including construction compounds, will be located 170m from The Engine Room Café is located in East Tilbury. The café, located at Coalhouse Fort, is open six days a week (Tuesday to Sunday) and is anecdotally a central community facility in the village.
- 7.37 It is likely that the cafe could be heavily used by construction workers should provisions not be made within construction compounds. This could result in reduced availability and enjoyment of the café for local residents and visitors.
- 7.38 The prolonged closure of Station Road for up to six years will further limit access to the café, increasing walking distances for some users (e.g. Low Street residents) by up to 4.8km – an increase of 2.1km. The nearest alternative café is located 3.8km away at Thurrock Thameside Nature Park. As such, in the absence of mitigation, it is considered that the reduced availability and accessibility of the café could reduce the enjoyment and use of the café by local residents, resulting in a **moderate adverse effect which is significant**.

The Ship Pub

- 7.39 The LTC Development Boundary, including construction compounds, will be located in proximity to The Ship Pub in East Tilbury. The Ship is the only public house in the village of East Tilbury and is open seven days a week. The nearest alternative public house is located in Linford, 2.4km north of The Ship.
- 7.40 The proximity of the pub to the LTC Development Boundary could result in environmental changes and reduced availability of the facility for local users due to increased demand by construction workers. As such, the enjoyment of the pub by local residents could be reduced.
- 7.41 Similar to the Engine Room Café, the prolonged closure of Station Road will restrict access to the pub for up to six years, resulting in increased walking distances of up approximately 2km for some residents (increasing a pedestrian's journey time from 28 minutes to 53 minutes). As pubs are of economic, social and cultural importance in village life, it is considered that impacts could have a **moderate adverse effect which is significant**.

The Whitecroft

- 7.42 The Whitecroft is a 56-bedroom care home for older people, specialising in care for people with dementia. The Whitecroft is located on the A1013 Stanford Road, adjacent to the LTC Development Boundary. Construction of LTC will further require the closure of Stanford Road for up to six years, closing the main access route into Grays (and essential facilities within Grays, such as medical facilities) for users of the care home.
- 7.43 As dementia can heighten the effects of sensory changes, construction noise could be particularly distressing and disorientating for residents of The Whitecroft. The presence of construction workers and increase in HGV traffic, will also increase safety risks for care home residents. It is therefore considered that the construction of LTC will have a **significant major adverse effect** on the well-being of care home residents.

Willow Garden Day Nursery

- 7.44 Land required for the construction of LTC will be located 40m from the Willow Garden Day Nursery, resulting in adverse environmental changes, such as noise and air quality, for users of the nursery. Willow Garden Day Nursery provides early years education for with capacity for 36 children aged 0-5 years and is open Monday to Friday from 7am to 7pm. In addition to its proximity, the nursery has a strong focus on outdoor learning, as such adverse changes environmental factors are likely to have an adverse impact on child learning and development.
- 7.45 The increase in HGV traffic on the local road network will further increase safety risks for users accessing the nursery school. As there are no other nursery schools in Orsett Heath, as such impacts are considered to have a **significant major adverse effect** on children using the nursery.

Orsett Heath Academy

- 7.46 Land required for the construction of LTC will be located 200m from the proposed location of Orsett Heath Academy, resulting in adverse environmental changes, such as noise and air quality, for users of the school. The school, due to open in temporary accommodation from September 2020, will provide secondary education for up to 240 pupils with the permanent site providing education for up to 1,200 pupils from September 2022.
- 7.47 Adverse environmental factors, such as noise, have the potential to negatively affect learning. Additionally, the increase in HGV traffic on the local road network will further increase safety risks for children accessing the school. Due to the sensitivities of the key user group, impacts are considered to have a **significant major adverse effect**.

Treetops School (including Post-16 Provision)

- 7.48 The construction of LTC will require the prolonged closure of the A1013 Stanford Road, which is an access route to Treetops Schools for pupils living east of the A1089 Dock Approach Road. Treetops School is a specialist school with 276 children and young people (aged 3 to 19 years) who experience moderate learning difficulties, particularly in the areas of autism. Prolonged road closures and the presence of HGV traffic on local roads will alter journey times and increase the unpredictability of commuting. This can be distressing for many people with learning difficulties, particularly autism.
- 7.49 There are no alternative schools in the area. Beacon Hill Academy could act as a suitable alternative school for some pupils in the area, however the main school site is located approximately 11km away (in South Ockendon), with the post-16 provision located adjacent to Treetops School. Moreover, Beacon Hill Academy does not offer places to pupils where there is a primary diagnosis of autism. Consequently, the prolonged closure of Stanford Road is considered to have a **significant major adverse effect** on users of Treetops School.

Treetops 2

- 7.50 Treetops 2 is a new free school programmed for delivery in September 2022. This school will be located adjacent to Treetops School and will also be accessed via A1013 Stanford Road. Treetops 2 school is a specialist all-through school with 140 places for pupils between the ages of 4-16 catering for Moderate Learning Difficulties and Autistic Spectrum Condition. The prolonged closure of Stanford Road is considered to have a **significant major adverse effect** on users of Treetops 2 School.

Beacon Hill Academy (Post-16 Provision)

- 7.51 Beacon Hill Academy is a 75-place special academy for children and young people (aged 2 to 19 years) who have severe and complex learning difficulties. The construction of LTC will require the prolonged closure of the A1013 Stanford Road, which is an access route to the Post-16 Provision site.
- 7.52 For pupils living east of the A1089 Dock Approach Road, the prolonged road closure and the presence of HGV traffic on local roads will alter journey times and increase the unpredictability of commuting. This can be distressing for many people with learning difficulties. Whilst Treetops School could provide an alternative education facility for some pupils, it is located adjacent to the Beacon Hill Academy post-16 site and therefore subject to experience the same impacts. The prolonged closure of Stanford Road is therefore considered to have a **significant major adverse effect** on users of the Beacon Hill Academy post-16 provision.

Blight once operational

- 7.53 Significant adverse effects will be experienced by two community facilities during the operational phase.

The Whitecroft

- 7.54 The permanent alignment of LTC will be 190m from The Whitecroft. It is not expected that LTC will result in significant environmental effects once operational. However due to the sensitivity of residents of The Whitecroft, if unmitigated significant **moderate adverse effects** are likely to occur.

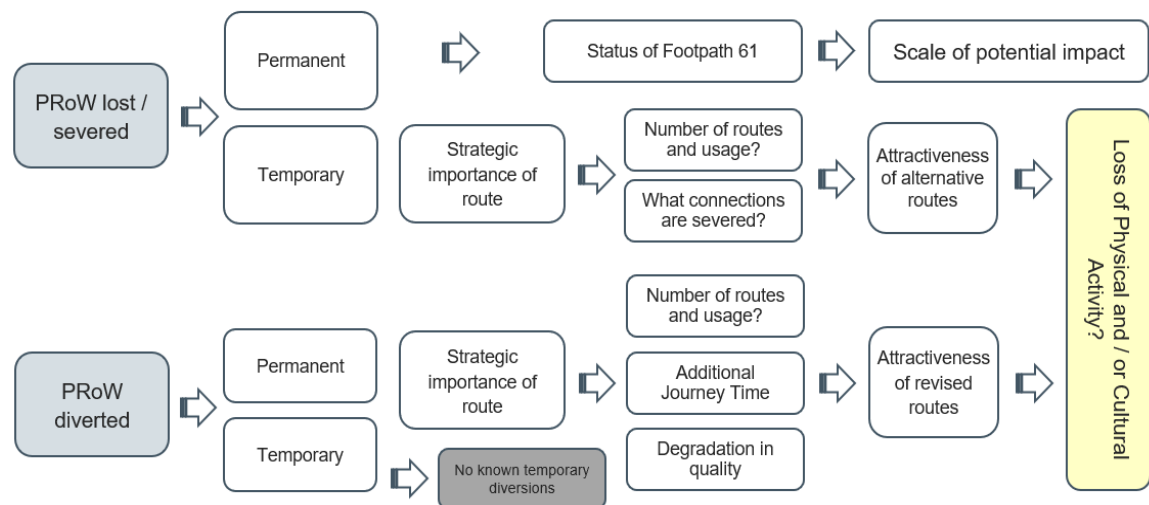
Willow Garden Day Nursery

- 7.55 The permanent alignment of LTC will be 330m from Willow Garden Day Nursery. It is not expected that LTC will result in significant environmental effects once operational. However due to the sensitivity of children and the emphasis on outdoor learning at the nursery, significant **moderate adverse effects** are likely to occur if impacts are unmitigated.

d) Impact of Rights of Way

- 7.56 Thurrock's Public Rights of Way (PRoW) network consists of 155.7 km of definitive footpaths, over 50 km cycle route and 16.6 km bridleway. As outlined within Chapter 4, definitive usage data of individual PRoWs is not currently available; however, research by the Countryside Agency indicated that over 60% of individuals use the PRoW network. Thurrock Council Active Travel Strategy (Oct 2017) highlights importance of a sufficient PRoW network in affecting the quality of life of local communities
- 7.57 Chapter 4 also outlines the range of direct impacts the construction and operation of the LTC Scheme could have upon individual PRoWs. Figure 7.5 below summarises these impacts by type and considers how the direct impacts may translate into loss of economic value and social wellbeing.

Figure 7.5 PRow Impacts – Scope of Assessment



Source: Hatch Regeneris

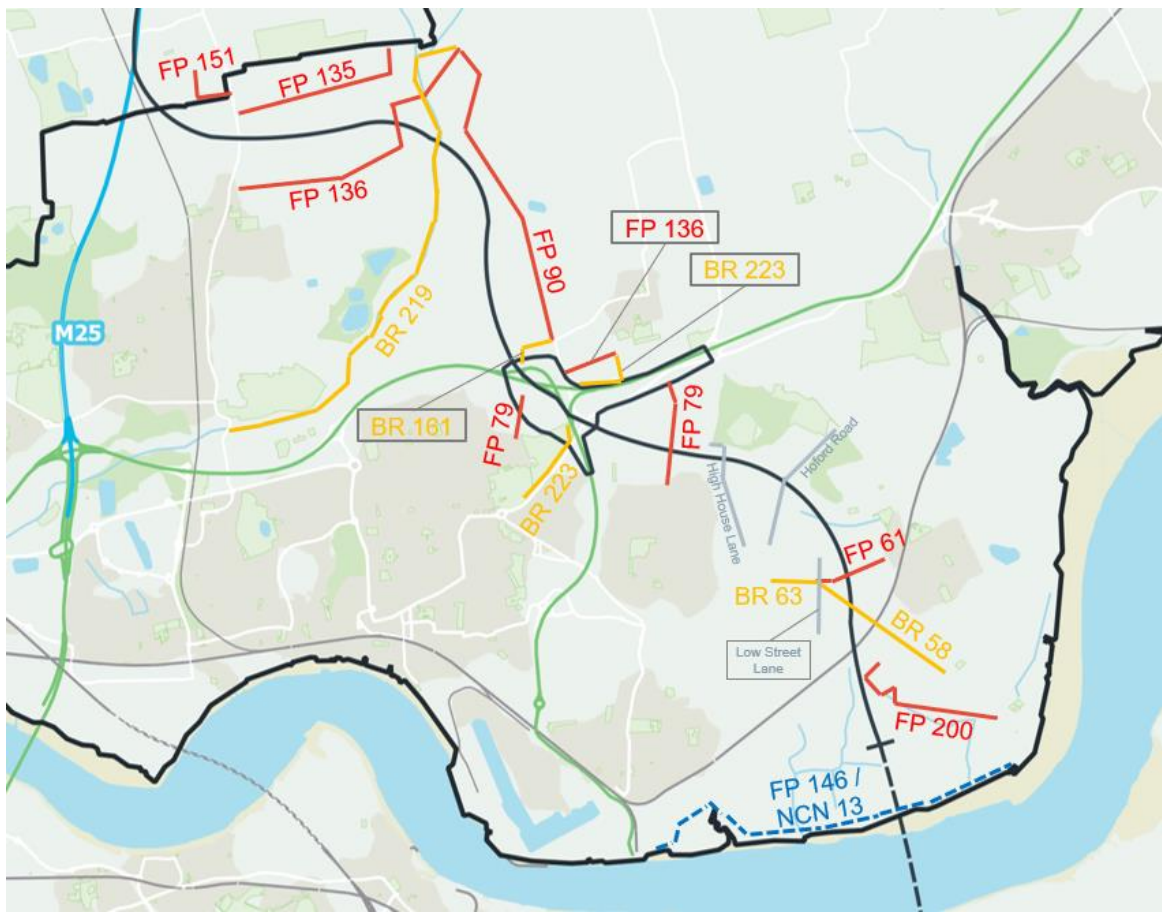
Permanent Severance

- 7.58 Whilst Highways England documentation suggests that there are no PRow routes permanently severed, the status of Footpath 61 remains unclear. The footpath currently provides access from Bridleway 63 (part of Coal Lane connecting towards Chadwell St Mary) and Beechcroft Avenue in East Tilbury (located to the north of the Tilbury Loop Railway Line) (see figure 7.7 below). The route feasible provides a connection between East Tilbury and Chadwell St Mary. Usage data is not available, but it would appear that the route may not be particularly well-utilised.
- 7.59 Whilst it may not be heavily utilised, there would appear to be no provision within the LTC Scheme proposals for this route to be retained and so it will be permanently severed.
- 7.60 Muckingford Road is located around 275m to the north and will provide a crossing point over the LTC; however, Muckingford Road currently has no pedestrian provision and would not offer the same amenity or safety as a segregated footpath.
- 7.61 A route under the LTC will be provided as part of the diversion to Bridleway 58 (Coal Lane). This will be located approximately 450m south of the current Footpath 61 alignment. A diversion along this route would add approximately 850m onto a trip from East Tilbury and Chadwell St Mary.
- 7.62 Whilst the direct economic impact of the loss of this route is unlikely to be significant (given the anticipated low current footfall) it is likely to reinforce the physical severance created by the LTC Scheme between East Tilbury and Chadwell St Mary. There will no longer be a direct walking route between the two communities. This will discourage pedestrian trips and disadvantage those without access to other modes, such as car. This is considered further in the section (f) below on community cohesion.

Temporary Severance

- 7.63 A large number of PRow, cycle routes, and tracks are impacted during the LTC construction phase, a number of which could be temporarily severed whilst the scheme is built. This includes 17 routes identified within Thurrock, which are presented in Figure 7.6 and listed below:

Figure 7.6 PRow, Cycle Routes, and Tracks Impacted by LTC

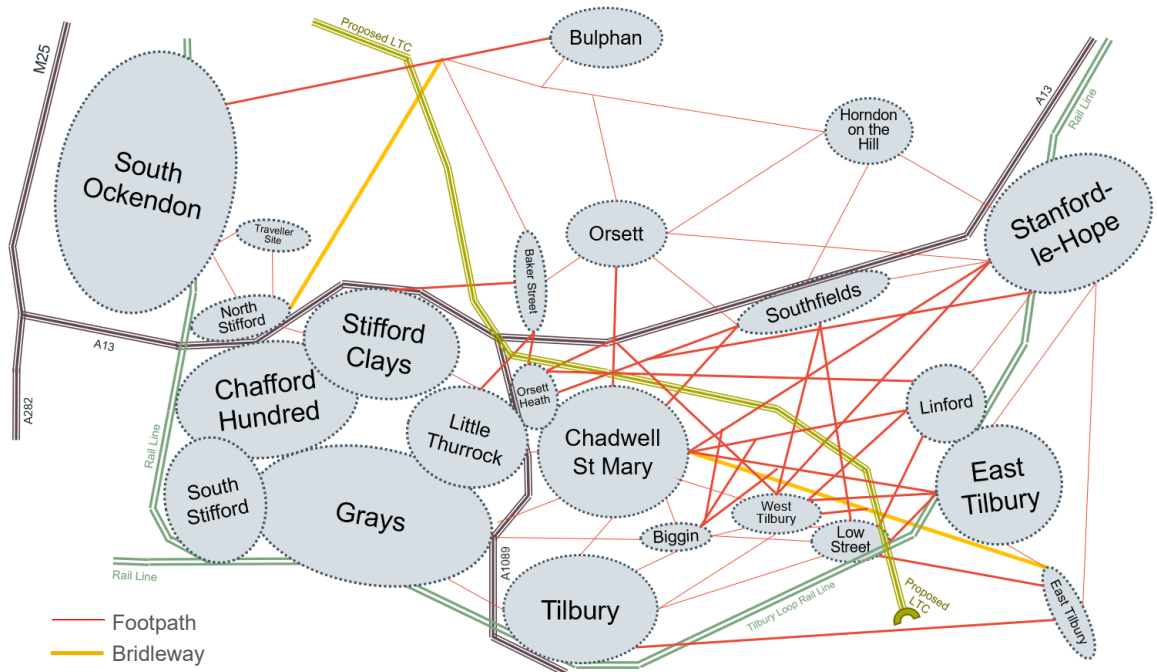


Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 1) NCN 13 / Footpath 146 (Coastal Route) – undetermined if this will remain open during the construction phase.
- 2) Footpath 200 (Coalhouse Fort to Station Road)
- 3) Bridleway 58 (Coal Road)
- 4) Low Street Lane (track)
- 5) Bridleway 63 (Coal Road)
- 6) Holford Road (track)
- 7) High House Lane (track)
- 8) Footpath 79 (Chadwell St Mary to Orsett)
- 9) Bridleway 223 (Gammonfields Way / Long Lane)
- 10) Footpath 97 (Long Lane leading to the north east into rough ground)
- 11) Permissive Bridleway 206 (Baker Street to Mill Lane)
- 12) Bridleway 161 (Green Lane)
- 13) Footpath 90 (from Fen Lane running north towards Bulphan fen)
- 14) Bridleway 219 (alongside Mardyke)
- 15) Footpath 136 (South Ockendon to Bulphan Fen)
- 16) Footpath 135 (from North Road running east towards Bulphan fen)
- 17) Footpath 151 (west from North Road - mainly located outside of Thurrock area)

7.64 To assess the relative importance of the PRoWs an assessment has been undertaken to determine how they provide connections between the surrounding local communities. Figure 7.7 provides a graphical representation of this analysis, with local community areas presented, alongside the connections that will cross over the LTC alignment and be severed during the LTC construction phase.

Figure 7.7 PRoW, Cycle Routes, and Tracks Impacted by LTC



Source: Hatch Regeneris

It is estimated that a total of 29 different PRoW connections between local villages, towns, and urban centres across Thurrock will be affected by the construction of the LTC Scheme. Table 7.4 provides a demonstration of the number of connections for different geographic groupings of communities.

Table 7.4 Local PRoW Connections

Area	Communities	PRoW Connections Across LTC Alignment
Area 1 (North)	Baker Street, Orsett, Bulphan, Horndon on the Hill	11
Area 2 (North East)	Southfield, Stanford-le-Hope	12
Area 3 (East)	Linford, East Tilbury (North & South)	14
Area 4 (Villages)	Low Street, West Tilbury, Biggin	16
Area 5 (Tilbury)	Tilbury	11
Area 6 (Central)	Chadwell St Mary, Orsett Heath	11
Area 7 (Grays)	Grays, Little Thurrock, Stifford Clays, Chafford Hundred, South Stifford	13
Area 8 (North West)	South Ockenden, North Stifford	6

Source: Hatch Regeneris

- 7.65 This indicates that the villages of Low Street and West Tilbury, and the settlement/hamlet of Biggin, will be particularly affected by the temporary severance of PRow routes, reducing accessibility to a wide range of nearby communities across a large number of separate routes. Similarly, Linford and East Tilbury will also be significantly impacted.
- 7.66 It is not yet known how the construction of LTC may be phased and whether the closures to the PRow will be continuous throughout much of the construction phase, if the closures will be staggered to minimise the collective impact, or at what point overbridges / underpasses will be provided. Given the scale of the project, it is anticipated that severance will occur across long periods of time and that for any one PRow that is closed, there is likely to be very limited viable alternative routes.
- 7.67 The closures are therefore likely to result in a range of impacts over a prolonged period, including:
- **Reduced accessibility to facilities and services:** Some routes provide connections between nearby local communities that could be utilised to access schools, local shops, churches, and recreational facilities. Whilst the routes may not be a primary mode of access, they provide access to all, particularly those without access to a private car.
 - **Increased community isolation:** as is described further in section (g), a number of the communities located along the LTC alignment are already relatively isolated, and the loss of connections will create further severance between individuals and community-based groups. This could exasperate issues of loneliness and associated physical and mental health issues.
 - **Health and Wellbeing:** the PRow provide access to all for both physical exercise and the ability to connect with nature. There is wide-ranging literature around both the need for physical activity²⁴ (150 minutes per week significantly reduces the risk of poor health), as well as the benefits of interacting with nature and mental health²⁵. Widespread loss of PRow across the construction phase of the LTC Scheme could create damaging changes in underlying behaviours and increase the risk of health issues amongst the local population. These issues could extend beyond the construction phase where walking routes are permanently blighted and become less attractive to use, as discussed further in the section below.

Permanent Diversions and Blight

- 7.68 Whilst it is the intention to restore nearly all of the existing PRow upon completion of the LTC Scheme, a number of them will be subject to diversions and all of them will, to a greater or lesser degree, suffer blight as a result of the LTC operations.
- 7.69 There is some uncertainty around the number and extent of PRow, cycle paths, and tracks that will be diverted but the following routes have been identified as potentially being affected:

²⁴ <https://www.nhs.uk/live-well/exercise/exercise-health-benefits/>

²⁵ Example of evidence of the benefits of nature and wellbeing:

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, 19(12), 1207-1212.

Bowler, D. E., Buyung-Ali, L. M., Knight, T. M., & Pullin, A. S. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health*, 10, 456.

Cervinka, R., Röderer, K., & Hefler, E. (2012). Are nature lovers happy? On various indicators of well-being and connectedness with nature. *Journal of Health Psychology*, 17(3), 379-388.

Hartig, T. (1991). Restorative effects of natural environment experiences. *Environment and Behavior*, 23, 3.

- Footpath 200 (Coalhouse Fort to Station Road)
 - Diverted to join new Station Road alignment
- Bridleway 58 (Coal Road)
 - Diverted by 900m to pass under project embankment through new underpass
- Low Street Lane (track)
 - Diverted west to retail access to Muckingford Road
- High House Lane (track)
 - Diverted west to retain access to Brentwood Road
- Footpath 79 (Chadwell St Mary to Orsett)
 - Diverted west by 600m to cross project route on new overbridge
- Bridleway 223 (Gammonfields Way / Long Lane)
 - Diverted to west accommodate new slip road from A1089 to LTC
- Footpath 97 (Long Lane leading to the north east into rough ground)
 - Curtailed to accommodate new slip road from A1089 to LTC
- Permissive Bridleway 206 (Baker Street to Mill Lane)
 - Realigned to accommodate new slip from LTC to A13 (eastbound)
- Footpath 136 (South Ockendon to Bulphan Fen)
 - Diverted by 650m and raised by 9.5m above existing level to cross project route on new footbridge

7.70 The diversions will result in some additional distances added to some routes between communities and to community facilities. This may continue to discourage residents from travelling by foot to access facilities, services, or visit other communities. This may particularly be the case if the route now requires crossing the LTC, with the associated blight of noise, poor air quality and visual intrusion. Given all of these routes will have been severed potentially for a prolonged period during construction, it may be challenging to encourage residents to change back to using these routes, even once reinstated.

7.71 Whilst the direct economic cost of additional journey times between communities / community facilities could be measured, the absence of information on current usage levels means that an overall estimation of the total economic impact cannot be accurately assessed.

7.72 As a purely indicative assessment, if the three routes subject to the main diversions (58, 79, 136) were used, collectively, by between 30 and 60 pedestrians a day this could equate to a loss of economic present value of between £275,000 and £550,000 over the appraisal period.

7.73 There will also be negative impacts upon those individuals and groups using the PRow for recreational purposes. Whilst the additional distance attributable to diversions may not be a specific issue, the blight resulting from the LTC Scheme could be significant. This will affect routes crossing the LTC Scheme, but also those running alongside it, such as Footpaths 90 and 135. The attractiveness of these routes will all be reduced, in terms of visual outlook, as well as noise and, potentially, air quality.

Overall Impact

- 7.74 Whilst it is challenging to monetise the impact of the LTC upon PRow, the analysis has demonstrated a range of potential impacts, during both the construction phase, but also continuing during the operational phase. As such, it is concluded that the overall impact will be rated Moderate Adverse.

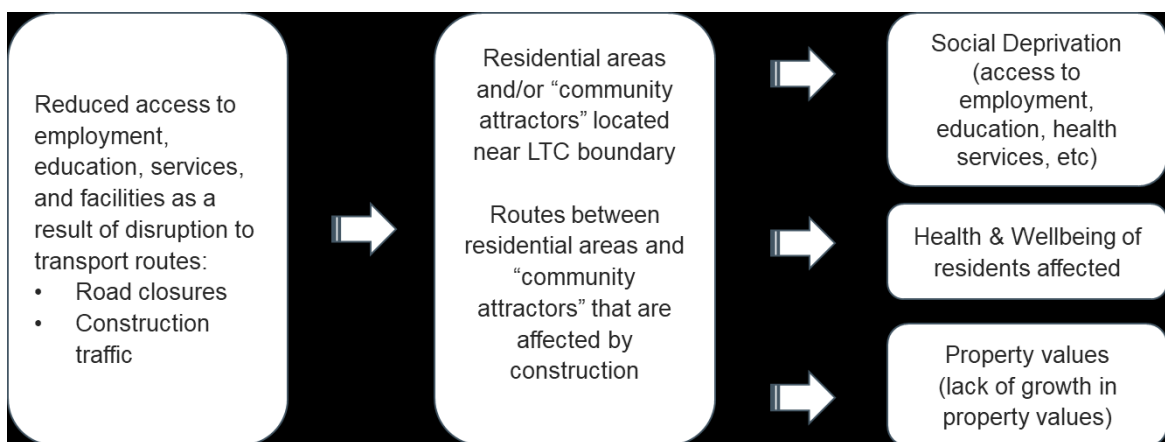
e) Community Disruption During Construction

- 7.75 The construction of the LTC is likely to disrupt the communities living around the route, particularly those living in already isolated parts of Thurrock. The ability for local residents to access employment, community facilities or services such as education and healthcare may be affected due to:
- Closure of roads to build the LTC
 - Increased congestion and traffic as a result of road closures
 - Increased traffic from construction vehicles creating additional congestion and increasing accident risks

Scope and Methodology of Assessment

- 7.76 To understand the disruption impact of the construction of the LTC on the local community, the scope of assessment set out in Figure 7.8 was used.

Figure 7.8 Community Disruption – Scope of Assessment

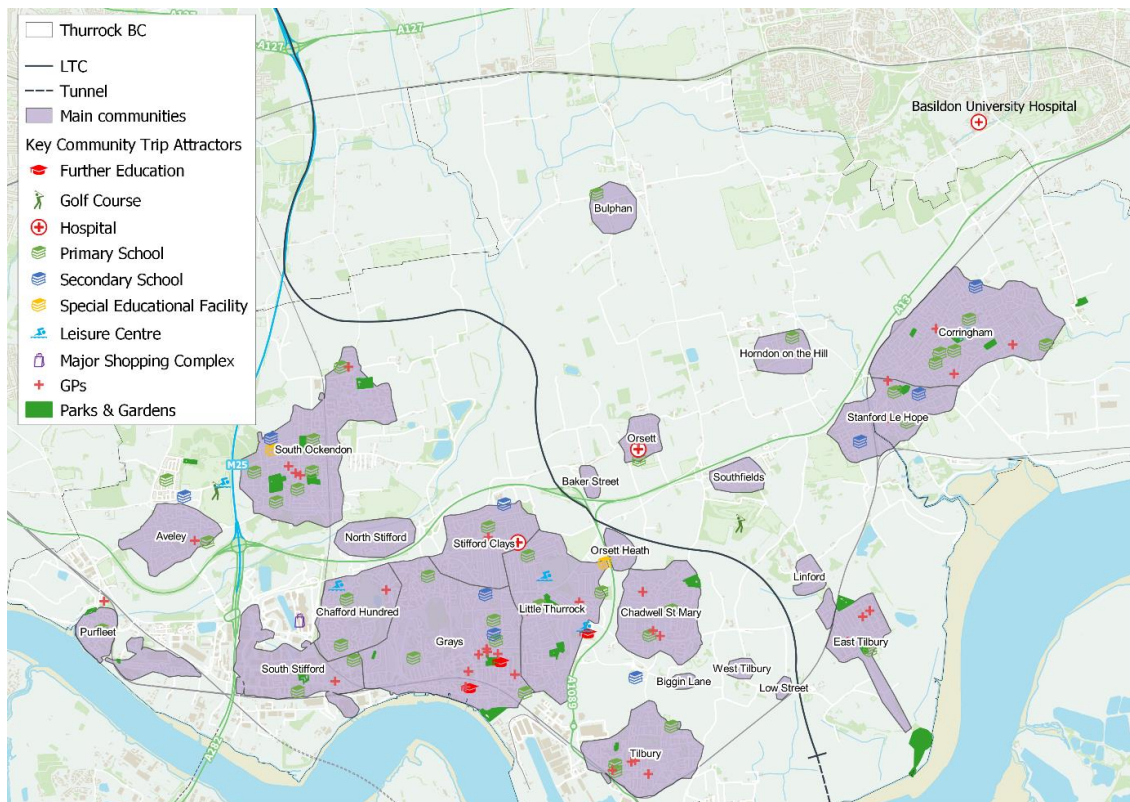


Source: Hatch Regeneris

Residential Areas and Community Attractors

- 7.77 Firstly, the key residential areas and community attractors in Thurrock were mapped to determine the current landscape of provision in the area. As shown in Figure 7.9, there's a range of services across Thurrock, however there are a number of important attractors, including the non-emergency hospital and FE colleges, which are less prevalent.
- 7.78 At the moment, Thurrock has no Accident and Emergency provision, and so the majority of residents use the A&E in Basildon Hospital (located outside of the Borough, to the North East).

