Capital Project Business Case
Fairglen New Link Road

The template

This document provides the business case template for projects seeking funding which is made available through the **South East Local Enterprise Partnership**. It is therefore designed to satisfy all SELEP governance processes, approvals by the Strategic Board, the Accountability Board and also the early requirements of the Independent Technical Evaluation process where applied.

It is also designed to be applicable across all funding streams made available by Government through SELEP. It should be filled in by the scheme promoter – defined as the final beneficiary of funding. In most cases, this is the local authority; but in some cases the local authority acts as Accountable Body for a private sector final beneficiary. In those circumstances, the private sector beneficiary would complete this application and the SELEP team would be on hand, with local partners in the federated boards, to support the promoter.

Please note that this template should be completed in accordance with the guidelines laid down in the HM Treasury's Green Book. https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

As described below, there are likely to be two phases of completion of this template. The first, an 'outline business case' stage, should see the promoter include as much information as would be appropriate for submission though SELEP to Government calls for projects where the amount awarded to the project is not yet known. If successful, the second stage of filling this template in would be informed by clarity around funding and would therefore require a fully completed business case, inclusive of the economic appraisal which is sought below. At this juncture, the business case would therefore dovetail with SELEP's Independent Technical Evaluation process and be taken forward to funding and delivery.

SOUTH EAST
LOCAL ENTERPRISE
PARTNERSHIP

The process

This document forms the initial SELEP part of a normal project development process. The four steps in the process are defined below in simplified terms as they relate specifically to the LGF process. Note – this does not illustrate background work undertaken locally, such as evidence base development, baselining and local management of the project pool and reflects the working reality of submitting funding bids to Government. In the form that follows:

Local Board Decision

- Consideration of **long list** of projects, submitted with a short strategic level business case
- **Sifting/shortlisting process** using a common assessment framework agreed by SELEP Strategic Board, with projects either discounted, sent back for further development, directed to other funding routes or agreed for submission to SELEP

SELEP

- Pipeline of **locally assessed projects submitted to SELEP**, with **projects supported by strategic outline business cases - i.e., partial completion of this template**
- Prioritisation of projects across SELEP, following a common assessment framework agreed by Strategic Board.
- **Single priorisited list of projects is submitted by SELEP to Government** once agreed with SELEP Strategic Board.

SELEP ITE

- Following the allocation of LGF to a project, scheme promoters are required to prepare an **outline business case, using this template** together with appropriate annexes.
- Outline Business Case assessed through **ITE gate process**.
- **Recommendations are made by SELEP ITE to SELEP Accountability Board** for the award of funding.

Funding & Delivery

- Lead delivery partner to commence internal project management, governance and reporting, ensuring **exception reporting mechanism back to SELEP Accountability Board** and working arrangements with SELEP Capital Programme Manager.
- **Full Business Case** is required following the procurement stage for projects with an LGF allocation over £8m.

Version control	
Document ID	Fairglen New Link Road Business Case
Version	Gate 2 Version 4 – 190131
Author	Dave Joy
Document status	Final
Authorised by	
Date authorised	

SOUTH EAST
LOCAL ENTERPRISE
PARTNERSHIP

1. PROJECT OVERVIEW

1.1. Project name:

Fairglen New Link Road Business Case

1.2. Project type:

In support of the Fairglen Interchange Improvement Scheme, provide the addition of a new link road from the southbound A130 on to the A1245 southbound and a dedicated left turn slip from the A1245 southbound on to the A127 eastbound.

1.3. Federated Board Area:

Opportunity South Essex

1.4. Lead County Council / Unitary Authority:

Essex County Council

1.5. Development location:

The Fairglen Interchange of the A127 with the A130, adjacent to Morbec Farm, Wickford SS12 9JF.

1.6. Project Summary:

Please note that this bid is for funding of the Link Road and Slip Road only. The complete project, including construction of the overall Fairglen Improvement Scheme, is a DfT retained scheme, supported by ECC. Many references in this document will apply to the complete scheme, but, where possible, specific references to the Link Road and Slip Road will be highlighted. The link road is viewed as part of the Fairglen Improvement Scheme and to be constructed at the same time and under the same contract and was thus viewed as included in the overall scheme appraisal.

The A127 corridor is a vitally important primary route for the South Essex area which connects the M25, Basildon and Southend (including London Southend Airport). It also provides access to the wider areas of Basildon, Billericay, Brentwood, Canvey Island, Rochford and Wickford and has strategic links to the A13, A128, A129 and A130.

The interchange, which is located halfway between Southend-on-Sea and the M25 along the A127, carries over 110,000 vehicles in a 12 hour period. It suffers significant congestion and journey time delays during peak periods and high traffic flows throughout the rest of the week. The slip roads onto the A127 and the main A127 carriageway, either side of the interchange, have been found to be operating above their design capacities, which results in reduced performance. In addition, there are safety concerns relating to poor visibility and poor lane management.

The proposed new link road and slip road will alleviate traffic flows at Fairglen and will reduce demand at the main interchange by negating the need for vehicles travelling from Chelmsford, southwards down the A130, to complete two sides of the 'Fairglen triangle' south of the A127 to access the A127 heading eastbound towards Southend. Travel distance (approximately 1km) will also be saved.

The one lane link road, designed with shoulders, will cross National Grid Land and will join the A1245 at a new signalised junction with right turn capability only. The dedicated left turn slip road will commence after the railway line and join the A127 at a similar point to where today's slip road joins.

This proposal is supplementary to the main A127 / A130 Fairglen Interchange short term improvement scheme. This scheme has secured £15m LGF funding in Round 1 and is a DfT Retained Scheme. A video fly-through and associated documentation for the total scheme can be found here:-
http://www.essexhighways.org/highway-schemes-and-developments/major-schemes/a127-a130-fairglen-interchange.aspx

Provisional plans have been developed for a more wide-ranging longer term proposal, but, at this time, no funding exists, to progress this full longer term scheme.

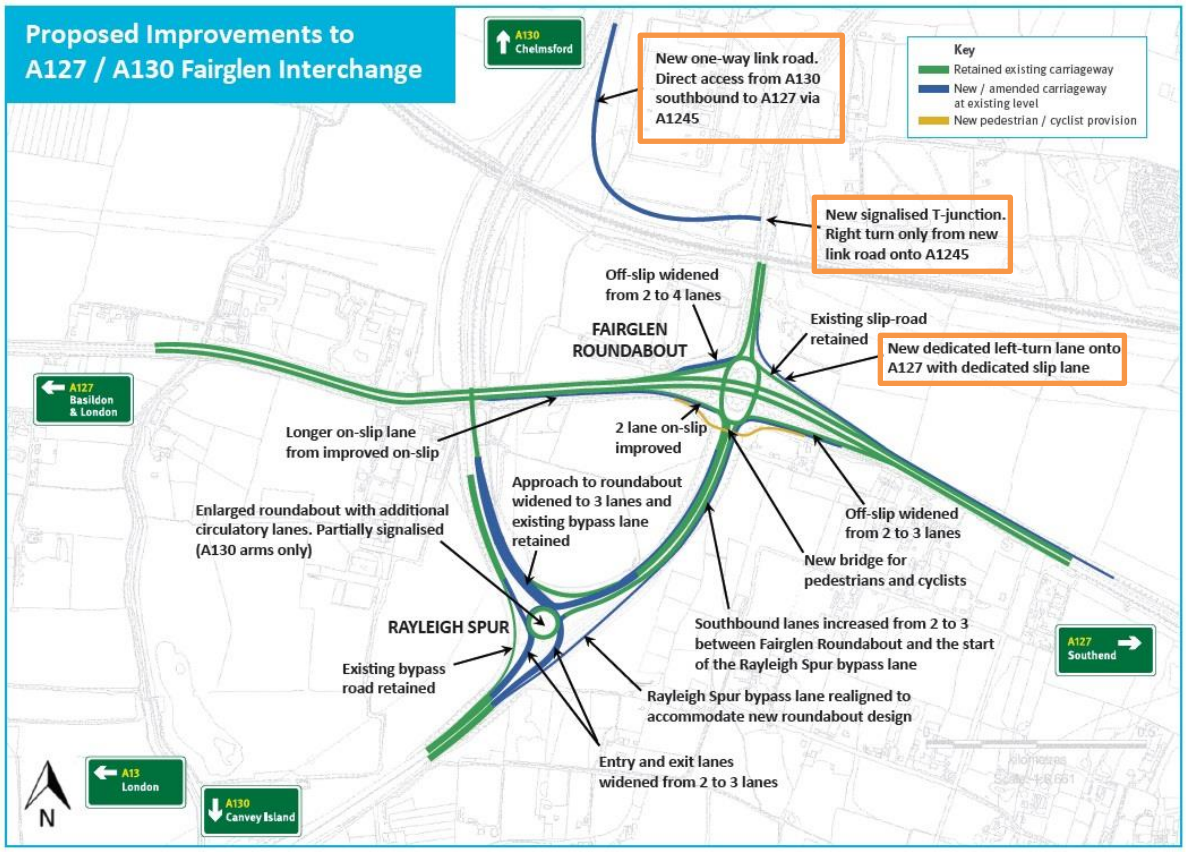

Figure 1: Fairglen Interchange (This proposal highlighted in orange)

Drawings of the proposed improvements can be found at Appendix F.

1.7. Delivery partners:

Partner	Nature and / or value of involvement (financial, operational etc.)
Essex County Council	Financial, operational, programme management and project direction
Essex Highways	Responsible for design, management and coordinating delivery of schemes
Ringway Jacobs and partners	Responsible for constructing schemes

1.8. Promoting Body:

Essex County Council

1.9. Senior Responsible Owner (SRO):

Andrew Cook, Director, Highways & Transportation, ECC

1.10. Total project value and funding sources:

For the Link Road and Slip Road only:-

Funding source	Amount (£m)	Constraints, dependencies or risks and mitigation
SELEP	£6.235	Dependent on this bid
ECC	£3.504	ECC funding has already been included in ECC's aspirational part of the capital programme (19/20 and 20/21). ECC will need to formally approve its funding levels in advance of each of these years.
ECC Revenue	£0.105	Subject to approval February 2020
Total project value	**£9.844**	

1.11. SELEP funding request, including type (LGF, GPF etc.):

£6.235m LGF capital funding is requested from SELEP in the form of a financial contribution. The funding will not constitute State Aid.

1.12. Exemptions:

This scheme, as defined, is not subject to any Value for Money exemptions.

1.13. Key dates:

Overall Fairglen Interchange Improvement Programme (DfT Retained Scheme)

Project milestone	Indicative date
Preliminary design	Completed
Detailed design	April to December 2019
Tender	March to August 2020
Start construction	October 2020
End construction	September 2022

1.14. Project development stage:

Project development stages completed to date			
Task	**Description**	**Outputs achieved**	**Timescale**
Outline Business Case – Link Road	Detailed study submitted to SELEP	Completed – paper issued	July 2016
Strategic Outline Business Case – Short Term Improvements	DfT Retained Scheme - Detailed report submitted to SELEP & DfT	Completed – paper issued	February 2017
Project development stages to be completed (link road and slip road)			
Task	**Description**	**Timescale**	
Business Case	Full Business Case – this bid	June 2018 to February 2019	
Design	Detailed design	April to December 2019	

1.15. Proposed completion of outputs:

Other, recently approved, related projects to be funded by SELEP:-

- Fairglen Interchange Outline Business Case – Short Term Improvements – DfT Retained Scheme - £15m funding approved for spend in 2019-2021
- Chelmsford to Braintree RBS – £3.66m funding, approved in February 2017 with construction started in January 2018
- Basildon ITP Tranche 2 – £6.4m funding, approved at the May 2017 Accountability Board
- Chelmsford to Harlow RBS – £2.173m funding, approved at the November 2017 Accountability Board
- Colchester to Clacton RBS - £2.74m funding, approved at the November 2017 Accountability Board. Preparatory works commenced in June 2018 with major works starting Winter 2018
- M11 J8 - £2.7m funding, approved at the November 2017 Accountability Board.
- Chelmsford City Growth Package - £9.193m funding, approved at the February 2018 Accountability Board with initial works starting in June 2018.
- Gilden Way Upgrading (in support of M11 J7a) - £5.0m funding, approved at the February 2018 Accountability Board.
- Braintree to Sudbury RBS - £1.8m funding, approved at the June 2018 Accountability Board.

2. STRATEGIC CASE

2.1. Scope / Scheme Description:

South Essex
To support growth in South Essex, the A127 / A130 / A1245 Fairglen Interchange requires substantial improvement. This junction is currently operating at capacity and suffers significant congestion at peak times. It is the primary access route to Southend and Rochford, including London Southend Airport, to the east of the junction. Traffic also passes through this junction to access Canvey Island and the ports of Tilbury and DP World London Gateway, both located off the A13 to the south west of the junction.

Improvements to this interchange will enable and support planned growth, along with the housing identified in the south Essex Strategic Housing Market Assessment (SHMA). The SHMA identifies the 'objectively assessed need' for Basildon, Castle Point, Rochford and Southend as being 2,350 to 2,770 dwellings per annum, resulting in around 12,800 new homes being required by 2021.

The interchange is located at the boundary of Basildon Borough Council, Castle Point Borough Council and Rochford District Council and it forms the main junction for strategic routes heading to / from Southend and London Southend Airport. For this reason, any traffic growth across this area will have a significant impact on Fairglen Interchange. The local authorities each have significant plans for growth in housing and jobs, estimated to be around 26,000 houses and 25,000 jobs by 2031. Improvement of the interchange is essential to the road capacity required to meet the traffic demand generated by this growth.

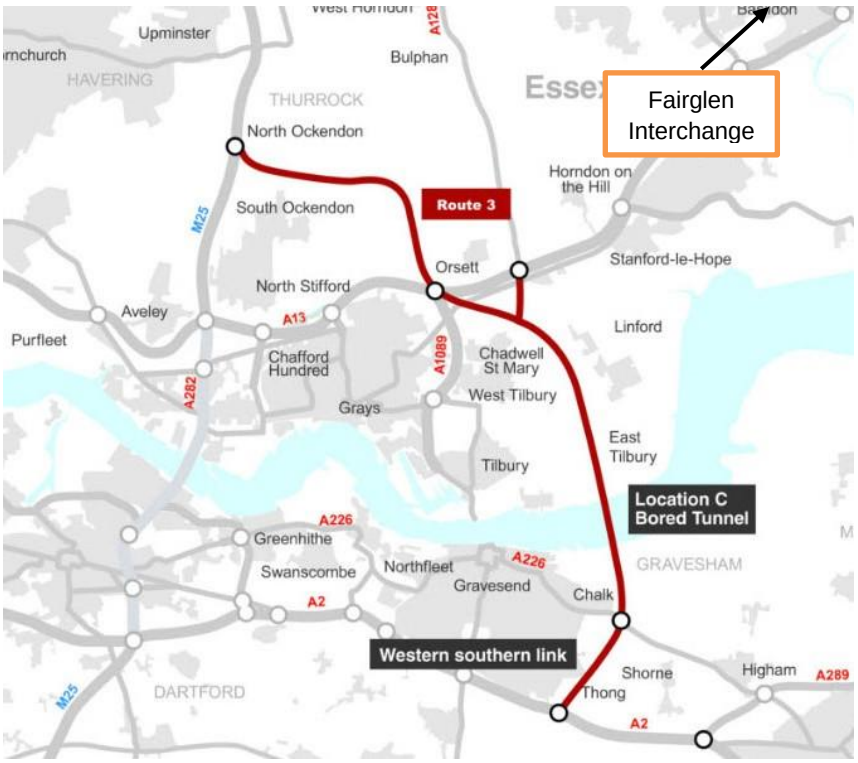

Figure 2: Lower Thames Crossing – Preferred Route

The potential impact of the Lower Thames Crossing on the Fairglen Interchange has been modelled by Highways England. The current modelling results suggest that the Lower Thames Crossing would lead to an increase in trips, passing through the interchange, of approximately 100 to 200 additional vehicles per hour in the peak hours, in each direction. This further highlights the need to provide additional capacity at the Fairglen Interchange to facilitate movement and growth in this area.

