HATCH

LTC Mitigation Benefits

A Final Report by Hatch
October 2020

Thurrock Council

LTC Mitigation Benefits

October 2020

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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

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.

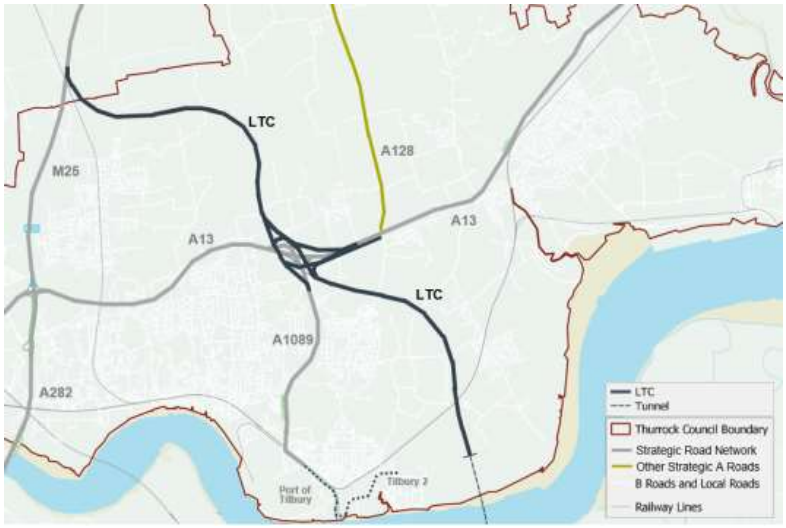
ii. Hatch have subsequently been working with the Council to help develop a range of potential mitigation and legacy measures in response to the identified costs from the initial assessment. This report provides a summary of the process undertaken to identify potential measures, and to then prioritise 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.



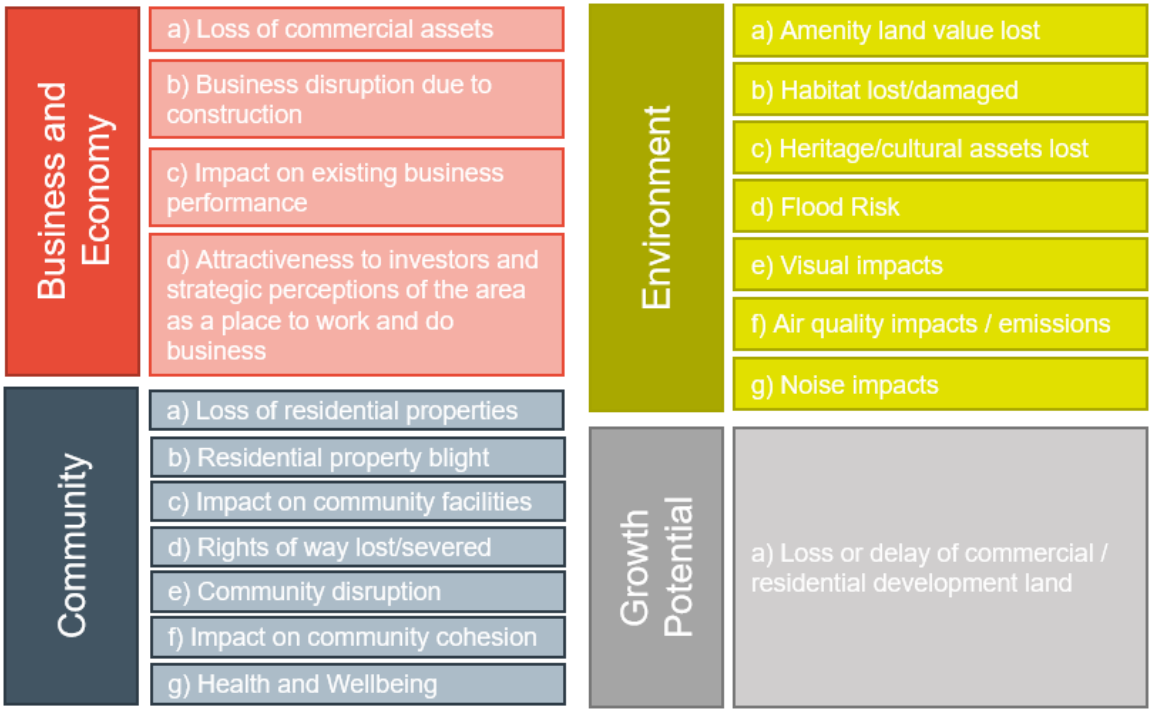
Area Context

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.



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.

Table E1 Identified Cost Impacts of LTC Scheme

Business & Economy Impact	Estimated Cost
Commercial Assets / Land Value Lost	c. £4 million
Business disruption during construction	up to c. £39 million
On-going **Business Performance**	up to c. £18 million
Attractiveness to **investors**	*Minor to Moderate Adverse*

Environment Impact	Estimated Cost
Amenity land value lost	£1.35 million
Habitat lost/damaged	*Minor to moderate adverse*
Heritage impact	*Moderate adverse*
Flood risk	*Negligible to minor adverse*
Visual impacts	*Moderate adverse*
Local **air quality and emissions**	*Moderate adverse*
Increase in **noise**	*Moderate to Major adverse*

Community Impact	Estimated Cost
Loss of **residential properties**	*£3.1 million*
Residential property blight	*£25.4 million*
Impact on **community facilities**	*Moderate adverse*
PRoW severance/disruption	*Moderate adverse*
Community disruption	*Moderate adverse (up to £36 million transport impacts)*
Impact on **community cohesion**	*Moderate adverse (up to £21 million transport impacts)*
Health & Wellbeing	*Moderate adverse*

Growth Impact	Economic Cost
Land ***permanently lost***	*up to £88 million*
Land ***delayed***	*up to £29 million*
Land ***blighted***	*up to 41 million*

xiv. 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 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***.

xv. Since the completion of the LTC Economic Cost Study *(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 the following direct impacts in more detail:

- **Land and property** lost/sterilised or delayed from development, with a particular focus on impacts around the proposed A13/LTC interface

- **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.