Figure 7.9 Key Residential Areas and Community Attractors in Thurrock



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Magnitude of Disruption

7.79 The magnitude of disruption potentially caused by the LTC was determined using a scoring matrix. This assessed the level of current access from each residential area to the key attractors using the quickest road route. The attractors used for this assessment were:

- A&E
- Non-emergency hospital
- GPs and access to the nearest 3 GPs (included due to GP prevalence in Thurrock)
- Leisure centre
- Primary school and access to nearest 3 primary schools (included due to primary school prevalence in Thurrock)
- Secondary school and access to nearest 3 secondary schools (included due to primary school prevalence in Thurrock)
- Further/Higher education
- Specialist education facilities
- Parks, gardens and children's play areas
- Primary and Secondary retail centres

7.80 The disruption impact of the LTC on that route was then scored using a 1-4 scale (with 1 being the biggest disruption and 4 being the lowest disruption). As a result, locations with the lowest score across all the attractors were identified as being at highest risk to disruption from the LTC. The scoring criteria is shown in Figure 7.10.

Figure 7.10 Disruption Scoring Matrix

1	Single route of access disrupted
2	Route disrupted but other reasonable alternatives available, or main route has minor disruptions
2.5	Route disrupted but access to other services over the river
3	Direct access
4	Direct access within 10 minutes

Source: Hatch Regeneris

Assessment of Impacts on Community Disruption

7.81 The results of the disruption scoring exercise are shown in Figure 7.11 and show that the communities located in close proximity to the route are likely to be most disrupted. The 8 communities within the red box are considered to be the worst affected, predominantly as a result of prolonged road closures of local roads during the construction period.

7.82 Whilst these communities are predominantly small settlements or villages, and therefore have smaller populations with fewer people to disrupt, many of them already experience isolation from the rest of Thurrock and its services. This is due to their more rural location, limited access routes and limited provision of services in close proximity.

7.83 The sections below detail the analysis undertaken when determining the disruption impact of access to the different 'attractors'. A greater level of detail has been included for the A&E example as it is the attractor subject to the most disruption. It is also intended that this will give an example of how the analysis for each attractor was undertaken.

Figure 7.11 Magnitude of LTC Disruption

Community	Size of Place	Rank	Score
Grays	Significant Urban Area		
Little Thurrock	Urban Area		
Stifford Clays	Urban Area		
Aveley	Small Town		
Chafford Hundred	Urban Area		
North Stifford	Village		
South Stifford	Urban Area		
South Ockendon	Small Town		
Tilbury	Small Town		
Horndon on the Hill	Village		
Orsett Heath	Settlement/Hamlet		
Corringham	Small Town		
Biggin Lane	Settlement/Hamlet		
Chadwell St Mary	Small Town		
Stanford Le Hope	Small Town		
Purfleet	Small Town		
West Tilbury	Settlement/Hamlet		
Bulphan	Village		
Low Street	Settlement/Hamlet		
Linford	Settlement/Hamlet		
East Tilbury	Village		
Orsett	Village		
Baker Street	Settlement/Hamlet		
Southfields	Settlement/Hamlet		

Source: Hatch Regeneris

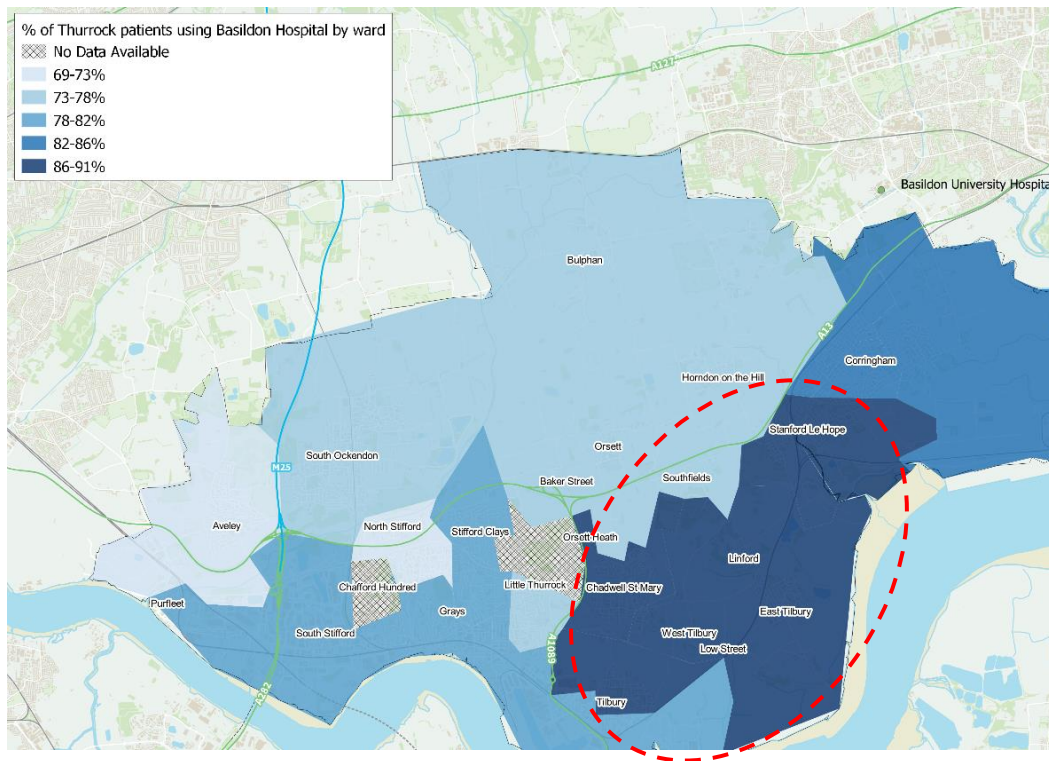
Access to A&E

7.84 Disrupting access to A&E is a significant impact of LTC construction, with consequences for community health and wellbeing in Thurrock.

7.85 Data from the NHS in 2017 shows that, at the moment, the communities in the south east of Thurrock (such as Tilbury and Chadwell St Mary) are some of the worst performing areas in the country for access to an A&E department. This is primarily due to the lack of A&E provision within Thurrock.

7.86 In addition, data from Thurrock Council on the proportion of Thurrock patients using Basildon Hospital (see Figure 7.12) shows the greatest reliance on Basildon Hospital by communities is in those worst performing areas. This suggests these communities are particularly at risk to any east-west severance caused by LTC.

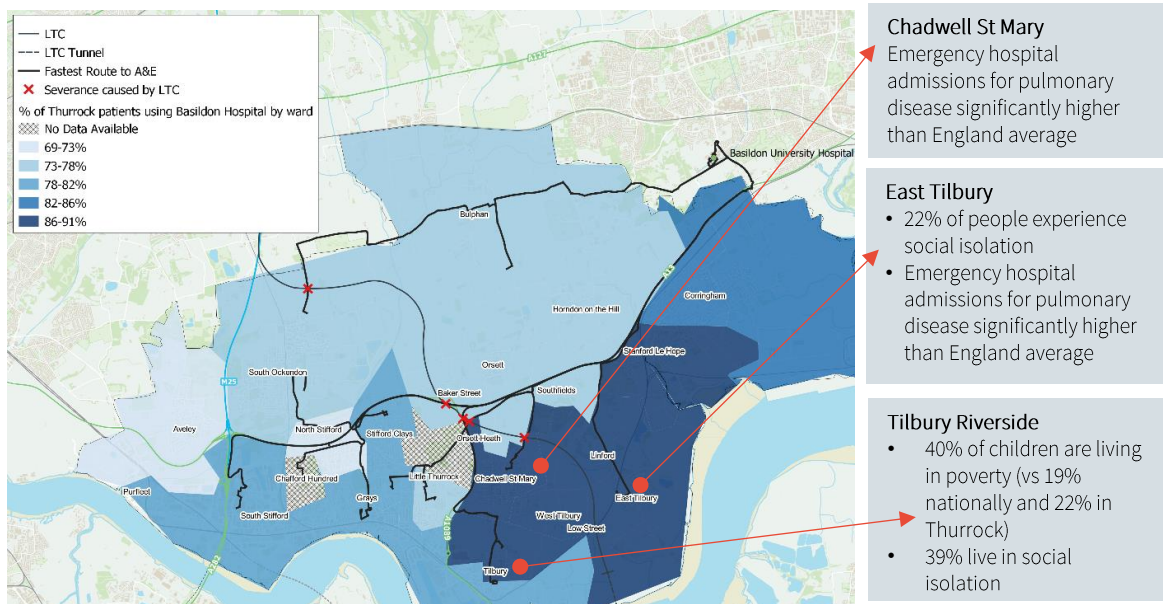
Figure 7.12 Reliance on Basildon Hospital by Thurrock Patients



Source: Hatch Regeneris. Data from Thurrock Council. Contains OS data © Crown copyright and database right 2019

7.87 Overlaying the fastest routes from each ward in Thurrock to Basildon A&E onto this map (see Figure 7.13 below) shows that the LTC is likely to have a major impact on the accessibility of the hospital to south-east Thurrock. Prolonged local road closures during LTC construction will be a primary cause of severance and/or increased journey times from these communities to Basildon Hospital.

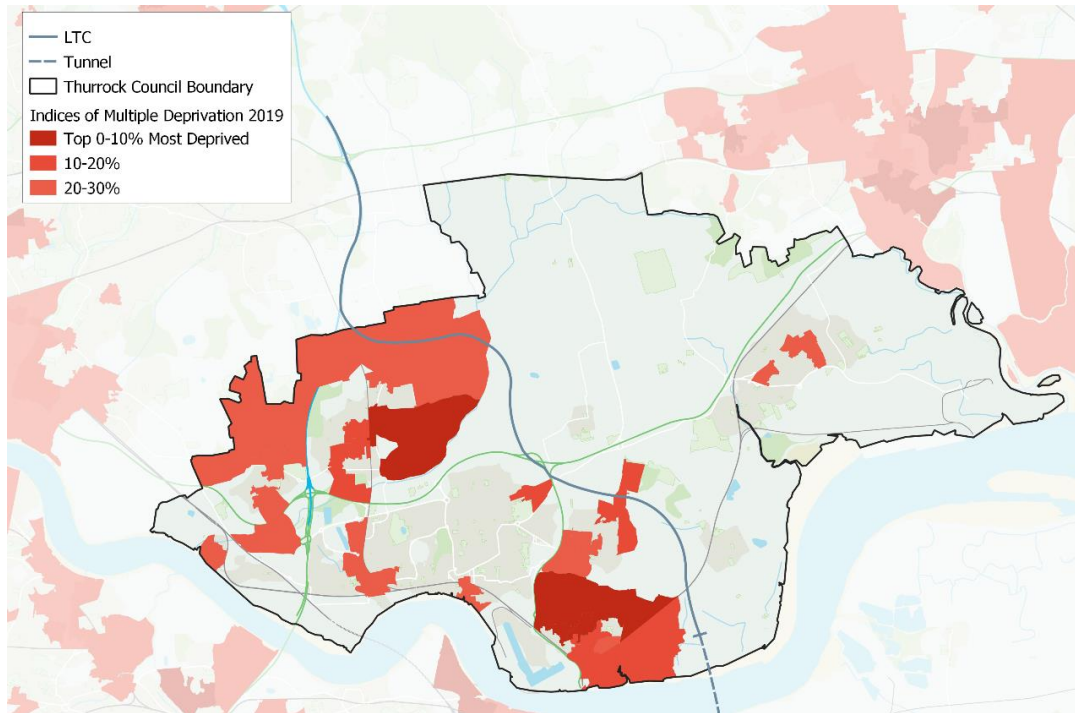
Figure 7.13 Disruption caused by LTC on routes to Basildon Hospital



Source: Hatch Regeneris. Data from Thurrock Council. Contains OS data © Crown copyright and database right 2019

- 7.88 In addition to disruption of access, there is also concern about the inequality of the negative impacts resulting from LTC. As shown in Figure 7.13, the communities most likely to suffer from disruption of access to A&E are also struggling with poor health and higher than average hospital admissions, poverty and isolation. The Index of Multiple Deprivation 2019 map (Figure 7.14) also shows how these same communities are in the top 30% most deprived in the country. Baseline data in Chapter 3 also shows that the people living in Tilbury are currently most impacted by health inequalities and social isolation.

Figure 7.14 Top 30% Most Deprived LSOAs (IMD 2019)



Source: Hatch Regeneris. Data from MHCLG 2019. Contains OS data © Crown copyright and database right 2019

Access to a non-emergency hospital

- 7.89 Thurrock currently has one non-emergency hospital, located in the village of Orsett. The location of this attractor on the other side of the A13/A1089 junction means access to the hospital is likely to be heavily impacted for many Thurrock residents who live on the western side of the borough. In fact, for all communities apart from those in the north east of Thurrock (such as Bulphan and Horndon on the Hill), the construction of the LTC will close or disrupt the main access routes to the hospital.
- 7.90 A number of communities including North Stifford, Low Street, Tilbury and Chadwell St Mary will experience the worst degree of disruption. Their fastest route to Orsett hospital will be closed for prolonged periods of time and the alternative route via the A13 will be heavily disrupted due to the A13/LTC junction creation.
- 7.91 There are outline plans to close Orsett Hospital in the future and replace it with four new integrated medical centres across Thurrock. These new centres will provide the same services as currently offered in Orsett Hospital, so there will be no net loss of provision in Thurrock as a whole. If the proposal were to go ahead, it would change the type of disruption impacts that the LTC Scheme would have on non-emergency medical care but the constraints are likely to remain.

Access to GPs

- 7.92 Thurrock has a large number of GPs, with at least one in almost every community included in our analysis. Therefore, the potential disruption in access to the nearest GP as a result of the construction of LTC is minimal.
- 7.93 However, a recent audit²⁶ of healthcare provision in Thurrock found that there was insufficient GP provision in the borough for the size of the population and its needs, and that the pressure on these resources was increasing due to the size of waiting lists. As a result, it is assumed that the ability to access just the nearest GP is most likely to be inadequate for the majority of residents. When assessing access to the nearest 3 GPs, the potential disruption impact of the LTC increases. Orsett, Baker Street and Southfields are among the communities who experience disruption in this case.

Access to Leisure Centre

- 7.94 The provision of leisure facilities in Thurrock is skewed towards the centre and west of the borough, with only one centre in Corringham to serve the communities in the east. As a result, locations such as Orsett, Baker Street and Low Street, which are in close proximity to the LTC and are likely to have access roads closed, are at risk of having their access to a leisure centre disrupted.
- 7.95 Whilst there are plans to build a new leisure facility in between Orsett Heath and Little Thurrock, this will still be difficult to access during the construction period for communities on the other side of the LTC, such as Southfields and Linford. It is also likely that the construction of this new leisure centre will be disrupted due to its close proximity to the route.

Access to Further Education

- 7.96 The provision of further education in Thurrock is predominantly centred around Grays town centre, with three FE colleges located in close proximity to one another. There is no higher education provision in Thurrock, and many people travel to Basildon or Gravesend on the over side of the River Thames to access further/higher education.
- 7.97 As a result, for a number of communities in Thurrock access to this attractor will be disrupted due to LTC. Our analysis suggests five communities could face the highest degree of disruption due to road closures. This includes Low Street, East Tilbury, Linford, Orsett, Baker Street and Southfields. As discussed in chapter three, Tilbury, East Tilbury and the surrounding areas currently have the highest levels of Education and skills deprivation in Thurrock.

Access to Specialist Educational Facility

- 7.98 Similarly, to further education, the provision of specialist education facilities in Thurrock is scarce. Whilst it is likely that people will travel further to access a specialist facility (for example outside the borough or to the south side of the river), many residents in Thurrock will be reliant on more local provision which can be easily access by car or public transport.
- 7.99 Modelling the disruption associated with LTC construction suggests that a significant number of communities could be heavily disrupted, primarily due to prolonged road closures but also due to the likely delays and congestion at the A13/A1089 junction.

²⁶ Thurrock Health and Wellbeing Strategy 2016-2021

Access to Primary Retail Centre

7.100 Grays Town Centre and Lakeside represent Thurrock's primary retail centres, due to their large and diverse retail offer. Whilst there are other retail centres in Thurrock, these are secondary/tertiary, and many are strongly characterised by a convenience offer serving local residents living in the immediate vicinity. As a result, it is likely that communities in Thurrock will need to access the retail centre in Grays/Lakeside. This puts a number of communities at risk of disruption during the LTC construction phase. Similarly, to the other attractors, it is the communities on the eastern side of the LTC, such as East Tilbury, Linford, Orsett and Southfields which are likely to be most impacted.

Access to the other attractors

- 7.101 The community disruption analysis also looked at potential impact to disruption for access to primary schools, secondary schools, parks and gardens, children's play areas and secondary retail centres. Whilst the overall impact across the communities is likely to be minimal due to the prevalence of these attractors across Thurrock, there may be some isolated instances of disruption as a result of the LTC.
- 7.102 For example, open spaces and parks are important community assets and play a key role in the good mental and physical health of a population. Coalhouse Fort, an attractor which has multiple functions (a well-used open space and a heritage site), will have its access disrupted during construction due to the closure of nearby roads and the close proximity of the main construction site. This could have negative impacts for residents across the borough who regularly use the fort for exercise, education and social purposes.

Direct Travel Time Costs

- 7.103 As part of the disruption caused to access and movement to local facilities across Thurrock there will be specific impacts upon journey times. Whilst it is not feasible to capture all of these impacts quantitatively, there are two elements that can be estimated in quantified terms:
- Additional journey times through diversions caused by road closures
 - Delays through the A13/A1089 junction during roadworks

Additional Journey Times through diversions

- 7.104 Section 4 outlined the local roads that will be subject to closures as a result of the construction of the LTC Scheme. An assessment of the potential additional mileage and journey time that would be incurred as a result of diversions to avoid these routes has been undertaken.
- 7.105 Using estimates of traffic flows along each road, the forecast total additional journey times and distances have been estimated. This indicates that up to 51,000 additional vehicle miles and up to 2,550 hours of travel time would be incurred across these routes for every day of closure.
- 7.106 Whilst it is unclear for what period of time each road would be closed, the estimated impact over 6 months to 1 year would be equivalent to a loss in economic value of between £5.7 m and £18.3m

A13/A1089 Junction Impacts

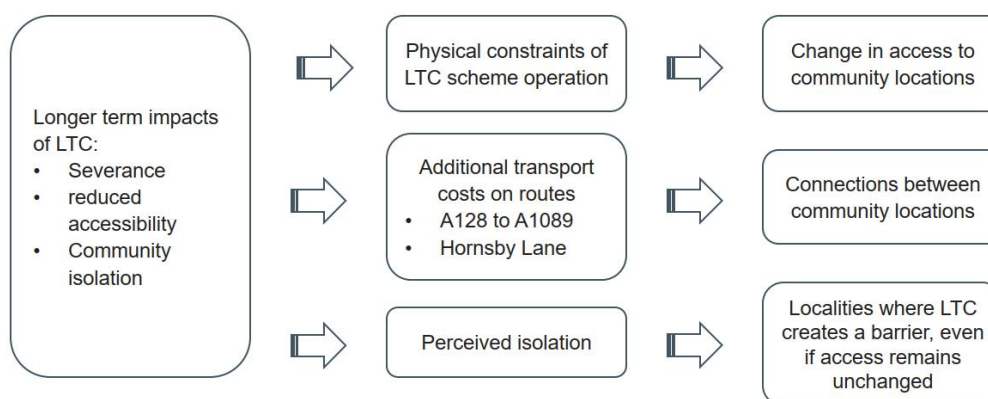
- 7.107 Section 4 outlines the potential construction related impacts of LTC on the operation of the current A13 / A1089 junction. Whilst specific traffic management plans are unavailable it has been assumed that some speed restrictions, lane reductions, and occasional road closures will be in place during certain points in the construction phase.

- 7.108 Based on the same approach adopted in Chapter 4 for all general traffic, it is estimated that around 42,000 non-business-related trips per day pass through the junction with an origin or destination within Thurrock.
- 7.109 The delays that will be incurred at the junction will translates into an additional 800 to 1,850 hours per day, or 255,000 to 587,000 per annum, depending upon actual average journey times through the roadworks.
- 7.110 Depending upon the duration that traffic restrictions are in place around the A13 junction works takes, this level of delay translates to an estimated monetised economic cost of between £2.5 million (1 year) to £18.1 million (3 years) in present values (2019 prices) to the Thurrock business economy.

f) On-going Community Cohesion

- 7.111 The delivery of LTC could result in long-term adverse impacts which have the potential to adversely affect social cohesion within Thurrock.
- 7.112 The proposed LTC alignment will bisect wards that are already severed by both road and rail infrastructure, namely the wards of East Tilbury, Orsett and Ockendon. The additional infrastructure will not only fail to improve access to and within Thurrock but will further advance community severance and isolation – ultimately affecting the vibrancy of communities and personal well-being of the local population.
- 7.113 To understand the effect of LTC on community cohesion, the following scope of the assessment was followed:

Figure 7.15 Community Cohesion – Scope of Assessment



Source: Hatch Regeneris

Current Local Perceptions

- 7.114 Local perceptions of factors that influence community cohesion are described below.
- **Social isolation:** nearly a third (31.9%) of the Thurrock population currently experiences social isolation.²⁷ This figure varies substantially when considered at ward level. Latest figures show that 22% of people in East Tilbury, 19.5% in Orsett and 38% of those in Ockendon currently experience social isolation.²⁸ As such, the

²⁷ Social isolation is based on the number of pensioners living alone

²⁸ Thurrock Borough Council (2019): EIA Scoping Report request – Public Health.

population of Thurrock, and especially in Ockendon, is particularly vulnerable to changes that could adversely affect perceptions of social isolation.

- Community unity:** The Thurrock Residents Survey²⁹ provides insights into community unity at ward level. Using “to what extent would you agree / disagree that people in this local area pull together to improve the local area” as a proxy, 81% of East Tilbury and 72% of Orsett residents agree, which is significantly higher than the Thurrock average of 52%. Conversely, only 40% of Ockendon residents would agree with the statement, which is significantly lower than the borough average.

The findings suggest an inverse relationship between community unity and social isolation.

- Personal well-being:** The Annual Population Survey considers personal well-being to be a product of a person’s perceptions of life satisfaction, happiness, worthwhile and anxiety.

Prior to 2016, the population of Thurrock experienced a general improvement across all well-being indicators (as shown in Figure 7.17 below). Thereafter, personal well-being has been in decline, with latest figures showing that the population of Thurrock have lower personal well-being (across all indicators) compared to the regional and national average.

Figure 7.16 Personal well-being 2018/19

Life satisfaction	7.53	7.75	7.71
Happiness	7.40	7.62	7.56

Source: ONS (2019): Annual Population Survey.

Figure 7.17 Trends in personal well-being factors



Source: ONS (2019): Annual Population Survey.

²⁹ BMG Research (2016): Thurrock Residents Survey 2016.

Impact of LTC on Community Cohesion

- 7.115 With the exception of Hornsby Lane, all roads traversed by LTC will be reinstated upon completion. As such, the physical constraints of the LTC Scheme in operation are limited.
- 7.116 Hornsby Lane provides access to one residential farm and is a minor link road between Stanford Road and Orsett Heath. As access to the residential property will be maintained from the south, the impact of permanently closing Hornsby Lane will be limited to local access, therefore having a minor impact on community cohesion.

A128 to A1089 Movements

- 7.117 As set out in Chapter 4, the configuration of LTC will alter vehicular southbound movements from the A128 to the A1089 – resulting in an additional 6.8km and eight-minute journey time. Recent research identified that longer commute times are associated with higher levels of stress, reduced leisure time, and reduced job satisfaction, culminating in lower levels of life satisfaction.³⁰ Monetarily, the additional commute resulting from LTC (calculated over a standard Department for Transport 60-year appraisal period, and based on current traffic movements for commuting and leisure) is estimated to be equivalent to an economic costs of around £14.5m.

Thames Crossing Closures

- 7.118 As set out in Chapter 4, instances when both LTC and Dartford Crossing could be closed concurrently are predicted to occur once every 80 to 160 days. Whilst average closures associated with incidents on the Dartford Crossing are around 30 minutes, the impact they can have upon traffic disruption on the M25 and approach roads can last significantly longer, in some instances well over an hour.
- 7.119 The impact of a concurrent incident on both the Dartford Crossing and LTC could result in widespread disruption within the local vicinity. This will include the A13 through Thurrock, as well as knock-on impacts to the local road network across Thurrock. It is envisaged that the scale of potential delays could be exponentially high with both crossing points closed.
- 7.120 To assess these impacts would require detailed traffic modelling of the area, which is unavailable. An indicative analysis has been undertaken to demonstrate the scale of potential impacts.
- 7.121 If a concurrent closure resulted in delays along key routes running parallel to the A13 (A1306, B186, A1013) and the A1089 then the traffic modelling data available indicates this could affect up to 6,600 non-business-related trips. If delays average were an average of 30 to 45 minutes per vehicle then the impact would equate to £30,000 to £44,000.
- 7.122 Allowing for a concurrent closure of between every 80 to 160 days, these delays are the equivalent to an economic loss of between £2.2m and £6.7m over the full appraisal period.

Perceptions of Isolation

- 7.123 While it is acknowledged that LTC will not permanently sever existing routes, the additional travel times and the physical presence of the infrastructure can increase perceptions of social isolation for vulnerable residents in the community. People in rural communities, especially those without access to a car, are particularly susceptible to such changes.

³⁰ Understanding Society (2016): 'How and Why Community Influences Life Satisfaction'. Commuting and Wellbeing: Bulletin 2: Cross-sectional Analysis

- 7.124 Research shows a positive relationship between social cohesion and access to destinations / walkability³¹. Throughout the six-year construction period, prolonged road closures will separate residents from key social amenities within walking distance.
- 7.125 For example, the closure of Station Road will sever Low Street Lane and Church Road residents from East Tilbury. Taking The Ship public house as a key social amenity within East Tilbury, the closure of Station Road would increase walking distances for pedestrian residents by 2km, resulting in an additional 26 minutes' walk. Given the rural nature of the area, reducing access to already limited social infrastructures will adversely affect the vibrancy of the community, resulting in a decline in social well-being and community cohesion.
- 7.126 The construction of LTC is therefore considered to have an overall **moderate adverse effect** on community cohesion.

g) Health and Wellbeing

- 7.127 The baseline assessment identifies a range of underlying health issues across Thurrock. This inter-relates with areas of very high deprivation across a number of wards within the area.
- 7.128 A range of different potential issues have been identified, that cut across many of the other themes identified within the assessment, which could impact upon the health and wellbeing of local residents. These include:
- Health/stress impacts of loss of housing and relocation
 - Disruption in access to healthcare
 - Health impacts of increased noise/air pollution
 - Disruption and blight to Public Rights of Way (PRoW)
 - Impact on health and wellbeing of disrupted views/access to nature
 - Negative health and wellbeing impacts of increased community severance and decreased community cohesion
- 7.129 As this study has predominantly focused on the qualitative health and wellbeing costs associated with the other impact areas, it does not preclude any findings from the Health Impact Assessment which will be undertaken in due course.