Fairglen Interchange
The Fairglen Interchange forms a strategic connection between the A13, A127, A130 and A1245 Priority Route 1 roads in Southern Essex. It is made up of two main elements – Fairglen Roundabout and Rayleigh Spur Roundabout.

Fairglen Interchange currently suffers from significant congestion during peak weekday periods and high traffic flows throughout the rest of the week. The slip roads onto the A127 and the main A127 carriageway, either side of the interchange, have been found to be operating above their design capacities, which results in reduced performance. In addition, there are safety concerns relating to poor visibility and poor lane management.

Provision of a link road from the A130 to the A1245 and the slip road from the A1245 to the A127, north-east of the interchange, will remove a significant volume of traffic from the interchange itself and will contribute to improved journey times along this section of the A127.

A separate successful business case has been submitted for the Fairglen Interchange Improvement scheme, securing £15m funding from the LGF, subject to submission of a WebTAG compliant business case to the DfT. This funding is supported by a further £4m contribution from Essex County Council.

Context with A127
The A127, previously known as the Southend Arterial Road, is a dual carriageway east-west link between Southend, Basildon, the M25 and Romford, where it merges with the A12 into East London. Approximately 15 miles of the A127 road falls within Essex County Council's boundary, from the M25 Cranham Interchange to the outskirts of Southend.

The A1245 intersects with the A127 at the grade separated Fairglen Roundabout junction.

South of this junction is Rayleigh Spur, a three arm at-grade roundabout junction with dedicated turning lanes on each arm. Rayleigh Spur is connected to Fairglen Roundabout via the A1245 / A130 Link. The other two arms of the roundabout are the A130 heading north to Chelmsford and the A130 heading south to the A13, via Sadlers Farm.

The A130 from Rayleigh Spur is a dual carriageway north-south link between Chelmsford and Benfleet / Basildon. All of the bridges along the A130 are named, and the first, Annwood Bridge, carries the A130 over the A127 to the west of the Fairglen Roundabout.

History of the junction
Fairglen Roundabout was constructed in 1965 and Rayleigh Spur was added in 2002, ahead of the opening of the A130 'County Route' Design Build Finance Operate (DBFO) road to Chelmsford in February 2003.

A capacity improvement scheme was implemented at Fairglen Roundabout in 2009, as part of a package of schemes within a successful bid to the Community Infrastructure Fund (CIF II), to improve the A127 Basildon Enterprise Corridor. It entailed the provision of a left-hand segregation lane for northbound vehicles from the A1245 / A130 Rayleigh Spur onto the London-bound A127 slip road. This required carriageway widening on the northbound roundabout approach, and various kerb line re-alignments and road marking to permit greater utilisation of the road space.

'A127 – Corridor for Growth, an Economic Plan'
(https://www.essexhighways.org/uploads/docs/nevendon-a127-corridor-for-growth-paper2.pdf)
The purpose of this March 2014 Paper was to make a joint case from ECC and Southend Borough Council (SBC) to demonstrate to Government the importance of the A127 corridor to the economic growth and financial well-being of South Essex.

The Fairglen Interchange is mentioned a number of times in the document, with specific attention given to the recommended requirement for a new slip road.

Traffic

The Fairglen Interchange carries traffic for a variety of different trip purposes, including commuting, leisure, business and retail trips, as well as seasonal traffic to and from Southend. For consistency, the numbers quoted below are from the original submissions to the DfT.

Figure 3, below, shows the 12 hour inbound traffic flows at Fairglen Interchange, based on data collected by the DfT on a typical weekday in 2013. The total number of vehicles passing through the interchange in the observed 12 hours totalled around 110,600.

Figure 3: Total 12 hour inbound flows (vehicles) at Fairglen Interchange. Source: DfT, 2013

Figure 4, below, shows the hourly inbound traffic flows from 07:00 – 18:00 for each approach arm to Fairglen Interchange, based on the DfT data.

Figure 4: Hourly traffic flows (vehicles) on each approach to Fairglen Interchange - Source: DfT, 2013

Turning movement information has also been obtained from an Automatic Number Plate Recognition (ANPR) survey carried out by Essex Highways in May 2014. These flows were converted into Passenger Car Units (PCUs) for the busiest AM and PM peak periods and can be seen in Figures 5 and 6, as directional arrows. The widths of the arrows are proportional to the number of PCUs making each movement and the total number of PCUs on each approach are presented in numerical form.

Both the DfT and Essex Highways surveys identified 07:00–08:00 and 17:00–18:00 as the busiest hours in the AM and PM peak periods.

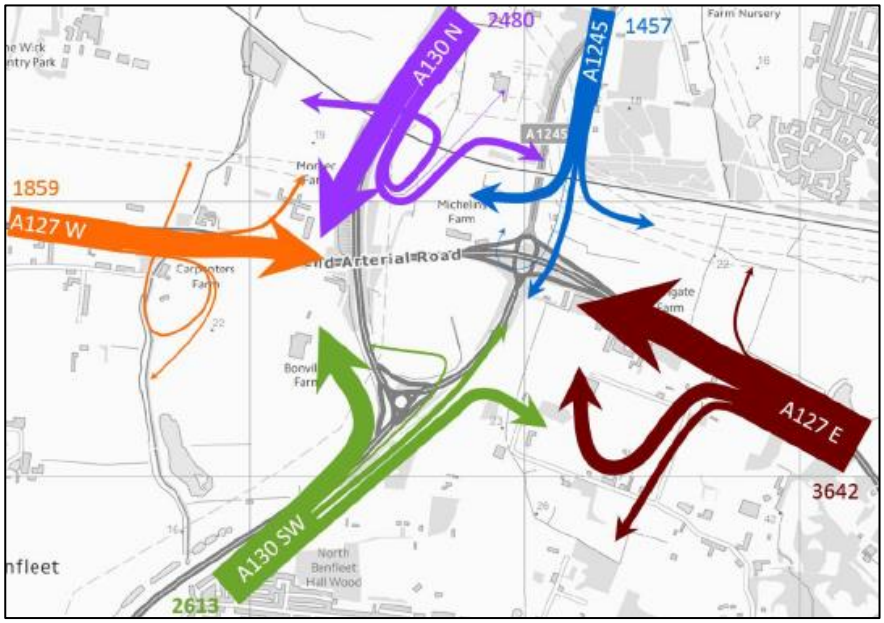

Figure 5: Traffic Movements through Fairglen Interchange AM Peak (07:00-08:00). Source: ANPR data, May 2014

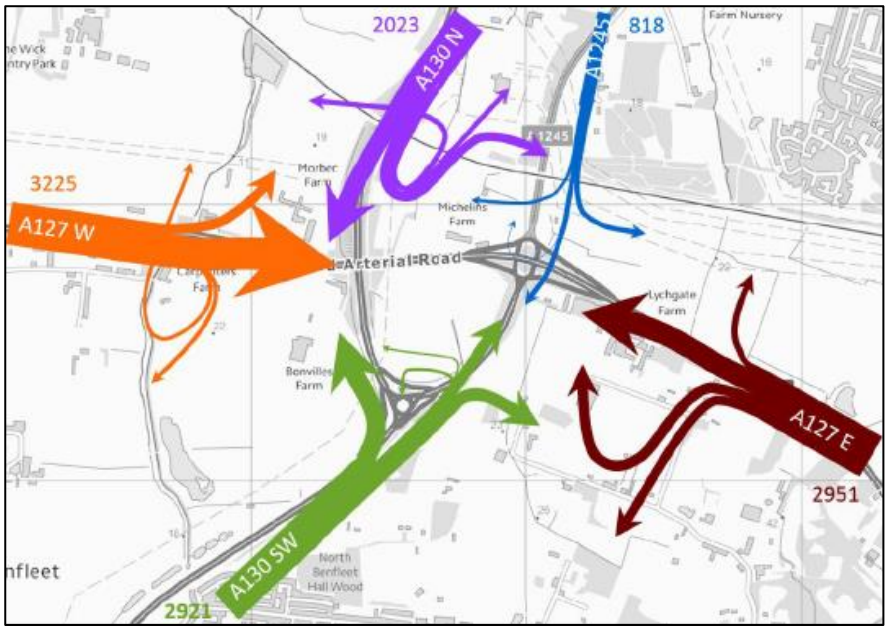

Figure 6: Traffic Movements through Fairglen Interchange PM Peak (17:00-18:00). Source: ANPR data, May 2014

This shows that the movements with the highest traffic flows are those on the A127. The other movements which are significant are the two-way movements on the A130, and the two-way movements between the A130 and the A127 (east).

Based on the results of the ANPR survey, the largest movement in the AM peak is westbound towards London from the A127E. By contrast, the PM peak shows the largest movement to be eastbound on the A127W.

Other key movements to note are the high flows between the A130N and A130SW in both peak hours.

In addition, there are significant flows from the A130N and A130SW to the A127E. This traffic takes priority over the A127 eastbound off-slip and the A1245, as it moves around Fairglen Roundabout, causing delay to these approaches.

Traffic Delay
Queuing on the A130 / A1245 northbound approach to Fairglen regularly extends back from the Fairglen roundabout give-way line to the exit of Rayleigh Spur, in both lanes.

Traffic tailing back from the eastbound A127 on-slip in the PM peak often causes delay to the A1245 southbound approach to Fairglen Roundabout, and the A127 eastbound off-slip.

Teletrac (Trafficmaster) data allows delay to be compared on different parts of the road network. In this case, delay is measured as traffic speeds as a percentage of free flow speeds. The Trafficmaster data is shown in Figures 7 and 8 for the AM and PM peak hours respectively.

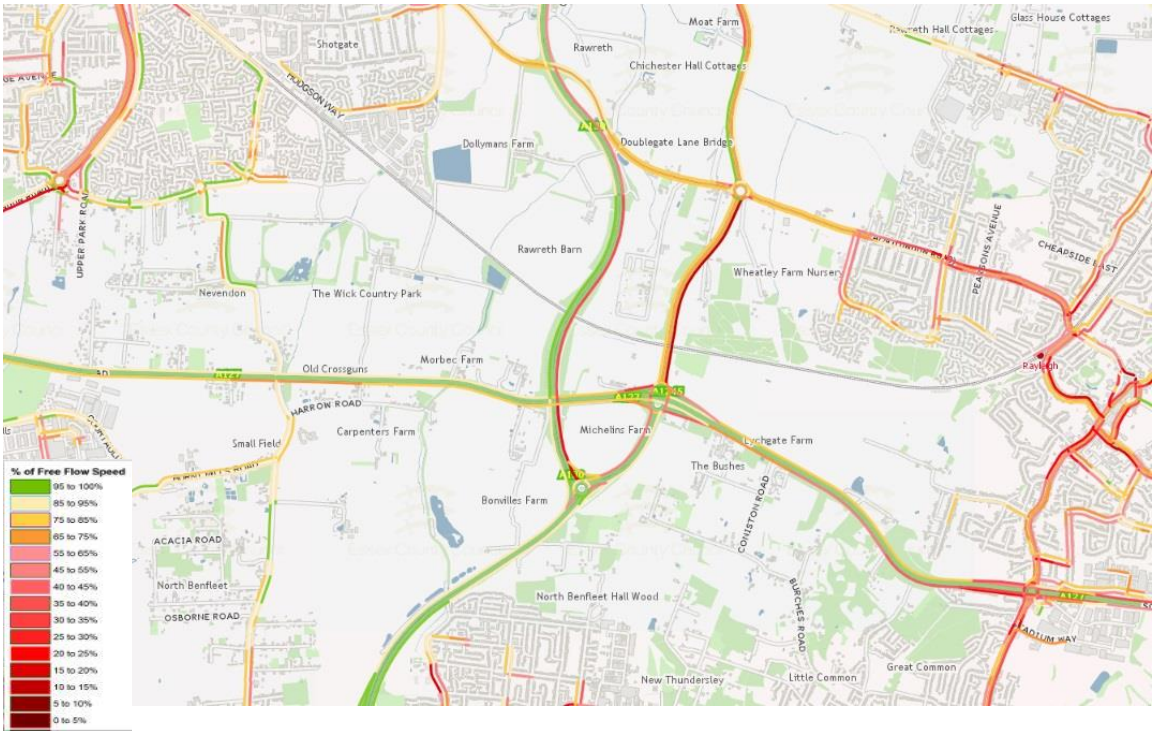

Figure 7: 2017 Teletrac AM peak (07:00-08:00) plot

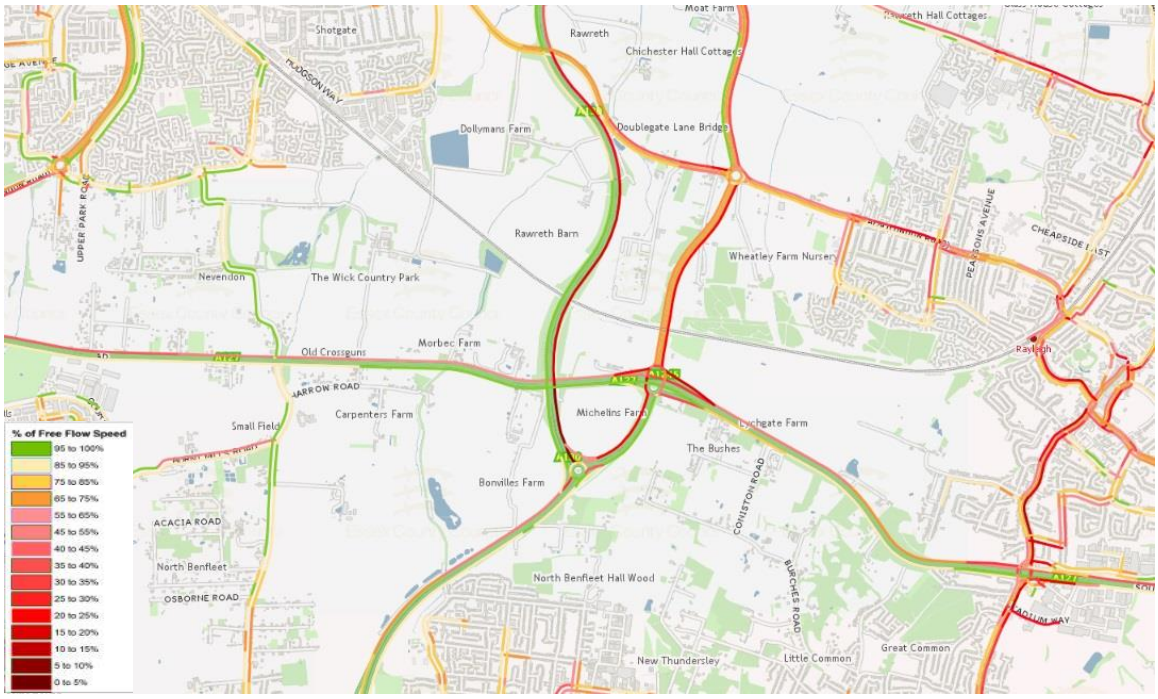

Figure 8: 2017 Teletrac PM peak (17:00-18:00) plot

The Teletrac plots show that, during the AM peak hour:

- The A1245 approach to the Fairglen Roundabout is typically around 30% to 35% of the free flow speed during the AM peak hour (7am to 8am).
- Delay occurs on the westbound A127 off-slip at the Fairglen Roundabout and on the A130 (north) approach to the Rayleigh Spur.