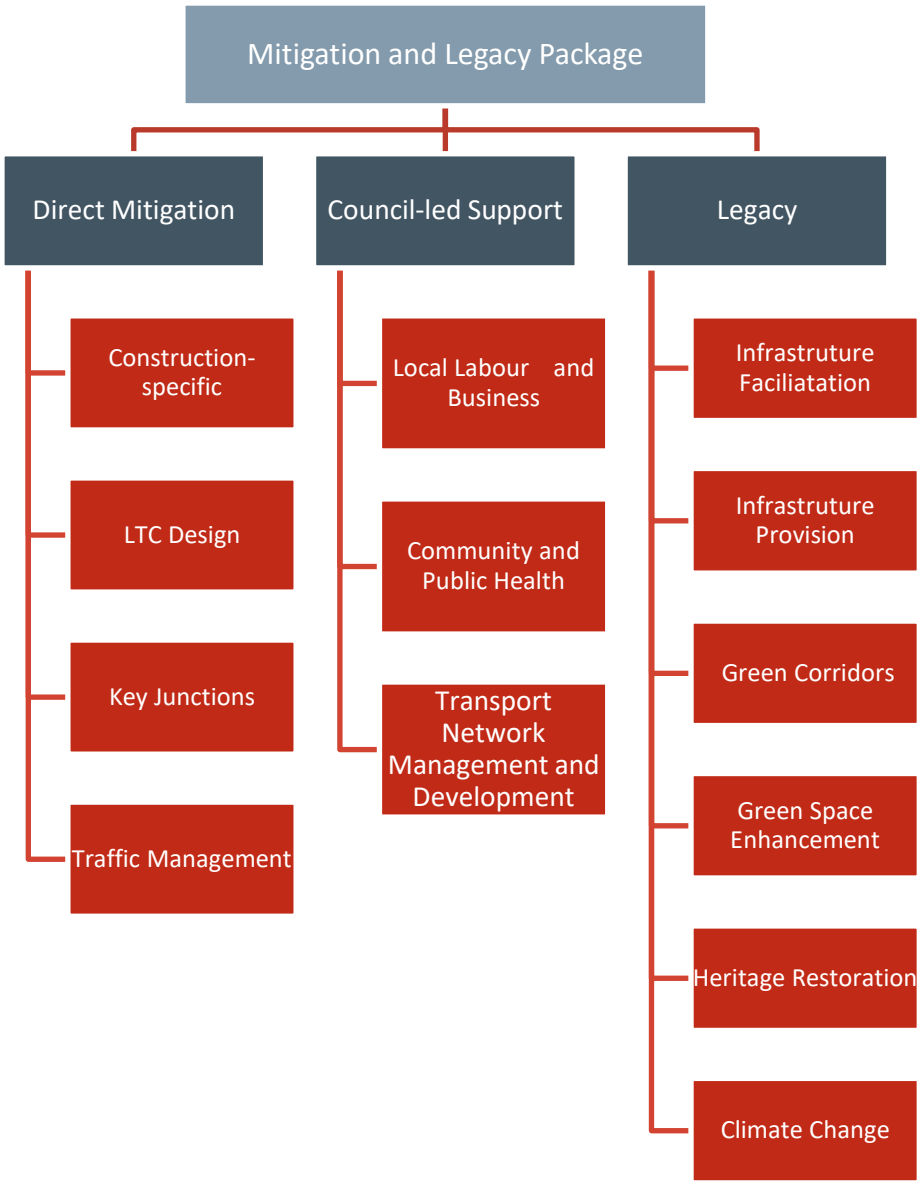
xix. This iterative process led to the identification of a final preferred package of measures that incorporates 57 defined schemes and concepts

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.