Housing Loss and Relocation

- 7.130 Whilst only impacting upon a relatively limited number of properties, the impact upon residents living within these properties could, potentially, be significant. Individual circumstances will differ, but the definitive requirement to move out of family home, and all of the associated stress of relocation, could be determinantal to the physical and mental wellbeing of some individuals.
- 7.131 In addition, Thurrock Council has already received concerns from residents who live in close proximity to the proposed route about their inability to sell or re-mortgage their properties due to uncertainty about land values and the route. These concerns are centred on the stress and anxiety caused as a result.

³¹ Victoria Transport Policy Institute (2018): Community Cohesion as a Transport Planning Objective.

Disruption in Access to Healthcare

- 7.132 The analysis has indicated that access to healthcare services will be particularly affected by the delivery of the LTC Scheme, particularly during the construction phase. Whilst it is difficult to quantify the scale of potential impacts, some groups are likely to find it more challenging to access the medical care they need, including by public transport services – such as the bus routes that currently connect communities to Orsett and Basildon Hospitals.
- 7.133 There could also be a disruption to care workers and other health providers who need to travel around the borough to reach vulnerable and in-need residents. This is likely to particularly impact the locations which will have access routes impaired during the construction phase and which have high proportions of ill residents, such as Little Thurrock, East Tilbury and Chadwell St Mary.

Noise / Air Pollution

- 7.134 It is recognised that noise and air pollution have direct impacts upon both physical and mental wellbeing. High concentrations of pollutants from vehicles are well documented as causing respiratory impacts, and there is a growing evidence base of the impact of noise, as referenced within DfT TAG:

“there is growing evidence on the links between environmental noise, defined by the World Health Organisation (WHO) as ‘noise emitted from all sources except industrial workplaces’, and health outcomes. The 2011 WHO report Burden of disease from environmental noise identified environmental noise as the second largest environmental risk to public health in Western Europe.”

- 7.135 Whilst the majority of the LTC alignment is away from residential areas, there are still some localities where impacts will be felt, including around Low street, Chadwell St. Mary, Orsett Heath, Stifford Clays, and Baker Street.
- 7.136 Detailed modelling of noise and air quality impacts is not yet available from Highways England but even if the extent to which formal tolerance levels are exceeded may be low, there will still be a significant increase in background noise and pollutants from current baseline levels created by the LTC Scheme. When coupled with the high prevalence of respiratory disease in communities such as South Ockenden, Tilbury and Chadwell St Mary, it is likely there will be a negative impact upon local residents’ health and wellbeing.

Lost community Assets

- 7.137 A scout activity centre and rugby club are located within the proposed LTC development boundary. The potential loss of parts, or all, of these facilities, even on a temporary basis, could have health and wellbeing impacts. This could be in relation to the direct physical health benefits that participants derive from the clubs, but also the wider social connections.
- 7.138 Open spaces and parks are also important community assets and play a key role in the good mental and physical health of a population. A number of

Loss of PRow

- 7.139 PRowS provide access-to-all for both physical exercise and the ability to connect with nature. There is wide-ranging literature around both the need for physical activity (150 minutes per week significantly reduces the risk of poor health), as well as the benefits of interacting with nature and mental health.
- 7.140 Widespread loss of PRow across the construction phase of the LTC Scheme could create damaging changes in underlying behaviours and increase the risk health issues amongst the local population, particularly for a population which suffers from high levels of obesity

and physical inactivity. These issues could extend beyond the construction phase where walking routes are permanently blighted and become less attractive to use.

Severance and Community Cohesion

- 7.141 The LTC Scheme will create a significant additional physical barrier across the area, impacting on the ability for residents to access friends, social networks and services. Whilst most transport connections will, ultimately, be restored, there are likely to remain perceptions of increased isolation created by the scheme. There could be a range of negative health and wellbeing impacts associated with increased community severance and resultant decreased community cohesion, in terms of individuals mental wellbeing. This will have detrimental impacts for those communities near the LTC which already have high levels of social isolation, such as Tilbury, South Ockendon and East Tilbury.

Conclusions – Community

- 7.142 The LTC will have a number of impacts on Thurrock’s communities. This includes the economic costs of lost housing, adverse impacts to community facilities and negative social impacts of increased severance.
- 7.143 The overall impacts of the themes discussed above are summarised in Figure 7.18.

Figure 7.18 Summary of Community Impacts	
Impact Area	Estimated Cost to Thurrock
a) Loss of residential properties	£3.1 million
b) Residential property blight	£24.5 million
c) Impact on community facilities	<i>Moderate adverse (within LTC Corridor)</i>
d) PRoW severance/disruption	<i>Moderate adverse (within LTC Corridor)</i>
e) Community disruption during construction	<i>Moderate adverse (across Thurrock) (up to £36 million direct transport impacts #1)</i>
f) On-going impact on community cohesion	<i>Moderate adverse (across Thurrock) (up to £21 million direct transport impacts #1)</i>
g) Health & Wellbeing	<i>Moderate adverse (across Thurrock) #2</i>

Source: Hatch Regeneris #1 estimated economic impact of delays to non-business-related car trips

#2 subject to findings of full Health Impact Assessment

8. Environmental Cost Impacts

Overview

- 8.1 This chapter assesses the impact of LTC on the environment in Thurrock, including the loss of land, impacts on habitat and heritage, air, noise and visual pollution, and wider climate change impacts.
- 8.2 The impacts considered within this chapter fall into two main categories:
- **Direct impacts:** as a result of loss of land / environmental assets or direct environmental pollutants from the construction and operation of the LTC Scheme
 - **Indirect impacts:** blight on the wider environment as a result of the delivery of LTC
- 8.3 As a result, the assessment study areas for this chapter include:
- **LTC Development Boundary³²:** land, habitat or heritage that falls within the LTC Development Boundary will experience *direct effects* during construction and, in some instances, permanent demolition
 - **200m from the LTC Development Boundary:** environmental resources that fall within 200m of the LTC Development Boundary will experience potential *blight effects during the construction phase*
 - **50m from the LTC alignment:** environmental resources that fall within 50m of the LTC alignment may experience *permanent blight effects during the operational phase*.
 - **200m from the LTC alignment:** environmental resources that fall within 200m of the LTC alignment may experience less significant *blight effects during the operational phase*.

Impact Assessment

- 8.4 A number of impacts have been identified under the Business and Economy costs theme. These are:
- a) Amenity value of land lost
 - b) Habitat lost or damaged
 - c) Impact on heritage
 - d) Flood risk
 - e) Visual impacts
 - f) Air quality impacts/emissions
 - g) Noise impacts

³² As set out in the Highways England 2018 Statutory Consultation

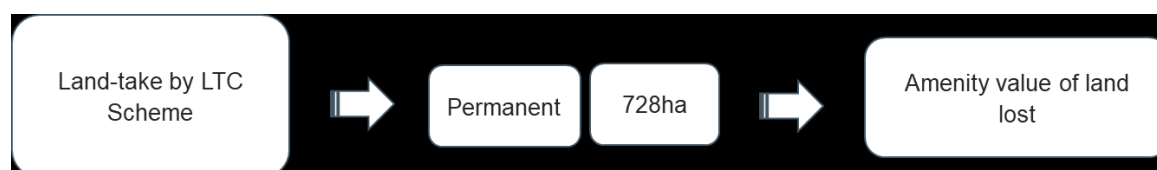
a) Amenity Value of Land Lost

- 8.5 To construct the LTC, 728 hectares³³ of land will be permanently taken. This land has an amenity value which will be lost as a result.

Scope and Methodology of Assessment

- 8.6 The scope of assessment for this impact is shown below. Only the permanent land loss has been included to evidence the absolute value loss as a result of the LTC. Amenity value of land is separate to the value of the land itself (captured elsewhere), and therefore this impact can be included in addition to the loss of agricultural (see impact 6a) and developable land (see chapter 9).

Figure 8.1 Amenity Land Lost – Scope of Assessment



Source: Hatch Regeneris

- 8.7 Calculating the amenity value of the land lost has been undertaken based on the following assumptions:
- It is assumed land is lost in the first year of construction
 - The approach taken is based on research undertaken by Eftec and Entec on amenity benefit values. This has been adopted in the DCLG Appraisal Guidance³⁴.
 - Given the location of the LTC route, the amenity value of greenbelt land (£1,797 per ha in 2016 prices) has been applied to the 728 ha. This value has been inflated to 2021 (first year of construction) and then discounted to 2019.

Assessment of Impacts of the Loss of Amenity Land

- 8.8 The economic cost of losing 728ha of amenity land is £1.35m in present value (2019 prices).

³³ Taken from the Highways England Preliminary Environmental Information Report 2018

³⁴ DCLG Appraisal Guide
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/576427/161129_Appraisal_Guidance.pdf

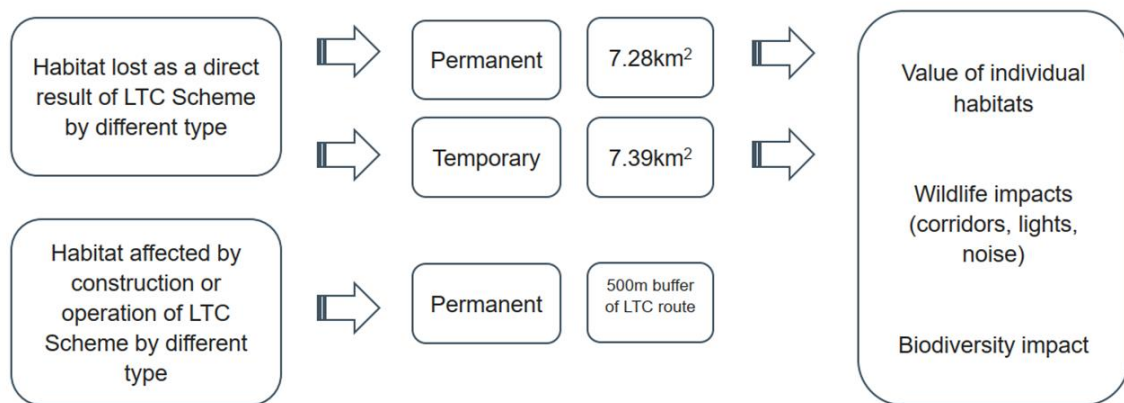
b) Habitat Loss

- 8.9 The construction of LTC will permanently require 728ha of land, with an additional 739ha required temporarily³⁵. The requirement of land will result in the loss, damage or reduced quality of wildlife habitats across the borough. While some habitats will be permanently lost or altered, those located within proximity to the LTC will be affected by environmental effects such as noise, lighting and visual disturbances – ultimately affecting the richness and/or viability of Thurrock’s biodiversity.

Scope and Methodology of Assessment

- 8.10 The assessment of habitat loss considers wildlife habitats lost as a result of LTC, and further considers the effect of the Scheme on habitats located within 500m of the permanent alignment, as shown in Figure 8.2 below.

Figure 8.2 Habitat Loss – Scope of Assessment



Source: Hatch Regeneris.

Assessment of Impacts of the Loss of Habitats

- 8.11 Thurrock has a rich biodiversity, including numerous Sites of Special Scientific Interest (SSSIs), Nature Reserves, Community Forests and Local Wildlife Sites. Using DEFRA data³⁶, the locations of key habitats have been identified.

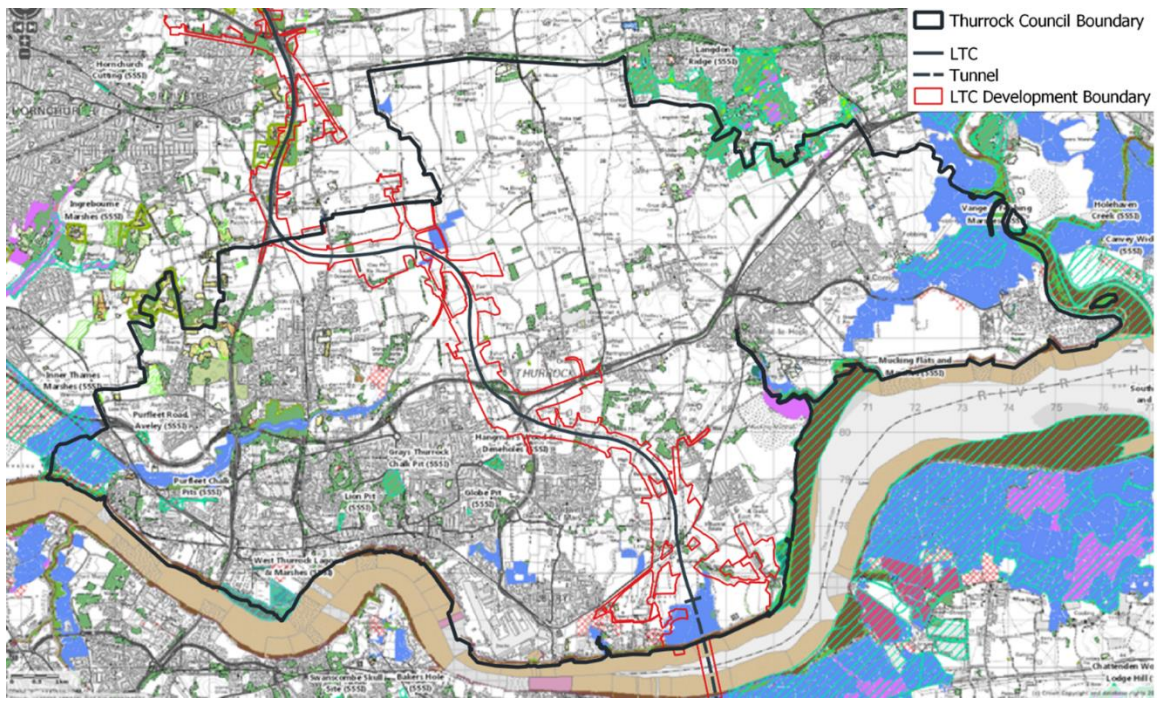
Direct effects

- 8.12 Figure 8.3 shows the location of habitats of importance in relation to the LTC Development Boundary.

³⁵ Taken from the Highways England Preliminary Environmental Information Report 2018

³⁶ DEFRA data compiles information on habitats from various sources including Priority Habitat Inventory, Intertidal Substrate Foreshore, BAP Priority Habitat and National Forest Inventory.

Figure 8.3 Location of habitat sites with LTC Development Boundary



Source: Hatch Regeneris. Data from DEFRA (2019)

8.13 In total, the LTC Development Boundary spans across 138ha of wildlife habitats, resulting in the loss or damage of these environments. Affected areas are listed in Table 8.1 below.

Table 8.1 Habitats within LTC Development Boundary

Data List	Habitat	Type	Affected land: Location and area (hectares (ha))
Priority Habitat Inventory	Coastal	Mudflats	<ul style="list-style-type: none"> River Thames (22ha)
Priority Habitat Inventory	Coastal	Coastal and floodplain grazing marsh	<ul style="list-style-type: none"> Area north of River Thames (90ha) North east of South Ockendon (8.2ha)
Priority Habitat Inventory	Woodland	Deciduous Woodland	<ul style="list-style-type: none"> Church Road / Station Road (4.4ha) A13 Junction (7.1ha) Stanford Road (0.6ha)
Priority Habitat Inventory	Other	No main habitat but additional habitat exists	<ul style="list-style-type: none"> Condovers Scout Activity Centre (2.6ha)
National Forest Inventory	Woodland	Conifer	<ul style="list-style-type: none"> Linford (1.1ha)
National Forest Inventory	Woodland	Broadleaved	<ul style="list-style-type: none"> North of South Ockendon (2.6ha)
			TOTAL: 138.6ha lost

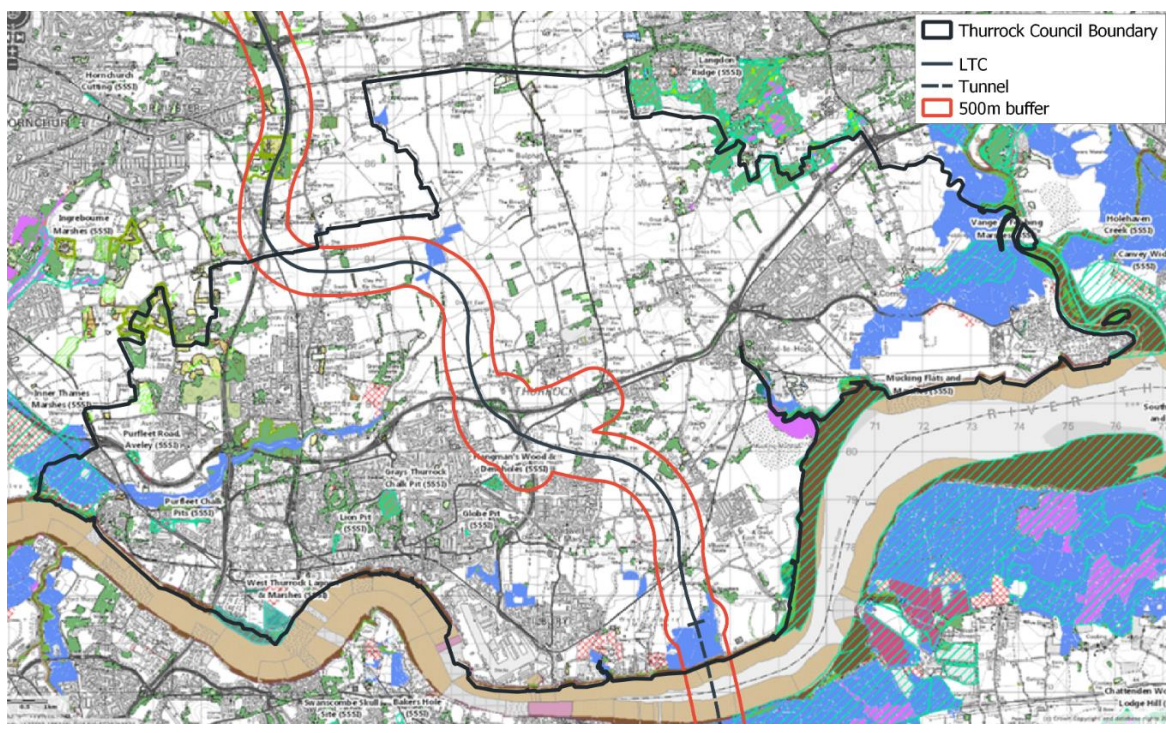
Source: DEFRA (2019) – MAGIC. Available at: <https://magic.defra.gov.uk/>

- 8.14 Associated noise and vibration associated with the construction of the LTC tunnel is likely to further affect marine biodiversity in the River Thames. Despite being temporary, the construction phase has the potential to disturb the marine environment, resulting in the loss of benthic habitats and macroinvertebrate resources. Construction activities also have the potential to deteriorate the quality of water and produce underwater noise, resulting in the possible contamination of benthic habitats and / or affecting migrating smelt.
- 8.15 While the LTC Development Boundary does not directly impact upon the Mucking Flats and Marshes, it is noted that this *Site of Special Scientific Interest (SSSI)* and *Important Plant Area* is in close proximity to the development area and therefore may experience some disturbances. The mudflats are the largest intertidal feeding area for wintering wildfowl and waders west of Canvey Island on the north bank of the Thames. The area is an important staging post for migratory species with wintering wildfowl and waders reaching both nationally and internationally numbers, and ringed plover reaching internationally important numbers.

Indirect effects

- 8.16 Once operational, environmental changes resulting from the use of the LTC has the potential to affect wildlife and habitats within the area.
- 8.17 Figure 8.4 shows wildlife habitat sites within 500m of the permanent alignment of LTC.

Figure 8.4 Habitats sites within 500m of LTC



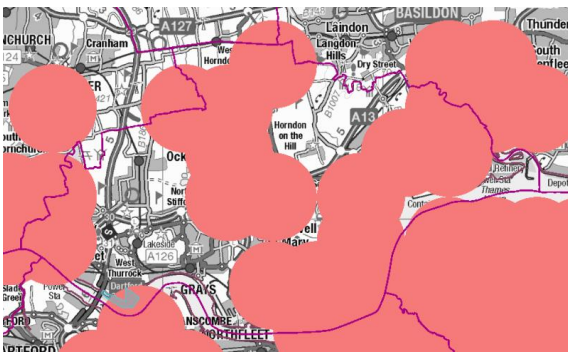
Source: Hatch Regeneris. Data from DEFRA (2019)

- 8.18 Majority of the habitat areas within the 500m buffer will have been subject to direct effects during the construction phase, resulting in the permanent loss of these sites. However, according to DEFRA data, the following wildlife habitats and species are located within 500m of LTC:

- Deciduous Woodland located to the west of Linford, to the north of Chadwell St Mary and surrounding the Orsett Golf Club;

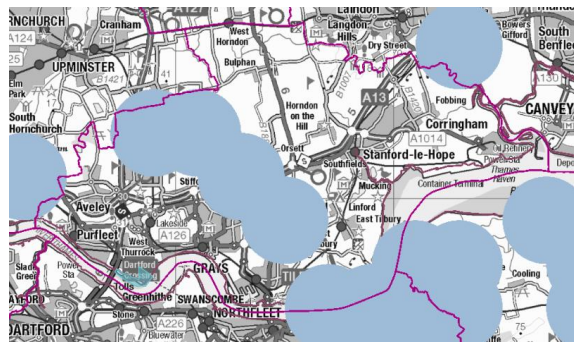
- A 3ha area of deciduous woodland is located to the west of the A1089 and is also an ancient and semi-natural woodland;
- Hangman’s Wood and Denehole (SSSI): A 5.2ha woodland located 550m from the LTC alignment. The site has been identified as an important underground hibernation site for bats in Essex. Three bat species (brown long-eared bat, Natterer’s bat and Daubenton’s bat) have been recorded at this location;
- Species:
 - Great Crested Newt: an area to the west of East Tilbury, 500m from LTC, has previously granted a European Protected Species licence application (between 2014 and 2017). Licences allow the licence holder to take actions to safeguard European Protected Species from negative impacts associated with development and other potentially damaging activity. The license granted was for the protection of Great Crested Newt. It is unclear what the current status of this habitat and species is;
 - Farmland Birds: corn bunting, grey partridge, lapwing, tree sparrow, turtle dove, yellow wagtail, redshank and snipe are present across Thurrock and, crucially, follow the route of LTC. Figures 8.5 to 8.12 show the locations of respective habitats within Thurrock.

Figure 8.5 Corn Bunting



Source: DEFRA (2019)

Figure 8.6 Grey Partridge



Source: DEFRA (2019)

Figure 8.7 Lapwing



Source: DEFRA (2019)

Figure 8.8 Redshank



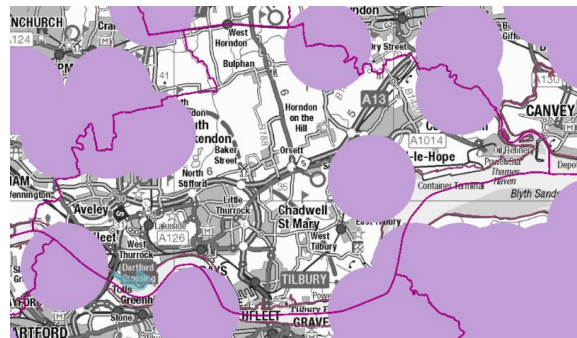
Source: DEFRA (2019)

Figure 8.9 Tree Sparrow



Source: DEFRA (2019)

Figure 8.10 Turtle Dove



Source: DEFRA (2019)

Figure 8.11 Yellow Wagtail



Source: DEFRA (2019)

Figure 8.12 Snipe



Source: DEFRA (2019)

- 8.19 Due to their proximity to the LTC and the height viaduct, the habitats and species identified above are at risk of permanent environmental disturbances, ultimately adversely affecting Thurrock's biodiversity.
- 8.20 Within the borough are many sites supporting rare invertebrates, many of which have specialist habitat requirements. These habitats include Thames Terrace Grasslands and Open Mosaic Habitat on Previously Developed Land several of which will be directly affected by the route.

c) Impact on Heritage

Scope and Methodology of Assessment

- 8.21 The National Heritage List for England has been used to establish existing heritage assets in the study area. Approximately 180 heritage assets are located within the study area, including seven Scheduled Monuments, one Conservation Area, one Grade I listed building and 21 Grade II listed structures. The full list of identified designated assets is provided in Appendix B, along with their respective assessments. The remainder are sites recorded on the Historic Environment Record.
- 8.22 The significance of effects on heritage assets has been determined by the sensitivity of the asset and magnitude of the impact on the asset or users of the asset.

Sensitivity

8.23 The sensitivity of impacts on heritage assets has been prescribed using the following criteria:

Table 8.2 Sensitivity of Heritage Assets	
Sensitivity of Resource	Criteria
Very High	<p>Very high importance and rarity, international scale and very limited potential for substitution:</p> <ul style="list-style-type: none"> • World Heritage Sites (including nominated sites) • Heritage assets of acknowledged international importance • Other buildings of recognised international importance • Historic landscapes or townscapes of international importance
High	<p>High importance and rarity, national scale and limited potential for substitution:</p> <ul style="list-style-type: none"> • Scheduled monuments • Heritage assets of acknowledged national importance (including non-designated assets) • Grade I and Grade II* listed buildings • Other listed buildings of acknowledged national importance • Conservation areas containing buildings of acknowledged national importance • Historic landscapes or townscapes of national importance
Medium	<p>Medium or high importance and rarity, regional scale and limited potential for substitution:</p> <ul style="list-style-type: none"> • Grade II listed buildings • Conservation areas • Heritage assets of acknowledged regional importance • Other buildings of acknowledged regional importance • Historic landscapes or townscapes of regional importance
Low	<p>Low or medium importance and rarity, local scale:</p> <ul style="list-style-type: none"> • Locally listed buildings • Other listed buildings of acknowledged local importance • Heritage assets of limited importance, but with potential to contribute to local research objectives • Historic landscapes or townscapes of local importance
Negligible	<p>Very low importance and rarity, local scale:</p> <ul style="list-style-type: none"> • Historic buildings of no architectural or historical note • Heritage assets with very little or no surviving interest

Source: DMRB (2019): LA 104 – Environmental Assessment and Monitoring; TFL (2016): Silvertown Tunnel 6.1.8 Environmental Statement, Chapter 8 - Cultural Heritage and Archaeology

Magnitude

- 8.24 The magnitude of effects on heritage assets has been prescribed using the following criteria:

Magnitude of Impact	Criteria
Major	<ul style="list-style-type: none"> Change to most or all of the heritage asset, such that it is totally altered Comprehensive changes to the setting of an asset
Moderate	<ul style="list-style-type: none"> Changes to a large part of the heritage asset, such that it is clearly modified Changes that affect the setting of an asset that affects its character
Minor	<ul style="list-style-type: none"> Changes to a heritage asset, such that it is slightly altered Slight changes to the setting of a heritage asset
Negligible	<ul style="list-style-type: none"> Very minor changes to a heritage asset or its setting
No Change	<ul style="list-style-type: none"> No change to the heritage asset or its setting

Source: DMRB (2019): LA 104 – Environmental Assessment and Monitoring; TFL (2016): Silvertown Tunnel 6.1.8 Environmental Statement, Chapter 8 - Cultural Heritage and Archaeology

Significance of effects

- 8.1 The significance of a heritage effect is the product of the magnitude of the impact and the sensitivity of users of the affected heritage asset.
- 8.2 Significant impacts are those considered to have moderate, large or very large adverse effects. Other effects, equating to minor adverse or negligible, are not considered to be significant.

		Magnitude of impact				
		Major	Moderate	Minor	Negligible	No change
Sensitivity	Very High	Very Large	Large or Very Large	Moderate or Large	Slight	Neutral
	High	Large or Very Large	Moderate or Large	Slight or Moderate	Slight	Neutral
	Medium	Moderate or Large	Moderate	Slight	Neutral or Slight	Neutral
	Low	Slight or Moderate	Slight	Neutral or Slight	Neutral or Slight	Neutral
	Negligible	Slight	Neutral or Slight	Neutral or Slight	Neutral	Neutral

Source: DMRB (2019): LA 104 – Environmental Assessment and Monitoring; TFL (2016): Silvertown Tunnel 6.1.8 Environmental Statement, Chapter 8 - Cultural Heritage and Archaeology

Assessment of Impacts on Heritage Assets

8.3 This section provides a summary of assets which are considered to be significantly affected by the delivery of LTC.

Direct Impacts

8.4 A large number of heritage assets are located within land required for the LTC Development Boundary. These include:

- **Crop Mark Complexes:** These include a large Scheduled Monument located to the north of the A13/A1089 junction, a second close to Baker Street with numerous non designated cropmarks recorded on the Historic Environment Record.
- **Three listed buildings will be totally demolished including 1 and 2 Grays Corner Cottages:** a Grade II listed building currently used as two semi-detached residential properties.
- **Thatched Cottage:** a listed Grade II residential property. **Murrells Cottages:** a listed Grade II residential property currently used as two semi-detached residential properties.
- **Early prehistoric and palaeo-environmental deposits:** Deposits likely to contain evidence of early human occupation within Thurrock

8.5 These assets will be demolished and / or permanently altered, resulting in a **very large adverse effect** which constitute a significant effect.