The delay during the PM peak hour is found to be more significant than in the AM peak hour, particularly on the following:

- The A1245 southbound approach to the Fairglen Roundabout.
- The A130 / A1245 approach to the Fairglen Roundabout.
- The A130 (north) southbound approach to the Rayleigh Spur.

The operation of the Fairglen Interchange during the AM and PM peak hours has been modelled using Vissim and Linsig and it would appear that, from this work, the eastbound A127 on-slip merge problems at Fairglen Roundabout may be the cause of the majority of congestion issues on the other arms of the junction. Tables 1 and 2 below show results that are consistent with the observations in the Teletrac data, and give further information on the lanes and movements that are operating approaching, at, or above capacity.

The data shows that, currently, there are parts of the network that already experience delay. Therefore, failure to address these issues will constrain the ability to provide economic growth in the region, and will reduce the efficiency of existing businesses in the surrounding area.

Table 1: Performance of the existing Fairglen Roundabout (AM and PM peak hours) 2014

Approach		Lane-movement	AM peak (8am to 9am)		PM peak (5pm to 6pm)	
			Degree of saturation (%)	Queue (PCUs)	Degree of saturation (%)	Queue (PCUs)
Fairglen Roundabout	A1245 north	Left only	79	2	82	7
		Ahead	100	31	103	22
		Ahead	100	31	99	13
	Circulatory east	1	75	8	89	9
		2	77	9	91	10
		3	76	9	20	1
	A127 westbound off-slip	Left only	82	15	86	12
		Ahead	82	16	87	13
	A1245 south	Left only	N/A	N/A	N/A	N/A
		Ahead	100	28	93	9
		Ahead	98	23	96	16
		Ahead	98	23	98	18
	Circulatory west	1	47	5	90	19
		2	61	7	85	17
		3	62	7	67	11
	A127 eastbound off-slip	Left only	52	4	91	16
		Ahead	67	5	75	11

Table 2: Performance of the existing Rayleigh Spur Roundabout (AM and PM peak hours) 2014

Approach	Lane-movement	AM peak (8am to 9am)		PM peak (5pm to 6pm)	
		RFC	Queue (PCUs)	RFC	Queue (PCUs)
Rayleigh Spur	A1245	0.83	5	0.58	1
	A130 south	0.82	5	0.98	31
	A130 north	1.00	48	0.89	7

2.2. Location description:

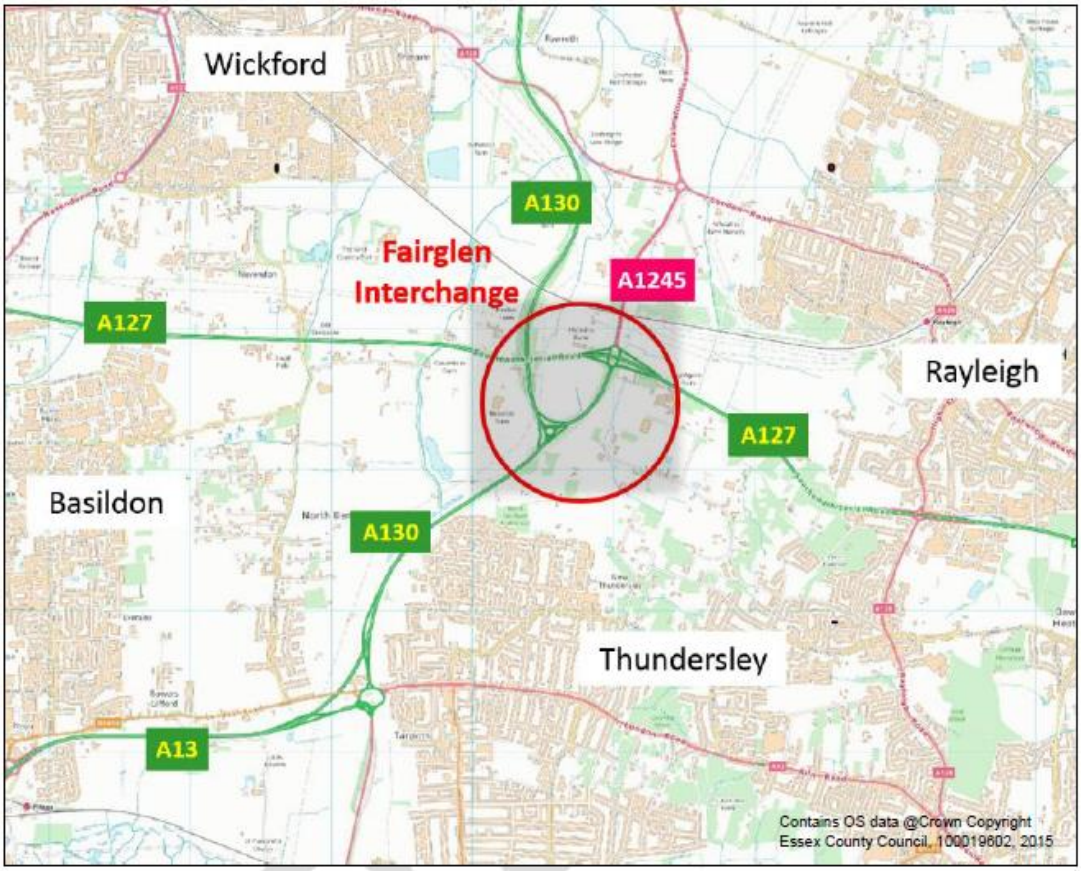

Figure 9: Location map of Fairglen Interchange and connecting links

Location
The Fairglen Interchange is situated halfway along the key strategic A127, which links East London to Southend.

The A127 corridor is a vitally important primary route for the South Essex area which connects the M25, Basildon and Southend (including London Southend Airport). It also provides access to the wider areas of the adjacent boroughs of Basildon, Brentwood and Rochford and the district of Castle Point. These include the key towns of Basildon, Brentwood, Billericay, Canvey Island, Rayleigh, Rochford and Wickford.

The A127 has strategic links to the A13, A128, A129 and A130.

Rail
Situated approximately 300 metres north of the Fairglen Interchange is the Shenfield-Southend Railway Line. Eastwards from the Fairglen Interchange, this railway line has stations serving Rayleigh, Hockley, Rochford, Southend Airport, Prittlewell and Southend Victoria. To the north-west of the Fairglen Interchange, on the Shenfield-Southend line, is Wickford station, where the Crouch Valley Line branches off and runs to and from Southminster. To the south of the Fairglen Interchange is a third railway line offering a train service to and from London, with stations located at Pitsea and Benfleet. Figure 10 shows the routes of these railway lines.

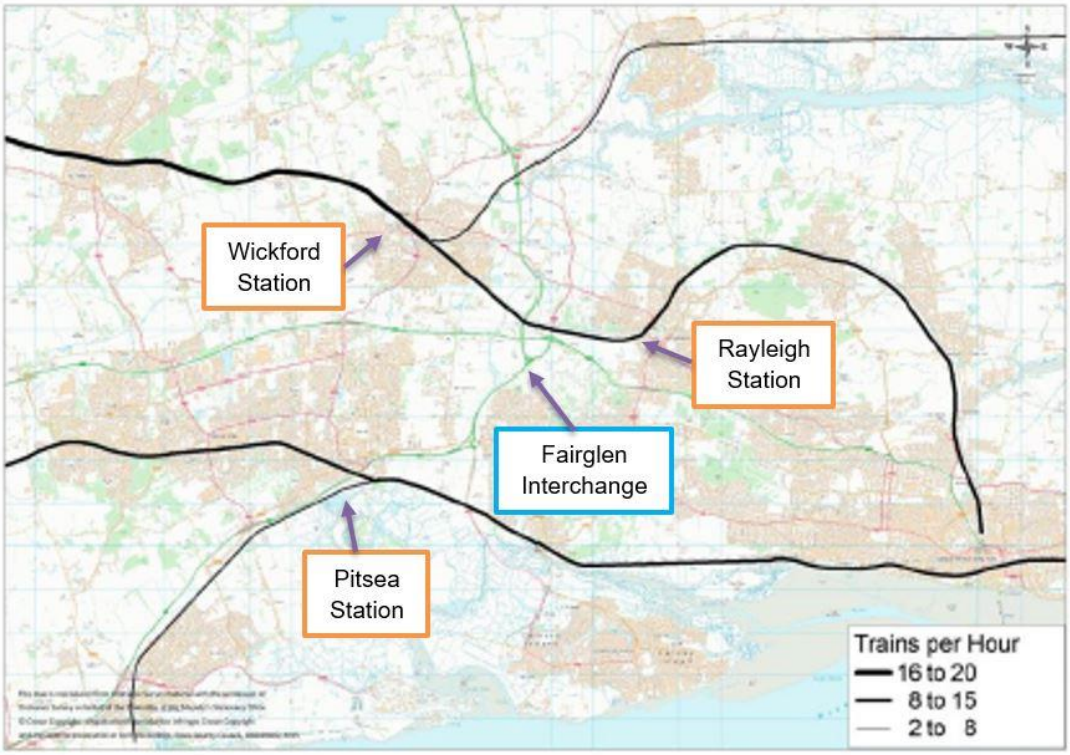

Figure 10: Map showing rail stations, links and frequencies surrounding Fairglen Interchange

On weekday mornings, in the peak period, from approximately 06:30 until 08:50, there is a quicker, cheaper and more frequent direct train service to London Liverpool Street from Wickford station, compared to that available from Rayleigh station, due to Wickford receiving services from 2 lines (the Crouch Valley Line and the Southend Line which serves Rayleigh). Following the weekday morning peak, the services offered are at the same frequency for both stations. It has been suggested that the better service offered from Wickford creates 'railheading' to this station, with the Fairglen Interchange receiving many of these commuter trips.

The alternative train service to London Fenchurch Street from Pitsea station (to the south west of the Fairglen Interchange) offers a cheaper and even better frequency than Wickford from 05:25 until just after 09:00. Therefore, the 'railheading' could potentially be in the other direction, with the Fairglen Interchange receiving commuter trips to Pitsea from settlements to the north east.

Outside of commuter traffic, the rail links in the vicinity of the Fairglen Interchange are tailored towards trips to and from London, with other more localised journeys (e.g. to the east of Basildon) not as well catered for, meaning that travel by private car is likely to be more attractive. In addition, there has never been a north–south rail link between the London, Tilbury & Southend railway in the south and the Shenfield to Southend, Crouch Valley and Great Eastern Lines. Therefore, travelling by bus is the only non-car alternative mode.

Cycling
The new link road and slip road do not, in themselves, provide any additional new facilities for pedestrians or cyclists. However, the complete scheme will introduce improved walking and cycling particularly east-west across the carriageway from Fairglen roundabout to the Rayleigh Spur.

Bus
The Fairglen Interchange is not utilised greatly by bus services currently; local bus services tend to be concentrated to the east and west of the junction. Consequently, there are no bus stops within the area of the junction, and less than 2 regular bus services passing through the junction per hour (Figure 11).

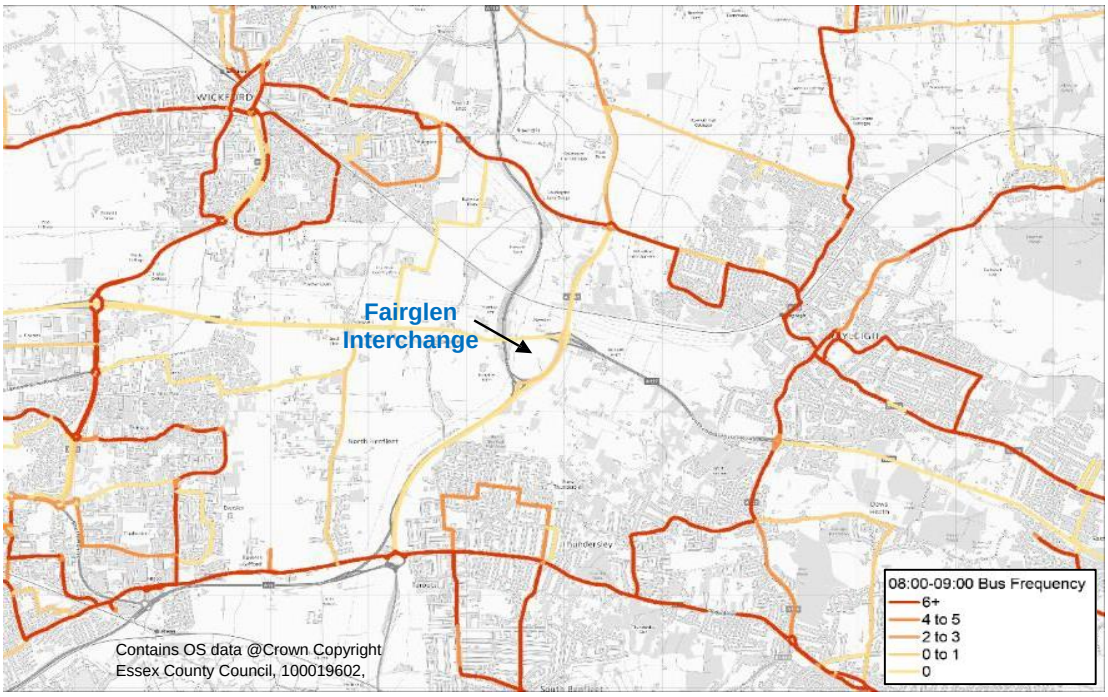

Figure 11: Map showing 08:00-09:00 peak hour bus routes and frequencies surrounding Fairglen Interchange

Regal Busways Service 1 (between Writtle and Canvey Island via Chelmsford, Rettendon Common, Battlesbridge and South Benfleet), and Service 1A (between Writtle and Canvey Island via Chelmsford, East Hanningfield, Rettendon, Battlesbridge and South Benfleet), pass through both the Rayleigh Spur and the Fairglen Roundabout 8 times daily Monday to Friday, and Service 1 on eleven occasions on Saturdays, with gaps of between 60 to 150 minutes between each service. The nearest scheduled bus stops are at Bedloes Corner to the north of the Interchange, and at Tarpots Corner to the south.

A number of school bus and coach services also pass through the Interchange during the morning peak and return mid-afternoon.

First Essex operate regular services to / from the north (Carpenter's Arms) and south (Thundersley) and to / from North Benfleet, but First Essex services do not actually pass through the Fairglen Interchange itself.

Comparative Mode Journey Times

Table 3 below compares weekday journey times for 3 popular trips within South Essex, by the different modes available and the frequency of these modes.

Table 3: Comparative Journey Times

		Rayleigh to Brentwood	Rayleigh to Chelmsford	Southend to Basildon
Rail	Journey Time (mins)	30	40-50	20
	Frequency (per hour)	3	3-6	6
Bus	Journey Time (mins)	80	30	60
	Frequency (per hour)	1	1	6
Car	Journey Time (mins)	30	25	30

Employment and Economy
The town of Basildon is the largest employment centre in the Thames Gateway South Essex (TGSE) area and is home to the Basildon Enterprise Corridor, the largest concentration of employment in Essex.

The Basildon Enterprise Corridor plays host to major international businesses such as Ford, SELEX Galileo and New Holland Agriculture, along with a growing concentration of advanced engineering small and medium employers (SMEs). It is well located to provide a base for global companies seeking to build links with the established concentration of advanced manufacturing and engineering businesses.