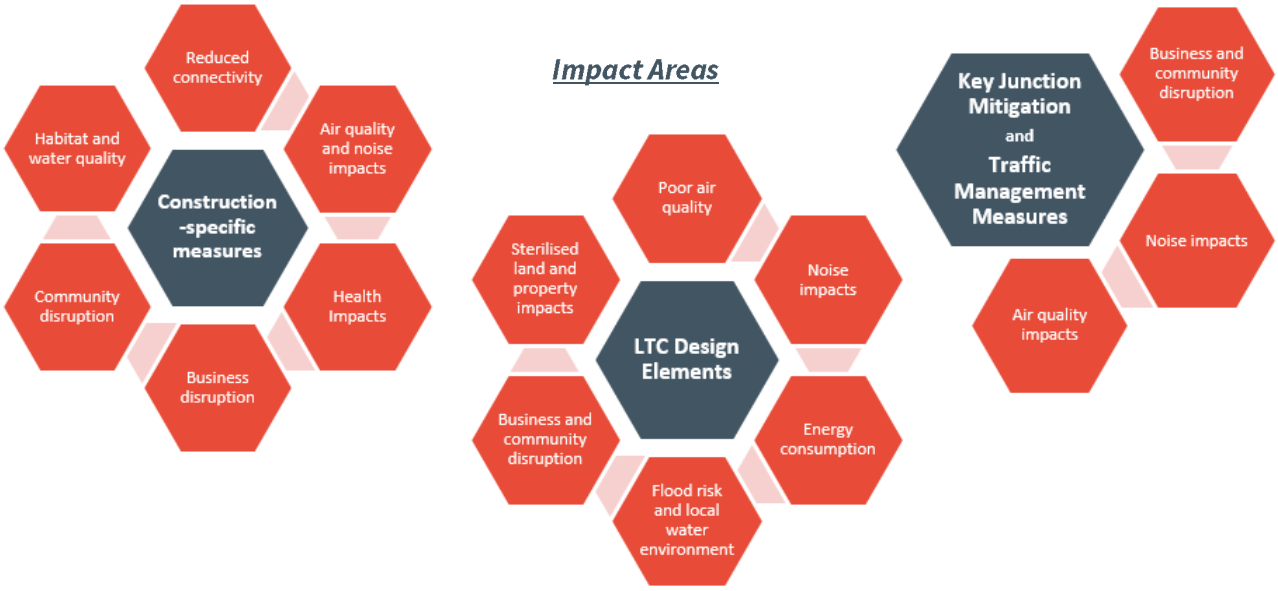
Direct Mitigation Measures

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

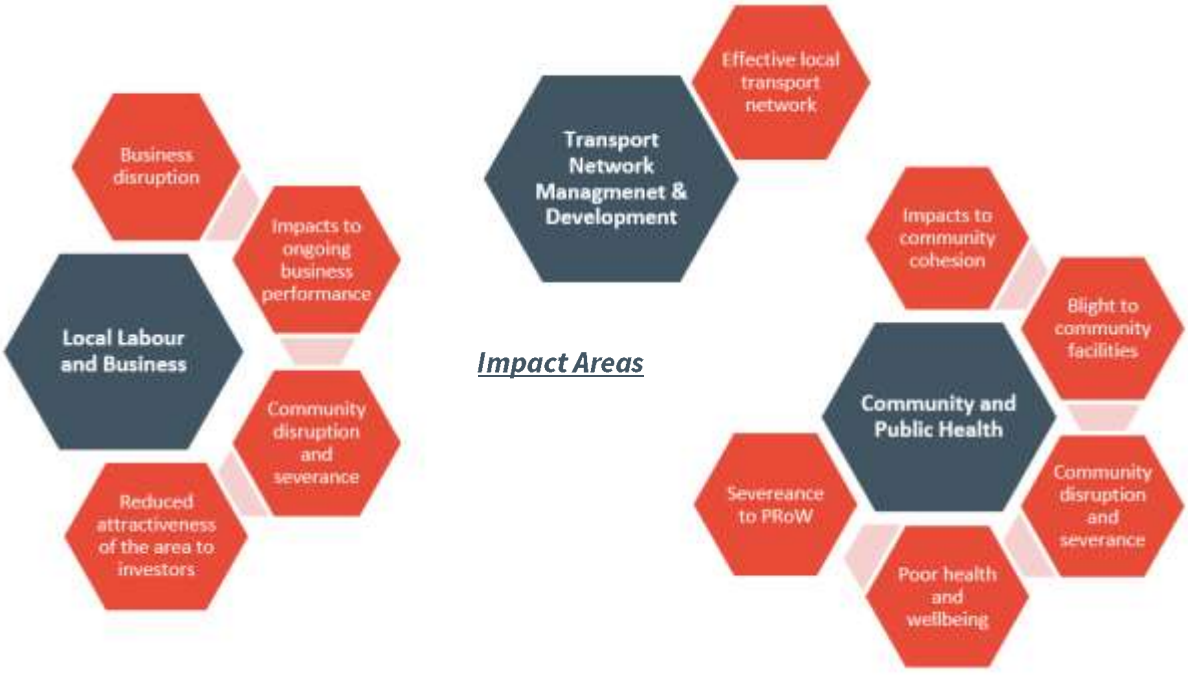
xxix. The Council recognise that both the construction phase of the LTC scheme, along with its subsequent operational phase, will result in pressures upon the way some local businesses can operate, as well as the cohesion of local communities and their access to employment, education and public services 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

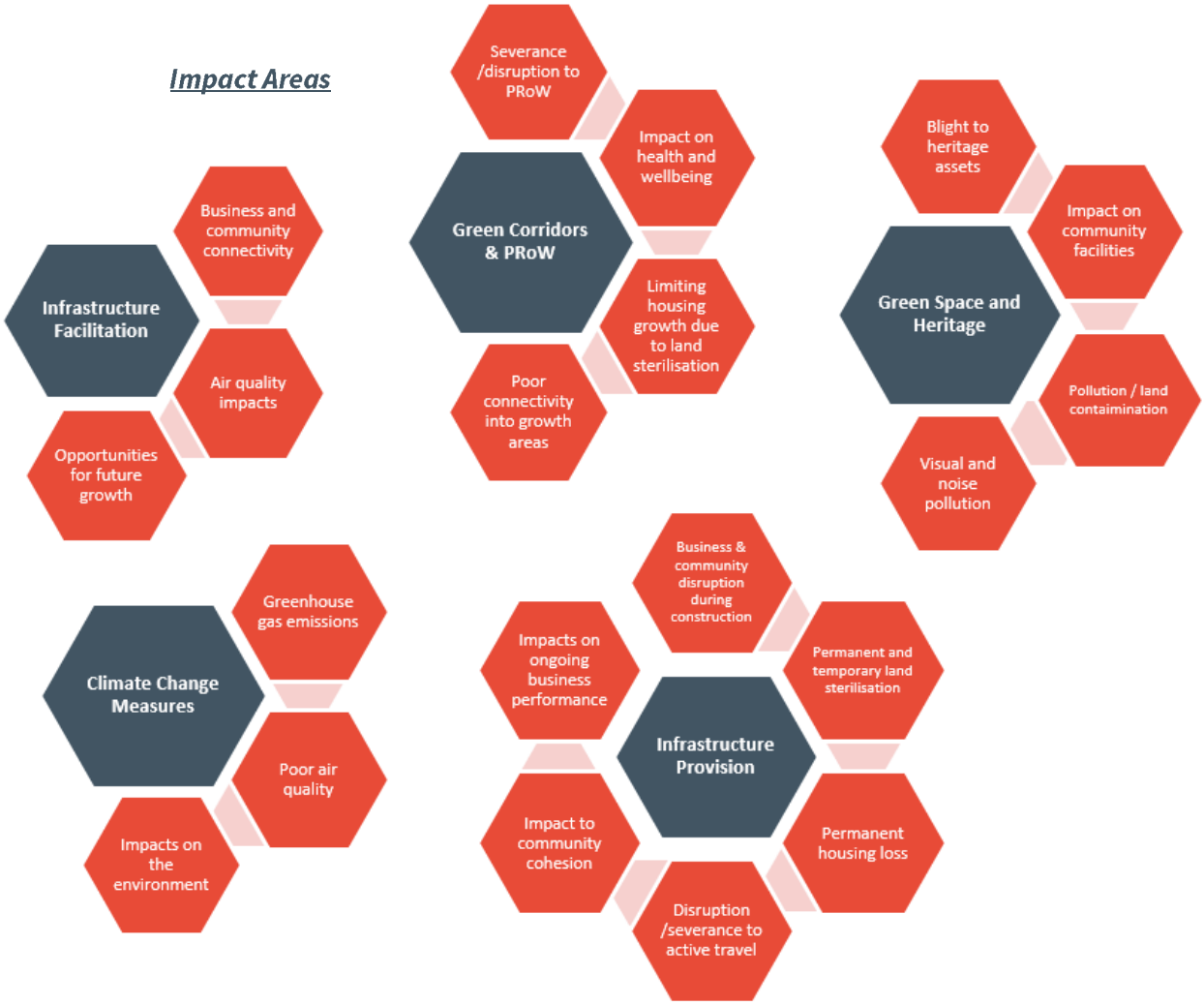
xxxiv. This final 'theme' represents measures that seek to ensure the LTC scheme delivers a lasting legacy across Thurrock and delivers positive local outcomes.