Impact on setting

8.6 Construction of LTC has the potential to cause significant effects on setting of a number of Grade II listed buildings, scheduled monuments and conservation areas due to their proximity to LTC activities:

- **A number of listed buildings lie will have their setting impacted:** including Buckland: a listed Grade II residential building; Heath Place: a listed Grade II residential property.; hitecroft Farmhouse: a listed Grade II building currently used as a care home; Baker Street Windmill: a listed Grade II residential property.
- **Scheduled monuments setting will be impacted:** These include the Orsett Causewayed enclosure, Coalhouse Fort, Coalhouse Battery
- **Conservation Areas: the landscape in which the West and East Tilbury conservation areas are located in will be subject to major negative change** due to the close proximity of the construction site, LTC and road closures during construction

8.7 The above heritage assets are considered assets of medium to high value. Given the proximity of the these to the LTC Development Boundary and/or the permanent LTC alignment, environmental effects, such as vibration, visual impact will affect the integrity of the assets. In addition, large numbers of undesignated heritage assets, including archaeological sites, non-designated buildings, paleo-environmental deposits and historic landscape features, will be impacted by the proposed scheme.

8.8 As environmental mitigation strategies are currently unknown, the significance of impact effects on the heritage assets are considered to be moderate, resulting in each asset having a permanent **moderate adverse effect, which is significant**. To fully understand the potential damage the construction of LTC may have on the assets, detailed environmental assessment will be required to be submitted as part of the DCO process. Trial trenching, palaeo-environmental assessment, geophysical survey is being undertaken at present and is likely to identify further heritage assets to be added to the above.

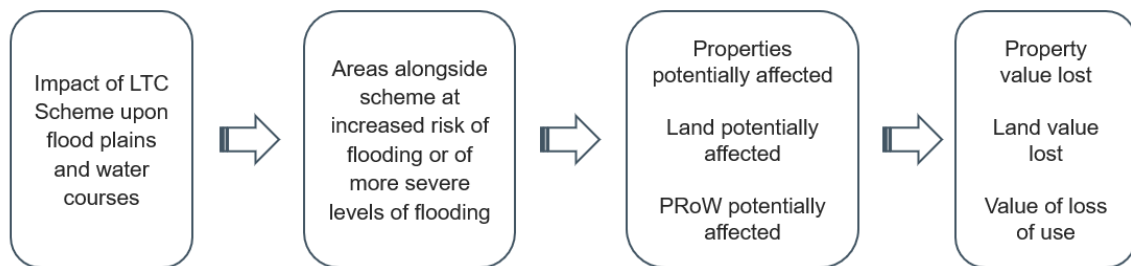
d) Flood Risk

- 8.9 As with any new highway development of this scale, there will be a significant increase in hardstanding associated with the footprint of the proposed LTC Scheme. As such, without appropriate measures being put in place there is a significant risk that flood risk could increase.

Scope and Methodology of Assessment

- 8.10 Figure 8.13 sets out the scope of the assessment proposed to assess the potential flood risks associated with the LTC Scheme.

Figure 8.13 Flood Risk – Scope of Assessment



Source: Hatch Regeneris.

- 8.11 It is understood that, with most major infrastructure schemes, major flood risks will be mitigated against; however, there can be instances where the cost of mitigation is prohibitively expensive and so there can be increased risk of flooding to some properties or land. In addition, flood mitigation work can affect specific parcels of land and so it can be important to understand whether or not this could have subsequent negative impacts for the local community.
- 8.12 The assessment has sought to establish whether or not the LTC Scheme (taking into account any mitigation measures) is likely to significantly impact upon flood risk across the Thurrock area.

Assessment of Impact on Flood Risk

- 8.13 There are on-going discussions between the Council and Highways England to ensure that flood risks are appropriately accounted for any runoff from the LTC Scheme and to ensure that there will be no increase in the runoff rates. Whilst there are potentially a few areas where the scheme could deliver slight improvements to existing flooding risk, these are currently considered incidental and there has not been any significant consideration about how the scheme could be used to tackle existing flood risk.
- 8.14 There remains limited detailed information with which to assess the overall impact and so, whilst there are currently no significant concerns from the proposals presented to date, this could be subject to change once further revised designs are presented.

Conclusion

- 8.15 On the basis of the limited information available it is concluded that there will be a negligible or minor impact upon flood risk from the LTC Scheme, but this will be subject to further review once further information is available.

e) Visual Impacts

8.16 It is likely that an infrastructure project of this size will have visual impacts on the surrounding environment. This is due to the size and scale of the LTC, and the alignment of the route through greenbelt and low-lying marsh land.

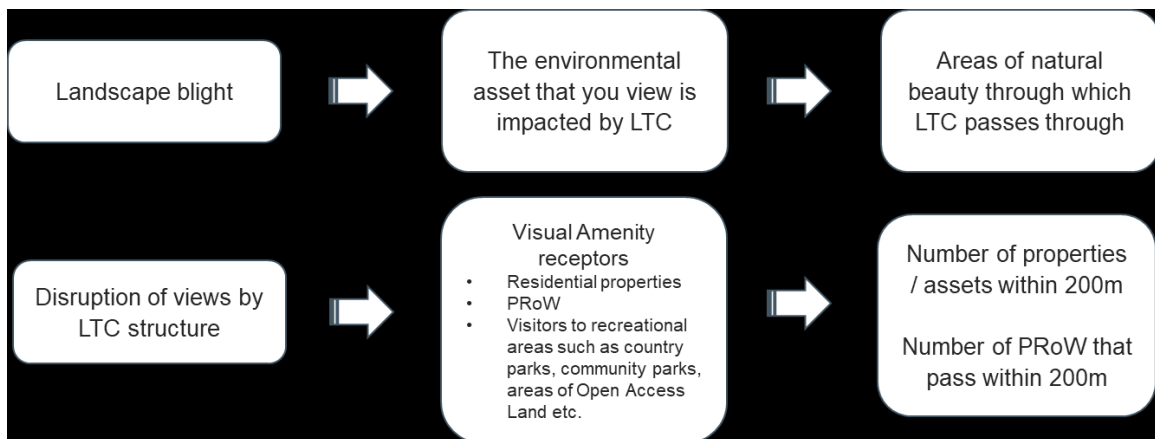
Scope and Methodology of Assessment

8.17 Figure 8.14 below sets out the scope of assessment for understanding the visual impacts of the LTC. This includes two possible areas of impact:

- 1) The physical landscape is impacted by the LTC structure, resulting in a reduction in the quality of the environment that is viewed
- 2) The LTC physically blocks or impairs views from visual amenity receptors. This includes residential homes, users of public rights of way and visitors to parks etc.

8.18 It is assumed that these visual impacts will occur throughout both the construction and operational phases.

Figure 8.14 Visual Impacts – Scope of Assessment



Source: Hatch Regeneris

Assessment of Visual Impact

8.19 Assessment of the impact of the LTC on the two areas set out above suggests:

- 1) The LTC is likely to have adverse impacts on a number of important visual landscapes in Thurrock. As set out in the Highways England PEIR, there are several different landscapes which will be subject to permanent changes due to the construction and operation of the LTC, these include:
 - Marshland across the borough – in particular, Tilbury marshes will be subject to major adverse change from the construction activities of the LTC tunnel portal.
 - Greenbelt land with specific heritage or biodiversity value – Orsett Fen will undergo major negative change due to the construction and operation of the LTC/A13 junction
 - Mardyke Valley – the character of low-lying Mardyke Valley will be significantly altered due to the construction and operation of a viaduct to carry the LTC over the marshland. This area of Thurrock is currently sparsely populated and relatively

undeveloped, with much of the natural landscape intact. The introduction of a major road and elevated viaduct could result in major adverse change to the area.

- 2) During construction and operation, the LTC will disrupt views for a number of visual amenity receptors:
- **Residential properties** within 200m of the LTC are likely to experience moderate to major impacts to current views. There are 160 properties that fall within this 200m boundary. Given the scale of construction, for some of these homes the disruption to views in the construction phase will be heightened. Two examples of residential properties likely to experience major impacts include:
 - Homes on Princess Margaret Road which currently have an uninterrupted view across the Thames and of the Kent Downs AONB. The LTC tunnel portal will impair these views
 - Residential properties on the eastern edge of Tilbury with an uninterrupted eastern view across the West Tilbury marshes. The tunnel portal and LTC route will disrupt these views
 - **14 Public Rights of Way** are located in close proximity to the LTC and are likely to have their views impacted. PRow at risk include:
 - Users of PRow between West and East Tilbury
 - Users of NCR 13 and Thames Riverside PRow which will be subject to moderate/minor visual change
 - The footpath network and scattered rural properties in the open, low-lying Orsett Fen. These visual amenity receptors currently have 360-degree, uninterrupted views
 - Other receptors such as visitors to Coalhouse Fort and users of the Orsett and Top Meadow golf courses are likely to experience disruption. In particular, Coalhouse Fort currently has extensive views along and across the Thames Estuary, as well as views to the west across Tilbury Marshes. Therefore, LTC construction and operation on both sides of the River Thames could impede views from the Fort.

Additional impacts of visual disturbance

Health and Wellbeing

- 8.20 Evidence³⁷ compiled by the University of Essex on behalf of the Wildlife Trust explores the impacts of natural views to health and wellbeing. It finds that natural views and access to green space can have positive impacts in areas such as mental wellbeing, encouraging physical exercise, tackling obesity and health inequality. However, as the baseline data shows, these are all challenges which are currently heightened in Thurrock, and therefore the role of natural landscapes in these communities could be particularly important.
- 8.21 The research suggests that building on green spaces could have serious implications for health and social inequalities, as a lack of green space in residential areas corresponds with poor wellbeing and reduced physical activity. This is exacerbated in poorer areas, which will impact on the deprived communities concentrated around the LTC route.

³⁷ https://www.wildlifetrusts.org/sites/default/files/2018-05/r1_literature_review_wellbeing_benefits_of_wild_places_lres_0.pdf

Light pollution from construction compounds

- 8.22 Given the 24-hour programme of construction, it is likely that lights used to light up the construction compounds will result in visual light pollution impacts at night for the surrounding areas. This could have an adverse impact on the properties, community facilities and habitats located in close proximity to the compounds. However, due to a lack of detailed information on construction activities, it is impossible to make a robust assessment of the potential magnitude of visual impact associated with light from construction activities at night at this stage.

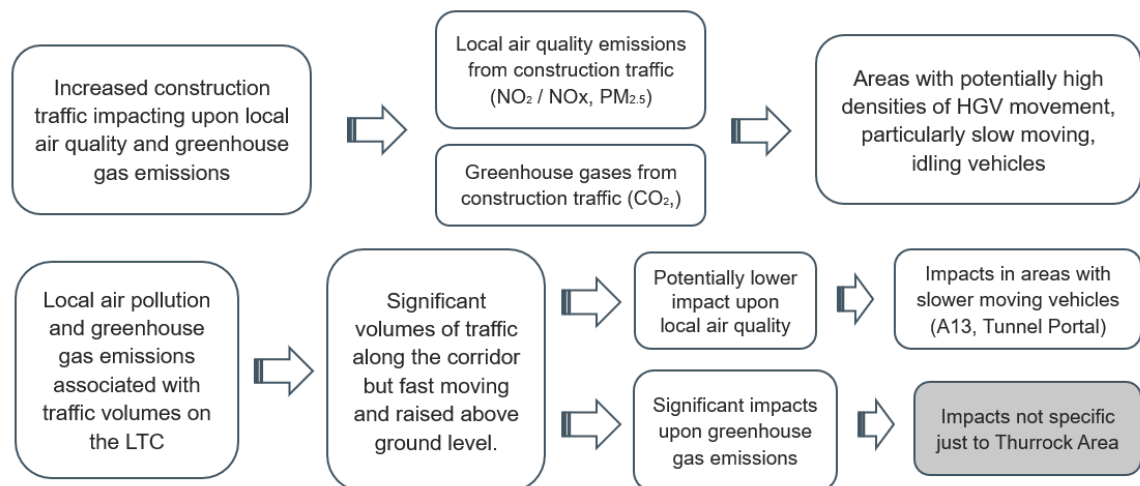
f) Air Quality/Emissions

- 8.23 The LTC will result in significant additional strategic traffic movements across Thurrock, as well as changes in local traffic movements. In addition, the construction of the scheme will require a significant increase in HGV. These changes in traffic movements could impact upon both local air quality, as well as the level of greenhouse gas emissions.

Scope and Methodology of Assessment

- 8.24 Figure 8.15 sets out the scope of the assessment proposed to assess the potential impacts of the LTC Scheme upon local air quality and greenhouse gas emissions.

Figure 8.15 Local Air Quality and Greenhouse Gas Emissions – Scope of Assessment



Source: Hatch Regeneris.

Construction Phase Air Quality / Emissions Impacts

- 8.25 Chapter 4 outlined the level of additional traffic movements associated with the construction of the LTC Scheme. Overall are estimated to be an additional 11,700 monthly HGV movements to compounds in Thurrock and between 1,800 and 2,700 monthly bus movements to bring workers to and from the construction compounds. Whilst, in themselves, these are not significant daily traffic movements, they will create clusters of additional movements in and around the compound sites themselves.
- 8.26 These clusters of movements, and idling vehicles, could contribute to local air quality issues in the areas around the two compounds locations in the heart of Thurrock: Low Street / East Tilbury, and Chadwell St Mary / Southfields.

- 8.27 The greenhouse gas emissions from the construction-related traffic will depend upon the specific vehicle mix but, whilst still notable, the overall scale of trips will not be significant in comparison to wider transport emissions across Thurrock and the resultant LTC Scheme itself.
- 8.28 There will also be a range of traffic impacts around the existing A13 junction with the A1089 during the construction of the LTC Scheme. Traffic flows are likely to be slower and there could be additional congestion, including stop-start traffic on local roads subject to disruption. Whilst there is insufficient data to quantify these impacts, they are likely to add to local air quality issues around the junction.

Operational Phase Air Quality / Emissions Impacts

- 8.29 The operational phase of the LTC will result in a significant traffic flows along the route. As detailed in Chapter 4, the Highways England traffic modelling indicates that there could be the following average daily traffic flows on different section of the LTC:
- South of the A13 = between 90,000 – 95,000
 - North of the A13 = between 75,000 – 80,000
- 8.30 These levels of traffic will generate significant emissions, in terms of nitrogen dioxide (NO₂), Nitrogen Oxide (NO_x), Particulate Matter (PM), and carbon dioxide (CO₂).

Local Air Quality

- 8.31 Assessing the levels of emissions generated and, most importantly, the local concentrations created, requires detailed air quality modelling that is not currently available.
- 8.32 Evidence recognises³⁸ that driving a constant speed is more efficient than acceleration and deceleration (unless driving at speeds above 75mph), and that emissions disperse more readily is greater at higher speeds. As such, the concentrations of emissions created along free-flowing sections of the LTC are likely to be relatively low, in comparison to similar traffic volumes on local roads. The raised height of the carriageway will further assist with dispersing pollutants.
- 8.33 Where traffic speeds reduce, and vehicles are accelerating and decelerating, the risk of higher concentrations of emissions forming is much higher. This is likely to occur around the junction with the A13, where speeds will reduce considerably for vehicles interchanging between routes, albeit the junction is designed to avoid stationary traffic. There are also likely to lower vehicle speeds, and higher acceleration, for vehicles coming out of the tunnel portal, particularly HGV given the level of incline.
- 8.34 Low traffic speeds, and stop/start traffic, will also occur in the event of incidents along the LTC. Whilst Highways England has not provided definitive forecasts of incident management, analysis undertaken within Chapter 4, applying existing data on closures from the Dartford Crossing, forecasts that an incident may occur on the LTC once every four days.
- 8.35 As well as assessing the potential concentrations of emissions created, air quality impact assessments need to consider the number of sensitive 'receptors' within defined distances of the scheme that could be affected. The estimated number of properties within 200m of the LTC alignment is 160. Beyond 200m from the scheme, the contribution of vehicle emissions to local pollution levels is not significant³⁹.

³⁸ 'Advising fuel efficient driving techniques for your fleet' (Energy Savings Trust / Department for Transport)

³⁹ TAG Unit A3 Environmental Impact Assessment

- 8.36 It can be seen that the overall number of existing properties in close proximity to the proposed LTC Scheme alignment is relatively low. There will be some properties around the LTC junction with the A13 that will be within 200m, as well as potentially some in Chadwell St Mary and Low Street.
- 8.37 Based upon the evidence of traffic volumes, speeds, and location of sensitive receptors within 200m of the alignment, the analysis concludes that the main impacts of the LTC Scheme in terms of local air quality impacts are likely to be focused around the A13 junction.

Greenhouse Gas Emissions

- 8.38 Whilst the local air quality impacts (as defined by the DfT) in the immediate vicinity of the LTC Scheme may not be high relative to the scale of the scheme, the overall level of greenhouse gas emissions associated with the scheme will be considerable.
- 8.39 It is recognised that a primary role of the LTC is to provide capacity relief to the Dartford Crossing, which is operating above capacity. A significant proportion of trips (83%) using the LTC will be existing trips that have diverted from the Dartford Crossing. The proportion of induced trips crossing the River Thames as a result of the LTC Scheme is, therefore, estimated to be around 13,250 vehicle trips per day.
- 8.40 Data on the overall average length of trip undertaken by these additional vehicles is not currently known, but if it assessed across the length of the LTC Scheme within Thurrock then this would account for an additional 32 million miles travelled per year. This is estimated to equate to around 7,500 additional tonnes of CO₂ produced within Thurrock per annum.

Overall Air Quality / Emissions Impacts

- 8.41 Without specific air quality modelling outputs, it is not possible to quantify the overall impacts of the LTC Scheme upon local air quality and greenhouse gas emissions. The disruption caused by the scheme and the volume of traffic generated will create significant impacts and so the overall conclusion is that there will be **moderate adverse** impact, subject to further analysis.

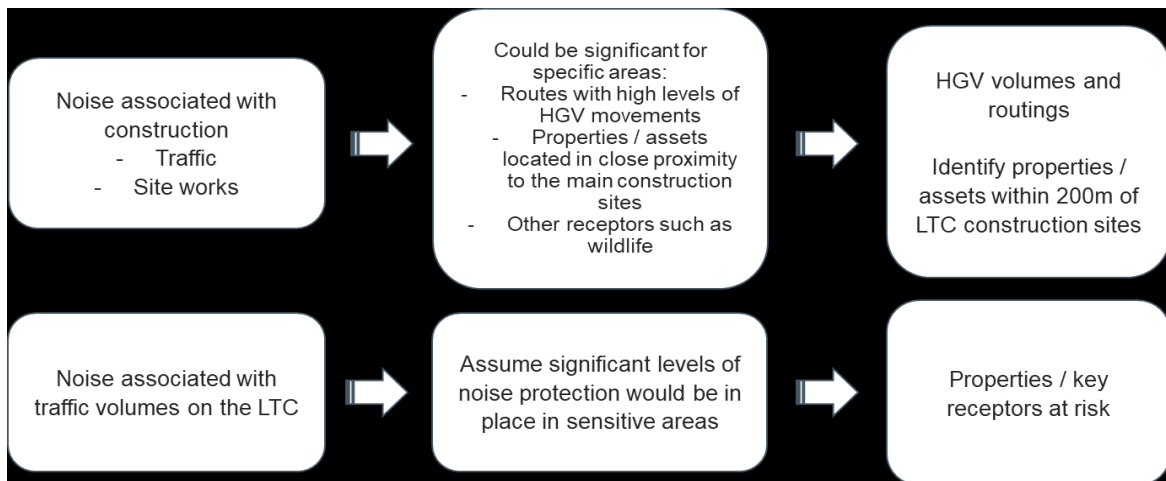
g) Noise Impacts

- 8.42 The construction and operation of the LTC will result in increases to noise levels in Thurrock. This is a result of increased levels of traffic, as well as construction activities.

Scope and Methodology of Assessment

- 8.43 The scope of assessment below (Figure 8.16) sets out the approach to measuring the noise impact of the LTC in the construction and operational phases:
- **Construction** – noise impacts from construction traffic and construction activities on the main work sites
 - **Operational** – noise from traffic on the LTC road

Figure 8.16 Noise Impact – Scope of Assessment



Source: Hatch Regeneris

8.44 The likely receptors at risk from increased noise impacts include:

- Residential properties
- Public Rights of Way
- Hospitals, schools and community facilities

Assessment of Noise Impact

8.45 Whilst strict national guidelines mean that noise from the LTC is unlikely to exceed standards set for construction and operation of major road infrastructure, there is likely to be an increase to the background noise above current levels. For the more rural locations in Thurrock, this increase, whilst still within national limits, may be a significant noise impact compared to current levels.

8.46 As a result, assessing the impact of noise will focus on this relative increase and the potential adverse effects it may have. Department for Transport WebTAG guidance⁴⁰ states that transport-related noise should be assessed in relation to its impact on annoyance, sleep disturbance and health impacts (such as stress and dementia).

Construction phase impacts

8.47 Assessment of the construction phase has determined the areas at most risk to high levels of construction traffic (see chapter 4). This finds that the communities closest to the main work sites, including East Tilbury, West Tilbury and Southfields, will have significantly increased traffic flows, mostly HGV vehicles. HGV (>3.5 tonnes) and other construction traffic emit greater levels of noise than normal cars. Given the small, local nature of the roads around these settlements, it is likely that the baseline HGV traffic level is very low. Therefore, significantly increased traffic flows for LTC construction will result in a relative increase to noise levels. This is assessed potentially having a moderate adverse impact on local properties and community assets within 300m⁴¹ of the construction boundary. This is likely to affect over 250 properties and other sensitive receptors such as Treetops, Treetops

⁴⁰ DfT WebTAG Environmental Impact Appraisal

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf

⁴¹ This is the buffer used by Highways England in the PEIR, in accordance with national guidance.

2 and Orsett Heath Schools, Linford Village Hall, The Whitecroft nursing home and a number of primary schools.

- 8.48 In addition, construction activities at the work sites will generate noise in the local area. There is currently a lack of detailed information on the potential noise and vibration impacts of construction, and therefore a robust assessment of impact cannot be made. However, information on the construction process suggests that, in addition to day-time construction noise, tunnel boring will occur 24/7 and work to connect the LTC to the existing road network will occur during night-time. As a result, there are likely to be continuous day-time and night-time construction noise impacts for the 6-year construction period. The rural location of the tunnel portal means the relative uplift in noise due to tunnel boring, especially during the night, could be significant.
- 8.49 Therefore, the LTC construction phase is likely to have noise impacts which cover all three of DfT's impact areas: annoyance, sleep disturbance and health impacts.

Operational phase impacts

- 8.50 Assessing the levels of noise generated by the LTC requires detailed noise monitoring and modelling that is not currently available. However, the information that is available suggests that operational noise impacts due to traffic increases are likely to be significant for some sensitive receptors due to the relative increase from a low baseline level.
- 8.51 As stated in the PEIR, the LTC will go through an area of Thurrock which currently has 'lower road traffic noise levels', in particular areas such as Tilbury, East Tilbury, West Tilbury and Linford are likely to experience adverse impacts associated with increased background noise.
- 8.52 In addition, the WebTAG guidance acknowledges the increasing importance of measuring the impact of noise on 'quiet areas'. This refers to 'tranquil landscapes' or peaceful rural areas. Whilst assessment of this impact cannot be included in a technical appraisal of noise impacts, it is important to consider the potential changes to landscape tranquillity as a result of major transport schemes. This is likely to be particularly relevant for areas of Thurrock such as the Mardyke Valley, which is currently relatively undisturbed.

Conclusions – Environment

- 8.53 The LTC will have a number of impacts on the environment in Thurrock. This includes the economic costs of lost housing, adverse impacts to community facilities and negative social impacts of increased severance.
- 8.54 The overall impacts of the themes discussed above are summarised in Figure 8.17.

Figure 8.17 Summary of Environmental Impacts

Impact Area	Estimated Cost to Thurrock
a) Amenity Land Value lost	£1.35 million
b) Habitat lost/damaged	<i>Minor to moderate adverse impacts (within LTC Corridor)</i>
c) Heritage impact	<i>Moderate adverse [#] (within LTC Corridor)</i>
d) Flood risk	<i>Negligible to minor adverse [#] (within LTC Corridor)</i>
e) Visual impacts	<i>Moderate adverse (across Thurrock)</i>
f) Local air quality and emissions	<i>Moderate adverse [#] (within LTC Corridor)</i>
g) Increase in noise	<i>Moderate to Major adverse [#] (within LTC Corridor)</i>

Source: Hatch Regeneris

[#] not-withstanding the findings of future modelling exercise and detailed analysis

9. Impact upon Growth

Overview

- 9.1 The LTC scheme represents a major piece of physical infrastructure that will require significant land take, both to construct, but also when in permanent operation. This will have direct impacts upon land availability for development across Thurrock, as well as wider impacts upon the value of land surrounding the LTC Scheme.
- 9.2 This section examines the potential constraints that LTC will place upon residential and commercial development across Thurrock, with specific reference to:
- **Permanent** loss of development land during the construction and operational phases of LTC;
 - **Temporary** loss of development land during the construction phase of LTC; and
 - **Blight** upon other development land affecting viability or value during the operational phase of LTC.
- 9.3 A review of the current Local Planning process is set out within Chapter 3. Whilst a new Local Plan is still under development, current evidence identifies a local housing need for up to 33,000 new homes by 2041, along with aspirations for growth in commercial development. The permanent, or temporary, loss of land associated with the construction and operational phases of LTC could, potentially, impact upon the ability of Thurrock Council to meet these growth aspirations.
- 9.4 Within the Chapter 3 baseline, a scenario assessment was presented that considered potential site suitability and viability for development, at a strategic area-wide level. Whilst only representative of a theoretical assessment, the outcomes of this exercise indicated that deliverable sites may enable between 38,100 and 43,500 new homes across Thurrock by 2050.

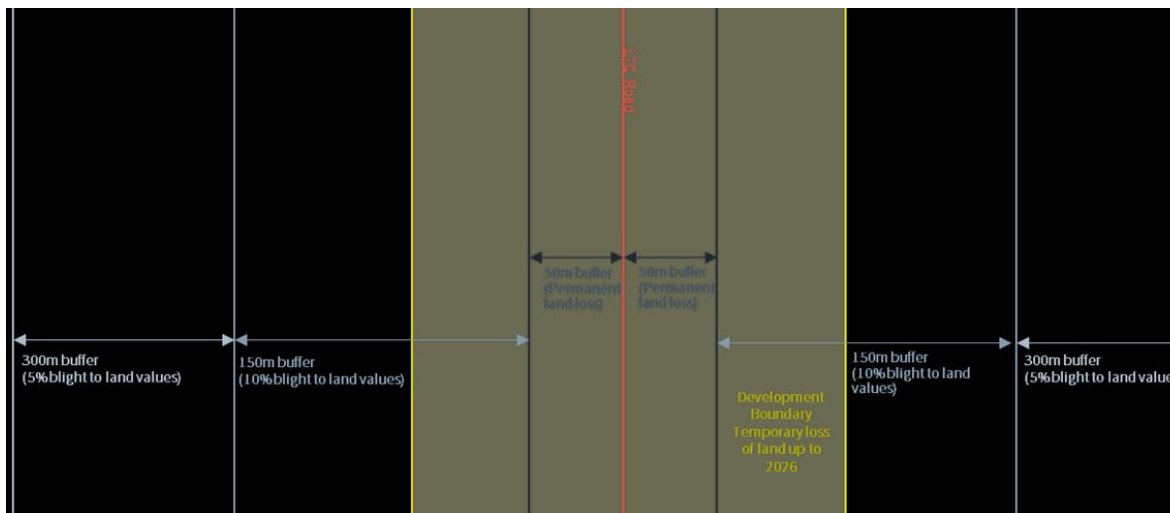
Impact Assessment

- 9.5 The growth impact assessment considers the potential development land affected by the construction and operational phases of LTC. These are defined as development land within:
- the physical boundary of the LTC structure and its surrounds that prevents any alternative development;
 - the red line boundary for LTC construction that restricts other development opportunities during the LTC construction phase (2021 to 2026); and
 - buffers extending 150m and 450m from the LTC permanent boundary
- 9.6 For each of these areas the volume of land affected has been determined and the value of that land for commercial or residential development estimated, using MHCLG estimates⁴². These estimates represent the Reference Case scenario for development values that could be achieved in the absence of the LTC Scheme.
- 9.7 Individual assessments are then undertaken to determine what land may be permanently or temporarily lost as a result of LTC, or if the viability and/or value of land could be affected by blight.