Location – Basildon (4 miles west of Fairglen)
Basildon is the largest town in the borough of Basildon. It lies 32 miles east of Central London, 11 miles south of the city of Chelmsford and 10 miles west of Southend-on-Sea. Nearby smaller towns include Billericay to the north, Wickford in the northeast and South Benfleet to the east.

Many of Basildon's residents work in Central London, due to the town being well connected to the City of London and the Docklands financial and corporate headquarters districts, with a 36–58 minute journey from the three Basildon stations to London Fenchurch Street. Basildon also has access to the City via road, on the A127, or the A13.

Location – Rayleigh (2 miles east of Fairglen)
Rayleigh is a market town and civil parish in the District of Rochford, located between Chelmsford and Southend-on-Sea. It lies 37 miles to the east of central London.

Location – Rochford (6 miles east of Fairglen)
Rochford is a town in the Rochford district of Essex. It is about 42 miles from Central London and approximately 21 miles from Chelmsford, the County Town of Essex. The town is just to the north of Southend on Sea, but is sufficiently separated from both Southend and Rayleigh to preserve its own identity.

History – Basildon
Basildon was one of eight 'New Towns' created in the South East of England after the passing of the New Towns Act in 1946. It was created to accommodate the London population overspill, and was based on the conglomeration of four small villages, namely Pitsea, Laindon, Basildon (the most central of the four) and Vange.

History – Rayleigh
Although there was early Anglo Saxon settlement, the town only started to grow with the construction of the Norman castle. However, real growth didn't occur until the 20th century as it developed as a commuter town.

History – Rochford
The town is the main settlement in the Rochford district, and takes its name from Rochefort, Old English for Ford of the Hunting Dogs.

Nearby, Southend Airport started life as a grass fighter station in World War I. Southend Airport was opened on the site in 1935. Following its purchase by the Stobart Group in 2008, a development programme provided a new terminal and control tower and an extended runway allowing new routes to European destinations.

Population
At the 2011 census, the population of Basildon was 107,123 and Rayleigh was 32,150. According to the same census, the civil parish of Rochford, which includes the town proper, and London Southend Airport, had a population of 8,471.

Road accidents
A collision investigation and prevention study (CIP) was undertaken in July 2015 for the road network including and surrounding the Fairglen Interchange. This identified 32 collisions that resulted in injury at the Fairglen Roundabout and 18 at the Rayleigh Spur. The average number of collisions at the Fairglen Roundabout is higher than the national average for typical four arm grade separated roundabouts.

The data also shows a high proportion of rear-end collisions at the Fairglen Roundabout, on approaches and slip roads. The vehicle collisions at Rayleigh Spur seem to be mainly due to loss of control, possibly caused by poor visual alignment on approaches.

It is reasonable to infer that unmitigated growth in traffic in this location would exacerbate existing safety concerns.

Non-motorised Users
The Fairglen Interchange is largely unsuitable for non-motorised users, with currently no designated footpaths or cycleways. Although, as stated above, active travel will be addressed when the full scheme opens with the introduction of new footways and cycleways.

2.3. Policy context:

SELEP Strategy
The Fairglen Improvement Scheme supports the SELEP Vision; to 'Create the most enterprising economy in England' and the single SELEP goal; to promote steady, sustained economic growth over the next two decades. In total, SELEP aims to generate 200,000 new private sector jobs, complete 100,000 new homes and to leverage investment totalling £10bn to accelerate growth, jobs and housing.

Future of Essex Strategy
Investment in key junction improvements is wholly compliant with the recently published 'Future of Essex' strategy. This states that an effective transport system is integral to peoples' daily lives; it underpins business and commerce; provides access to work, education and training, essential services and leisure activities; and enables people to make the most of opportunities as they arise.

The strategy, developed collaboratively with partners throughout the county, identifies the importance of connecting people in Essex to each other, and the rest of the world, if Essex is to develop sustainably and share prosperity with everyone in Essex.

The provision of the Fairglen New Link Road is strongly aligned with the 'Future of Essex' priority of tackling congestion on the county's roads and railways.

Investment in the transport network is aimed at ensuring the efficient and effective movement of people and goods to boost economic growth, create great places to live, work and visit, enable people to live independently, and improve the lives of people using the transport network throughout Essex.

Specifically the Fairglen New Link Road enables inclusive economic growth within South Essex, identified as a major economic engine within the Essex Organisational Strategy and supports the following strategic priorities:

- Enables Essex to attract and grow large firms in high growth industries. The scheme supports trade, by better connecting key economic centres, especially along major transport corridors, and helping people to travel by public transport, bike and on foot.

- Helps secure sustainable development and protect the environment. The scheme ensures that growth can be sustainable and accommodated in a way that enhances Essex.

- Facilitates growing communities and new homes.

- Enhances transport access to employment, education and training, and essential services including healthcare, retail and leisure facilities to enable participation in everyday life.

The proposal supports the delivery of the Essex Local Transport Plan vision for a transport system that supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex by providing connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration.

The Fairglen Interchange already experiences severe congestion, especially during peak periods. Much of the infrastructure in and around the area is already approaching capacity and its ability to accommodate traffic generated by the additional planned housing is extremely limited. The situation is further exacerbated by the significant development pressures facing the County over the next decade, including port and airport expansions, which will give rise to a substantial increase in strategic transport movements directly affecting the infrastructure in the vicinity of Fairglen.

The importance of this junction on the A127 is also demonstrated by its inclusion in the new Major Road Network, a network of roads that has been identified by DfT as being essential to support National and regional economic growth and competiveness.

Greater Essex Growth and Infrastructure Framework (2016-2036)
This report presents an overview of growth patterns and the infrastructure projects needed to support growth in Essex.

Growth in Greater Essex over recent decades has created a deficit in existing infrastructure. In particular, the growth in journeys by road and rail has not been matched by sufficient government investment to enhance the network. The framework has identified that the listed major transport projects need to secure at least £26.5 billion (regional) and £5.5 billion (cross-boundary) funding.

Capacity within Greater Essex will also be affected by housing and economic growth in neighbouring areas. In particular, the influence and reach of the London City Region, and the overheating Cambridge economy will impact in different ways on localities within Essex. The emergence of the new London Plan is expected to displace housing and employment from London along strategic growth corridors into Essex.

Essex Local Transport Plan
The *Essex Local Transport Plan (2001)* which included the *Essex Transport Strategy (2011),* set out the original 15 year vision to improve travel in the county and underlined the importance of the transport network in achieving sustainable, long term economic growth and enriching the life of residents. It has been supplemented by delivery strategies for public transport, highways, cycling and public rights of way.

There are common themes across the policy documents, including the need to facilitate economic growth through new housing and jobs, and improve travel conditions to support businesses to expand and operate efficiently. The scheme aligns strongly with the economic growth objectives of SELEP, and the emerging local plans for new homes and job creation. Failure to address congestion hotspots in the A127 and A130 corridors, including the Fairglen Interchange, will be detrimental to business and quality of life across the wider area.

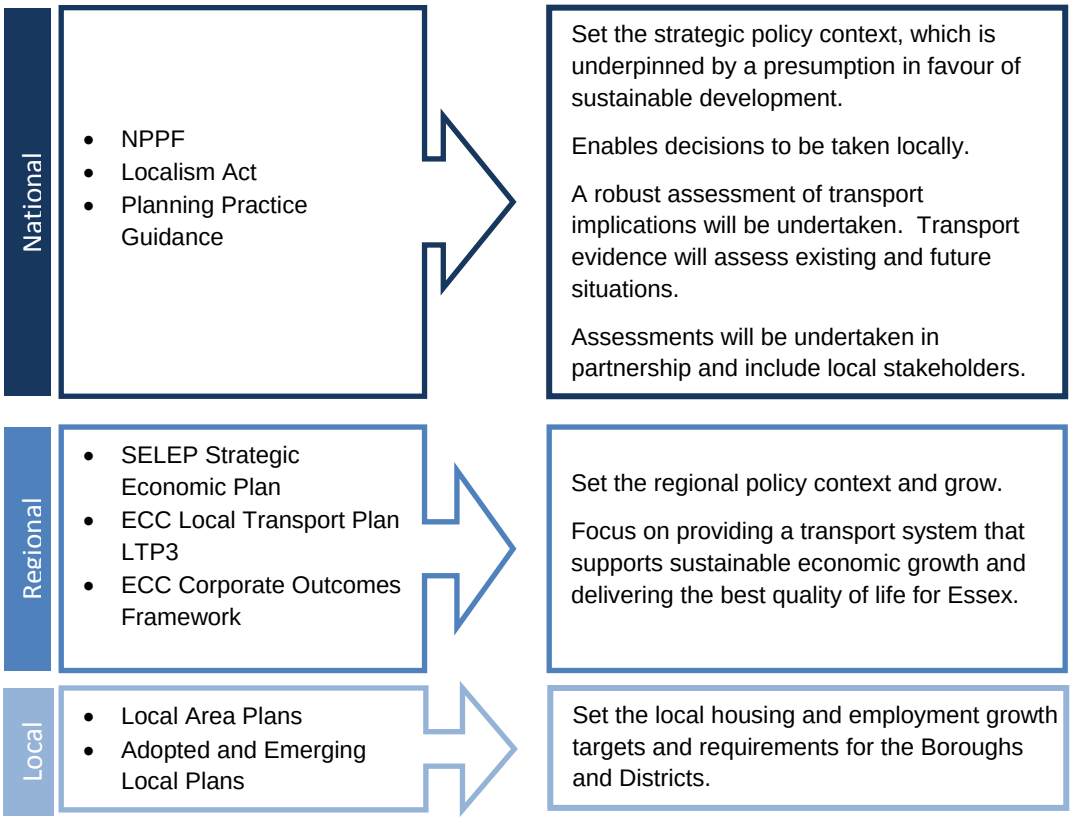

Figure 12: Key strategic aims, responsibilities, and policy objectives

This model of development plan preparation is described by Government in the illustration below:

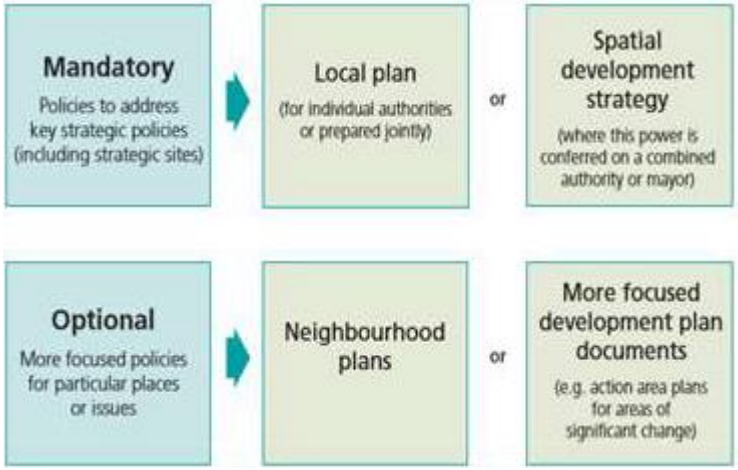

Figure 13: Model of development plan

South Essex - History of joint working

The local planning authorities in South Essex are Basildon, Castle Point, Rochford, Southend-on-Sea, Thurrock and Essex County Council. More recently, Brentwood has been incorporated into the group, given its close relationship with Basildon, Thurrock and the key infrastructure affecting the area, such as the A127.

There is a long established tradition of working in partnership on strategic planning matters, dating from the era of the former Thames Gateway South Essex Board. Examples of this work include a Planning & Transport Strategy for the Thames Gateway South Essex area, a series of Strategic

Housing Market Assessments, Strategic Flood Risk Assessments, and, more recently, an Economic Development Needs Assessment.

Furthermore, Planning Portfolio Holders / Cabinet Members acknowledged in 2016 that a strategic planning framework of some kind was necessary for the area in order to assist with the preparation of individual local plans and demonstrate that the "duty to co-operate" was being effectively discharged. A Memorandum of Understanding for Strategic Planning in South Essex was subsequently agreed in early 2017.

South Essex 2050
The intention has been to formulate a joint "place-based" vision, together with the growth and strategies necessary to support this, the infrastructure required in the area, and how local authorities might work together to deliver these aspirations.

Consequently, following extensive discussion and by joint working, the Leaders and Chief Executives have agreed on eight industrial and infrastructure strategic priorities for the area:

- Place leadership, proposition and brand
- Opening up spaces for development (green infrastructure, housing and commercial)
- Transforming transport connectivity
- Supporting the seven sectors of industrial opportunity: Advanced manufacturing; Construction; Environmental technologies and energy; Digital and creative services; Finance and business services; Life sciences and healthcare; and Transport and logistics
- Shaping local labour and skills markets
- Creating a fully digitally-enabled place
- Securing a sustainable energy supply
- Enhancing health and social care through co-ordinated planning.

Thames Gateway South Essex (TGSE) stretches along the north bank of the Thames, running to the eastern fringes of London. As part of the Thames Gateway, it is an established national priority area for growth and, in Lord Heseltine's words, "crucial to UK competitiveness". The TGSE area has the capability to add at least £2.4b to the UK economy each year.

Stretching from Purfleet and Thurrock, in the west, to Rochford and Southend-on-Sea in the east, the TGSE is home to more than 650,000 people, 54,000 businesses and a workforce of over 200,000.

Thanks to its location, the area is crucial to the UK for both national and international trade. The TGSE area has excellent road and rail links to the capital and the rest of the south east and other UK markets. Port and airport connections to Europe and beyond are strategically key – and constantly improving. The London Gateway port and logistics park and the massive redevelopment of London Southend Airport are just the most recent and high-profile developments.

Thousands of new jobs are being created in the area, along with high-quality new homes and leisure facilities for the local communities.

Opportunity South Essex
South Essex is one of three development areas which make up the Thames Gateway, the others being East London and Thames Gateway North Kent. South Essex presents a significant opportunity for transformational growth. While much has been achieved in recent years, for example the opening of the port of DP World London Gateway, the development of London Southend Airport and the expansion of the Port of Tilbury, South Essex has the potential to deliver a further 66,600 jobs and 46,850 homes in the years to 2031.

Responding to this challenge, the private sector led Opportunity South Essex (OSE) has produced an Economic Growth Strategy which identifies the roles that the partnership and individual partners will play. The implementation of the Fairglen Interchange Improvements will support these objectives with the provision of improved access to employment and education.

Five priorities for intervention have been identified and for each of these priorities there is a strong pipeline of investment propositions:-
Priority 1: Driving Growth – Securing resources for priority projects and supporting business growth with a strong integrated offer
Priority 2: Outstanding connectivity – Improving connectivity locally, nationally and internationally
Priority 3: Quality of Place – Creating places and spaces that improve lives and secure investment
Priority 4: Skills for Growth – Developing, attracting and retaining talent
Priority 5: Housing – Stimulating and reshaping the housing market.

South Essex
Over the period from 2014 to 2037, the following table shows the projected change in population and households across South Essex, based on the latest 2014-based projections. Household growth is converted to dwellings using 2011 Census vacancy rates, for consistency with the Strategic Housing Market Assessment (SHMA).

Table 4: 2014-based Population and Household Projections 2014 – 2037

	Change 2014 – 2037				Average per year	
	Population	%	Households	%	Net migration	Dwellings
Basildon	34,197	18.9%	17,396	23.0%	588	770
Castle Point	9,723	10.9%	5,561	15.0%	669	250
Rochford	10,464	12.3%	5,740	16.7%	475	256
Southend-on-Sea	33,359	18.7%	19,151	24.9%	980	876
Thurrock	41,062	25.1%	19,502	30.2%	574	869
South Essex	**128,805**	**18.5%**	**67,350**	**23.4%**	**3,286**	**3,021**

Source: DCLG; ONS; Edge Analytics

The 2014-based projections suggest that the population of South Essex will increase by circa 19% over the period from 2014 to 2037, with around 128,800 additional residents projected to live in the area. This projected growth exceeds the national rate (17%) projected for England over the same period.