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)*

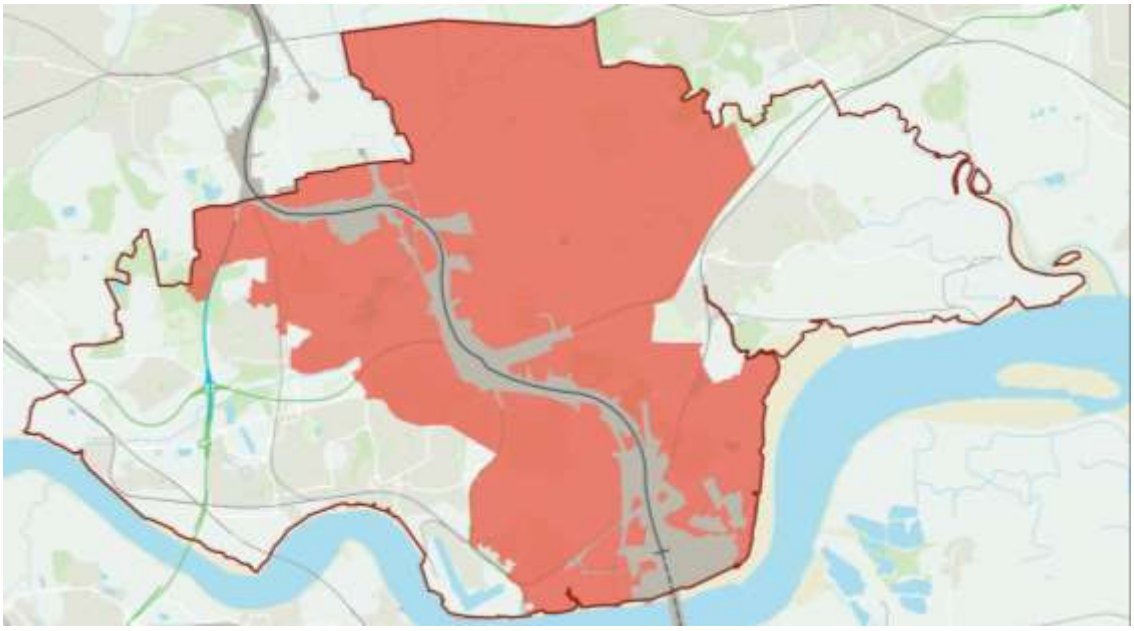
Figure 1.1 LTC Alignment within Thurrock

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:

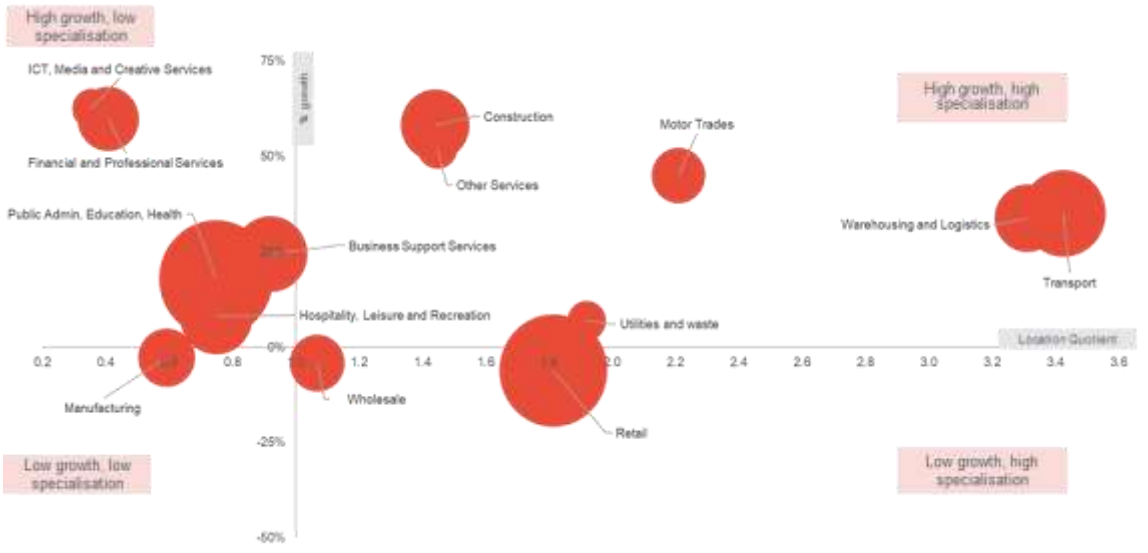
Current Transport Network

- 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

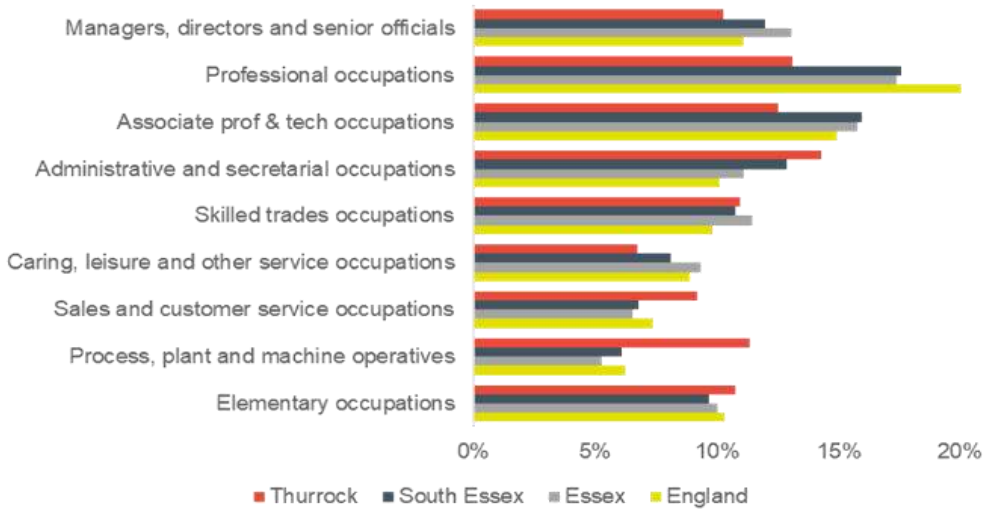
development is progressing rapidly. This recent investment has delivered a large number of jobs, although further investment could secure a higher proportion of skilled jobs in the area.