⁴² <https://www.gov.uk/government/publications/land-value-estimates-for-policy-appraisal-2017>

9.8 Figure 9.1 provides an overview of the different zones in which the impacts of LTC upon development land has been assessed.

Figure 9.1 Diagram of Buffer Zones applied within the analysis



Source: Hatch Regeneris

- 9.9 For land deemed permanently lost, the total value of the land is presented as an economic cost. For land deemed temporarily lost, the economic loss of value from not being able to progress any development until 2027 is estimated.
- 9.10 For land within the 150m and 450m buffers, an assessment of the impact that the close proximity of the LTC Scheme (during both construction and operational phases) could have upon underlying economic values has been undertaken. Evidence of property blight impacts emerging in relation to HS1 and HS2 have been used to estimate the impact of LTC blight upon local land values.
- 9.11 Analysis by PwC⁴³, based upon discussions with DfT and HS2 Ltd, forecasts on-going blight from transport infrastructure ranging up to 10% within 120m and up to 6% within 500m. Further research from Hampton International⁴⁴ linking the housing market to major transport infrastructure estimated that properties outside London within 500m of the HS2 alignment fell by 4.5% in absolute terms, but 8.9% in relative terms to wider house price trends.
- 9.12 On the basis of this wider evidence base, we have applied the following parameters within the assessment of impacts of LTC upon the value of development land:
- For commercial development land located in close proximity of the LTC (within 150m) a 5% loss of value has been applied, based upon the evidence base. For the commercial development land between 150m and 450m, a 2.5% loss in value has been applied.
 - For residential development land located with 150m of the LTC a 10% loss of value has been applied, whilst for land between 150m and 450m, a 5% loss in value has been applied.

⁴³ HS2 Property Bond Cost Report, PwC (2014)

⁴⁴ Linking Housing Markets: The effect of transport infrastructure on housing, Hamptons International (2014)

Commercial Development

Permanent Loss

- 9.13 The only potential development land directly impacted by the final LTC alignment is an area to the south of the Tilbury Loop rail line. There is estimated to be a maximum loss of 3 ha of potential employment land. It is understood that any development opportunities within this area will require significant upgrades to transport infrastructure provision. Alternative land options would be available to off-set this relatively small potential loss of land in this locality. The net economic value of losing this land for commercial development will therefore be negligible.
- 9.14 For completeness, we have estimated the loss in gross economic value associated with this permanent loss of commercial development land. At £5.4m, it can be seen that, even at this maximum gross level, it represents a relatively small loss of value.
- 9.15 Given the uncertainties of the medium-term viability of the site, we would conclude that the net impact of permanent loss of commercial development land for LTC is, broadly, neutral.

Temporary Loss

- 9.16 As with the permanent loss of land, the main area of potential commercial development land that could be affected by the construction of LTC is to the south of the Tilbury Loop rail line. This area is particularly affected by the main designated construction compound for the LTC tunnel portal. A further 84 ha of potential employment land will be temporarily lost within the construction red line boundary (over and above the permanent commercial land lost). As stated above, this land will require substantial transport infrastructure investment to “unlock” any development and, as such, the probability of any substantial development coming forward before 2027 may be limited.
- 9.17 For completeness, we have estimated the maximum loss in gross economic value associated with the temporary loss of commercial development land. This indicates that delaying construction on these sites could cost the economy up to £11m.
- 9.18 Given the uncertainty over whether this development could come forward in the period up to 2027, we have concluded that impact of the construction of LTC upon commercial development opportunities is likely to be relatively minimal.

Blight

- 9.19 A final assessment of the potential commercial development land within 150m and 450m of the LTC alignment has been undertaken. Whilst none of this land will be permanently or temporarily lost as a result of the LTC Scheme, the disruption caused during the construction of the scheme, and the permanent physical and environmental impacts of the scheme in its operational phase, could cause blight in these areas. This could impact upon the viability or value of development that could be brought forward.
- 9.20 There remain relatively few commercial development opportunities located within 150m and 450m of the LTC alignment. A maximum of 6 ha has been identified within 150m and 48 ha within 450m. Much of this land is, again, south of the Tilbury Loop rail line and subject to a number of constraints for development. The total economic value associated with developing this land is estimated at around £104m. Applying a loss of value of 5% for land within 150m, and 2.5% for land between 150m and 450m, would generate a maximum loss in value of £2.7m.

Residential Development

- 9.21 The LTC alignment, and associated red line construction boundary, passes through a significant area of potential development land within the heart of Thurrock. An expansive area between Chadwell St. Mary, Linford/East Tilbury, and the Tilbury Loop rail line has been identified for potential residential development. It is recognised, however, that not all of this land is likely to be brought forward within the next 20 years, due to a combination of requirement, suitability, and/or viability. It is probable that housing expansion will be focused around extensions to existing villages, towns, and urban areas.
- 9.22 The assessments of permanent and temporary residential land loss, as well as blight, have been undertaken on the basis that a reduced proportion of the total available land would be brought forward for development within the emerging Local Plan and that the land is highly likely to be required to meet the housing needs of the Thurrock area. The assessment has applied a range of average housing density rates for the whole of Thurrock of between 35 and 40 dph.

Permanent Loss

- 9.23 Figure 9.2 presents the estimated areas of designated residential development land that will be permanently lost by the construction of LTC.

Figure 9.2 Estimation of Permanent Residential Development Land Loss due to LTC



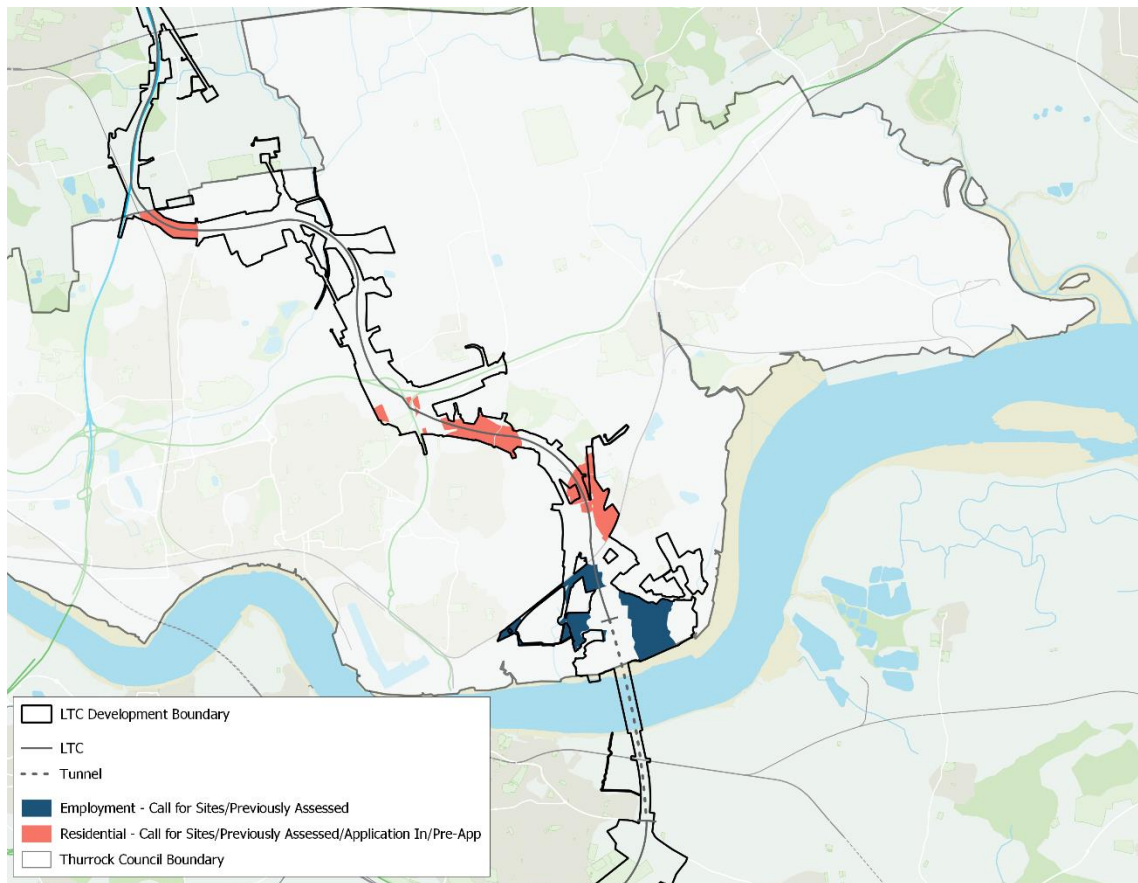
Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

- 9.24 We have estimated the permanent loss of homes that could be delivered on these sites, and the associated economic value. The scale of potential residential development affected is estimated to be between 735 - 840 homes, with an associated gross economic value of between £70m and £85m.

Temporary Loss

- 9.25 Figure 9.3 presents the estimated areas of residential development land that could be impacted by the construction of LTC. Excluding the area that will be permanently lost to the LTC Scheme, we have estimated the number of homes that could be temporarily delayed in construction until post-2026. The economic time value of the enforced delay in construction is then estimated.

Figure 9.3 Estimation of Temporary Residential Development Land Loss due to LTC Construction



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

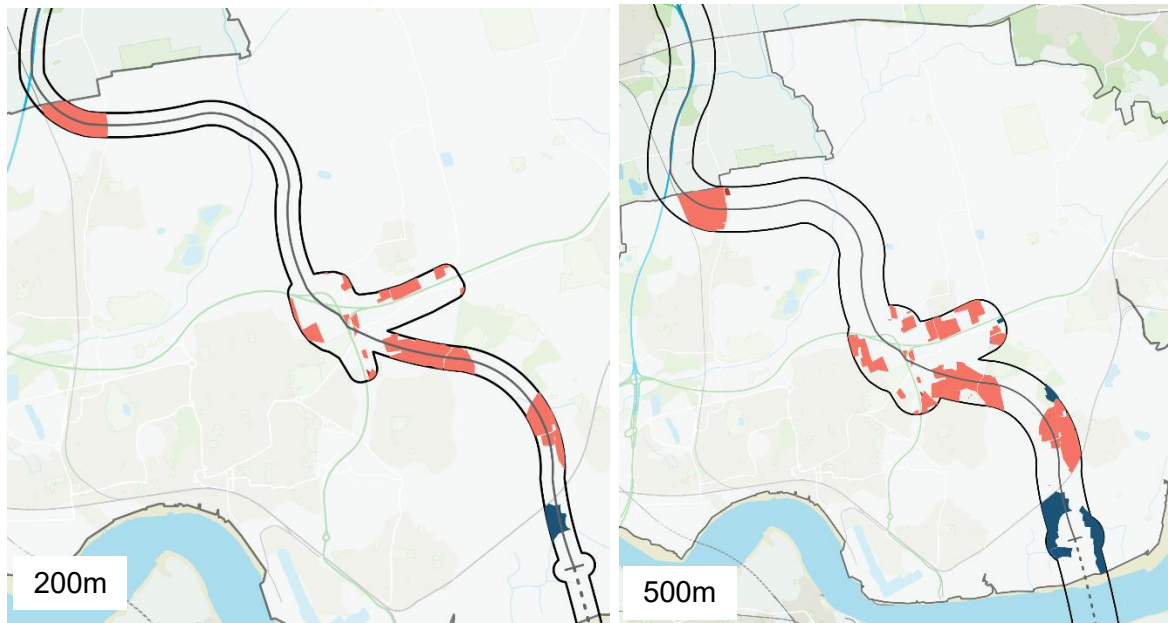
- 9.26 The scale of potential residential development affected is estimated to be between 2,330 – 2,660 homes, with an associated gross economic value of between £16m and £18.5m.

Blight

- 9.27 A further assessment of the potential residential development land within 150m and 450m of the LTC alignment has been undertaken. Whilst none of the land will be permanently, or even temporarily, lost as a result of LTC, the disruption caused through the construction of the scheme, and the permanent physical and environmental impacts of the operational scheme, could cause blight in these areas. This could impact upon the viability or value of development that could be brought forward.
- 9.28 Figure 9.4 presents the estimated areas of residential development land within 150m and 450m of the LTC alignment. There is forecast to be the potential for between 1,870 and 2,135 homes within 150m and a further 3,150 and 3,600 homes within the extended buffer to 450m.

- 9.29 The total economic value associated with this residential land is estimated at between £520m and £600m. Applying a loss of value of 10% for land within 150m, and 5% for land within 150m to 450m, would generate a loss in gross economic value of between £33m and £39m.

Figure 9.4 Estimation of Development Land Potentially Affected by LTC Blight



Source: Hatch Regeneris. Contains OS data © Crown copyright and database right 2019

Summary and Conclusions

- 9.30 The assessment of growth has examined a range of impacts of the LTC Scheme upon residential and commercial development. Whilst there remains uncertainty around future development proposals, it is clear that land required directly for the construction and final operation of the LTC Scheme, as well as sites immediately surrounding the proposed alignment, hold significant economic value in development terms.

Forecast Gross Economic Development Cost Impacts

- 9.31 Table 9.1 provides a summary of the maximum gross economic impacts, in terms of lost value of development land.

Table 9.1 Estimated Loss of Gross Economic Value from Development Impacts

Development Impact	Land Area	Land Impacted	Economic Cost to Thurrock
Permanent Land Lost	Total Development Area *	39 hectares	Up to £88 million *
	Number of new homes #	Up to 840 homes	
Temporary Land Lost	Total Development Area *	285 hectares	Up to £29 million *
	Number of new homes #	Up to 2,660 homes	
Development Land Blight	Total Development Area *	324 hectares	Up to £41 million *
	Number of new homes #	Up to 5,730 homes	

Source: Hatch Regeneris * commercial and residential land # delivered from residential land allocations

Forecast Net Economic Development Cost Impacts

- 9.32 It is standard economic practice to consider the 'net' economic cost impacts, alongside 'gross' impacts. In the context of this study, this should take into account the overall potential supply of development land across the borough, and whether the development land lost, or affected, by the LTC Scheme would mean there is insufficient land available to meet future development needs.
- 9.33 Given some of the uncertainties around future development it is challenging to assess the likely net impacts of the LTC upon development value. Chapter 3 established that Thurrock has a 'housing needs' assessment of 33,000 homes by 2041. Whilst Thurrock has a wide range of potential development sites, many of them will be subject to constraints that will make them not deliverable or developable.
- 9.34 Hatch Regeneris have estimated that the amount of actual developable land may allow between 38,100 and 43,500 homes to be delivered by 2050 (see Chapter 3). Whilst the profile by which this land may come forward is not specified, it is anticipated that between 5% and 20% may not come forward until after the provisional Local Plan period (post-2041). Applying an average figure of 12.5% indicates that there may only be land available for between 33,350 and 38,000 homes over a typical Local Plan period (2022 – 2041).
- 9.35 At the lower end of the forecast land available for delivering homes (sufficient to deliver 33,350 homes) it is only marginally above the designed need (33,000 homes). This implies that nearly all of the designated development land within 500m of the LTC Alignment is required to meet Thurrock's potential housing needs to 2041. Under this scenario, the residential impacts presented in Table 9.1 reflect the net economic cost of the LTC Scheme in terms of residential growth impacts.
- 9.36 The higher end of the forecast land available for delivering of homes (sufficient for delivering 38,000 homes) is 15% above the designed need (33,000 homes). This would infer that Thurrock could have an excess of land for residential development equating to the provision of 5,000 homes. Under this scenario, the homes that are forecast to be permanently and temporarily lost as a result of the LTC Scheme (equating to between 3,065 and 3,500 homes), whilst still representing a gross economic loss, would not be required to meet Thurrock's housing needs. However, some of the land within the 150m and 450m buffer zones around the LTC Alignment would still be required to meet the housing needs target (enough to deliver between 3,080 and 4,230 homes). The blight associated with these properties would still represent a net economic cost. This value is estimated to be between £17m and £23m.

Development Cost Impact Conclusions

- 9.37 In conclusion, the gross development cost impact of the LTC Scheme upon future development values is significant with a potential economic cost in excess of £150m. This value could also represent the net economic cost to the area, due to the risk that the developable land across the designated LTC Corridor is required to meet Thurrock's housing needs. Even under a more unconstrained assessment of available development land across Thurrock, much of the development land directly adjacent to the LTC alignment will be required to meet the housing needs target. The loss of value of this land as a result of blight from LTC is estimated to be in the region of £20m.

10. Summary and Conclusions

Summary

10.1 This section provides an overall summary of the outputs from the economic cost impact analysis.

Business and Economy Impacts

10.2 The LTC could significantly impact upon the local economy and businesses in Thurrock, particularly in relation to disruption as a result of LTC construction and operation.

- **Permanent loss of one commercial premises in Thurrock** - the Cattery on Springfield Farm. There will also be a **loss of 152ha of agricultural land** that could affect up to 53 farms located within 1 km of the proposed LTC route.
- Construction-related **business disruption** may occur from restricted access to some commercial premises along the LTC route and the negative impact of reduced accessibility to town centres. Disruption around the A13 junctions with the A1089 and A128 could impact upon access to the Port of Tilbury and other businesses located off the A1089. The impact of local road closures and additional HGV construction traffic could reduce trips to local retail centres and impact upon levels of turnover.
- **On-going business performance** could be affected by reduced accessibility from the A128 to the A1089, as well as in the event of concurrent closures of the LTC and Dartford Crossing.
- The LTC could also have an adverse impact upon the **attractiveness of the local area to investors** by negatively affecting strategic perceptions. This could impact upon local vacancy rates.

Summary of Key Business and Economy Impacts

Impact Area	Estimated Cost to Thurrock
a) Commercial assets / land value lost	c. £4 million
b) Business disruption during Construction	Jobs loss GVA Impact
	115 FTE up to c. £39 million
c) On-going business performance	up to c. £18 million
d) Attractiveness to investors & strategic perceptions	Minor to Moderate Adverse (across Thurrock)

Source: Hatch Regeneris

Community Cost Impacts

- 10.3 The LTC will have a number of impacts on Thurrock's communities. This includes the economic costs of lost housing, adverse impacts to community facilities and negative social impacts of increased severance.
- The LTC Scheme results in a direct **loss of up to 20 residential properties**, with associated land value and cost of relocation.
 - In addition, a further **1,400 residential properties are affected by blight**, with 160 of them located within 200m of the LTC Scheme, and a further 1,240 within 500m.
 - Whilst none are lost as a result of LTC, around **14 community facilities are impacted** by the construction or operational of the scheme. Land associated with two facilities is temporarily lost. A further seven community resources experience significant adverse blight during construction, and two suffer significant adverse blight during the on-going operation of the LTC Scheme.
 - There will be significant **disruption to PRowS** during the construction phase with, most routes temporarily severed, reducing access to facilities/services, increasing community isolation, and impacting health & wellbeing. There will also be some permanent diversions to routes, and many will suffer blight from the LTC Scheme.
 - The construction of the LTC scheme is likely to **disrupt the communities** living around the route through closures to local routes, increased congestion from road closures and diversions, and increased traffic from construction vehicles. Eight communities along the route will be particularly affected (*Southfields, Baker Street, Orsett, East Tilbury, Linford, Low Street, Bulphan, and West Tilbury*), whilst access to A&E will be particularly affected, followed by access to further education and special education facilities. There will also be isolated incidences of disruption in access to open spaces and important community assets in the borough, such as Coalhouse Fort which currently plays a key role in supporting the physical and mental wellbeing of residents as it is widely used for exercise, education and social interaction.
 - **On-going community** cohesion will be affected by reduced access from the A128 to the A1089, the impact of concurrent incidents on the LTC and Dartford Crossing, as well as more general perceptions of isolation created by the physical barrier of the LTC Scheme and impacts on PRowS.
 - A number of these impacts have a cumulative effect upon overall **health and wellbeing** of local residents⁴⁵. These include health/stress impacts of enforced relocation, blight, noise/air pollution, disruption to access to healthcare, loss of community assets, loss of PRow, and severance and community cohesion. There are concerns that the costs of the LTC will disproportionately negatively affect the communities who already suffer from health inequality, such as Tilbury and South Ockendon, where there are already high levels of deprivation, isolation and poor health outcomes.

⁴⁵ This assessment has predominantly focused on the qualitative health and wellbeing costs associated with the other impact areas and, therefore, does not preclude any findings from the Health Impact Assessment, to be undertaken in due course.

Summary of Community Impacts	
Impact Area	Estimated Cost to Thurrock
a) Loss of residential properties	£3.1 million
b) Residential property blight	£24.5 million
c) Impact on community facilities	Moderate adverse (within LTC Corridor)
d) PRoW severance/disruption	Moderate adverse (within LTC Corridor)
e) Community disruption during construction	Moderate adverse (across Thurrock) (up to £36 million direct transport impacts #1)
f) On-going impact on community cohesion	Moderate adverse (across Thurrock) (up to £21 million direct transport impacts #1)
g) Health & Wellbeing	Moderate adverse(across Thurrock) #2

Source: Hatch Regeneris

#1 estimated economic impact of delays to non-business-related car trips

#2 subject to findings from full Health Impact Assessment

Environmental Cost Impacts

10.4 The LTC will have a number of impacts on the environment in Thurrock. This includes the economic costs of lost housing, adverse impacts to community facilities and negative social impacts of increased severance.

- The LTC will result in **direct loss of amenity value** from land lost across 728ha
- There will also be **a direct loss of habitat**, along with indirect impacts on wider habitat corridors, including deciduous woodland, and potential impacts upon areas with Great Crested Newts and farmland birds.
- There are numerous **heritage assets** that will be directly impacted, including nationally protected scheduled monuments, listed buildings, as well as impacts on numerous undesignated assets. In addition, there will be impact on the setting of a range of assets such as Scheduled monuments, listed buildings and conservation areas.
- Whilst available data on the scheme impacts is relatively limited, the potential impact of the LTC Scheme upon flood risk is considered likely to be relatively neutral.
- The LTC Scheme will have a range of **visual impacts** in terms of changing the physical landscape or impairing views. Tilbury Marshes, Orsett Fen, and the Mardyke Valley will all be impacted visually. Around 160 properties are located within 200m of the LTC and may have their views impaired, whilst at least 14 PRoWs are in close proximity to the LTC Scheme and users of these routes will be negatively impacted. There are also likely to be issues associated with light pollution during the construction phase.
- The LTC will result in significant additional strategic traffic movements across Thurrock, as well as changes to local traffic. Furthermore, the construction of the scheme will generate significant HGV movements. All of these will impact upon **local air quality and greenhouse emissions**. Whilst detailed air quality modelling is unavailable, it is considered likely that there could be issues around the LTC junction with the A13, where there will be changes in vehicle speeds and there are sensitive receptors in close proximity to the junction.

- Both the construction and operation of the LTC Scheme will generate significant **noise impacts**. Over 250 properties and a range of other sensitive receptors, such as Treetops, Treetops 2 and Orsett Heath Schools, will be in close proximity to the LTC development boundary and could be significantly impacted during the construction phase. Whilst detailed noise modelling outputs are not available, there are also likely to be significant impacts during the operational phase, particularly in areas around Tilbury, East Tilbury, West Tilbury and Linford.

Summary of Environmental Impacts	
Impact Area	Estimated Cost to Thurrock
a) Amenity Land Value lost	£1.35 million
b) Habitat lost/damaged	<i>Minor to moderate adverse impacts (within LTC Corridor)</i>
c) Heritage impact	<i>Moderate adverse # (within LTC Corridor)</i>
d) Flood risk	<i>Negligible to minor adverse # (within LTC Corridor)</i>
e) Visual impacts	<i>Moderate adverse (across Thurrock)</i>
f) Local air quality and emissions	<i>Moderate adverse # (within LTC Corridor)</i>
g) Increase in noise	<i>Moderate to Major adverse # (within LTC Corridor)</i>

Source: Hatch Regeneris

subject to future modelling exercises and more detailed analysis

Growth Cost Impacts

- 10.5 The assessment of growth has examined a range of impacts of the LTC Scheme upon residential and commercial development. Whilst there remains uncertainty around future development proposals, it is clear that land required directly for the construction and final operation of the LTC Scheme, as well as sites immediately surrounding the proposed alignment, hold significant economic value in development terms.

Forecast Gross Economic Impacts

- 10.6 The table below provides a summary of the maximum gross economic impacts, in terms of lost value of development land.

Estimated Loss of Gross Economic Value from Development Impacts			
Development Impact	Land Area	Land Impacted	Economic Cost to Thurrock
Permanent Land Lost	Total Development Area *	39 hectares	Up to £88 million *
	Number of new homes #	Up to 840 homes	
Temporary Land Lost	Total Development Area *	285 hectares	Up to £29 million *
	Number of new homes #	Up to 2,660 homes	
Development Land Blight	Total Development Area *	324 hectares	Up to £41 million *
	Number of new homes #	Up to 5,730 homes	

Source: Hatch Regeneris

* commercial and residential land

delivered from residential land allocations

Forecast Net Economic Impacts

- 10.7 Given some of the uncertainties around future development it is challenging to assess the likely net impacts of the LTC upon development value. Under some potential residential development scenarios nearly all of the defined development land along the LTC alignment may be required to meet the Thurrock's future housing needs. This would imply the net economic cost of loss of residential land could equate to the gross costs set out above.
- 10.8 Under more generous land availability assumptions, the net impacts would be lower (as residential development can take place elsewhere) but it is still estimated that between 3,100 and 4,250 new homes within a 500m buffer area around the LTC Scheme will be affected by blight with an estimated economic loss of between £17m and £23m.

Conclusions

- 10.9 The construction and operation of the LTC Scheme will have significant impacts upon residents and businesses located across the Thurrock area:
- The scheme will result in **significant direct loss of land** for current agricultural and amenity uses, as well as substantial future residential and commercial development opportunities. This represents a major loss of economic value for the area, potentially equating to as much as **£96 million**.
 - The construction phase will create **significant disruption for local access and movement** between villages/hamlets and the main urban areas. This will disrupt business operations and create severance between communities. The scale of impacts will depend upon the length of disruptions, but businesses could lose up to **£39 million** in economic value and communities will see a loss in social value equating to in excess of **£36 million**. A further **£29 million** will be lost from delayed development, on the basis the project is delivered to programme.
 - Once operational, the LTC Scheme will continue to **create blight across the corridor**, affecting current and future property values and creating environmental emissions. This will affect community cohesion and local health and wellbeing. There will also be on-going impacts upon business operations and affect the attractiveness of the area for investment. Whilst not all of these impacts can be quantified, there is estimated to be a loss of economic value of over **£100m**.

Appendix A - Assessment of Community Facilities

A.1 Table A.1 provides a full assessment of community facilities considered during the study of LTC.