Based on the latest 2014-based household formation rates ('headship rates') applied within this dataset, a need for 3,021 additional dwellings will be generated annually under this 'starting point' projection, when allowing for vacancy and second home ownership. The projected 23% increase in the number of households in South Essex again slightly exceeds the 22% growth projected nationally over the period.

Table 5: Implied Annual Housing Need 2014 – 2037 (Source: Edge Analytics)

	Basildon	Castle Point	Rochford	Southend -on-Sea	Thurrock	South Essex
SNPP London	721	296	284	895	874	3,070
2014 SNPP	**770**	**250**	**256**	**876**	**869**	**3,021**

Key:
Strategic housing market assessment (SHMA)

Sub-national population projections (SNPP)
Sub-national household projections (SNHP)

The following table summarises the current and projected future population under these scenarios.

Table 6: Projected Change in Population 2014 – 2037 (Source: ONS; Edge Analytics)

	2014	Adjusted Demographic Projection		Supporting Likely Job Growth	
		2037	Change	2037	Change
Basildon	180,521	214,718	34,197	220,286	39,765
Castle Point	88,907	98,630	9,723	96,964	8,057
Rochford	84,776	95,240	10,464	98,532	13,756
Southend-on-Sea	177,931	211,290	33,359	212,614	34,683
Thurrock	163,270	204,332	41,062	228,217	64,947
South Essex	**695,405**	**824,210**	**128,805**	**856,613**	**161,208**

2.4. Need for intervention:

Future situation
The Fairglen interchange project is identified by the SELEP SEP as a scheme within the wider Thames Gateway and A127 corridor, including, amongst others, an A127 route management strategy.

The interchange will become even more strategically important for north-south movement as a result of the construction and opening of the planned Lower Thames Crossing. There are also other major transport schemes planned in the wider area, including:

- A13 upgrading
- A127 potential new Pound Lane / Cranfield Park Road junction
- Crossrail at Shenfield
- Widening of the A12 (Highways England RIS)
- Expansion of London Southend Airport
- Basildon Town Centre regeneration.

The potential impact of the Lower Thames Crossing on the Fairglen Interchange has been modelled by Highways England. The current modelling results suggest that the Lower Thames Crossing would lead to an increase in trips passing through the Fairglen Interchange of approximately 100 to 200 additional vehicles per hour in the peak hours in each direction.

For the overall Fairglen Interchange Improvement Scheme, a Strategic Outline Business Case was developed and published in February 2017 (See Appendix H).

Forecast year scenarios have been developed to assess the likely future situation, with and without intervention. This considers the opening year and design year (15 years from opening year) for 'do minimum' and 'do something' scenarios. A 'do nothing' scenario has also been considered. In this scenario, it is predicted that, by 2021, there will be queuing of over 500 vehicles on the A130S at Rayleigh Spur in both the AM and PM peak. At Fairglen, in the AM, there will be a queue of over 100 vehicles on the A1245N and over 45 vehicles on the A1245S. In the PM, there will be a queue of over 45 vehicles on the A1245S and over 200 vehicles on the A127 eastbound off-slip. By 2036, these queues are predicted to increase, along with queuing on additional arms.

In reality, these queues are unlikely to fully materialise, because the congestion will be so severe that many will be deterred from using this route at these times. It does indicate, however, that, without improvement at Fairglen, it is likely that traffic will travel at an alternative time, creating additional congestion outside the peak hours, or it will find alternative routes, creating congestion elsewhere in South Essex that would potentially have negative environmental impacts in more built-up adjacent areas.

Following new traffic survey data becoming available, as well as an update to the strategic Lower Thames Area Model (LTAM), the traffic forecasting process has been reviewed and updated. (See Appendix K2). The results from the modelling are discussed in detail in the OAR (Appendices K3 & K4).

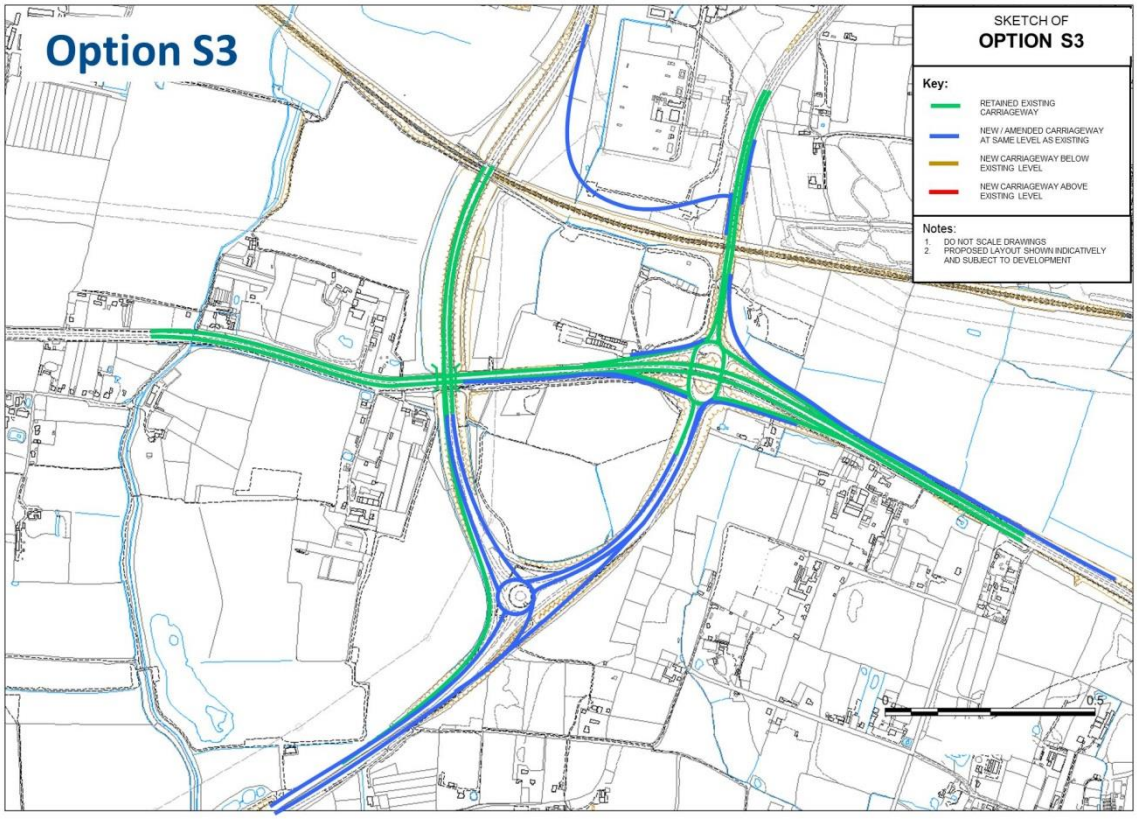

Figure 14: Preferred scheme (Option S3)

The preferred option is shown in Figure 14 above. Analysis suggests that Option S3 is likely to operate well in both the core and low growth scenarios. Option S3 is preferred due to its ability to accommodate higher levels of growth in South Essex.

A joint case on the importance of the A127 corridor to growth and financial wellbeing in south Essex was presented in March 2014 in a paper co-authored by ECC and Southend Borough Council (SBC) – see reference above. This paper acknowledged that the scheme is a priority in the period to 2020.

The importance of the A127 corridor and the Priority Route 1 network in the economic growth of south Essex is also discussed in the ECC Key Corporate Outcomes Framework 2014-2018, and the ECC Vision for Essex 2013-2017. This suggests that the scheme is critical to both short and long term economic prospects for the area.

The current local transport plan (LTP3) acknowledges that there is forecast to be substantial housing and job growth in the corridor (approximately 24,150 homes and 25,600 jobs identified in the emerging local plans for Castle Point, Basildon, Rochford, and Southend). Of particular note is the expansion of Southend Airport (increasing passenger numbers from 1.1 million per year to a

capacity of 2 million passengers per year), and the neighbouring Southend and Rochford Joint Area Action Plan (JAAP) for the Saxon Business Park, which will increase travel demand in the A127 corridor.

The importance of the scheme is reflected in the support currently pledged by SELEP – financial support of £15 million Local Growth Funding for the overall scheme has been ear-marked. This particular funding request is being submitted to SELEP for the additional £9.8 million to cover the cost of the link road and slip road as shown in Figure 14 above.

The function of the Fairglen interchange can be considered in national, regional, and local contexts. The A127 and A130 provide connections to national infrastructure, including London Stansted and London Southend Airports, the M25 and A12. Regionally, the A127 and A130 connect urban settlements including: Basildon, Chelmsford, Rayleigh, Southend and Grays (via the A13). Locally, traffic travelling between Basildon, Rayleigh, South Benfleet and Wickford can use the Fairglen interchange. A summary of the functions is shown in Figure 15 below. These functions result in a significant volume of traffic using the interchange.

National	• Provides part of the strategic connection to Stansted and Southend Airports. • Connects to Highways England's Strategic Trunk Road Network between London, the South East and the East of England (M25 and A12).
Regional	• Links the major regional centres along the route. • Provides for the distribution of goods and services. • Provides access to holiday destinations within the region.
Local	• Provides a route for connecting local settlements. • Used by commuters on a daily basis.

Figure 15: Functions of the Fairglen Interchange

A127 Corridor

The A127 corridor has a prosperous economy and its economic importance is acknowledged by SELEP. Basildon is home to one of the largest single concentrations of advanced manufacturing in the south of England, making a significant contribution to the prosperity of the area. In the future, significant growth is planned along the A127 corridor.

Southend Airport has scheduled air services to destinations throughout Europe, and the neighbouring business park is attractive to global companies. Additional traffic growth in the region will result from the expansion of airport capacity. Phase 2 of the terminal development at Southend Airport is forecast to accommodate 2 million passengers per year by 2020, which is an increase of 900,000 passengers compared to the 1.1 million passengers per year using the airport in 2017.

Improvements to the corridor are therefore important to maintain economic investment, and support the growth in new and existing economic centres, including Basildon and Southend Airport.

Businesses and communities are impacted by delays to vehicles using the local road network, resulting in additional costs arising from congestion. Heavily congested, delays impede the movement of local traffic across the Thames Gateway, and increase pressure on the surrounding road network, particularly the M25, A13 and A130. The scheme aims to address several issues at the local and regional level, including increased business efficiency through more reliable journey time, and to facilitate economic growth through new housing and job creation along the corridor.

The A127 corridor makes a substantial contribution to the SELEP area and offers considerable growth prospects. The success of the region attracts a large demand for new homes and jobs, which would generate traffic that would use the Fairglen Interchange. The level of growth forecast by 2031 in the emerging local plans of Castle Point, Basildon, Rochford, and Southend is approximately 26,000 homes and 25,400 jobs. Increasing road capacity in this corridor has been identified in the SEP as critical to the facilitation of the creation of jobs and homes in this area.

Age profile of residents

Annual mid-year population estimates for mid-2014 were published by the Office for National Statistics (ONS) in June 2015. The population estimates in the local authorities surrounding the Fairglen Interchange are shown in Table 7. This shows that the percentage of people at working age (16 to 64 years old) is equal to or less than the UK average.

Table 7: Age distribution in the local authorities in the vicinity of the Fairglen Interchange

	Age 0-15 years (%)	Working age 16 to 64 (%)	Age 65+ (%)
Basildon	20%	63%	17%
Castle Point	17%	59%	24%
Rochford	17%	60%	22%
Southend-on-Sea	19%	62%	19%
Thurrock	22%	64%	14%
Essex	19%	61%	20%
UK	19%	64%	18%

Car ownership of residents

Car ownership data (2011 Census) has also been analysed. This shows that between 14% and 28% of households in Basildon, Castle Point, Rochford, Southend-on-Sea, and Thurrock have no car or van. Therefore, over 70% of households do have access to at least one car or van, which suggests that car usage is high in the area.

Travel to work commuting

The commuting patterns for all modes of transport show that the towns in the A13, A130 and A127 corridors are both the origin and destination of commuting journeys, indicating that there is a significant amount of travel internal to South Essex on these roads. Unsurprisingly, given the proximity to London, this is also a key destination for commuters, although the majority of these people choose to travel by train.

Below is a summary table of the transport problems and challenges:

Table 8: Summary of existing and future transport problems and challenges

Problem/ challenge	Current	Future
Journey time reliability	Poor journey time reliability through the interchange adversely affects businesses.	If not addressed, poor journey time reliability will adversely affect ECC's ability to deliver increased connectivity and journey time reliability on their priority route network.

Problem/ challenge	Current	Future
Network capacity	Interchange suffers from a lack of capacity during peak periods. Conflicting movements at the Fairglen Roundabout cause congestion in peak periods. Peak spreading occurs at the interchange, whereby flows build up early in the AM period and continue beyond traditional peak times.	A number of schemes elsewhere in Essex, under construction, or in development, are likely to increase traffic through the Fairglen Interchange. Growth from emerging developments will increase demand for movement through the junction.
Alternatives to the car	Private car is the key mode of travel for most trips due to the lack of current alternative modes available. Cycling is becoming more popular in Essex, but there are missing links currently in the cycle infrastructure at Fairglen, which will affect its potential future growth in the area. A lack of pedestrian provision at the Fairglen Interchange.	Essex LTP3 states that ECC must "actively manage car, freight and passenger transport traffic through integrated transport management and information systems to improve network resilience and provide alternatives to the car." Direct NMU routes will need to be provided between new developments in the vicinity of the Fairglen Interchange. Potential contiguous strategic cycle routes between key settlements in South Essex should not be frustrated. Pedestrian and cycling improvements will only be addressed with the introduction of the full scheme.
Road accidents	A high proportion of rear end collisions have occurred at the Fairglen Roundabout, on approaches and slip roads, potentially due to poor lane discipline, side swipe collisions and collisions in darkness. Evidence of vehicular collisions at Rayleigh Spur caused by loss of control, or, possibly, caused by poor visual alignment on approaches.	Higher vehicle-kilometres are likely to lead to a higher number of collisions.
Ageing infrastructure	Bridge Structures - pier & abutment concrete defects are generally limited to concrete surface degradation, but there may be more significant issues which have not yet been revealed by current inspections. Drainage – the Fairglen Roundabout, being located in a hollow, does not help with aiding drainage. Land drainage from the south-east entering the highway drainage is still an issue.	Bridge Structures – the load carrying capacity and safety of operation of the Fairglen bridges will be diminished, unless remedial works and further preventative measures are addressed. Drainage will continue to be a problem.
New infrastructure and accesses for planned developments		New development sites in the vicinity of the interchange will require adequate access. Additional traffic resulting from the emerging Local Plan sites will need to be managed effectively.

A127 Enterprise Parks Corridor – Within Basildon Borough, there are over 8,000 businesses, including multi-national companies such as Ford Motor Company, Selex Galileo, First Data, MK Electric, Case New Holland and IFDS located within the A127 Enterprise Corridor. Together, these businesses provide over 35,000 jobs. The *Basildon Economic Growth Strategy* envisages that, in

the future, the role of this corridor will not only be retained, but will grow, with the aim of attracting new investors to the corridor.