- 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 Outputs 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 Survey[2] 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 scheme[3] 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.

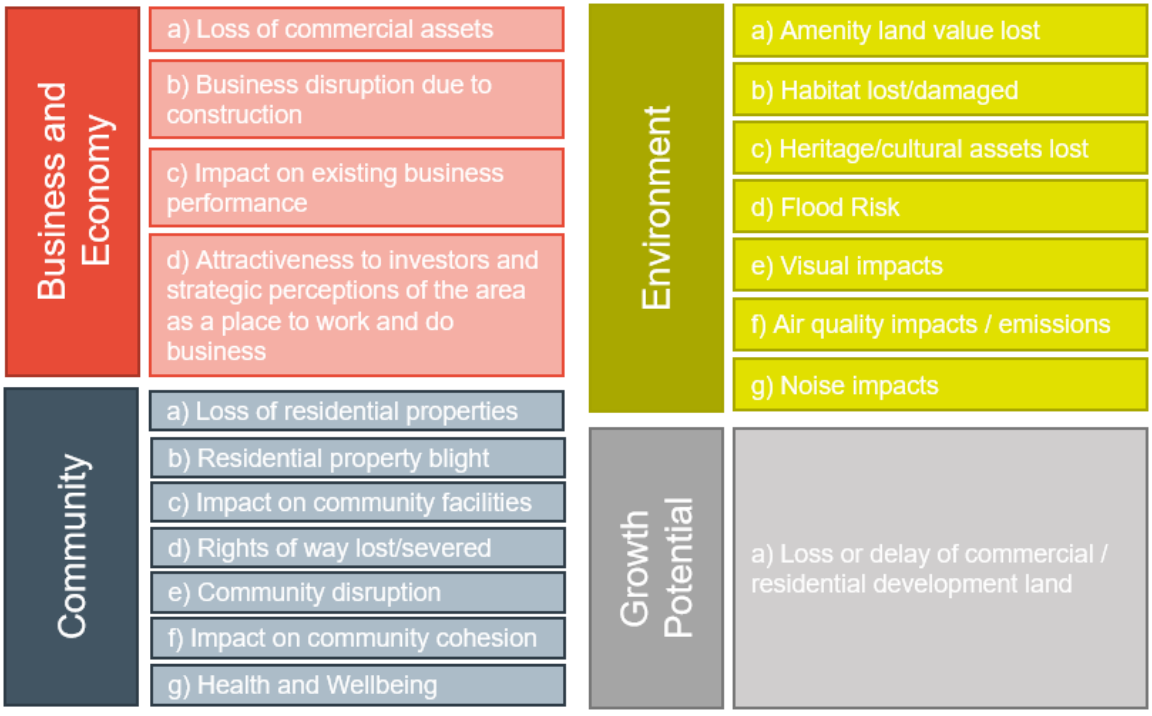
2.2 There is currently no single set of guidance relating to the assessment of local economic and social impacts of major infrastructure projects in the UK. The guidance which currently exists (such as the HM Treasury Green Book and Department for Transport TAG) is highly technical and focuses predominantly 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.

Figure 2.1 Impact Framework



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
Commercial Assets / Land Value Lost	c. £4 million
Business disruption during construction	up to c. £39 million
On-going **Business Performance**	up to c. £18 million
Attractiveness to **investors**	*Minor to Moderate Adverse*

Environment Impact	Estimated Cost
Amenity land value lost	£1.35 million
Habitat lost/damaged	*Minor to moderate adverse*
Heritage impact	*Moderate adverse*
Flood risk	*Negligible to minor adverse*
Visual impacts	*Moderate adverse*
Local **air quality and emissions**	*Moderate adverse*
Increase in **noise**	*Moderate to Major adverse*

Community Impact	Estimated Cost
Loss of **residential properties**	*£3.1 million*
Residential property blight	*£25.4 million*
Impact on **community facilities**	*Moderate adverse*
PRoW severance/disruption	*Moderate adverse*
Community disruption	*Moderate adverse (up to £36 million transport impacts)*
Impact on **community cohesion**	*Moderate adverse (up to £21 million transport impacts)*
Health & Wellbeing	*Moderate adverse*

Growth Impact	Economic Cost
Land ***permanently lost***	*up to £88 million*
Land ***delayed***	*up to £29 million*
Land ***blighted***	*up to 41 million*

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 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***.

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 disproportionally 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 is 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 wight 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 CO_2 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

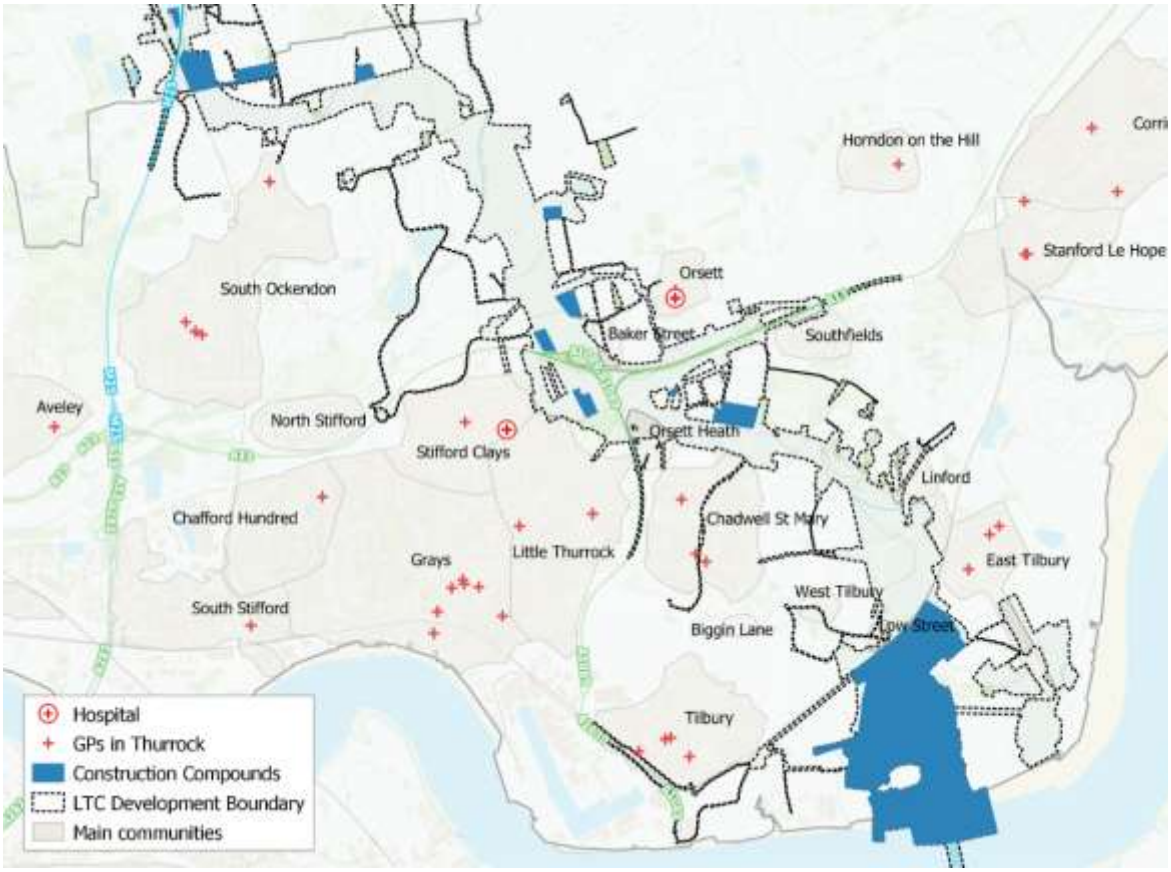
4.10 The aims and approaches adopted to developing each of these 'themes' are set out within the respective sections below, including the various 'sub-themes' contained within each of them.