Table A.1 Impact of LTC on Community Facilities						
Resource	Resource Description	Phase	Impact phase and effect	Magnitude	Sensitivity	Significance
The Engine Room Café (at Coalhouse Fort), Princess Margaret Road, East Tilbury	<ul style="list-style-type: none"> A café located at Coalhouse Fort in East Tilbury, approximately 140m from the LTC Development Boundary A key community resource for residents and visitors of East Tilbury. The café is open six days a week (Tuesday to Sunday). 	Construction	<ul style="list-style-type: none"> Reduced availability of the café for existing users due to the increased demand from nearby construction workers Reduced enjoyment of the café due to changes in noise levels, air quality and construction traffic during the construction period Physical isolation due to prolonged road closures 	Medium: impacts will continue for the duration of the six-year construction period.	Medium: The nearest alternative café is at the Thurrock Thameside Nature Park (Essex Wildlife Trust Visitor Centre), 3.8km away. As such, users have limited capacity to avoid impacts. The viability of the café is unlikely to be affected.	Significant moderate adverse effect
		Operational	<ul style="list-style-type: none"> Not assessed 	N/A	N/A	N/A
Parish Church of St Catherine, Princess Margaret Road, East Tilbury	<ul style="list-style-type: none"> Located 20m the LTC Development Boundary in East Tilbury. An Anglican (Church of England) church serving the communities of East and West Tilbury and Linford. Due to isolation, the church is kept locked apart from when services are held (on Sundays). It is also open on the last Sunday of the month from Easter to October for tea and cake. Services are also held on Wednesday mornings at the St Francis Centre which is associated with the church. 	Construction	<ul style="list-style-type: none"> Physical isolation due to prolonged road closures Potential noise disturbance during service hours due to construction activities 	Medium: impacts will continue for the duration of the six-year construction period.	Low: due to the limited operating hours of the church, and the availability of an alternative place of worship within East Tilbury (i.e. the St Francis Centre).	Minor adverse effect which is not significant.
		Operational	<ul style="list-style-type: none"> No impacts identified 	N/A	N/A	N/A

The Ship Pub, Princess Margaret Road, East Tilbury	<ul style="list-style-type: none"> A public house located adjacent to the LTC Development Boundary in East Tilbury. The pub is open seven days a week between 12pm-11pm. (12pm-10.30pm on Sunday). Features include car parking and a beer garden. 	Construction	<ul style="list-style-type: none"> Reduced availability of the pub facilities for existing users due to the increased demand from nearby construction workers Reduced enjoyment of the pub due to changes in noise levels and air quality during the construction period Physical isolation due to prolonged road closures 	Medium: impacts will continue for the duration of the six-year construction period.	Medium: The nearest alternative pub is located in Linford, 2.4km away. Given its location, prolonged road closures are likely to limit the accessibility of this pub for some users, e.g. Low Street residents. The viability of the pub is unlikely to be affected.	Significant moderate adverse effect
		Operational	<ul style="list-style-type: none"> No impacts identified 	N/A	N/A	N/A
Condovers Scout Activity Centre, Church Road, West Tilbury	<ul style="list-style-type: none"> Located within the LTC Development Boundary A formal 3.5-acre site with accommodation, a campsite, wash facilities and facilities for a wide range of sports / game activities. 	Construction	<ul style="list-style-type: none"> Temporary use of land required affecting the entire site. 	High: the viability of the facility is affected.	High: children are the primary users of this facility. The tranquil location of the Centre is important for successful children's play and outdoor learning. Moreover, there are no other scout activity centres between the River Thames and the A127. However due to the transient use of this facility, sensitivity is considered to be medium	Significant major adverse effect
		Operational	<ul style="list-style-type: none"> Unknown 	N/A	N/A	N/A
The Whitecroft, Stanford Road	<ul style="list-style-type: none"> Located adjacent to the LTC Development Boundary and approximately 200m from the permanent LTC alignment. A 56-bedroom residential care home for older people and people with dementia 	Construction	<ul style="list-style-type: none"> Reduced enjoyment of the care home due to changes in noise levels, air quality and construction traffic. Physical isolation due to construction activities and the prolonged road closures of Stanford Road 	Medium: impacts will continue throughout the six-year construction period	High: older people and people with dementia are the primary users of this facility. Changes in noise levels can have adverse impacts on people with dementia.	Significant major adverse effect
		Operational	<ul style="list-style-type: none"> Reduced enjoyment of the care home due permanent environmental changes (i.e. noise, air quality and visual impacts) 	Low: while permanent impacts are anticipated, the environmental changes are expected to be low and will affect a small group of people.	High: older people and people with dementia are the primary users of this facility. Changes in noise levels can have adverse impacts on people with dementia.	Significant moderate adverse effect

Emmanuel Church, Sleepers Farm Road, Chadwell St Mary.	<ul style="list-style-type: none"> Located approximately 235m from the LTC Development Boundary and approximately 430m from the permanent LTC alignment. One of two Church of England churches in Chadwell St Mary. Weekly Sunday services and a monthly communion service is held at the church. 	Construction	<ul style="list-style-type: none"> Reduced access to the church due to road closures and construction traffic 	Medium: impacts will continue throughout the six-year construction period; however, this will only affect a very small proportion of people (i.e. congregants that live to the north of Chadwell St Mary).	Low: the church is operational for a limited number of hours. Alternative places of worship are also available within Chadwell St Mary (i.e. St Mary's).	Minor adverse effect which is not significant .
		Operational	<ul style="list-style-type: none"> Potential noise disturbance during service hours 	Low: while permanent impacts are anticipated, the environmental changes are expected to be low and will affect a very small group of people. Operational impacts will have little or no effect on the well-being of congregants.	Low: the church is operational for a limited number of hours. Alternative places of worship are also available within Chadwell St Mary (i.e. St Mary's).	Negligible adverse effect which is not significant
Orsett Golf Course, Brentwood Road, Orsett	<ul style="list-style-type: none"> An 18-hole golf course located in Orsett. The golf course lies adjacent to the LTC Development Boundary, and 180m from the LTC alignment. Facilities include a club house with restaurant and bar, and a pro shop. 	Construction	<ul style="list-style-type: none"> Reduced access to the golf course due to road closures during construction Reduced enjoyment of the golf course due to changes in noise levels, air quality and construction traffic 	Medium: accessibility impacts are likely to affect any users accessing the golf course from the south west of the golf course throughout the six-year construction period. Environmental impacts are likely to have little effect on the well-being of users	Low: due to the transient nature of the facility's use, users of the golf course will be able to experience impacts without incurring a significant effect.	Minor adverse effect which is not significant .
		Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Low: permanent environmental impacts are likely to have little or no effect on the well-being of users.	Low: due to the transient nature of the facility's use, users of the golf course will be able to experience impacts without incurring a significant effect.	Negligible adverse effect which is not significant
Willow Garden Day Nursery, 176 Heath Road, Orsett Heath	<ul style="list-style-type: none"> Located adjacent to the LTC Development Boundary and approximately 340m from the permanent LTC alignment. A nursery school providing early years education for children aged 0-5 years old. The nursery is open Monday to Friday from 7am to 7pm. Latest Ofsted report indicates that the nursery has a total of 36 places, with 68 children on roll. 	Construction	<ul style="list-style-type: none"> Reduced enjoyment and development of children due to changes in noise levels, air quality and traffic during the construction period. Physical and visual isolation due to location of LTC alignment and prolonged road closures 	Medium: impacts will continue throughout the six-year construction period	High: young children are the primary users of this facility. Changes in noise levels will have adverse impacts on successful learning, particularly as the school emphasises outdoor learning.	Significant major adverse effect
		Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Low: while permanent impacts are anticipated, the environmental changes are	High: young children are the primary users of this facility. Changes in noise levels will have	Significant moderate adverse effect

				expected to be low and will affect a small group of people	adverse impacts on successful learning, particularly as the school emphasises outdoor learning.	
Foxhound Riding School	<ul style="list-style-type: none"> Located approximately 340m north of the LTC alignment. A riding school providing equestrian services and facilities, including a riding school (for riders of all abilities, aged over 5 years old) and livery yard. 	Construction	<ul style="list-style-type: none"> Impact phase: construction phase Reduced access to the riding school due to road closures during construction 	Medium: accessibility impacts are likely to affect any riders accessing the riding school from the south of the A13 due to prolonged road closures. Impacts will continue throughout the six-year construction period	Low: due to the transient nature of the facility's use, users of the riding school will be able to experience impacts without incurring a significant effect.	Minor adverse effect which is not significant .
		Operational	<ul style="list-style-type: none"> Operational on Monday, Wednesday, Thursday and Friday between 9am and 9pm, Tuesday 9am to 5pm and over the weekend between 8am to 5pm. 	<ul style="list-style-type: none"> Permanent environmental changes 	Low: permanent environmental impacts are likely to have little or no effect on the well-being of users.	Low: due to the transient nature of the facility's use, users of the riding school will be able to experience impacts without incurring a significant effect.
Linford Village Hall, Lower Crescent, Linford	<ul style="list-style-type: none"> Located 150m from the LTC Development Boundary. A fully accessible village hall in Linford which is available to hire by organisations of private individuals for meetings, group activities and receptions. 	Construction	<ul style="list-style-type: none"> Reduced enjoyment of facility by users due to changes in noise levels and air quality once operational 	Negligible: environmental impacts associated with the operation of LTC will have little or no effect on the well-being of village hall users.	Low: due to the transient nature of the facility's use, users of the village hall will be able to experience impacts without incurring a significant effect.	Negligible adverse effect which is not significant
		Operational	<ul style="list-style-type: none"> No impacts identified 	N/A	N/A	N/A
Orsett Heath Academy*	<ul style="list-style-type: none"> Located 200m from the LTC Development Boundary A new secondary school opening in a temporary site from September 2020 for up to 240 pupils. The permanent new site is planned to open in September 2022. The academy will provide have capacity for up to 1,200 pupils. 	Construction	<ul style="list-style-type: none"> Reduced access to the school due to the anticipated prolonged closure of the A1013 Stanford Road Adverse environmental impacts (such as noise and vibration effects) which can disturb learning. 	Medium: impacts will continue throughout the six-year construction period	High: children are the primary users of this facility. Prolonged road closures, resulting in changes in journey lengths, and increase the unpredictability of commuting times. Environmental effects may also affect children's' learning.	Significant major adverse effect
		Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Negligible: permanent environmental impacts are likely to have little or no effect on the well-being of users.	High: children are the primary users of this facility.	Minor adverse effect which is not significant .
Thurrock Rugby Football Club, Long Lane, Grays	<ul style="list-style-type: none"> Located adjacent to the LTC Development Boundary 	Construction	<ul style="list-style-type: none"> Temporary land take from the Club affecting four junior rugby pitches. 	Medium: impacts will continue throughout the six-year construction period	High: children are the key users of the rugby pitches which will be temporarily lost. Due to the transient nature of the facility's use, users of the rugby	Significant major adverse effect

	<ul style="list-style-type: none"> A rugby club with 20 teams including men's, women's, youth and children teams. 		<ul style="list-style-type: none"> Reduced access to the Club due to temporary road closures Temporary environmental changes 	club will be able to experience environmental impacts without incurring a significant effect.		
		Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Low: permanent environmental impacts are likely to have little or no effect on the well-being of users.	Low: due to the transient nature of the facility's use, users of the Club will be able to experience impacts without incurring a significant effect.	Negligible adverse effect which is not significant
		Construction	<ul style="list-style-type: none"> Reduced access to the school due to the anticipated prolonged closure of the A1013 Stanford Road Adverse environmental impacts (such as noise and vibration effects) which can disturb learning. 	Medium: impacts will continue throughout the six-year construction period	High: children with learning difficulties are the primary users of this facility. Prolonged road closures, resulting in changes in journey lengths, and increase the unpredictability of commuting times. Environmental effects may also affect children's' learning.	Significant major adverse effect
Treetops School (including planned extension and Post-16 Provision*), Buxton Road, Grays	<ul style="list-style-type: none"> Located 50m from the LTC Development Boundary Specialist school for children and young people (3-19 years old) who experience moderate learning difficulties – particularly in the areas of autism. There are 276 places available at the school. 	Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Negligible: permanent environmental impacts are likely to have little or no effect on the well-being of users.	High: children with learning difficulties are the primary users of this facility.	Minor adverse effect which is not significant .
		Construction	<ul style="list-style-type: none"> Reduced access to the school due to the anticipated prolonged closure of the A1013 Stanford Road Adverse environmental impacts (such as noise and vibration effects) which can disturb learning. 	Medium: impacts will continue throughout the six-year construction period	High: children with learning difficulties are the primary users of this facility. Prolonged road closures, resulting in changes in journey lengths, and increase the unpredictability of commuting times. Environmental effects may also affect children's' learning.	Significant major adverse effect
Beacon Hill Academy (Post-16 Provision), Buxton Road, Grays	<ul style="list-style-type: none"> Located 110m from the LTC Development Boundary Specialist school for children and young people (2-19 years old) who experience severe and complex learning difficulties. There are 75 places available at the Academy (including primary, secondary and post -16 provision). 	Operational	<ul style="list-style-type: none"> Permanent environmental changes 	Negligible: permanent environmental impacts are likely to have little or no effect on the well-being of users.	High: children with learning difficulties are the primary users of this facility.	Minor adverse effect which is not significant .

*future development

Appendix B - Designated Heritage Assets

B.1 The tables below provide a list of designated heritage assets located within 200m of the LTC Development Boundary.⁴⁶

Table B.1 Scheduled Monuments							
Asset	Location	List Entry Number	Within 200m of LTC DB	Within 450m of LTC	Sensitivity	Magnitude	Significance
Crop Mark Complex*	Orsett	1002134	✓	✓	High	Major: the alignment of LTC will sever this asset, permanently altering most of this asset.	Very Large
Coalhouse Fort*	East Tilbury	1013943	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a change in the setting of this asset	Moderate
East Tilbury Battery	East Tilbury	1013880	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a change in the setting of this asset	Slight
Second World War Anti-Aircraft Battery	West Tilbury	1012185	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a change in the setting of this asset	Slight
Causewayed Enclosure and Anglo-Saxon Cemetery	-	1009286	✓	✓	High	Utility diversions will directly impact the site. : land to south of this asset will be permanently required for the construction of LTC, resulting in a change in the setting of this asset	Moderate
Gatehouse and Moat	South Ockendon	1002155	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a slight change in the setting of this asset	Slight
Roman Barrow	South Ockendon	1019106	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a slight change in the setting of this asset	Slight

Table B.2 Conservation Areas					
Conservation Area	Within 200m of the LTC DB	Within 450m of the LTC	Sensitivity	Magnitude	Significance
East Tilbury*	✓	✗	Medium	Minor: due to the location of the conservation area, no changes to the actual asset are anticipated as the permanent requirement of land will be used for environmental mitigation. However, there will be a major negative change to the landscape which forms the setting of the conservation area.	Slight
West Tilbury	✓	✓	Medium	Moderate: the edge of the conservation area is within the LTC development boundary. There will be a major negative change to the landscape which forms the setting of the conservation area, and access may be affected due to road closures and construction traffic.	Moderate

*Asset on the Heritage at Risk register

⁴⁶ Historic England (2019): National Heritage List for England. Available at: <https://historicengland.org.uk/listing/the-list/map-search?clearresults=True>

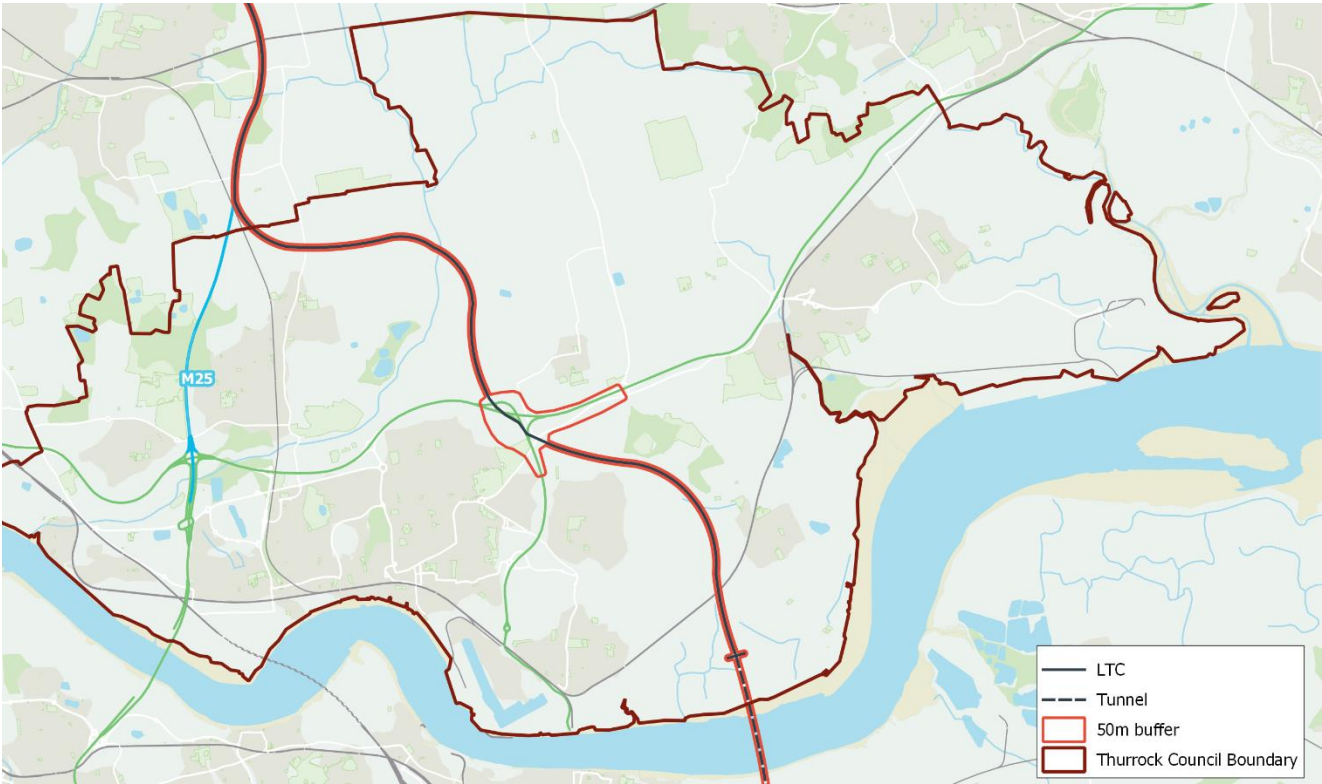
Table B.3 Listed Buildings							
Asset	Location	List Entry Number	Within 200m of the LTC DB	Within 450m of the LTC	Sensitivity	Magnitude	Significance
Grade I listed buildings							
Church of St Katherine	Princess Margaret Road	1337129	✓	✗	High	Minor: land surrounding this asset will be permanently required for environmental mitigation, resulting in a slight change in the setting of this asset	Slight
Grade II listed buildings							
Old Rectory	Princess Margaret Road	1111553	✓	✗	Medium	Minor: land adjacent to this asset will be permanently required for environmental mitigation, resulting in a slight change in the setting of this asset	Slight
Buckland	Station Road	1147796	✓	✓	Medium	Moderate: land adjacent to this asset will be permanently required for construction of LTC and Station Road realignment, changing the setting of the asset	Moderate
Sutton's Farmhouse	Waltons Hall Road	1111569	✓	✗	Medium	Negligible: land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Neutral
Waltons Hall	Waltons Hall Lane	1111568	✓	✗	Medium	Negligible: land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Neutral
Weatherboarded Barn (at Waltons Hall)	Waltons Hall Lane	1337098	✓	✗	Medium	Negligible: land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Neutral
Turners Farm	Waltons Hall Lane	1307175	✓	✗	Medium	Negligible: land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Neutral
Polwicks	Church Road	1111623	✓	✗	Medium	Minor: a large area of land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Slight
Walnut Tree Cottage	Church Road	1111624	✓	✗	Medium	Minor: a large area of land adjacent to this asset will be temporarily required for the diversion of utilities, resulting in a temporary change in the setting of this asset	Slight
Murrels Cottages	Stanford Road	1337096	✓	✗	Medium	Major: the realignment of Stanford Road will result in the demolition of this asset	Very Large
Heath Place	Hornsby Lane	1111575	✓	✓	Medium	Moderate: the permanent alignment of LTC will be located in proximity to this asset, resulting in access to the asset being temporarily affected and an indirect, but permanent, change in the setting of this asset	Moderate
Heath Cottage	Hornsby Lane	1111574	✓	✓	Medium	Negligible: land in proximity to this asset will be temporarily required for the diversion of utilities and the construction of LTC, resulting in a slight change in the setting of this asset	Neutral
Whitcroft's Farmhouse	Stanford Road	1111566	✓	✓	Medium	Moderate: the permanent alignment of LTC will be located in proximity to this asset. Construction of the Stanford Road realignment will additionally result in access to the asset being temporarily affected	Moderate
1 and 2 Grays Corner Cottages**	Baker Street	1337056	✓	✓	Medium	Major: land required for the LTC alignment will result in the demolition of this asset	Very Large

Thatched Cottage**	Baker Street	1111644	✓	✓	Medium	Major: land required for the LTC alignment will result in the demolition of this asset	Very Large
Baker Street Windmill	Stifford Clays Road	1111643	✓	✓	Medium	Moderate: the permanent alignment of LTC will be located in proximity to this asset, affecting its setting. Construction of the Stifford Clays Road realignment will additionally result in access to the asset being temporarily affected	Moderate
Mill House	Stifford Clays Road	1111642	✓	✓	Medium	Minor: land required to the west of this asset will be temporarily required for a construction compound, and permanently required for the LTC alignment, resulting in a slight change in the setting of this asset	Slight
Whitfields	Stifford Clays Road	1146709	✓	✓	Medium	Minor: land required to the west of this asset will be temporarily required for a construction compound, and permanently required for the LTC alignment, resulting in a slight change in the setting of this asset	Slight
Thatched Barn (at Whitfields)	Stifford Clays Road	1111630	✓	✓	Medium	Minor: land required to the west of this asset will be temporarily required for a construction compound, and permanently required for the LTC alignment, resulting in a slight change in the setting of this asset	Slight
The Wilderness	Fen Lane	1111631	✓	✓	Medium	Negligible: land required to the west of this asset will be temporarily required for a construction compound, and permanently required for the LTC alignment, resulting in a slight change in the setting of this asset	Neutral
Moat Bridge and Gatehouse (at South Ockendon Hall)	Hall Lane	1147701	✓	*	Medium	Negligible: land surrounding this asset will be permanently required for environmental mitigation, resulting in a slight change in the setting of this asset	Neutral
Former Gateway (at Groves Barns)	North Road	1147431	✓	✓	Medium	Minor: the permanent alignment of LTC will be located in proximity to this asset, affecting its setting.	Slight

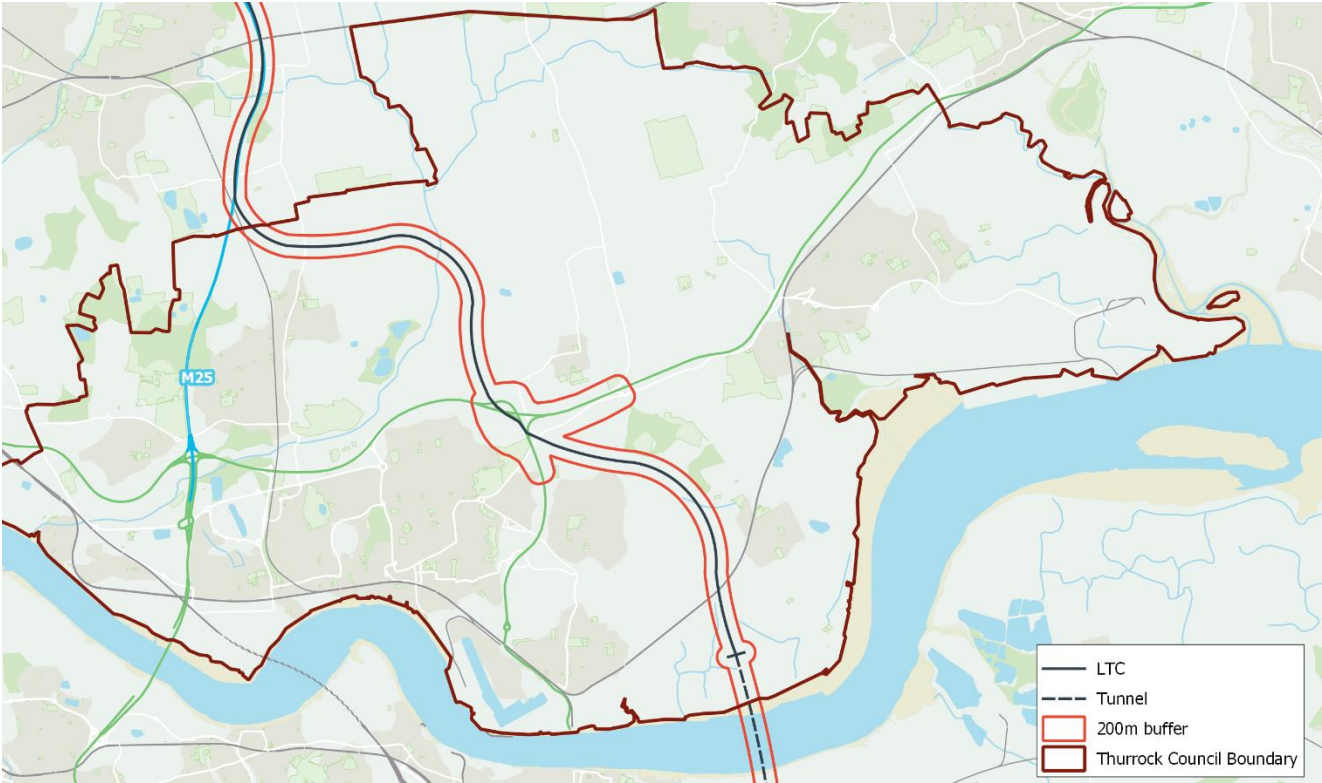
** Asset located within LTC Development Boundary

Appendix C - LTC Buffer Zones

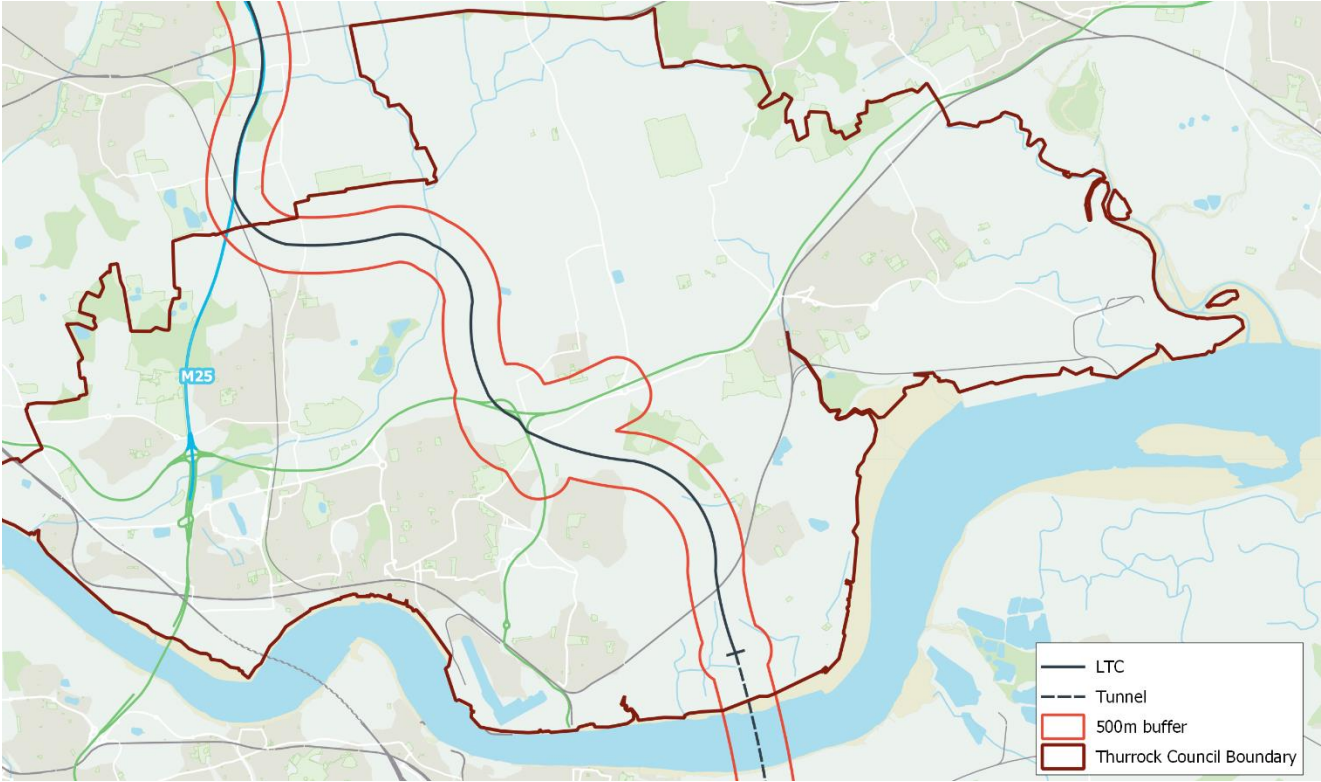
C.1 LTC Alignment with 50m Buffer



C.2 LTC Alignment with 200m Buffer



C.3 LTC Alignment with 500m



Appendix D - Qualitative Assessment Scale

Economic, social, and environmental impacts can often be quantified against thresholds defined using numerical values. Where this has not been feasible within this study, a consistent scale of adverse impacts has been applied for assessing the significance of the potential negative effects.