Basildon Town Centre – A masterplan has been prepared for the regeneration of Basildon town centre to enhance its role as a regional centre. The masterplan envisages 65,300sq.m of commercial leisure and comparison floorspace, and a new 2,000 student college campus, a new town market and additional residential development. This will be supported by enhanced public transport connections and integration. Elements of the masterplan have already been delivered, with the remaining delivery expected to occur within the next few years.

Developments in Basildon, Benfleet, Rayleigh, Wickford
The following large developments situated in the area surrounding the Fairglen Interchange which will have an effect on the operation of the interchange are:-

In the proposed Basildon Local Plan, New B-class employment proposals will be supported in the following locations:

- 12ha to 16ha of land to the west of Gardiners Lane South
- 3.5ha of land at Terminus Drive, Pitsea
- 5.5ha of land to the south west of A127 Dunton Interchange
- 5.5ha of land to the east of Burnt Mills
- The delivery of 440 homes at Dunton Fields – under development.

Also,

- Basildon are seeking to deliver up to 14,600 sq.m net additional comparison goods floorspace and up to 4,300 sq.m net additional convenience good floorspace by 2021, and a further 57,600 sq.m and 1,600 sq.m net floorspace respectively by the end of the plan period (2034).
- In addition to new retail provision, the Council will seek to deliver up to 5,500 sq.m gross additional food and drink (A3, A4 and A5) floorspace by 2021, and a further 11,100 sq.m gross floorspace by the end of the plan period.

Significant Projects in South Essex
There are a number of significant projects elsewhere in South Essex that will influence traffic flows. Some of these projects will create new jobs, and will therefore create new commuting patterns, opportunities in new spin-off industries and new skill requirements. Others will create new shopping and leisure opportunities for residents that will need to be addressed, in order that the town centres continue to grow and thrive to serve local people.

London Gateway (DP World) – UK's newest deep-sea container port combined with Europe's largest logistics park, on the northern bank of Thames in Thurrock. Once complete, it is expected that London Gateway will have created 12,000 direct jobs and over 20,000 indirect jobs.

Southend Airport – Over the past two years, the runway at Southend Airport has been extended, a new train station has been opened and the airport has commenced operation of commercial flights to a number of destinations across Europe, including regional flights to Dublin that enable onward connection to destinations in the USA. The London Southend Airport and Environs Joint Area Action Plan (2014) anticipates that the airport will be dealing with 2 million passengers a year by 2020, and that the surrounding area will be developed for airport related businesses creating around 6,000 jobs.

Southend Central Area – An 'Area Action Plan' has been prepared for the Southend Central Area, comprising Southend town centre and the seafront central area. In accordance with the Core Strategy, the area action plan seeks to regenerate and transform the existing town centre, as a fully competitive sub-regional centre, led by the development of the University Campus. Substantial progress has been made in delivering key sites within Southend town centre to achieve this ambition. The regeneration of Southend provides opportunities in relation to improving access to Higher Education.

Lakeside Basin – The Thurrock Core Strategy (2011) provided plans for the future of the Lakeside Basin, including the industrial parks, retail parks and shopping centre. It is proposed that transformation will bring up to 9,000 new jobs, primarily through the substantial expansion of retail floorspace (50,000sq.m net comparison floorspace) to serve sub-regional needs, and additional convenience, service retail, office and leisure floorspace to broaden the mix of uses.

The Lower Thames Crossing – Work is progressing on the development of the Lower Thames Crossing which will provide an alternative route to the existing crossing at Dartford. This will have the potential to improve accessibility, in particular, for connections of the Basildon Enterprise Corridor to the strategic road network. This therefore presents economic opportunities, but will need to be managed carefully in order to ensure it does not have negative consequences for the local highway network and / or land values.

Road, Rail and Air
The area's strategic road and rail network is heavily used, particularly, given the proximity to, and connectivity with, London. The principal roads are the A12 and A13, while the A127 and A130 also form important parts of the Strategic Road Network (SRN) and will form part of the new Major Road Network (MRN).

The growing demand for the use of airports, including London Stansted and London Southend, will create additional associated pressures on road and rail infrastructure. The County Council, along with local and national agencies and other organisations, is working collaboratively with the Local Planning Authorities to ensure infrastructure meets demand for enhanced economic growth.

All of the above demonstrates the need for intervention to improve the situation.

Public Engagement and Consultation

Previous engagement
In February 2017, information was published about the plans to improve the A127 / A130 Fairglen Interchange, and provided opportunities for people to find out more about the project and give their feedback.

Public Consultation
In February / March 2018, the consultation was opened to the public.

The Consultation Brochure (see Appendix K1) provided information on:

- Who uses the Fairglen Interchange and how?
- What are the problems and the scheme objectives?
- Effects on traffic movement, journey times and congestion
- Economic benefits of the scheme, including the benefit cost ratio
- Environmental assessment of the impacts of the proposed scheme
- Future-proofing and the need for a long-term solution
- The public consultation process, and what will happen next.

Figure 16: Public Consultation Brochure on A127 / A130 Fairglen Interchange Improvement Scheme

2.5. Sources of funding:

As stated above, the overall improvement scheme is a DfT retained scheme that is estimated to cost a total of £29.3m. DfT funding, through SELEP will provide £15m, and ECC has already included provision to fund £3.6m towards the cost of the Link and Slip Roads as well as a substantial contribution to the full scheme. No S106 monies are available.

The success of the overall Fairglen Interchange Improvement Scheme is highly dependent on the provision of the new link road and slip road. Given the size of the total project, if funding for this package is not secured, it would not be possible for ECC to fund all of the works without support. It would not be possible to deliver individual elements as all are needed to deliver a step change in the efficiency of the junction. Individual feature improvements, on their own, would simply not have the same level of impact.

2.6. Impact of non-intervention (do nothing):

Impact of not changing
Fairglen Interchange already experiences congestion during peak periods. This is because the roundabouts are operating at, or over, capacity. The A127 carriageway and adjoining slip-roads also experience congestion, because the flows are higher than the flows that the carriageway and slip-roads were designed for. This is particularly true of the eastbound on-slip. Due to the existing problems, any further traffic growth, without any improvements, or mitigation measures, will lead to further congestion, increased journey times (and reduced journey time reliability for businesses) and increased queuing.

In a 'do nothing' scenario, it is predicted that, by 2021, there will be queuing of over 500 vehicles on the A130S at Rayleigh Spur in both the AM and PM peak. At Fairglen, in the AM, there will be a queue of over 100 vehicles on the A1245N and over 45 vehicles on the A1245S. In the PM, there will be a queue of over 45 vehicles on the A1245S and over 200 vehicles on the A127 eastbound off-slip.

In reality, these queues are unlikely to fully materialise, because the congestion will be so severe that many will be deterred from using this route at these times. It does indicate, however, that, without improvement at Fairglen, it is likely that traffic will travel at an alternative time, creating additional congestion outside the peak hours, or it will find alternative routes, creating congestion elsewhere in South Essex that would potentially have negative environmental impacts in more built-up adjacent areas.

As described above, doing nothing is not an option, because all of the transport modelling indicates that, with the steady progression of developments in the local area, the junction will be seriously constrained as demand continues to increase.

2.7. Objectives of intervention:

	Problems / Opportunities identified in Need for Intervention section						
	Congestion	**Connectivity**	**Employment**	**Environment**	**Sustainability**	**Safety**	**Resilience**
Objective 1	✓✓✓	✓✓✓	✓✓✓			✓✓	✓✓✓
Objective 2	✓✓✓	✓✓✓	✓✓✓				✓✓✓
Objective 3	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	
Objective 4				✓✓			
Objective 5	✓✓	✓✓		✓✓	✓✓	✓✓	
Objective 6	✓✓	✓✓✓				✓✓	
Objective 7	✓✓✓	✓✓✓				✓✓	✓✓✓
Objective 8							✓✓
Objective 9	✓✓	✓✓		✓✓		✓✓	✓✓

Objectives

The scheme objectives relate to the problems and opportunities and issues raised at stakeholder workshops held as part of the options development, including:

- Connectivity

  Objective 1 - Accommodate / manage future travel demands to facilitate proposed growth in south Essex

  Objective 2 - Ensure good connectivity to South Essex via key transport corridors

- Environment

  Objective 3 - Improve opportunities for residents and employees in south Essex to access alternative modes and encourage their use

  Objective 4 - Protect and enhance the natural, built and historic environment

- Sustainability

  Objective 5 - Improve connectivity for non-motorised users through Fairglen / A130 Interchange

- Safety

  Objective 6 - Improve safety at Fairglen / A130 Interchange through appropriate geometric design, signage, speed limits and visibility

- Resilience

  Objective 7 - Manage congestion at peak times to ensure reliable journey times through the Fairglen / A130 Interchange

  Objective 8 - Ensure ECC assets are appropriate for future highway network

Objective 9 - Keep Fairglen / A130 Interchange operational through improved maintenance provision and incident management.

2.8. Constraints (see also Appendix G for Powers & Consents):

Although initial positive discussions have already taken place between Essex and the respective landowners, until such time as the contracts have been finally agreed and signed, there will be an on-going risk to the scheme. However, UKPN, in particular, have indicated their consent to transfer ownership of the land around the sub-station.

Additionally, final topographical investigations will be required to confirm the condition of the land over which the road will pass and the level of banking required as it circumvents UKPN's Rayleigh Main Sub-station.

The functioning of the new link road would not work without the addition of the new slip road, as traffic would be channelled onto the A1245 and would then still end up negotiating Fairglen Roundabout to access the A127 eastbound.

The performance of the overall scheme would not be as effective without the new link road and slip road. However, until such time as the overall scheme receives DfT approval, there has to be a risk on the likelihood of the total scheme progressing.

2.9. Scheme dependencies (see Appendix B5):

The introduction of the new link road and slip road will have a significant impact on congestion at the interchange, because it will remove all traffic, heading southbound down the A130 that wishes to go to Southend, from negotiating the Fairglen roundabout. This will have a knock-on effect on the efficiency of the interchange for all other travel movements.

However, the full benefits will not be felt until all aspects of the Interchange Improvement Scheme have been delivered.

2.10. Expected benefits:

See Developments in Basildon, Benfleet, Rayleigh and Wickford listed above in Section 2.4.

2.11. Key risks:

For the Risk Management Strategy, see Appendix B1, for Key Risks Appendix B2, for the latest Risk Register for the overall scheme Appendix B3 and for the QRA Appendix B4.

Type	Description	Respons-ibility	Mitigation / Proposed Resolution	Prob-ability	Impact
Design	Design and construction scope changes	Essex Highways / ECC	Clear communication and early confirmation of scope	Low	Medium
Utilities	Discovery of undetected utilities during construction	Essex Highways	Undertake early surveys with trial holes	Medium	Medium
Ground Conditions	Unforseen soft spots and voids requiring redesign	Essex Highways	Undertake early surveys with trial holes	Low	Medium
Traffic Management	Potentially complex and costly with approvals required	Essex Highways	Consult early and work closely with Network Management	Low	Medium
Tender Prices	Tender prices at variance with estimates and client budget	Essex Highways	Obtain early estimates, compare with other recent information and work with suppliers	Low	Medium
Costs	Construction costs escalation	Essex Highways	Monitor regularly and develop alternative actions as necessary	Low	Medium
Stats Costs	C3 Prices at variance with estimates	Essex Highways	Timely requests, utility mapping and trial holes	Low	Medium
Approvals	Time consuming processes with legal and cost implications	Essex Highways	Commence approval process early	Low	Low
Weather	Adverse conditions could jeopardize programme timing	Essex Highways	Plan programme taking account of likely weather conditions and provide programme float	Low	Low
Project	Lack of capacity to deliver the programme in full	ECC	Ensure resources are allocated and identify potential contingency support	Medium	Medium

3. ECONOMIC CASE

3.1. Options assessment:

Option generation
An Options Workshop was held in July 2015, with approximately 20 stakeholders identified by ECC. The aim was to table the evidence of current and future transport related problems at the Fairglen Interchange, and work with the stakeholders to identify as many potential improvement options for the Interchange as possible, across all modes. This generated 32 potential options to improve the Fairglen Interchange.

An additional three options were generated following the workshop. Two of the three options were developed by Essex Highways as combination schemes comprised of constituent parts drawn from the workshop options. The last option was put forward by a member of the public. This gave a total of 35 options for consideration.

Initial sifting and early assessment
The 35 options were reviewed as part of the OAR to sift out the options that did not contribute significantly to the identified challenges (overarching problems) and objectives of the appraisal study. In addition, it identified those options that potentially faced significant challenges in terms of deliverability, feasibility and affordability and which justified not taking those options any further in their present format.

At the end of this process, 13 options remained. These options were analysed to determine, at a very initial stage, the impact the proposed schemes would have on traffic flows at the junction. No analysis was carried out to determine what impact any of the schemes would have on trip generation or route choice, but additional trips were included based upon broad assumptions related to predicted traffic growth from proposed developments.

Eight options emerged from this process and were assessed as likely to be deliverable, feasible and affordable, whilst also contributing positively to many of the challenges and objectives of the study.

Options for further development and assessment
These options were then subjected to further analysis including traffic modelling and initial engineering design which led to further scheme refinement. In some cases, it revealed challenges that justified discarding the schemes. The process also revealed options that were not previously considered and these were subsequently included in the analysis.

The options were then classified as short and long term. The short term options were those that could accommodate lower levels of traffic growth (compared with the longer term options), and had a higher prospect of delivery due to the greater likelihood of funding, and could also be constructed within the next 5-10 years. The long term options were those that were able to accommodate future year flows under a higher growth scenario, but which would require significant additional funding in order to achieve delivery.

Preferred options
At this stage, only short term options were considered. The assessment work undertaken, as part of the OAR, identified two short term options for further consideration: S1 and S3.

Features of the option S1 scheme included:

- Fairglen Roundabout
  - A127 EB has a 2 lane off-slip which widens to 4 lanes, for a length of 100 metres, on approach to the stop line
  - A1245 SB has two full lanes, which widens to 4 lanes, for a length of 100 metres, three of the lanes enter the roundabout at a give-way line and the fourth forms a left-slip which merges with the eastbound A127 on-slip

  - EB on-slip widened to 2 lanes with a staggered merge
  - WB off-slip widened to 3 lanes
  - WB on-slip widened to 2 lanes with a staggered merge, left-slip rebuilt to make room for widened on-slip
  - Extended auxiliary lanes on both on-slips
- Rayleigh Spur
  - Circulatory carriageway enlarged
  - Traffic signals on A130 arms
  - A130 SB widened to 5 lanes on approach to the stop line
  - Bypass from A130 to A1245 removed
  - Bypass from A130 to A130 retained
  - Bypass from A1245 to A130 rebuilt
- A1245
  - A1245 NB widened to 4 lanes from Rayleigh Spur to connect in with the left-slip at Fairglen roundabout.
  - A1245 SB between Fairglen roundabout and Rayleigh Spur widened to 3 lanes

Features of the option S3 scheme included:

- As option S1 plus
  - Southbound A130 traffic heading to A127E redirected via A1245N
- Re-signing
  - Option A: redirect traffic from A130N to A127E onto A1245 at Rettendon Turnpike
  - Option B: construct new link road from A130N to A1245 to the north of the railway line

Re-signing was considered and discarded as an isolated scheme in the OAR. However, it was also noted in the OAR that it may be useful in combination with junction improvements. These two options were considered against the project objectives to understand their performance in terms of strategic fit. This assessment is shown in Table 9 below and demonstrates that option S3 performed better than option S1.