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.

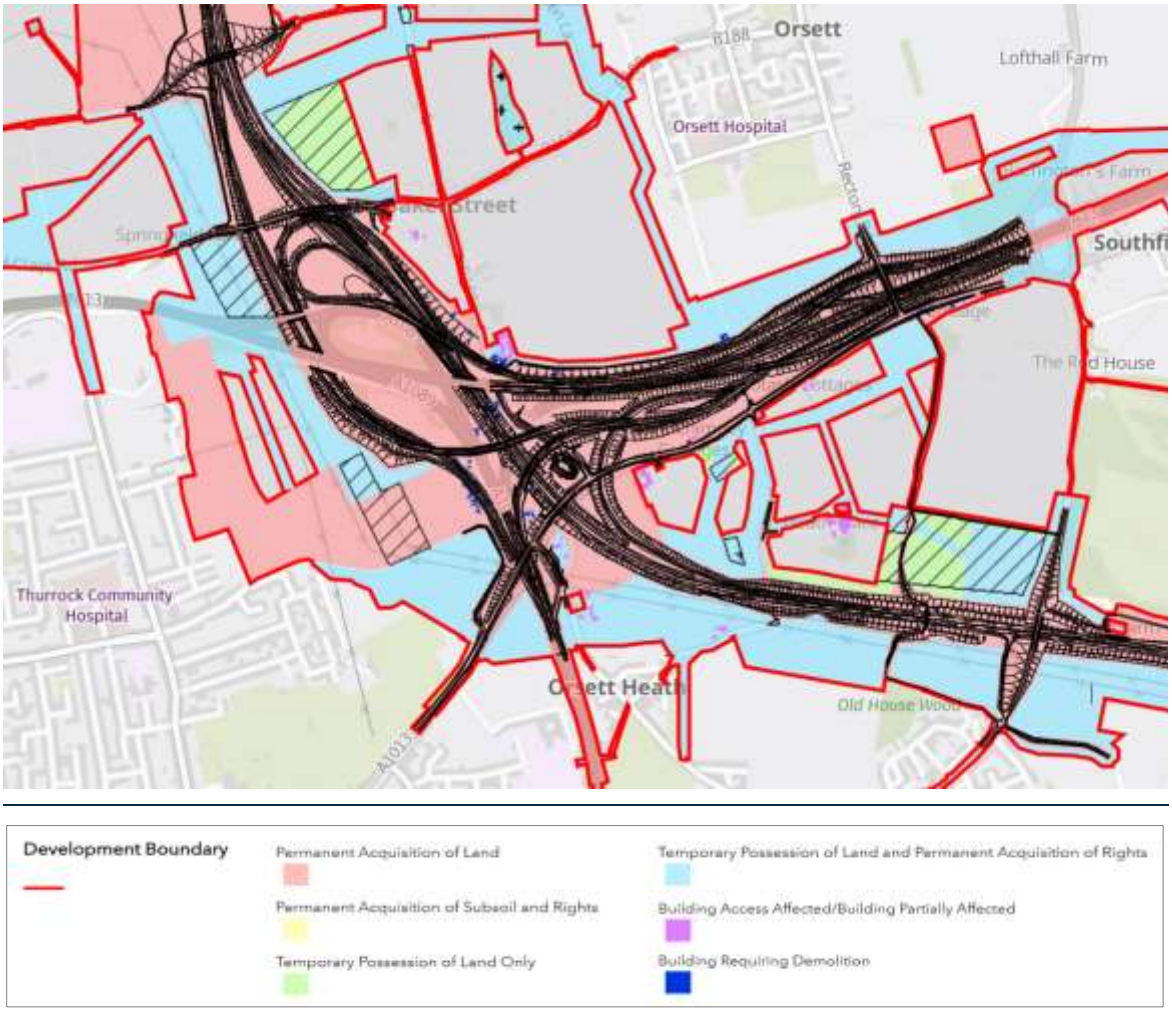
4.15 Similarly, whilst the design of the LTC has developed in detail over time, there remain a number of areas where the Council remain concerned around how the scheme will be delivered in practice, particularly in relation to land sterilisation, potential impacts upon flood risk and water quality, as 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***.