Major Adverse - Total loss or large-scale damage to existing character or distinctive features. Likely to result in substantial harm or loss of economic or social value.

Moderate Adverse - Partial loss or noticeable damage to existing character or distinctive features. May result in significant harm or loss of economic or social value, without appropriate remedial action.

Minor Adverse - Slight loss or damage to existing character or features and elements, with associated loss of economic or social value. The effects cannot be completely mitigated but opportunities may exist for mitigation

Negligible Adverse - Barely noticeable loss or damage to existing character or features and elements. There is a low possibility that harm or loss of economic or social value could arise.

No Change - No noticeable loss, damage or alteration to character or features. No harm or loss of economic or social value.



HATCH
REGENERIS

www.hatchregeneris.com

London: +44(0)207 336 6188

Manchester: +44(0)161 234 9910

Lower Thames Crossing

Thurrock Council Local Impact Report

Appendix G - Annex 3: Thurrock Council SEE Strategy Review

Lower Thames Crossing Task Force – Review of LTC Skills, Education and Employment (SEE) Strategy

1. Introduction

- 1.1. This report provides the Thurrock LTC Taskforce with an update on the LTC Skills, Education and Employment Strategy ('SEE Strategy') that has been produced in draft by Highways England.
- 1.2. This SEE Strategy is a crucially important document that provides the policy context for a number of specific measures/requests that Thurrock Council have made to LTC via the Hatch report (Hatch. LTC Mitigation Benefits for Thurrock Council. February 2021), most notably:
 - CLS 1 - Provision of a Council-led Local Labour and Business Team
 - CLS 3 - Target required for Local Labour and Apprentice use
 - CLS 4 - Employment Opportunities Small Capital Grants scheme
 - CLS 5 - Social Value delivered via Procurement.
- 1.3. It is important that Thurrock Council ensures the SEE Strategy is drafted in such a way that it provides the right policy foundation for these requests to be accepted.
- 1.4. This report is based on the content of the latest draft (August 2021) of the SEE Strategy but also information gleaned from associated technical meetings and correspondence on the SEE Strategy. The report refers to both the SEE Strategy and the associated CLS measures listed above, as they are so connected.

2. Timeline

- 2.1. The main milestones that members of the Thurrock LTC Taskforce should be aware of are as follows:
 - An initial draft of the Skills, Education & Employment (SEE) Strategy was produced in early Summer 2020
 - Stantec (Thurrock's retained LTC advisors) provided a review of the initial SEE Strategy in July 2020 and sent comments to the LTC Team
 - Hatch LTC Mitigation Benefits report published in February 2021, with all measures on skills/employment consistent with earlier Stantec comments
 - Response to Stantec comments was provided by LTC Team in February 2021.
 - A SEE Working Group was established by the LTC Team and met for the first time in February 2021. Our understanding is that it has only met on one further occasion in May 2021.
 - Hatch provided more specificity/quantification of Thurrock's ask on CLS1 on 9 June 2021, on CLS 4 on 8 July 2021 and on CLS5 on 23 July. No further material was required on CLS3, which is a largely self-explanatory request.
 - A new/revised draft SEE was circulated by the LTC Team in August 2021.

LTC Task Force Paper



- Separately to the SEE Strategy, the LTC Team responded to the Hatch detailed requests on CLS1 on 20 September, and on CLS5 on 22 September. No specific response has been received so far on CLS 4.

3. Analysis

3.1. The items below reflect either comments on the original SEE Strategy in July 2020, or a Hatch Measure, and assess the extent to which the latest draft of the SSE Strategy adequately addresses each point:

Original Comments made July 2020	Connection to Hatch Measure	Extent to which the latest Draft SSE Strategy provides the necessary reassurance to Thurrock Council
'All SSE KPIs should be suitably ambitious'	CL3 – Target required for local labour and apprentice use	<p>The current set of targets/KPIs lack ambition and are not currently legally secured through the DCO.</p> <p>The SSE states that LTC project will 'support more than 22,000 jobs'. Against this context, the SSE targets could be more stretching. The main targets are, as follows:</p> <ul style="list-style-type: none"> - 437 apprentices - 650 work placements - 500 workless job starts <p>We believe more apprenticeships and work placements could be offered on a project of this scale.</p>
'Should be a local labour target for workforce as a whole'	CL3 – Target required for local labour and apprentice use	<p>There is <u>no</u> local labour target for the workforce as a whole and none are currently legally secured through the DCO. This is a key omission.</p> <p>As noted above, the SEE Strategy estimates that 22,000 construction posts will be created, but does not state how many of these would ideally flow to local residents.</p> <p>Whilst accepting the difficulty of enforcing local labour targets, we believe this a topic that the LTC Team should provide an innovative and workable solution.</p>
'We need a definition or definitions of 'local'. There could be core and outer definitions and Thurrock should be prioritised on the north side'	CL3 – Target required for local labour and apprentice use"	<p>Definitions of local are provided in the SEE Strategy, but there is no identification or prioritisation of Thurrock within that definition.</p> <p>The definition of 'local' in SSE is concerning because it offers no reassurance on the precise extent to which Thurrock stands to benefit from any local labour clauses/targets.</p>

		<p>Local appears to have a 'Tier 1' and 'Tier 2' definition – with the former implicitly carrying greater weight. But Tier 1 includes all authorities that 'host' LTC regardless of the extent of local works. So Thurrock is just one of 8 authorities, even though it hosts far more of the route and the construction activity than others.</p> <p>A good example is the apprenticeship target:</p> <ul style="list-style-type: none"> - A target is included for apprentices @ 437 over lifetime of project - But the draft SSE Strategy does not state what % of the 437 would be taken 'local' residents. - And even if a Tier 1 local target were included, it should specify how many apprenticeships might flow to Thurrock residents.
<p>'The delivery of support to residents and businesses should not be left to HE. We would expect HE to fund the Council to deliver this (who may commission) so that the Council can effectively build on local delivery arrangements/ links. Our initial request will be funding for a Local Labour and Business Team which includes flexible commissioning budgets'</p>	<p>CLS1 – Provision of a Council-led Local Labour and Business Team</p> <p>CLS4 - Employment Opportunities Small Capital Grants scheme</p>	<p>The Hatch/Thurrock submissions to LTC requested the provision of 9 new support posts to deliver positive labour market outcomes for Thurrock, at a combined cost of circa £450K per annum. The posts were to be solely focussed on Thurrock.</p> <p>LTC Team have made it clear in correspondence via other mechanisms that they do not intend to directly fund Council. Instead, LTC say they will be establishing their own team.</p> <p>The SEE document itself makes no reference to the additional staffing resource that will be assembled by LTC. Subsequent correspondence from the LTC Team (dated 20 September 2021) confirms that the proposal is for:</p> <ul style="list-style-type: none"> • 5 LTC SEE posts. • 1 of the posts is for a SEE Advisor for Northern LTC Areas <p>We understand the full list of the proposed posts is as follows:</p> <ul style="list-style-type: none"> • SEE Lead who has overall responsibility for the implementation of the SEE Strategy • SEE Manager to work with the LTC Skills & Employment working group to upskill local communities. • SEE Advisor North to build partnerships with existing providers within the North to increase local job opportunities and promote/enhance the education agenda

		<ul style="list-style-type: none"> • SME/Supply Chain Lead to support local business with the skills they need to access opportunities on the programme • SEE Apprentice <p>The posts are being filled right now, with 3 of the 5 posts currently operational.</p> <p>Whilst some progress is being made in getting SEE resource operational, it is far less resource than Thurrock asked and very little of it is specifically targeted at Thurrock.</p> <p>CLS 4 was one of four smaller scale grant programmes requested by Thurrock Council. It was requested in order to support Thurrock-based community and voluntary organisations prepare the local population for the employment benefits that will flow from LTC. The LTC Team have not yet clarified what is proposed for any of its community grant schemes, except the likely total sum across the project which is estimated to be £1M for the North area and £0.5M for the South area.</p>
<p>'It is great to see objectives to support local SMEs to be able to access opportunities, but we need a clearer understanding of how that will work. Great to see a target of £1 in £3 but what, practically, is proposed to achieve the target?</p> <p>'The Council requests a target for local spend'</p>	<p>In part :</p> <p>CLS 5 - Social Value delivered via Procurement</p>	<p>The '£1 in £3' spend with SMEs target remains.</p> <p>But there is no reference in the draft SEE to target to <u>local</u> SMEs, or to target <u>Thurrock</u> SMEs. That is a key omission.</p> <p>There is also only a very limited explanation in the SEE Strategy of how this target will be achieved. The comments raised in July 2020, about needing to see more detail on how local procurement will be delivered, still stand.</p>

4. **Headline Conclusions**

- The headlines from this analysis above are as follows:
- There has not been the necessary pace and urgency behind the development of the SEE Strategy. For example, the SEE remains in a draft state nearly 18 months after a first draft was produced and the time taken to respond to the Stantec first draft comments was 7 months.
- The stakeholder meetings that have been set up by the LTC Team to inform the production of the SEE Strategy have been intermittent. There have only been two meetings of the SEE Working Group, as far as we are aware, which is organised by LTC but chaired by the Council's Economic Development Manager.
- The targets in Draft SEE Strategy are not ambitious enough. For example, out of 22,000 anticipated posts spanning many years, we believe the target for apprenticeships should be higher than 437. A target of only 437 apprentices fails to capture the full potential of the project to develop new skills amongst young people.
- There is no provision in the Draft SEE to channel labour market benefits to Thurrock. Whilst there is a definition of 'local' based on 'Tier 1' and 'Tier 2' areas, Tier 1 includes all authorities that 'host' LTC regardless of the extent of construction works. Thurrock is listed as one of 8 authorities, with no enhanced weighting even though it hosts far more of the route and the construction activity than others.
- LTC is starting to mobilise its own SEE Team and will not, as it stands, be resourcing Thurrock to establish its own Local Labour and Business Team (as was requested by Thurrock under CLS1). Thurrock Council has requested a team of 9 Thurrock-based posts to ensure the full range of local labour market and business benefits were achieved.
- LTC is proposing a SEE Team of 5 posts, with just 1 of the 5 posts explicitly serving the North area. The five posts are set out on subsequent pages of this note. There is a considerable mis-match between the resource that Thurrock requested and what is currently being proposed.
- CLS 4 was one of four smaller scale grant programmes requested by Thurrock Council. It was requested in order to support Thurrock-based community and voluntary organisations prepare the local population for the employment benefits that will flow from LTC. The LTC Team have not yet clarified what is proposed for any of its community grant schemes, so it not yet clear whether the CLS4 request will be delivered.
- The draft SEE contains a target that '£1 in £3' will be spend with Small and Medium Sized Enterprises (SMEs). Unfortunately, there is no reference in the draft SEE to target local SMEs, or to target Thurrock SMEs - that is a key omission. The comments raised by Stantec in July 2020, about needing to see more detail on how local procurement will be delivered, still remain unanswered.

5. **Recommendations**

5.1. The Thurrock LTC Taskforce should:

- Provide a clear mechanism through which all agreed local labour market, skills and small business targets and outcomes and associated expenditure are legally secured through the DCO.

- Provide for Thurrock to be specifically targeted for positive labour market, skills and small business outcomes in the SEE Strategy. As currently configured the SEE Strategy subsumes Thurrock into a much wider Tier 1 area and provides no mechanism for guaranteeing local outcomes for Thurrock.
- Provide more ambitious labour market and skills targets in the SEE Strategy. Thurrock has requested ambitious targets from summer 2020 and this request has yet to be met.
- Provide a properly resourced Labour and Business Team for Thurrock going forward. There is a considerable mis-match between the resource that Thurrock requested and what is currently being proposed.
- The Council should closely monitor the evolution of the LTC Community Grant Schemes. The current total sum is estimated to be £1m for the north area and this will require a considerable uplift if the four smaller scale grant programmes requested by Thurrock Council are to be fully funded.

Lower Thames Crossing

Thurrock Council Local Impact Report

**Appendix G - Annex 4: Thurrock Council – Further Comments on SEE
Strategy**

Comments from Thurrock Council on SEE Strategy (Nov 21) & SEE HoT (August 2022)

Context

1. This note provides the response from Thurrock Council on the latest available draft of the LTC Skills, Education and Employment Strategy ('SEE Strategy') dated November 2021 and draft SEE Heads of Terms (SEE HoT) dated August 2022. The Council has previously commented via the regular Hatch meetings on the earlier August 2021 version of the SEE Strategy and via written submissions on the even earlier Summer 2020 version.

Thurrock Council Comments on Previous Versions of the SEE Strategy

- 'All SSE KPIs should be suitably ambitious'
- 'Should be a local labour target for the workforce as a whole'
- 'We need a definition or definitions of 'local'. There could be core and outer definitions and Thurrock should be prioritised on the north side'
- 'The delivery of support to residents and businesses should not be left to HE. We would expect HE to fund the Council to deliver this (who may commission) so that the Council can effectively build on local delivery arrangements/ links. Our initial request will be funding for a Local Labour and Business Team which includes flexible commissioning budgets'
- 'It is great to see objectives to support local SMEs to be able to access opportunities, but we need a clearer understanding of how that will work. Great to see a target of £1 in £3 but what, practically, is proposed to achieve the target?' 'The Council requests a target for local spend'.

These comments were made in written submissions from Stantec in July 2020 and then reinforced in the regular Hatch meetings as several of the Hatch CLS Measures relate to the contents of the SEE Strategy.

2. The Council wishes to raise seven points on the November 2021 Draft SEE Strategy and accompanying August 2022 SEE HoT document:

1. Process of Developing the Strategy

3. Page 3 of the November 21 SEE Strategy says. *"The LTC has been working closely with key stakeholders within the South-East and Thames Estuary regions, including local authorities, industry professionals, education and training providers and businesses to develop a strategy that understands and aligns to local needs and priorities"*.
4. This statement is simply misleading. There has been very little stakeholder input and engagement on the Strategy. The Council has repeatedly asked for sight of a revised strategy for approximately 11 months between September 2021 and July 2022. Eventually, the latest version was received in July 2022. It was dated November 2021 and it was concerning that the Council was issued with an 8-month old version. National Highways (NH) has not kept the Council sighted on latest revisions to the strategy, let alone involved us in its production. Furthermore, the regular meetings that NH promised to convene to ensure continuous involvement in the preparation of the SEE Strategy have not happened. The NH approach to consultation and engagement with the Council on this matter has been wholly inadequate and completely unacceptable.
5. The Council stressed in its email to NH on 12 July 2022 the importance of the SEE Strategy and the importance of involving local authority partners in the process. It stated:

“The SEE Strategy is a crucial document that should set out the strategic intent with regards to localising the skills and employment benefits of LTC. It needs to be ambitious, and it needs to have the support of local authority partners if it is to gain traction”.

6. The approach adopted by NH is disappointing and inadequate. The Council is concerned about the extent to which NH is seeking or using stakeholder views in any meaningful way to inform the SEE Strategy. It is important that NH engage more frequently and with genuine commitment as it seeks to finalise the SEE Strategy. You have made very recent promises that more meetings will be convened and we ask that this is followed through on.

2. Securing Mechanism

7. The Council welcomes the confirmation in the SEE HoT that National Highways is now proposing to secure the SEE Strategy via section 106 agreement. The Council’s requirements for pursuing this approach in an agreed manner are:
- To avoid the need for a unilateral agreement, the terms of the proposed S106 HoT should be favourable to ensure it is possible for the Council to be a signatory.
 - NH to commit to appending the final and full SEE Strategy to the S106, which would be supported by the Council.
 - The Council’s more detailed comments on making each target more ambitious must be built into the S106 HoT.
 - The Council must have opportunity to review details of the Employment and Skills Plan prepared by NH contractors and there must be a mechanism for the content of such Plans to be included within the SEE Strategy. Similarly, the reporting requirements for contractors needs to be detailed within the SEE Strategy.

3. Definition of Local

8. The Council is concerned that NH is no closer to an acceptable definition of ‘local’ than the previous version of the Strategy. The definition of ‘local’ continues to be based on Tier 1 and Tier 2 categories.
9. Tier 1 includes all authorities that ‘host’ LTC regardless of the extent of local works. The Council is listed as just one of six authorities (Thurrock Council, LB Havering, Gravesham Borough Council, Medway Council, Brentwood Borough Council and Dartford Borough Council). However, Thurrock hosts far more of the route and the scheme disbenefits than any other authority. The map (p13 of SEE Strategy) shows the LTC route does not go into either Brentwood, Medway, or Dartford.
10. Tier 2 includes areas within a 20-mile radius of the scheme. It must be clarified whether this is a 20-mile radius of a centre-point of the scheme alignment, or an area covered by 20 miles from the route alignment. The map on p14 of the SEE Strategy perhaps implies the definition might be based on an unspecified centre-point but the plan is very explicitly labelled as ‘indicative only’.
11. The Council requests several changes to the definition of ‘local’:
- ‘Host’ authorities are refined to include three only, namely Thurrock Council, LB Havering and Gravesham Borough Council.
 - The SEE Strategy makes clear that within these three areas the majority of works – greater than 70% - are expected to take place in Thurrock and that the sourcing of labour and other SEE targets should reflect this concentration of host-area activity in Thurrock.

- The definition of the 20-mile radius needs to be made clearer. The Council would be in acceptance with an approach based on the centre-point of the route alignment as set out in your map on p14 of the SEE Strategy.

4. Target for Local Labour

12. The Council welcomes the inclusion of an overall target for the sourcing of local labour. The target NH has suggested is:

“National Highways shall require its contractors and their subcontractors to use reasonable endeavours to:

- *achieve a target of at least 20% of employees to be from within the 'hosting boroughs';*
- *achieve a target of at least 45% of employees to be from within 20 miles of the Project route (inclusive of employees within the 'hosting boroughs')”.*

13. The Council considers these targets as they currently stand are too vague to be enforceable and therefore in practice meaningless. The Council’s requirements are as follows:

- All targets to be SMART – specific, measurable, achievable, realistic, time-bound.
- Clarify what ‘reasonable endeavours’ is intended to mean – in particular, what is the difference between ‘reasonable endeavours’ and ‘best endeavours’ (a potentially stronger and better phrase).
- Detail proposed sanctions for not meeting the targets.
- Refine and clarify the definition of both ‘host’ authorities and the 20-mile radius are, as per comments above.
- Develop an incentivised stretch target to enhance the potential for improved local labour market outcomes. A figure of at least 30% for the revised definition of ‘host authorities’ is warranted.

5. Ambition of Targets Generally

14. The Council’s previous request to build more ambition into the targets has been ignored. This is an important request that was reinforced by the comments of other local authorities, and there appears to be no justification for the NH stance.

15. The Council drew attention to three of the prime targets in previous comments. All three targets have either remained the same or been reduced in scale:

- Apprentices - 437 (same as August 2021 SEE Strategy)
- Newly employed/previously unemployed workers - 500 (same as August 2021 SEE Strategy)
- Work placements - 470 (reduced from 650 in August 2021 SEE Strategy)

16. NH openly and repeatedly claims to be creating 22,000 jobs through LTC. If this commitment is genuine, then these and the other targets lack the ambition that would be commensurate with this and are insufficiently localised. All 12 of the NH headline SEE Strategy targets must be revised to build in more ambition and localisation.

Note: The Council asks that NH reconsider its claim to be creating 22,000 jobs, as this soundbite used by NH communications is considered deliberately and blatantly misleading. The figures used by NH are a summation of annual jobs numbers, irrespective of the duration of each job. It follows that as many, if not most, employees will work on the project for more than one year then the actual number of jobs created will be considerably lower. It is important that NH confirm and clarify these figures and refrain from quoting the 22,000 figure in any LTC communications until such time that it has done so.

17. The table below sets out some comments and proposed revisions to the targets included in the SEE HoT document:

Activity	NH minimum targets as set out in August 2022 HoT	Council Comments
Training for local communities	350 people	NH needs to make clear the definition of 'local' in the context of this target. The Council has suggested below a target of 2,000 new qualifications across the workforce overall. Qualifications flow from training so if 45% of workers are 'local' as per NH suggestion, then this means a minimum of 900 training programmes with certification will be delivered for local workers. In addition, there will be additional training that is not necessarily certificated. An overall target of 1,500 local people receiving training (with or without a subsequent qualification) would be a reasonable target.
Sector skills qualification	500 people	500 qualifications over the course of a 7-year build programme and across 22,000 construction years of employment is a woeful and unambitious target. The Council requests that each year contractors are required to secure new qualifications for at least 10% of their workforce. This would equate to an overall target in excess of 2,000 sector skills qualifications.
Apprentices	437 people	The Council notes that only 60% of this target will be met by new apprenticeships, with the remaining 40% being existing contractor staff who are 'converted' to apprentices. The target must be increased to 500 apprentices, and this should relate solely to new apprenticeship opportunities. The 500 apprentices should also be resident in one of the three 'host' authorities.
Graduates/trainees	291 people	The Council is unclear on the meaning or purpose of this target. It appears to suggest that LTC delivery contractors are required to provide employment to 291 new graduates. It is not clear what relevance this target has to securing local labour market outcomes.

Newly employed	500 people	This target requires clarification. The SEE Strategy states ‘LTC delivery contractors are targeted to support at least 500 local people who were previously unemployed’. It is not clear if delivery contractors will be required to <u>employ</u> these individuals. This target should be clarified to say that 500 unemployed local people (using the Thurrock definition of local = three host boroughs) will be employed by LTC delivery contractors.
Pre-employment programmes	650 people	The Council requires that the vast majority of this pre-employment support (>90%) is undertaken with residents in the three host authorities as set out elsewhere in this paper. For a project of this scale the target should be substantially greater than supporting only circa 100 people each year. A figure closer to 200 people each year is more appropriate.
Education engagement	5,000 hours	NH has set out a target for 7,000 hours of engagement with local schools – broken down to 5,000 hours supporting students and 2,000 supporting educators. Whilst the volume of activity appears reasonable, NH must commit to undertake the vast majority of this activity in ‘local’ schools. The majority of activity (>90%) must be undertaken in schools in the three host authorities as set out elsewhere in this paper.
Support to educators	2,000 hours	See above.
Work placements	470 people	Increase target to 1,000 people. This requires re-instating the previous target of 650 and increasing by approximately 50%. A high proportion of these work placements (>90%) must be offered to ‘local’ school children (using the required Council definition of ‘local’).
SME spend	£1 in every £3	See below. There must be a ‘local’ component to this target. So, for example: ‘£1 in every £3 with SMEs, of which half will be local SMEs’ (using the required Council definition of ‘local’).
Business upskilling	1,000 businesses	This target must relate to ‘local’ businesses. This target should qualify the depth of business upskilling that NH and its contractors will engage in. For example, sending a mailshot to 1,000 businesses should not count against this target. The intervention needs to be in depth upskilling and awareness raising work. Depending on how the target is qualified, 1,000 local businesses may be a sufficiently stretching target.

Supply chain payment	Within 30 days	The Council is content with this target. It aligns with current reforms to the UK prompt payment policy, which is also seeking to reduce payment terms to 30 days on all government contracts. The Council requests that NH publishes a regular performance dashboard to hold itself accountable and measure performance against its targets.
----------------------	----------------	--

6. Resource to Deliver Strategy and Secure Local Outcomes

18. This is a critical issue for Thurrock Council and the SEE Strategy inadequately considers the topic. There is no explanation of the resource that will be put in place to help deliver the SEE Strategy and secure target outcomes. There is no justification to assume that the market, left to its own devices, will be sufficiently incentivised to deliver the target outcomes and the intervention and support required.
19. The Council has previously made very clear to NH its request for local labour market support staff to better connect local people and local firms to the opportunities of the project – see Hatch CLS1 request. To deliver the SEE strategy effectively the Council require the provision of six new support posts to deliver positive labour market and business outcomes for Thurrock.
20. The SEE Strategy must be amended to:
 - Make clear the staffing resource that NH is proposing to put in place to secure the SEE Strategy targets and how that resource will be deployed.
 - In doing so, adopt the request of the Council to ensure that Thurrock is provided with the bespoke labour market support staff needed.

7. Local SME Spend

21. The Council welcomes the commitment from NH to spending with Small and Medium Sized Enterprises (SMEs) and the inclusion of an accompanying target - ‘£1 in every £3 of project spend will be with SMEs’. There is however a major gap between the strategic intent of the SEE Strategy to deliver local business benefits and the target itself. Intent alone will not deliver this objective and more consideration must be given to how NH intend to deliver on this. Without this detail, this objective is nothing more than another meaningless soundbite used in misleading communications.
22. The SEE strategy states
 - Local Economic Growth is one of the SEE Strategy’s six overarching ambitions (our emphasis added). In fact, the target of ‘at least £1 in every £3 with SMEs’ is the sole target that is attached to this objective (see p4 of SEE Strategy)
 - In elaborating on the ‘Local Economic Growth’ ambition the SEE Strategy states at p5: ‘We will support local businesses to gain work on the project and build resilience to maximise local economic and business growth during and after construction’ (emphasis added).
23. Despite this clear emphasis on supporting local business, lead contractors are free to support small business anywhere in the country. This is wrong and the Council requires that there be an additional or replacement target relating to project spend with local business or local SMEs.

24. This target will be workable and can be monitored. Elsewhere in the SEE Strategy NH state it will be a 'a requirement that all LTC contractors will report on SME and local business spend' (page 20). The Council foresees no strategic nor practical barrier to including a local SME target as per its request.
25. Overall, the Council requests the following:
- (i) The inclusion of a 'local' dimension to the SME spend target; and then,
 - (ii) More detail on how this will be defined, measured and reported on. Note : the Hatch CLS1 request also includes provision for a local business liaison post in Thurrock that would help deliver this target.

Summary

We have raised seven points in this note:

1. NH must engage with us and other Councils more frequently and with genuine commitment as it seeks to finalise the SEE Strategy.
2. We welcome the confirmation in the SEE HoT that National Highways is now proposing to secure the SEE Strategy via section 106 agreement. We have listed a number of requirements about the details of the securing mechanism.
3. Thurrock Council requests several changes to the definition of 'local' in order that the SEE Strategy benefits Thurrock in way that is more commensurate with the share of disbenefits we face.
4. Thurrock Council welcomes the inclusion of an overall target for the sourcing of local labour but it is too vague as currently drafted. We have suggested improvements that will improve the enforceability of this target.
5. Local Councils' collective request to build more ambition into the SEE targets has been ignored by NH. Thurrock Council have responded this time with specific changes to each target.
6. The SEE Strategy must be amended to make clear the staffing resource that NH is proposing to put in place to secure the SEE Strategy targets and how that resource will be deployed.
7. Despite NH's clear stated desire to support local business, the SEE targets leave lead contractors free to support small business anywhere in the country. This is wrong and the Council requires that there be an additional or replacement target relating to project spend with 'local' businesses or 'local' SMEs.

Lower Thames Crossing

Thurrock Council Local Impact Report

**Appendix G - Annex 5: Proposed LTC Community Fund – Collective Position
of Directly Impacted Authorities**

Context

1. This note is addressed to National Highways and has been prepared by officers at Thurrock Council, LB Havering, Gravesham Borough Council and Medway Council. This grouping represents all those local authorities directly and deleteriously impacted by the proposed Lower Thames Crossing and which are targeted for increased 'levelling up' as Priority 1 or 2 areas.
2. The note sets out our collective position in response to the Lower Thames Crossing Community Fund Updated Proposals slide-deck dated 10 June 2022, and the minutes of associated meetings held by National Highways on 10 June and 29 June to discuss the updated proposals.
3. We have three main requests – all three of which we would like to discuss at a further joint meeting and that National Highways arranges this additional joint meeting. We are making these requests to expedite some of the main strategic issues surrounding the Community Fund, in order that all parties can then engage in more meaningful discussion on the Fund specifics.