Table 9: Assessment of options against project objectives

Objective	Option S1	Option S3
Accommodate / manage future travel demands to facilitate proposed growth in south Essex	0	1
Ensure good connectivity to South Essex via key transport corridors	1	2
Improve opportunities for residents and employees in south Essex to access alternative modes and encourage their use	0	0
Protect and enhance the natural, built and historic environment	-1	-1
Improve connectivity for non-motorised users through Fairglen / A130 Interchange	-1	0
Improve safety at Fairglen / A130 Interchange through appropriate geometric design, signage, speed limits and visibility	0	0
Manage congestion at peak times to ensure reliable journey times through Fairglen / A130 Interchange	1	1
Ensure ECC assets are appropriate for future highway network	0	1
Keep Fairglen / A130 Interchange operational through improved maintenance provision and incident management	1	1
Score	1	5

Options assessment:

See above.

Short list of options:

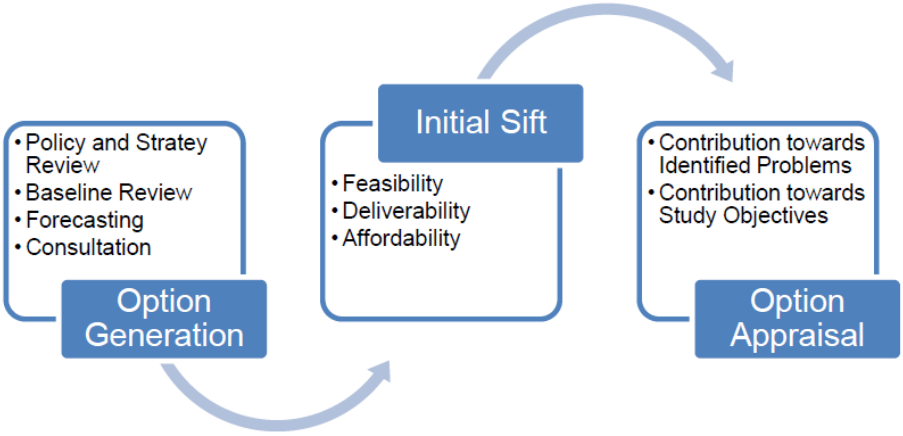

Figure 17: Overview of Option Assessment Approach

Option Generation
The purpose of the option generation process was to develop a range of measures or interventions that would have the potential to achieve the objectives identified above. The initial set of transport improvement options were developed through a high level review, informed by the following sources and approaches:

- Relevant policy and strategy documents
- Recent studies
- Individual studies
- Consultation and engagement exercises.

The initially identified options were selected to support strategic issues, and also concerns of a more localised nature, tackling areas and facilities that could be enhanced and developed in order to improve connectivity, reduce congestion and enhance accessibility for all modes.

The options that emerged from the studies included a range of schemes aimed at resolving the identified network and safety issues. The options were grouped by type and each assigned a unique code for reference.

3.2. Preferred option:

The preferred option is shown in Figure 14 in Section 2.4 above.

3.3. Assessment approach: (See Note on Economic Appraisal - Appendix L and below)

As the Link and Slip roads are intrinsic to the main scheme, and will be constructed at the same time, it is not appropriate to model and undertake economic appraisal of these two elements separately from that of the main scheme. The economic case for the overall scheme is thus summarised for this submission.

The scheme is modelled with Vissim (Local Model Validation Report and Traffic Forecasting Report attached as Appendices M3 and K2, respectively) with journey times and flows extracted and run in TUBA. Appraisal of the overall scheme is still ongoing, subject to DfT scrutiny, commensurate to the scheme at the end of Stage 2. Recently, modelling has been revised following feedback from the DfT on the specific methodology to incorporate the impact of the Lower Thames Crossing. Although the DfT still needs to respond formally, agreement has been reached and a revised Forecast Report has been submitted (Appendix K2). In view of the slight uncertainty, only BCR and NPV for a no-growth scenario are presented here. An Economic Appraisal Report for the full scheme will be completed Spring 2019, at which time annualisation will also be revised, although it

is unlikely to make a significant difference from the previous economic appraisal. The results presented here are based on low annualisation assumptions.

3.4. Economic appraisal inputs: (See note on Economic Appraisal – Appendix L)

- Journey times and flows from validated Vissim model
- 1.25 hrs AM Peak, 2 hrs PM peak and 1 hr IP assumed
- Only highway user benefits were considered
- Highway user benefits assessed from TUBA with defaults applied
- Cost estimates (inflated and factored to 2021 and discounted to 2010) included Construction, Land, Preparations, Supervision and Operating and Maintenance Cost. Sunk costs were excluded. 15% Optimism Bias was allowed commensurate to a scheme in Stage 2.
- No variable demand modelling has been undertaken as modal shift is not a scheme objective
- The TUBA default profile for maintenance in the DS scenario was applied, with no maintenance for the DM scenario.

3.5. Economic appraisal assumptions and results:

Appraisal Assumptions	Details
WebTAG version	TUBA 1.9.11, based on WebTAG Databook v1.10, May 2018 values, was utilised to undertake the appraisal.
Opening Year, Final Modelled Year and Appraisal Duration	Opening year 2022. An initial 2037 horizon was analysed but a no-growth scenario is presented here as the Forecast Report is still subject to formal approval. Appraisal was over 60 years.
Price Base / GDP Deflator	All prices were inflated and factored to 2021 prices and discounted to 2010 with GDP deflator within TUBA.
Real Growth (i.e. above CPI or below)	Construction costs and risks were inflated from time of estimate to construction using BCIS index.
Discounting	Per WebTAG and Standard TUBA Economics File, discounting at a rate of 3.5% per year for 30 years and 3.0% thereafter.

No Growth Scenario*	£m PV (2010)
Costs	
Capital Costs	20.488
Renewal Costs	0
Operating Costs	1.375
Journey Time Benefits	66.540
Highway Externalities	1.163
Revenue	
Indirect Tax	-2.708
Appraisal	
Present Value of Costs (PVC)	20.488
Present Value of Benefits (PVB)	64.955
Net Present Value (NPV)	44.507
Benefit Cost Ratio (BCR)	3.17

* TUBA files for this scenario will be included in a separate compressed folder.

For the overall programme, the Appraisal Specification Report can be seen at Appendices M1 & M2 and the LMVR at Appendix M3.

3.6. Sensitivity tests:

With the appraisal of the scheme ongoing, formal sensitivity tests have still to be undertaken. A no-growth scenario is presented here with a BCR of 3.17 and NPV of £44.5M. An assessment based on an earlier forecast yielded a BCR of 10.4 and NPV of £193.9M which provides an indication of the upper range of forecasts.

3.7. Environmental impacts:

Environmental Impact	Assessment
Noise	Slight Beneficial
Air Quality	Slight Beneficial
Greenhouse Gases	Slight Beneficial
Landscape	Slight Beneficial
Townscape	Not Applicable
Heritage	Neutral
Biodiversity	Neutral
Water Environment	Neutral

3.8. Social impacts:

Social Impact	Assessment
Accidents	Moderate Beneficial
Physical Activity	Neutral
Security	Neutral
Severance	Neutral
Journey Quality	Moderate Beneficial
Option values and non-use values	Slight Beneficial
Accessibility	Slight Beneficial
Personal Affordability	Slight Beneficial

For a summary of the Social Impacts, see Appendix J1.

3.9. Distributional impacts:

For a summary of the Distributional Impacts, see Appendix J2.

3.10. Wider impacts:

Wider Impacts were not assessed at this stage. Following WebTAG guidance, it is unlikely that the scheme will prove to provide wider economic benefits.

3.11. Value for money:

See Note on Economic Appraisal (Appendix L) for TEE, AMCB and Public Accounts Tables and the Appraisal Summary Table at Appendix N.

A no-growth scenario is presented here with a BCR of 3.17 and NPV of £44.5M. An assessment based on an earlier forecast yielded a BCR of 10.4 and NPV of £193.9M.

4. COMMERCIAL CASE

4.1. Procurement options:

Essex County Council (ECC) are committed to providing best value in the delivery of major highways schemes across the county. ECC has undertaken numerous procurement processes for major schemes.

- Essex Highways will be the delivery partner for the design of the scheme
- The construction will be subject to tender process through the Eastern Highway Alliance (EHA)
- ECC have a good track record of scheme delivery through this process
- Use of the EHA ensures a ready supply chain / contractors.

4.2. Preferred procurement and contracting strategy:

The Eastern Highways Alliance and SMARTe and the Highways Agency Framework have all been used extensively in prior major projects e.g. Sadlers Farm, Army & Navy Improvements, Chelmsford and Roscommon Way, Canvey etc.

Construction will be delivered through the Essex Highways Service Direct Delivery Framework using supply chain partners.

The benefits of procuring the scheme through this route are:-

- early involvement with the contractor
- use of supply chain partners who are familiar with the delivery of complex projects under tight deadlines
- flexibility and opportunity to accelerate the delivery of smaller elements through the 'Walk, Talk and Build' process, thus increasing confidence in project delivery timeframe
- the utilisation of the Framework is endorsed by the ECC procurement team and the ESH Construction Management Group.

4.3. Procurement experience:

Essex Highways / Ringway Jacobs have been responsible for delivering all non-HE highway schemes in Essex since April 2012. All schemes are run to tight budgets and timing constraints and this programme would be managed in the same way.

Since 2014, Essex County Council has delivered, or is in the process of delivering, nearly £140m of transport improvement schemes through SELEP LGF funding.

As a demonstration of prior experience at delivering programmes such as this, the following schemes are operational and were delivered on programme and to budget:

- A414 Maldon to Chelmsford RBS
- Colchester Integrated Transport Package (ITP)
- Colchester LSTF
- Colchester Town Centre
- South-East LSTF
- Colchester Park and Ride
- Basildon ITP (Phase 1)

Under construction:

- A127 Resilience Package
- Mill Yard, Chelmsford
- A414 Harlow Pinch Point Package
- Chelmsford to Braintree RBS

Construction about to commence:
- Basildon ITP (Phase 2)

Approved at the November 2017 Accountability Board:
- Chelmsford to Harlow RBS
- Colchester to Clacton RBS
- M11 J8

Approved at the February 2018 Accountability Board:
- Chelmsford City Growth
- Gilden Way Upgrading

Approved at the June 2018 Accountability Board:
- Braintree to Sudbury RBS

4.4. Competition issues:

The construction will be subject to a tender process through the Eastern Highway Alliance (EHA).

4.5. Human resources issues:

None identified.

4.6. Risks and mitigation:

A comprehensive risk register has been created (see Appendix B3 for the latest status) and will be updated regularly throughout the life of the scheme. As the scheme progresses, risks will be identified, recorded and actively managed. Where appropriate, risk owners will be allocated and tasked with eliminating risks, where possible, or identifying mitigation measures for residual risks. The same ethos will be taken through to the delivery stages of the scheme.

The quantified risk register will be updated as part of the procurement process to collate and cost, as accurately as possibly, construction related risk. This process will inform a more competitive tendering process.

The approach to risk transfer will be such that the management of a particular risk will rest with the party best placed to manage them.

4.7. Maximising social value*:*

During the development of the project, public consultations have been held (as described above) which have allowed all interested parties and stakeholders to share their views on overall developments in the area. This will have ensured that developments were considered against the economic, social and environmental well-being of the residents or persons affected.

5. FINANCIAL CASE

5.1. Total project value and funding sources:

This specific element of the overall Fairglen Interchange Improvement Scheme is estimated to total £9.844m. ECC plans to contribute £3.609m towards the programme, including the costs for the monitoring and evaluation programme. There is £6.235m allocated LGF which this business case is seeking approval for drawdown. As stated earlier, the overall project is a DfT retained scheme, for which £15m has been allocated through LGF towards the overall costs, pending a full business case submission to the DfT in Spring 2019.

Private funding is not available, so that the only other opportunities for funding are through DfT / SELEP and ECC.

5.2. SELEP funding request, including type (LGF, GPF, etc.,):

This bid requests £6.235m of LGF capital funding from SELEP.

5.3. Costs by type (capital and non-capital):

	Expenditure Forecast						
	19/20	19/20	20/21	20/21	Total	Total	Total
Cost type (£m)	**ECC**	**SELEP**	**ECC**	**SELEP**	**ECC**	**SELEP**	**All**
Capital							
Scheme Preparation	0.060	0.136	0.260	0.538	0.320	0.674	**0.994**
Construction	0.035	0.070	1.312	2.260	1.347	2.330	**3.677**
Stats	0.024	0.051	0.516	1.009	0.540	1.060	**1.600**
Land	0.200	0.360			0.200	0.360	**0.560**
Risk	0.010	0.040	0.210	0.330	0.220	0.370	**0.590**
Inflation	0.002	0.008	0.410	0.713	0.412	0.721	**1.133**
Management & Supervision	0.004	0.008	0.449	0.721	0.453	0.729	**1.182**
Monitoring and Evaluation - pre build	0.003				0.003		**0.003**
Revenue							
Transportation Studies ECC Revenue Budget - Monitoring and Evaluation (post build) 2/			0.105		0.105		**0.105**
Total funding requirement	**0.338**	**0.673**	**3.262**	**5.571**	**3.600**	**6.244**	**9.844**

Note 1/: Optimism Bias has not been applied to the costs in the Financial Case
Note 2/: ECC's revenue budgets will be formally approved in February 2020 for 2020/21 Financial Year

The latest cost summary can be found at Appendix P. A full and detailed cost schedule can be provided, if required – an earlier version is included in Appendix K4.

5.4. Quantitative risk assessment (QRA):

The Quantitative Risk Assessment used can be seen at Appendix B4.

5.5. Funding profile:

	Expenditure Forecast			
Funding source (£m)	**18/19**	**19/20**	**20/21**	**Total**
SELEP		0.673	5.562	6.235
ECC Capital		0.338	3.166	3.504
ECC Revenue			0.105	0.105
Total funding requirement		**1.011**	**8.833**	**9.844**

Please note that, whilst recognising the requirement to complete all LGF expenditures by end March 2021, there is scope for a little flexibility within the funding profile.

5.6. Funding commitment:

ECC capital funding of £3.504m has already been included in ECC's aspirational part of the programme (2019/20 and 2020/21). ECC will need to formally approve its funding levels in advance of each of those years. In addition ECC intends to contribute £105,000 in revenue funding in 2020/21, which will be subject to formal approval in February 2020. Section 151 Officer sign-off is included at Appendix A.

5.7. Risk and constraints:

The Quantitative Risk Assessment used can be seen at Appendix B4.

Throughout the development of the scheme, risks will be identified, recorded and actively managed. See Appendix B3 for an example of the latest version available. Where appropriate, risk owners will be allocated and tasked with eliminating risks, where possible, or identifying mitigation measures for residual risks. The same ethos will be taken through to the delivery stages of the scheme.

The quantified risk register will be updated as part of the procurement process to collate and cost, as accurately as possibly, construction related risk. This process will inform a more competitive tendering process. The approach to risk transfer will be such that the management of a particular risk will rest with the party best placed to manage them.

Risk contingency was originally identified in the early stages of the programme, but, as the scheme has progressed through the various design stages, it has now been incorporated into the risk assessment.

Costs will be carefully monitored throughout the scheme and, if any overruns start to emerge, contingency action will be developed. Options may include using alternative materials, programme timing improvements or slight modifications to scheme design.

Risk Management (See Appendix B1)

A proactive risk management procedure is in operation, including a quantified risk assessment approach, which ensures that risks are continuously identified, owners assigned and mitigation measures put in place. Regular reviews check the status of each risk and regulate their control and mitigation. Project procedures also require that, should the likelihood or severity of risks be identified as increasing by this process, responsibility for its mitigation is escalated upwards through the project management chain to ensure that this is achieved.