Legacy Measures

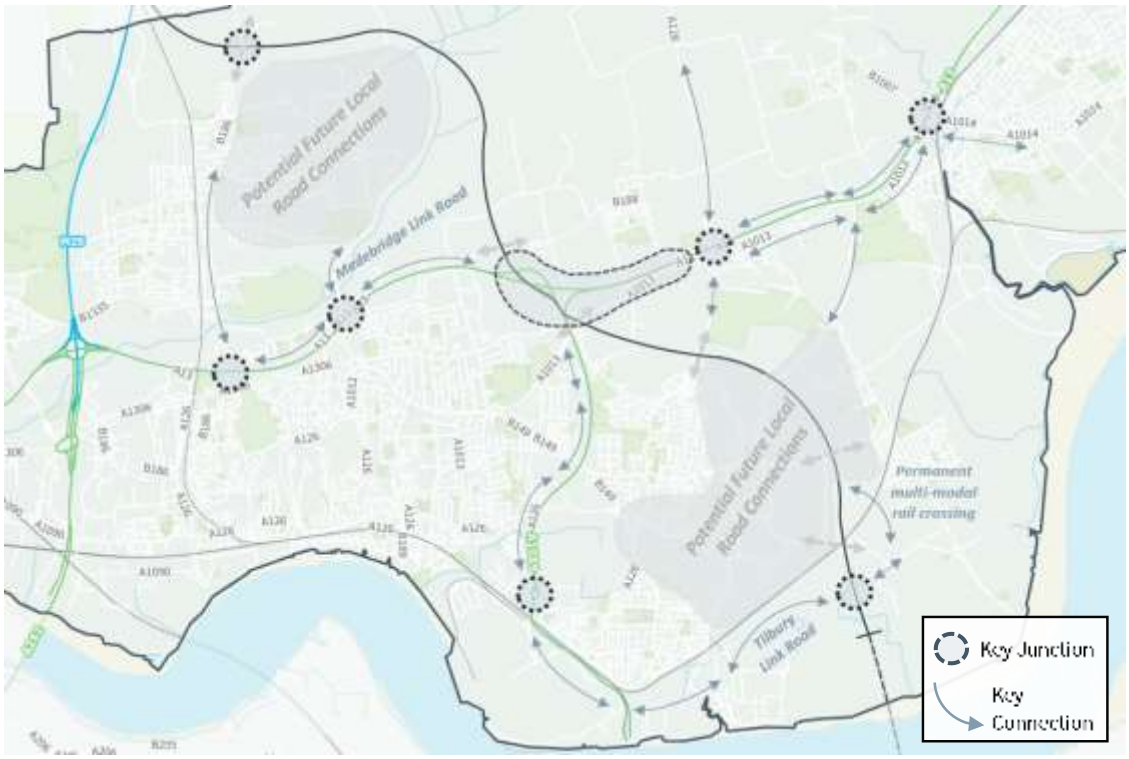
4.32 Whilst the LTC scheme runs straight through the heart of Thurrock, the current design offers extremely limited access from the Thurrock local road network. This means that it will not be the local communities of Thurrock who benefit from the scheme, but rather longer-distance trips passing through the area, mainly from the M25. This creates a situation where it is the local Thurrock community who are subject to the significant disruption during both construction and the longer-term severance of the scheme but gain limited notable positive impacts in return.

4.33 This led to the Council's historical position of being opposed to the current LTC scheme design proposals. If this position is to change, then the Council will expect to see significant concessions, in terms of either revisions to the scheme design (as discussed earlier within this chapter) and/or a series of supporting legacy measures for Thurrock.

4.34 The Council have long advocated the delivery of the Tilbury Link Road (TLR) as part of the LTC scheme. Whilst this no longer remains within the current core design, it is listed as a potential RIS3 scheme. It is this type of legacy measures that will open up the benefits of the LTC to Thurrock and help drive forward. To fully maximise the potential legacy, these additional measures must be delivered in an integrated manner and deliver the optimum outcomes in term of strategic and local connectivity, and support for the local business and residential communities.

4.35 In terms of Thurrock's highway network aspirations, Figure 4.3 provides an overview of the key junctions and links.

Figure 4.3 Thurrock's Aspirations for the future Strategic and Local Highway Network in relation to the LTC Corridor Alignment



Source: Hatch, 2020

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 Councils 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 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.

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 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 phase[4]. 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

[4] Taken 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 off-set 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 lain 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 report[5]. 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 journeys 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 Analysis[5].

[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 *(if applicable)*	*n/a (requires full strategic modelling outputs)*
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 Analysis[12].

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 though 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 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.

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 *(to be determined based on the number of successful applications for Business Rates reductions)*
	% 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 *(if applicable)*	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 framework[6] 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.

[6] Thurrock 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 *(reducing carbon emissions and improving energy use)*, 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 identity 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, routeing 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 crate 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 *(if applicable)*	*Business case currently being developed that will identify the economic monetary benefits.*
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 *(if applicable)*	*n/a (transport modelling outputs not available)*
Scale of required Investment	***Overall***	Low-medium cost intervention for enabling works
	% request from HE	100% of any facilitation works *(full scheme to be delivered through RIS3)*
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.

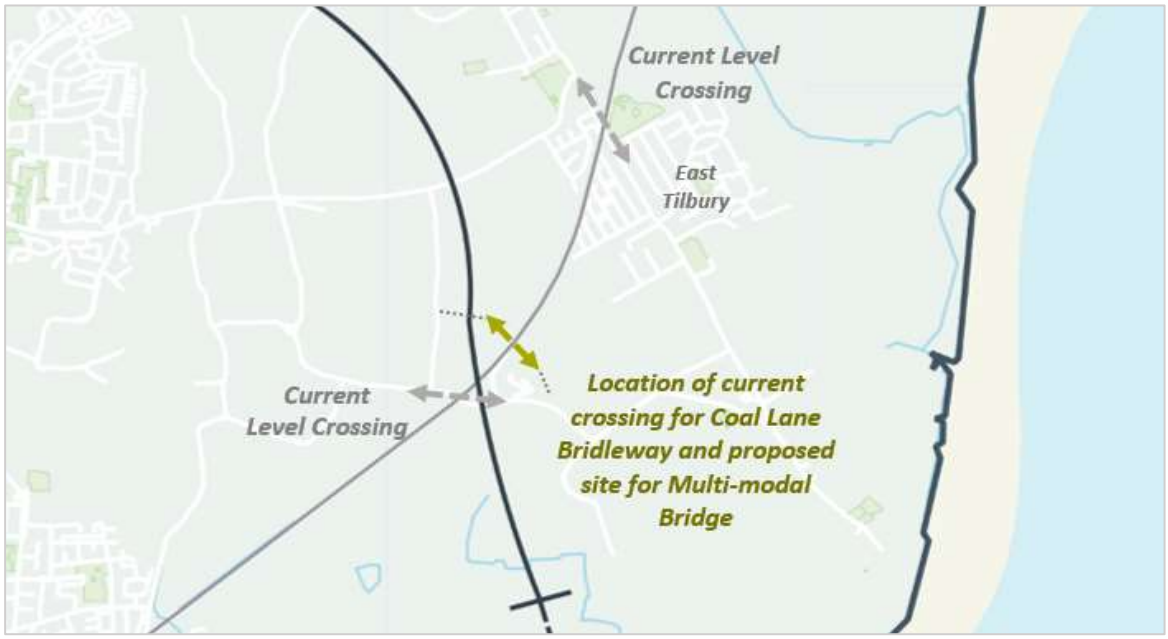
Measure L7	**Permanent Multi-modal rail crossing**	
Additional Description	Construction of a multi-modal bridge over the Tilbury Loop Line near East Tilbury, providing relief to nearby level crossings, support future development, and form part of the Coal Lane bridleway.	
Type and Scale of Benefits	***Impact 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 *(if applicable)*	*n/a (requires detailed public transport modelling)*
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 Analysis[7], 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 Analysis[7] 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 is 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 Aveley 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 surrounding by the LTC Development Area and so ensuring that access can been 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 as 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 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.