Request 1 : The proposed Fund should be increased in scale to at least £3.75M, and index-linked to increase annually to maintain value in real terms

4. The proposed LTC route alignment mainly impacts the authorities of Thurrock and Gravesham, and to a lesser extent LB Havering.
5. For context, Gravesham is a Levelling Up Priority 1 area and the communities of Thurrock are in equal need of Levelling Up. Thurrock is explicitly identified in the Levelling Up White Paper as an area with pronounced labour market challenges and is a Priority 2 Levelling Up area (narrowly missing out on Priority 1 status). LB Havering is also a Levelling up Priority 2 area.
6. NH has recently increased the scale of the proposed Community Fund from £1.5 million to £1.89 million over 7 years and cited the A14 Cambridge to Huntingdon scheme as the main reference point in setting the proposed scale of the Fund.
7. NH presented evidence in the slide-deck that puts the A14 Community Fund at £0.45 million for a capital investment of £1.5 billion. The proposed LTC is, based on current estimates, a £8.2 billion scheme – so 5.5 times bigger than the A14. On the basis of the A14 benchmark, an appropriately sized Community Fund for LTC would be £2.48 million.
8. Benchmark evidence from the other two road schemes you list in your 10 June slide deck would imply the following for the scale of the LTC Community Fund:
 - £2.37 million, if applying the benchmark evidence from the A428 scheme.
 - £2.41 million, if applying the benchmark evidence from the A303 scheme.
9. All of the above road schemes generate a Community Fund figure that is approximately 30% higher than the NH updated proposal. The LTC scheme is however of such a size and impact that it cannot simply be considered as another road scheme. It is promoted as a large scale, nationally significant, transformational infrastructure project and therefore should be considered as such.
10. The benchmark evidence should be limited to the road-based examples and it is important to consider how UK government has dealt with other large scale infrastructure projects, such as rail and nuclear new-build in respect of Community Funds.

11. Thurrock Council prepared benchmark evidence on a wider range of UK infrastructure projects and shared it with NH (indeed it is included in the NH 10 June slide-deck). The median average for a sample of schemes is £475 of Community Fund for every £1M of scheme capital expenditure. This sample comprises Thames Tideway (road), A14 (road), Hinkley Point (nuclear) and HS2 (rail).
12. Applying this median average to the likely £8.2 billion of LTC capital expenditure would yield a Community Fund of £3.75 million. This benchmark evidence, combined with local needs, is why we say a Community Fund of at least £3.75 million is warranted.
13. Given the rapid rise in UK inflation, we also request that the initial £3.75 million Fund is subject to an annual Index-linked review, whereby the remaining unallocated amount is increased in line with the Consumer Prices Index with Housing (CPIH) each year.
14. The Community Fund should also be linked to the LTC budget, so if an increase above the current £8.2 billion budget envelope is approved, then the fund should increase proportionally in line with any revised budget envelope.

Request 2 : NH to commit to LA-allocations (with the distribution as set out below).

15. NH meeting notes must make clear your revised position on the issue of local authority allocations. NH agreed at the 29 June meeting that it would agree to allocate the Community Fund by local authority, but this is not confirmed in the minutes. NH are required to provide confirmation on this important matter. Ring-fencing/apportioning the Fund by local authority area is essential and that the Community Fund is designed from the outset to both:
 - Benefit those areas most impacted by the LTC construction works.
 - Support those areas in most need of Levelling Up.
16. When NH confirm its intention to allocate the Community Fund by local authority, it is requested that it confirms the allocations below. Unacceptable current 'indicative allocations' as suggested by NH in the Lower Thames Crossing Community Fund Updated Proposals slide-deck dated 10 June 2022 are shown in brackets.

North-South Split	North			South	
% of Total	70% (66%)			30% (33%)	
Sub-Division	Thurrock	Havering	Brentwood	Gravesham	Medway
% of North/South	80% (80%)	20% (10%)	0% (10%)	90% (74%)	10% (26%)

17. The rationale for the proposed distribution is as follows:
 - Our best estimate is that approximately 77% of the above-ground LTC route falls within the northern area and therefore a split of 70/30 north-south for the Community Fund split provides a better, and more accurate, representation of the length and route alignment and likely community disruption than the 66/33 north-south split proposed by National Highways.
 - On the North sub-division:
 - The vast majority (80%) is proposed for Thurrock to reflect the scale/nature of community disruption that will take place in Thurrock and its Levelling Up need.
 - 20% is earmarked for LB Havering to reflect the extent of LTC route alignment in the borough and Havering's Levelling Up Priority 2 need.

- No Community Fund eligibility is proposed for Brentwood given the proposed LTC route alignment largely avoids this LA with the exception of M25 works and there will be significant benefit from the proposed Community Forest at Hole Farm. Brentwood is also a lower Priority 3 Levelling Up area.
 - Of the South sub-division
 - The vast majority of the Community Fund (90%) should be earmarked for Gravesham, to reflect the scale and nature of community disruption that will take place in Gravesham's and Levelling Up need.
 - A smaller share (10%) is earmarked for Medway. Although the route alignment does not directly impact Medway, this 10% allocation reflects the indirect impacts of LTC on Medway and its Levelling Up need (Medway is a Priority 2 area).
 - In addition, Dartford is not included within the scope of our suggested Community Fund distribution given the proposed LTC route alignment avoids this LA and that NH intends for Dartford to receive benefit from reductions in traffic on the Dartford Crossing.
18. The approach above is designed to channel the Fund into those local authority areas most impacted by LTC. The NH approach, a crude count of wards impacted, does not properly reflect the distribution of impact, not least because it includes wards where the LTC route does not directly fall. We have dispensed with any Ward-based allocation system.
19. We have also shown below how a Community Fund of £1.89 million (NH current position) and £3.75 million (our collective position) would be distributed. Figures in bold represent our suggested distribution method. Figures in brackets represent the indicative, and unacceptable, distribution suggested by NH:

Distribution of a £1.89 million Community Fund					
North-South Split	North			South	
Share of Total	£1.32m (£1.26m)			£0.57m (£0.63m)	
Sub-Division	Thurrock	Havering	Brentwood	Gravesham	Medway
	£1.06m (£1.01m)	£0.26m (£0.13m)	£0m (£0.13m)	£0.51m (£0.47m)	£0.06m (£0.16m)

Note : Numbers may not sum precisely due to rounding

Distribution of a £3.75 million Community Fund					
North-South Split	North			South	
Share of Total	£2.63m (£2.50m)			£1.13m (£1.25m)	
Sub-Division	Thurrock	Havering	Brentwood	Gravesham	Medway
	£2.10m (£2.0m)	£0.53m (£0.25m)	£0m (£0.25m)	£1.01m (£0.92m)	£0.11m (£0.32m)

Note : Numbers may not sum precisely due to rounding.

Request 3 : Clarify scope/eligibility for each of the four Community Fund themes that are proposed

31. Further clarity is required on that considered 'eligible expenditure' within each of the NH four themes of Mental Health and Wellbeing, Local Skills and Employment, Connecting Communities and Environment. More detail is required on what activities NH consider each of the themes to cover. It is important that Local Authorities can reassure local stakeholders that the themes will be broad in their remit and will not be overly restrictive in their reach.
32. A series of further detailed descriptions within each theme will assist in the future in determining eligibility more accurately. It is requested that NH provide this necessary detail without delay.

Lower Thames Crossing

Thurrock Council Local Impact Report

Appendix G - Annex 6: Thurrock Council Taskforce Report December

2021

LTC Task Force Paper

Lower Thames Crossing Task Force – Hatch Update (13 December 2021)

1. Introduction

- 1.1. Thurrock Council issued informally the full Hatch Report 'LTC Mitigation Benefits' to Highways England (HE) in mid-November 2020 on a confidential basis. HE's initial response was that the report was both useful, helpful and fair. The Council then published that report on its website on 24 February 2021, together with a public-facing document.
- 1.2. Technical meetings between HE (now National Highways (NH)) and Council officers/consultants began in December 2020 and continue still. These meetings have been helpful in explaining to NH the detailed thinking behind each measure, to determine if further information was required from the Council (it was for several measures and this has been provided) and to discuss how best for NH to satisfy each measure.
- 1.3. Since December 2020 there have now been 18 lengthy meetings and considerable progress has been made towards successfully agreeing how to cover each measure, and some measures have now been technically agreed and will be subject to subsequent Council approval.

2. Where we are in the process to date

- 2.1. Following the formal publication of the Hatch Report in February 2021, Matt Palmer (Executive Director of LTC) emailed the Leader and Portfolio Holder to express HE's position on all the measures in the report on 5 March 2021. Subsequently, the Council responded formally to HE on 16 April 2021, through the Portfolio Holder, setting out the Council's response on each measure and RAG'd (red, amber, green) each measure to indicate both its importance and likely urgency from the Council to satisfy it. No further formal correspondence has been exchanged between HE and the Council on this matter since then.
- 2.2. There have been a series of technical email exchanges on various measures over recent months to provide both further information and funding estimates from the Council and to clarify the actions taken by NH. A further measure was added in discussions with the Portfolio Holder in May 2021 relating to the A13 Trunking, giving a total of 58 measures.
- 2.3. It is worth noting that in the background the Council continues to engage with NH on all the outstanding technical issues as part of the Issues Logs, which will eventually form the Statement of Common Ground (SoCG). Recently NH has undertaken a thorough review of the Issues Logs and there are now well over 3,000 outstanding issues in three categories that the Council now need to audit over the coming weeks and months.
- 2.4. For clarity, to-date no measure has been agreed formally. Some measures have been approved technically, but agreement will be subject to Members subsequent approval, using the appropriate governance route. The technical reviews (and hence technical agreements at that time) were undertaken on the relevant measures, as part of the Council's formal response to the Community Impacts Consultation (CIC), formally issued in early October, following Council approval.
- 2.5. The table below sets out the status and progress of the 58 measures (although some are combined, hence the total is 53 not 58). This status review does not consider the relative importance that might be applied to each of the measures. The RAG explanation may help:
 - **Green** – measure technically agreed (there are now 11 measures)
 - **Amber** – measure close to technical agreement, but awaiting further detailed review by the Council or further information from NH (there are now 20 measures)
 - **Red** – measure unlikely to be determined without further technical/political discussion and/or senior/political involvement (there are now 17 measures, many of which are significant measures unresolved)
 - **Purple** – measure declined by NH (there are now 5 measures)

LTC Task Force Paper

Mitigation		
Ref	Thurrock description	Progress update
M1	Ensure the construction operations cause the minimum level of disruption by phasing activities.	Phasing information was included in the CIC consultation. In addition, Phasing Plans will be shared with the Council and acceptable updated wording has been included in the CoCP Section 4.3.4), as noted in the Council's CIC response.
M2	Ensure the construction operations cause the minimum level of disruption by locating compound sites away from properties and sensitive receptors.	Commitment to sharing construction compound layouts included in CoCP and other controls to manage impacts from compounds are now included in the REAC and will be covered further in the EMP2 and the Section 61 process.
M3	Ensure best practice approaches are adopted in relation to dust and emissions	Commitments are now included within the CoCP. The Council's specialists have reviewed NH's compliance with the GLA Mayor's SPG commitments (as best practice) and it is technically acceptable.
M4	Install sensors to monitor air quality and noise, with required actions if target limits are exceeded.	HE has now committed to both construction monitoring and a corresponding 'Exceedance Framework' and the Council have reviewed the wording and it is technically acceptable. In addition, the Council has provided two sets of technical comments on both AQ and Noise proposed monitoring process and locations and the final comments are still under consideration by NH.
M5	Minimise the level of disruption by only applying appropriate on-site working hours.	Discussed at length with NH. New commitment within CoCP to restrict extended working hours on earthworks within 300m of sensitive receptors (and the Order Limits) to core hours only. Council has reviewed the CoCP wording and the final technical wording to be discussed at a senior level.

LTC Task Force Paper

M6	Additional noise mitigation in Chadwell and East Tilbury during construction.	<p>Awaiting NH's further assessment of AQ and noise as part of its updated ES to be provided prior to DCO submission, although still subject to NH agreement to provide detailed assessments/data. Further noise mitigation may be necessary/provided by NH following Council review of this data.</p> <p>Additionally, NH has now offered their non-statutory compensation policy within the current consultation materials, which has been reviewed and is not yet considered acceptable.</p>
M7	Sustainable public transport access to construction sites	Further wording within the CoCP/REAC has been added by NH covering a commitment to use zero carbon/carbon neutral shuttle buses and incentivisation to use public transport. This has been reviewed and is technically acceptable.
M8	Use the construction phase as an opportunity to trial innovative forms of public transport measures.	Previously NH could not commit to this measure. However, the Council re-iterated its request given the Government's Decarbonisation Plan (especially page 102) and HE's own recently published 'Net Zero Highways Plan'. HE is now reconsidering its response to cover additional measures within their 'control' documents. This is awaited.
M9	Enable active travel to construction sites	NH has produced the Project Construction Travel Plan (PCTP) and it is part of the CIC consultation materials, which the Council reviewed and it is not adequate in its present form. Further information on this measure has been shared with NH and the Council await a response.
M10	Use of marine transport for the movement of materials.	NH produced its outline Materials Handling Plan (oMHP) as part of the CIC consultation materials. The Council reviewed it and it is not adequate in its present form. We await NH's further response.
M11	Ensure clear waste management processes and mitigation measures during construction (coded bins, appropriate training).	NH produced its outline Site Waste Management Plan (oSWMP) as part of the CIC consultation materials, which the Council reviewed and it is not acceptable in its current form. In addition, further REAC measures are being considered by NH, following technical comments from the Council. Recently, the Council submitted further details on its waste management process requirements and NH are considering these matters.

LTC Task Force Paper

M12	Smart speed limits that can respond to traffic flows and pollutant concentrations.	NH has declined to accept this measure, but NH has stated that it could be considered as part of a regional strategy with NH, Essex, Kent and Thurrock. NO further progress on this measure.
M13	Use of low-noise road surfacing on the LTC and the local network.	This is committed to be provided on LTC and its approach roads (and is within the REAC) and is not effective on low-speed roads (30 and 40mph). NH has reconsidered and some other Council approach roads (with 50mph speed limits) have now been included and the extent and specification is technically accepted by the Council's Highways Infrastructure team.
M14	Use of best-in-class energy efficient systems for operations.	HE has provided commitments within the CoCP/REAC for gantries, signage and lighting. The Council has reviewed in the light of HE's 'Net Zero Highways Plan', and it is now considered technically acceptable.
M15	Build sufficient earth bunds and noise barriers along the route to reduce noise	Some 10kms of 13kms of the route within Thurrock are currently proposed to be either in cutting or false cutting. Awaiting NH's further assessment of AQ and noise as part of its updated ES to be provided in early 2022, although still subject to NH agreement to provide detailed assessments/data. Further noise mitigation (earth bunds or noise barriers) may be necessary/provided by NH, following the Council's review of this data.
M16	Flood risk mitigation and water quality improvement through SuDS	The Council has reviewed additional technical information and commitments on road drainage, flooding and SuDS within the Council's CIC consultation response. The current SuDS Strategy and provision was not considered adequate and there was no commitment to enhance it during detailed design. However, further information has been exchanged and the Council await NH's response.
M17	Revised Proposals for A13/LTCJunction [removal].	This measure has been declined by HE, who have retained their current designs, with two recent amendments. The Council have reviewed the 'Technical Note for A13 Design Approach', which is not acceptable and a response has recently been issued for NH consideration and discussions.

LTC Task Force Paper

M18	Ensure a fixed proportion of LTC tolls are hypothecated to support projects within Thurrock.	This measure has been declined by NH, as it would be a Department for Transport (DfT) responsibility. However, NH may well support the Council in promoting this measure, if required. No further progress on this measure.
M19	Orsett Cock Roundabout Mitigation. Additional mitigation to negate the negative impact of the LTC scheme upon the A128 approach to the junction.	This is still under technical discussion to determine requirements. The Council maintain further mitigation will be required, subject to further traffic modelling and discussion, which has been discussed and is progressing over coming weeks.
M20	Manorway Roundabout Mitigation-Additional Lane capacity on the A1013 and A1013 approaches to ensure portand local traffic movements are not impaired by the LTC	This is still under technical discussion to determine requirements and design. It is under active consideration by NH, as part of RIS2, outside the LTC scope.
M21 to M23	Traffic Management Measures in Orsett, Horndon and Chadwell: Mitigation for additional traffic movements on local roads through local settlements, including HGV movements	These measures are under review by NH, involving further specific traffic modelling assessments.

Council Led Support		
Ref	Thurrock description	Progress update
CLS1	Financial contribution from HE to Thurrock to help the borough to manage impacts/scrutiny of LTC delivery.	The Council have provided further detailed information and breakdown estimates on the funding required to support Council officers in assisting NH, assuming it will be granted its DCOv2. A further Position Statement on resource funding has been submitted to NH recently that sets out the Council's position. This information is being considered by NH, although NH has committed to a partial fulfilment for this measure.
CLS8	<ul style="list-style-type: none"> • Council-led Local Labour and Business Team • Council-led Community and Public Health Team 	
CLS12	<ul style="list-style-type: none"> • Support to enable community engagement during the construction of the LTC scheme • Transport Network Management and Development Resource 	
CLS2	Business rates holidays for firms affected during construction	NH has declined to provide business rate holidays and so compensate the Council for potential loss of business rate revenue. However, there maybe additional business rate receipts from construction compound sites, which the Council is investigating. Further discussions to be held on adequacy of wider compensation provision by NH.

LTC Task Force Paper

CLS10	Support to enable community engagement during the construction of the LTC scheme	Additional text has been provided in the revised CoCP (Section 4.2) for NH to provide a team of community liaison officers. The Council has reviewed the new text and it is technically acceptable.
CLS6 CLS7	Grant funding to improve business environments and tackle perceptions of the local area Green business support scheme	<p>Further information was received to understand how the Council can access various NH schemes. The Council has provided an estimate of the funding required and NH has declined these measures, as NH state that they will control the construction impacts, so that such funding is not necessary.</p> <p>NH still considering the amount of the proposed Community Fund (for north of Thames) and how it will be secured within the DCO. It will also provide information on how these measures could be delivered through the proposed Community Fund.</p> <p>The Council has provided further detail of its 'asks' for this measure. In addition, a further Position Statement on resource funding has been submitted to NH recently that sets out the Council's position. This information is being considered by NH.</p>
CLS9	Public Health mitigation during construction	NH considers that provision will be included within the HEqIA (and within an appropriate ES chapter) and technical discussions are ongoing through CIPHAG and officer technical meetings. Further detail is awaited.
CLS3	Establish clear targets for engaging local labour and apprentices during the construction of the LTC scheme	NH has now considered how to secure appropriate targets within the DCO control documents and it favours the use of a S106 Agreement and the SEE would not become a 'control' document. Further details and further discussions are awaited, but the Council's position is set out in the Task Force Paper 'Review of the Skills, Education and Employment Strategy'.
CLS4	Grants to support voluntary and community organisations who are helping local people into employment	<p>Council provided an estimate of the funding required and still awaits a response from NH.</p> <p>HE has considered the amount of the proposed Community Fund (for north of Thames) as £1m (which is not considered adequate by the Council). However, how it will be secured within the DCO is not yet determined. NH will also provide information on how these measures could be delivered through the proposed Community Fund.</p>
CLS11	Capital grants to facilitate aesthetic and environmental improvements within the community	NH considers that the proposed Community Fund could provide these capital grants.

LTC Task Force Paper

CLS5	Ensure LTC procurement meets with requirements of the Council commissioning, procurement and grant funding strategy	Although NH is broadly in alignment with the Council's Social Value Framework, there are still ongoing discussions regarding the CoCP/REAC wording, to provide further, more detailed commitments.
------	---	--

Legacy		
Ref	Thurrock description	Progress update
L1	Safeguarding of the future provision of junctions onto the LTC at South Ockendon	<p>The Council has provided a suitable 'passive provision' definition and plans of the two areas at Tilbury and South Ockendon over which it would apply and has also recently issued its Position Statement on this matter and awaits NH response.</p> <p>The Council has also indicated that passive provision, even if provided as requested, would be insufficient to assist Local Plan delivery and both funding and delivery commitments are required for these two junctions. Technical discussions are ongoing.</p>
L2	A13 East-facing Access Support and Facilitation (at Lakeside)	£50m funding has been announced by Government towards this scheme, however, a funding gap in excess of this sum has been discussed. NH is working with the Council to progress the scheme. Technical discussions are ongoing to support the OBC and the Council has provided further information to support the case.
L3	Construct any elements of the proposed haul road that will fall within the general alignment of the TLR alignment to a standard to support the subsequent delivery of the Link Road	The previous HE proposals is to use the PoTL 'infrastructure corridor' and then the PoTL private road to the east to access the main compound, i.e. not necessarily coincident with the potential TLR route. However, discussions between the PoTL, the Council and NH to help deliver the TLR are ongoing, to agree a route, OBC and an appropriate delivery mechanism with DfT.

LTC Task Force Paper

L4	Asda Roundabout Enhancement - Therequirement for enhancements shouldbe actively examined alongside other delivery highway improvements	NH is investigating potential improvement schemes and undertaking further detailed traffic modelling and the Council has yet to establish with NH if it can accommodate construction traffic with or without mitigation. London Resort must be accounted for and the Council are involved in technical discussions about the most appropriate scheme given their understanding of future flows. A scheme will be included by NH within the LTC scope, but the Council are doubtful of its adequacy or appropriateness of the likely mitigation scheme. Discussions are ongoing.
L5	Recognise the long-term aspiration for the LTC to be utilised for cross-river public transport connections	<p>A Designated Funds support study was completed recently and it made 9 key recommendations that the Council officers supported and then offered a prioritisation, particular involving improvement to the ferry and its connections. Further discussions with NH are ongoing to progress these recommendations, particularly the Cross River Sustainable Transport Study (Priority 1) also through Designated Funds.</p> <p>In addition, in order to facilitate direct bus connections from key locations in Thurrock to the tunnel entrance a Technical Paper was sent to NH with indicative proposals for use of emergency accesses for bus use, so as to avoid circuitous bus routes to get to/from the tunnel. This is under consideration but may not be accepted by NH.</p>
L6	Maximise opportunities to utilise the construction of the LTC to enable future distributor roads to be more readily delivered	This measure is to assist delivery of the emerging Local Plan and is considered alongside Hatch Measures L7 and L8 below.
L7	Construct a permanent bridge over the Tilbury Loop line near East Tilbury to a width and standard that would enable itto be adopted as part of the future localhighway, walking and cycle network	<p>HE has committed to fund and build the permanent bridge over the Tilbury Loop Line in a location and to specifications to be determined by the Council. Many discussions have been undertaken to establish a location for the bridge and approach roads and agree risk reduction and funding commitments.</p> <p>The linking approach roads (to the north and south) would be the responsibility of either the Council of the housing developer for East Tilbury for final completion. It is intended to submit a planning application at a later date and secure the appropriate land from landowners through negotiations. Technical discussions are ongoing and it is proposed to deliver the built scheme prior to any DCO grant.</p>

LTC Task Force Paper

L8	Deliver the proposed construction haul road along Medebridge Road alignment from the A13 to Grangewater to a sufficient width and standard to enable it to be adopted by the council	The Council have requested improvements to this road, but NH consider it adequate for their construction needs, with the addition of passing places. Further technical discussions are ongoing regarding its current condition and width to determine what works may be required and could be agreed, although NH are resisting any agreement.
L9	Daneholes Roundabout Enhancement	This is supported in principle by NH and NH are discussing with DfT as part of improvements to the wider highway network. The mechanism for delivery is not yet agreed. The scope of work and funding for development of scheme has been agreed and delivered through the Council's PPA, with the scoping study undertaken by the Council's specialists.
L10	Utilise the construction phase of the LTC as an opportunity to lay down internet and 5G cables within the alignment and make provision on all bridges and tunnels, as appropriate	NH has provided text to be included in the revised Design Principles (a control document), which has been agreed as technically acceptable.
L11	Provision of worker accommodation that can be left as a legacy for Thurrock Council to use	This has been declined by NH. All worker accommodation is proposed to either be provided on the main compound (480 workers) or in existing local and rental accommodation.
L12	Ensuring that the proposed re-provision of bridges across the LTC, along existing corridors, deliver sufficient legacy provision to encourage active sustainable travel/support future growth	This has been in technical discussions for several months and has not yet been resolved, although progress is being made. The Council have established the appropriate guidance to be followed with support from DfT. We have requested further confirmation that segregated pedestrian/cycle routes can be provided on all bridge crossings, possibly with some adjustment to existing verge or highway widths. Such provision would allow futureproofing for increased active travel in the Borough. A Technical Paper was submitted to NH and they are considering adjusting the allocation of space on the relevant bridge crossings. Technical discussions are ongoing, as is the method of securing within the DCOv2.

LTC Task Force Paper

L13	Two Forts Way Project (TFWP)	<p>This relates specifically to the section of TFW that is currently closed and requiring re-routing. The Council requires contributions towards the re-routing of what will become the National Coastal Path in this area, which would involve design, clearance, signage, improving biodiversity and surfacing (a significant sum). The Council is applying for some funding and the remainder is requested from NH, which is under consideration by NH. These proposals also link to the ASLEA proposals for links to Stanford-le-Hope/Fobbing Marshes.</p> <p>Some aspects are of the TFW are covered by the emerging proposals from NH for the Tilbury Fields area, which will be finalised before DCOv2 re-submission. The Council are actively involved in those emerging proposals.</p>
L14	Complete and improve the PRoW network	<p>Council officers have prepared proposals for additional walking and cycling routes across the Borough, adding to the current LTC proposals for PRoW/cycleway improvements and were submitted as further requests for additional PRoW/cycleways for inclusion with LTC soon, together with additions to the Design Principles document. NH has considered these proposals and 3 are likely to be included in the DCOv2, 5 within Designated Funds for further study and 1 was declined. Technical discussions are ongoing..</p>
L15	Enhance key sites that are in close proximity to the LTC, are of low quality, and are in need of investment	<p>The additional open green space sites have been included in the full Hatch Report. A Technical Note was prepared setting out what is required for each open green space (6 areas) and the funding required. NH has considering these proposals and has allocated £100k from Designated Funds for further studies to establish Management Plans for implementation.</p>
L16	Coalhouse Fort and East Tilbury Natural and Cultural Heritage Area Project	<p>A Technical Paper was prepared in the first quarter of 2021 with a DB Paper and recommendations attached. Further work is required to present to Members. This measure seeks contributions from HE for ongoing maintenance and support, but is dependent on this Paper being concluded and agreed by Members. No further progress.</p>

LTC Task Force Paper

		Once agreed, it would be necessary to seek funding from NH via its Designated Funds for specific capital works to support this Scheduled Monument owned by the Council.
L17	Restoration of Belhus Woods including a survey and Conservation Management Plan	A Designated Funds bid was accepted by NH to prepare a Management Plan for the Belhus Woods area. This work is ongoing and following completion of the Management Plan, the Council would then seek further funding to implement its proposals and improve this area.
L18	Support and facilitate the collaborative partnership of organisations seeking to deliver the restoration of the site at East Tilbury Landfill	The Council has been in contact with appropriate companies about the future mining of the East Tilbury former Landfill. The site also has current ecological importance and officers are discussing with NH what are the appropriate actions for this site, including its relationship with the emerging Tilbury Fields proposals from NH. The Council will provide appropriate timescales for any restoration of this site. A Technical Paper is being prepared to set out all current information on this site, so that officers can consider appropriate future action and how it may be utilised by LTC or not.
L19	Ensure that electric and/or low-emission vehicles are incentivised to use the LTC with discounted or free use	As the Government's Decarbonisation Plan has now been published, together with HE's own recently published 'Net Zero Highways Plan', NH is to consider its response soon and will be discussed between senior officers soon.
L20	Low-emission vehicle usage targets with financial penalties payable to Thurrock in the event of exceedance	This measure has been declined by HE, as it is considered to be outside its control and requires DfT involvement.
L21	Carbon offsetting of the LTC scheme during construction and operation	This is under much wider decarbonisation discussions with NH, who are keen to develop their response on a larger, more comprehensive and ambitious scale, possibly by the establishment of a 'Low Carbon Hub' in Thurrock that supports LTC, Thames Freeport and the emerging Local Plan. Further discussions are planned and these ideas are still at an early stage, although the TEGB are now involved.

LTC Task Force Paper

L22	Additional street tree planting initiatives and the delivery of LTC Forest aspirations	This is a street tree planting initiative involving 2,750 trees throughout Thurrock, which could work in tandem with a small community forest project (yet to be defined). Technical discussions are ongoing and some smaller project could be funded through the proposed NH Community Fund or possibly separately within the LTC scheme as additional areas of woodland planting.
L23	Trunking of the A13 from Stanford-le-Hope and Manorway Roundabout (including a section of the A1014) to the A13 junction with the A1089	The Council supports the trunking of the A13 through Thurrock and is providing technical information to DfT and the trunking is under active and positive consideration by DfT. A draft OBC has been prepared. There are ongoing high-level discussions about funding assistance by DfT to cover the funding envelope.