All risks are currently owned by the partner authorities. As the project develops, it is expected that some of these risks will be transferred to contractors constructing the infrastructure. In addition, Essex County Council uses a proprietary online Risk Register to assess levels of risk and to track the progress of the risk management strategy for the scheme. The §151 Officer also has access to this system. Risks are categorised into five main areas, i.e.:-

- Project and programme risks related to delivery;

- Consultation and stakeholder acceptance;
- Reputational risks to the project partner authorities (and ultimately the contractors and service providers);
- Statutory Processes; and
- Financial and funding risks.

Risk Allocation

ECC will bear all risk for the project as part of its role as Highways Authority.

Further detailed risks are shown as part of the QRAs which can be seen at Appendix B4.

6. MANAGEMENT CASE

6.1. Governance:

The organisation to deliver the scheme is shown in Figure 18 below. The roles and responsibilities of the parties indicated in the figure are described in the following paragraphs.

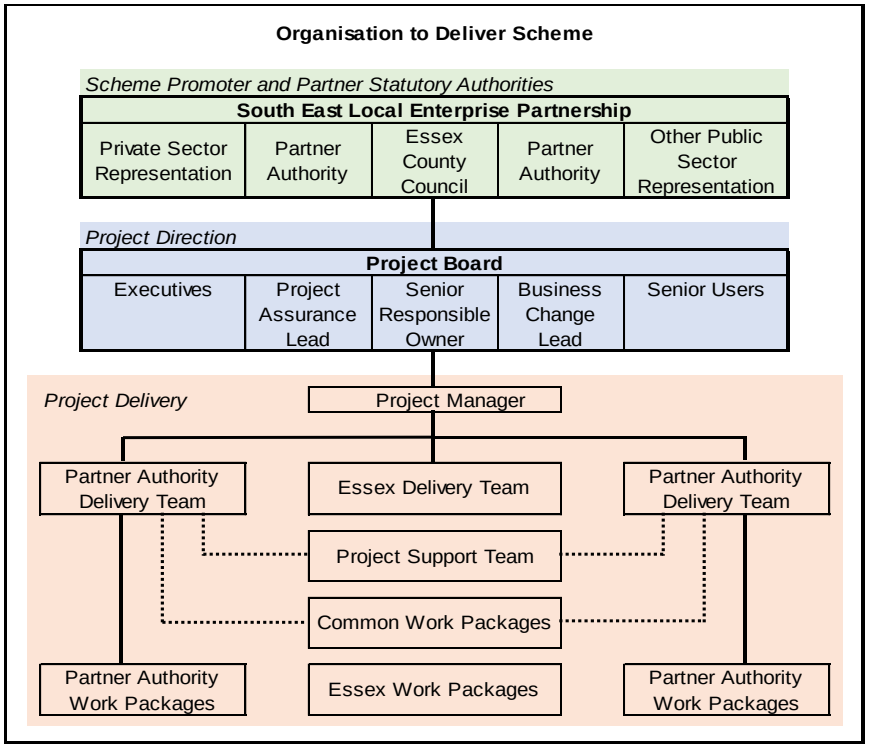

Figure 18: Arrangements for Scheme Delivery

Roles of Key Interested Parties:

South East Local Enterprise Partnership Board (SELEP) – brings together senior officers and transport portfolio holders of the partner statutory authorities promoting the scheme. Essex County Council acts as the lead authority for the scheme and provides the project's Senior Responsible Owner.

The arrangements between the statutory authorities promoting the scheme are in the process of being formalised through a joint working partnership agreement. This sets out the basis for governance of the project and for the financial contributions to be made by each party.

The Project Board – is responsible for the direction and overall management of the scheme. The Project Board is chaired by the Senior Responsible Owner and made up of the Executive and Senior User for each of the partner statutory authorities, the Project Assurance Lead and the Business Change Lead. These roles are defined below. Project Board meetings are normally held every six weeks. The Project Manager reports regularly to the Project Board, keeping members informed of progress and highlighting any issues or concerns.

The responsibilities of the Project Board include:

- Setting the strategic direction of the project;
- Defining the scope and setting the timescales for major project milestones;
- Approving the appointment of the Project Manager;
- Providing the Project Manager with the strategy and decisions required to enable the scheme to proceed to programme and resolve any challenges;

- Securing necessary approvals through the partner statutory authorities;
- Approving the project scope of work, programme and budgets, as well as any subsequent changes;
- Signing off completion of each stage of the project and authorising the start of the next stage; and
- Monitoring project risks and taking any appropriate action to mitigate risks.

Strategic Partnership Board – formed to be responsible for managing the scheme and handling of any issues. Essex Highways will also provide technical support and advice.

Delivery Teams – reporting to the Project Manager, the Delivery Teams (one for each partner statutory authority) are responsible for organising and delivering work packages on the highways under the authority's jurisdiction. The Essex Delivery Team has the additional responsibility for common work packages.

Project Support – this team is responsible for project administration, including document control, project team communications, arranging meetings, updating plans, and chasing up the completion of actions.

Individual Roles:

Senior Responsible Owner (Andrew Cook, Director, Highways & Transportation, ECC) – has ultimate responsibility and delegated authority for ensuring effective delivery of the scheme on time and on budget.

Project Manager (Elliot Smith, Infrastructure Project Manager, ECC) – is the individual responsible for organising, controlling and delivering the scheme. The Project Manager leads and manages the project team, with the authority and responsibility to run the project on a day-today basis. They also will be assigned the task of running and updating the risk register and organising the monitoring of the delivery of the programme objectives.

Executives – represent the group in each partner statutory authority with responsibility for obtaining funding for the scheme (Chris Stevenson, Head of Connected Essex Integrated Transport, ECC) and securing resources to deliver it (Ben Finlayson, Head of Infrastructure Delivery, ECC).

Sponsor – the role of major sponsor is coordinated through the Transportation Strategy and Engagement Group (Alan Lindsay, ECC).

Commissioning Delivery Manager (Gary MacDonnell, Project Manager, Commissioning Delivery, ECC) - The Commissioning Delivery Manager will provide coordinated management of projects associated with change management activities to achieve the aims and objectives associated with external funding requirements.

Senior Users (David Forkin, Senior Manager, Head of Maintenance; Alan Lindsay, Head of Transportation, Planning and Development, ECC) – represent the group who will oversee the future day-to-day operation of the scheme.

Project Assurance Lead (Erwin Deppe, Client Services Director, Ringway Jacobs) – provides an independent view of how the scheme is progressing. Tasks include checking that the project remains viable, in terms of costs and benefits (business assurance), the users' requirements are being met (user assurance), and that the project is delivering a suitable solution (technical assurance).

6.2. Approvals and escalation procedures:

See above

6.3. Contract management:

A Benefits Realisation Plan has been produced (see Appendix S1) and monitoring / evaluation will be undertaken at the appropriate points during scheme development (Appendix S2). Monitoring activities will be aligned to those best placed to do so and to existing regular monitoring and evaluation work. Land-use development related outputs are routinely monitored by planning authorities and this information will be tracked and linked to scheme completion, where appropriate.

6.4. Key stakeholders:

Key Stakeholders	Nature of involvement
Essex County Council	Support for scheme
Basildon Borough Council	Support for scheme
Castle Point Borough Council	Support for scheme
Rochford District Council	Support for scheme

Meetings with the relevant authorities are being held regularly to assess progress and to ensure good communication is maintained with the key stakeholders.

Following the public consultation, wider groups have also been consulted e.g. on the cycleway elements of the full scheme.

6.5. Equality Impact:

See Appendix R.

6.6. Risk management strategy:

A proactive risk management procedure is in operation, including a quantified risk assessment approach, which ensures that risks are continuously identified, owners assigned and mitigation measures put in place. Regular reviews check the status of each risk and regulate their control and mitigation. Project procedures also require that should the likelihood or severity of risks be identified as increasing by this process, responsibility for its mitigation is escalated upwards through the project management chain to ensure that this is achieved.

All risks are currently owned by the partner authorities. As the project develops it is expected that some of these risks will be transferred to contractors constructing the infrastructure. In addition, Essex County Council uses a proprietary online Risk Register to assess levels of risk and to track the progress of the risk management strategy for the scheme. The S151 Officer also has access to this system. Risks are categorised into five main areas, i.e.:-

- Project and programme risks related to delivery;
- Consultation and stakeholder acceptance;
- Reputational risks to the project partner authorities (and ultimately the contractors and service providers);
- Statutory Processes; and
- Financial and funding risks.

6.7. Work programme:

The timing programme will be updated regularly throughout the scheme. See Appendix C for the latest summary.

6.8. Previous project experience:

Essex Highways / Ringway Jacobs have been responsible for delivering all non-HE highway schemes in Essex since April 2012. All schemes are run to tight budgets and timing constraints and this programme would be managed in the same way.

Since 2014, Essex County Council has, or is, in the process of delivering nearly £140m of transport improvement schemes supported with SELEP LGF funding.

The following schemes are operational and were delivered on programme and to budget:

- A414 Maldon to Chelmsford RBS
- Colchester Integrated Transport Package (ITP)
- Colchester LSTF
- Colchester Town Centre
- South-East LSTF
- Colchester Park and Ride
- Basildon ITP (Phase 1)

Under construction:

- A127 Resilience Package
- Mill Yard, Chelmsford
- A414 Harlow Pinch Point Package
- Chelmsford to Braintree RBS

Construction about to commence:

- Basildon ITP (Phase 2)

Approved at the November Accountability Board:

- Chelmsford to Harlow RBS
- Colchester to Clacton RBS
- M11 J8

Approved at the February Accountability Board:

- Chelmsford City Growth Package
- Gilden Way Upgrading

Approved at the June 2018 Accountability Board

- Braintree to Sudbury RBS

6.9. Monitoring and evaluation (see Appendix S2):

Inputs

- Design, experience and expertise
- Construction equipment and materials
- Appropriate management and supervision.

Outputs (delivering the scheme/project)

- New link road from the A130 southbound to the A1245, together with a new signalised junction where the link road intersects with the A1245.
- A new slip road from the A1245 to the A127 eastbound.

Outcomes (See Appendix D & Appendix S2)
The scheme is predicted to improve journey times and reliability, plus reduce collisions. Therefore, to measure this, the following will be undertaken:-

- Teletrac (Trafficmaster) plots to show congestion, speeds and flows
- Collision statistics

- Also, subsequent levels of consequential new housing and businesses will be recorded.

Impacts (evaluation)

- Traffic journey times and flows will be monitored on a regular basis
- Levels of new consequential housing and businesses will be recorded on an annual basis.

Although construction work has commenced on the Basildon Town Centre Improvements, this scheme is sufficiently far away from Fairglen for it to have any direct benefit, or impact. In fact, there are no other current SELEP schemes in the vicinity.

6.10. Benefits realisation plan:

A Benefits Realisation Plan has been produced (see Appendix S1) and monitoring / evaluation (see Appendix S2) will be undertaken at the appropriate points during the scheme. Monitoring activities will be aligned to those best placed to do so and to existing regular monitoring and evaluation work. Land use development related outputs are routinely monitored by planning authorities and this information will be tracked and linked to scheme completion where appropriate.

Lessons learned from prior projects are automatically fed through to new projects on inception.

A requirement of the SELEP Assurance Framework is that each scheme will have an evaluation plan produced prior to final approval, independently reviewed, and monitored in accordance with this plan. This monitoring will be done according to government guidance and will, where appropriate, include one and five year reports.

A monitoring and evaluation plan for the scheme will be developed as an output of the full business case work. The plan would be informed by the quantitative and qualitative analysis undertaken for the key performance metrics and wider benefits anticipated.

ECC is mindful of the need to review and monitor highway network performance at various stages of scheme implementation to manage and minimise any potential negative scheme impacts. A process of monitoring and evaluation will be implemented to support and inform ongoing wider monitoring activities that are in place, utilising, where possible, survey data which is already collected.

Surveys will need to capture volumes, patterns of movement and journey times for all modes of transport, including private vehicles, public transport, and non-motorised users. Traffic volumes, speeds and journey times will be monitored at key locations within the area affected by the scheme.

Road safety impacts will be monitored as part of routine county-wide annual monitoring programmes to verify future accident incidences, numbers and locations.

The process evaluation will be ongoing throughout the life of the project and will be managed by the Project Executives and reported through the Project Board. Lessons learned, as part of the development of the scheme, will be reported.

Process Evaluation Monitoring reports will be produced at key milestones. Impact Evaluation Reports will be produced in line with key scheme progression and delivery milestones.
The management of risk in delivering to the monitoring and evaluation requirements will also been taken into account and mitigation measures set out in the risk register.

7. DECLARATIONS

Has any director / partner ever been disqualified from being a company director under the Company Directors Disqualification Act (1986) or ever been the proprietor, partner or director of a business that has been subject to an investigation (completed, current or pending) undertaken under the Companies, Financial Services or Banking Acts ?	No
Has any director / partner ever been bankrupt or subject to an arrangement with creditors or ever been the proprietor, partner or director of a business subject to any formal insolvency procedure such as receivership, liquidation, or administration, or subject to an arrangement with its creditors	No
Has any director / partner ever been the proprietor, partner or director of a business that has been requested to repay a grant under any government scheme ?	No

I am content for information supplied here to be stored electronically, shared with the South East Local Enterprise Partnerships Independent Technical Evaluator, Steer and other public sector bodies who may be involved in considering the business case.

I understand that a copy of the main Business Case document will be made available on the South East Local Enterprise Partnership website one month in advance of the funding decision by SELEP Accountability Board. The Business Case supporting appendices will not be uploaded onto the website. Redactions to the main Business Case document will only be acceptable where they fall within a category for exemption, as stated in Appendix E.

Where scheme promoters consider information to fall within the categories for exemption (stated in Appendix E), they should provide a separate version of the main Business Case document to SELEP six weeks in advance of the SELEP Accountability Board meeting at which the funding decision is being taken, which highlights the proposed Business Case redactions.

I understand that if I give information that is incorrect or incomplete, funding may be withheld or reclaimed and action taken against me. I declare that the information I have given on this form is correct and complete. Any expenditure defrayed in advance of project approval is at risk of not being reimbursed and all spend of Local Growth Fund must be compliant with the Grant Conditions.

I understand that any offer may be publicised by means of a press release giving brief details of the project and the grant amount.

Signature of applicant	
Print full name	
Designation	

8. APPENDIX A - FUNDING COMMITMENT

Dear Colleague,

In submitting this project Business Case, I confirm on behalf of Essex County Council that:

- The information presented in this Business Case is accurate and correct as at the time of writing.
- The funding has been identified to deliver the project and project benefits, as specified within the Business Case. Where sufficient funding has not been identified to deliver the project, this risk has been identified within the Business Case and brought to the attention of the SELEP Secretariat through the SELEP quarterly reporting process.
- The risk assessment included in the project Business Case identifies all substantial project risks known at the time of Business Case submission.
- The delivery body has considered the public-sector equality duty and has had regard to the requirements under s.149 of the Equality Act 2010 throughout their decision-making process. This should include the development of an Equality Impact Assessment which will remain as a live document through the projects development and delivery stages.
- The delivery body has access to the skills, expertise and resource to support the delivery of the project
- Adequate revenue budget has been or will be allocated to support the post scheme completion monitoring and benefit realisation reporting
- The project will be delivered under the conditions in the signed LGF Service Level Agreement with the SELEP Accountable Body.

I note that the Business Case will be made available on the SELEP website one month in advance of the funding decision being taken, subject to the removal of those parts of the Business Case which are commercially sensitive and confidential as agreed with the SELEP Accountable Body.

Yours Sincerely,

SRO (Director Level) ……

S151 Officer ……