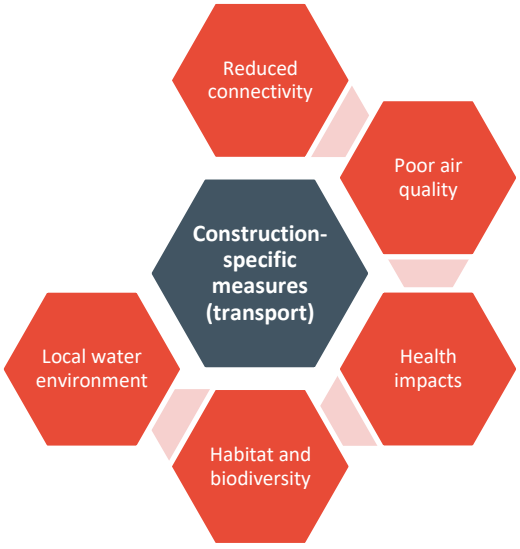
Construction-specific measures (emissions)

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 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.

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.

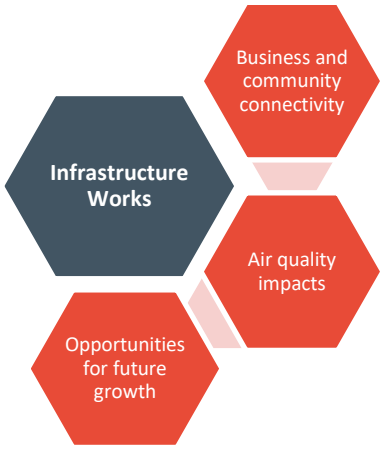
Legacy Measures

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.



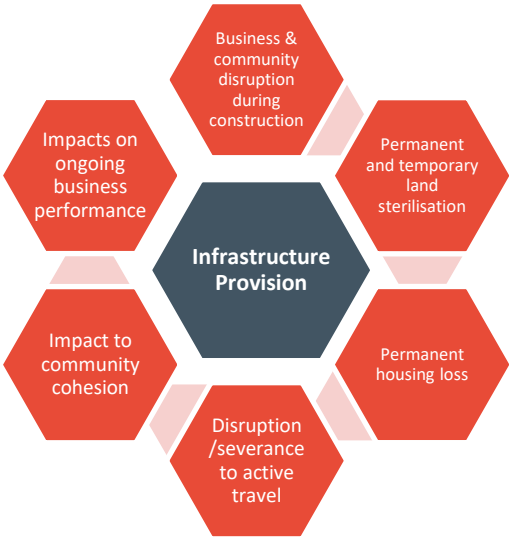
8.28 These mitigation measures, whilst not directly delivering enhancements, would ***facilitate the future delivery of strategically important infrastructure and measures*** that will enhance local and strategic connectivity and help to deliver improved business and community connectivity and unlock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

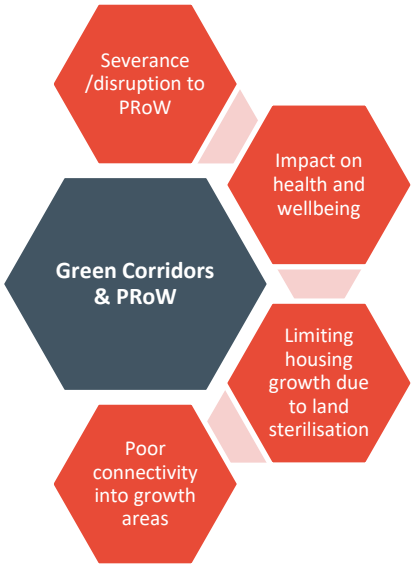


Green Corridors and PRoW Enhancements

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.

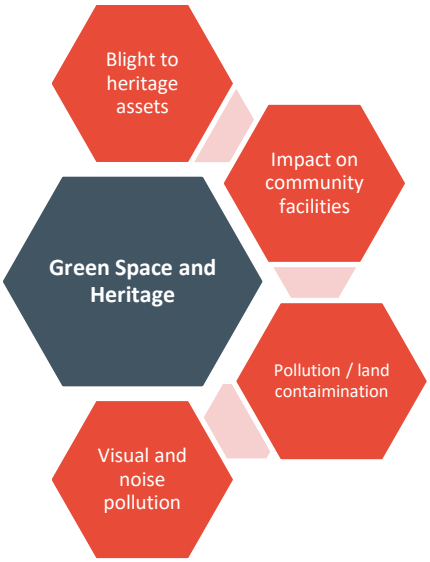


Green Space Enhancement and Heritage Restoration

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.

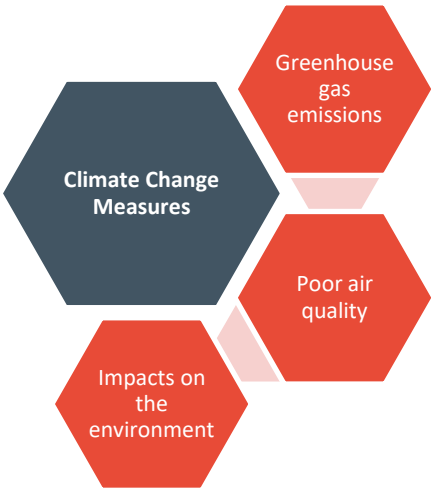
8.37 These mitigation measures would have a number of positive benefits, including securing the continued use of Coalhouse Fort and surrounding area, improving green and open space assets for local people, and cleaning up the contaminated land at East Tilbury Landfill.



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.

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