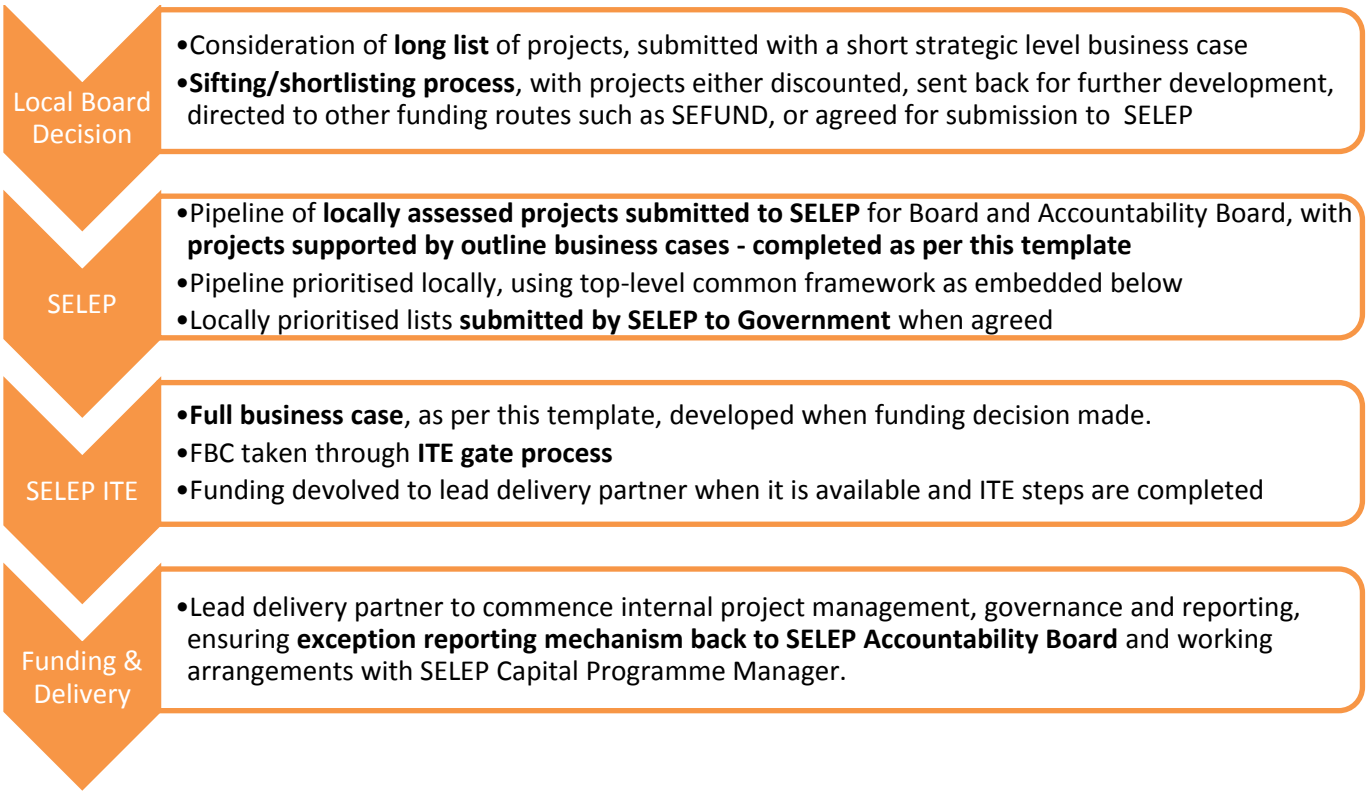
Capital Project Business Case A127 Essential Major Maintenance and The Bell Junction Improvement

The template
This document provides the template for non-transport project business cases for 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 requirements of the Independent Technical Evaluation process where applied.

Please note that this template is for guidance purposes only and 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

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. 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.



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Applicants for funding for non-transport projects should complete the blue sections only	**Applicants for funding for transport projects should complete both the blue and the orange sections**

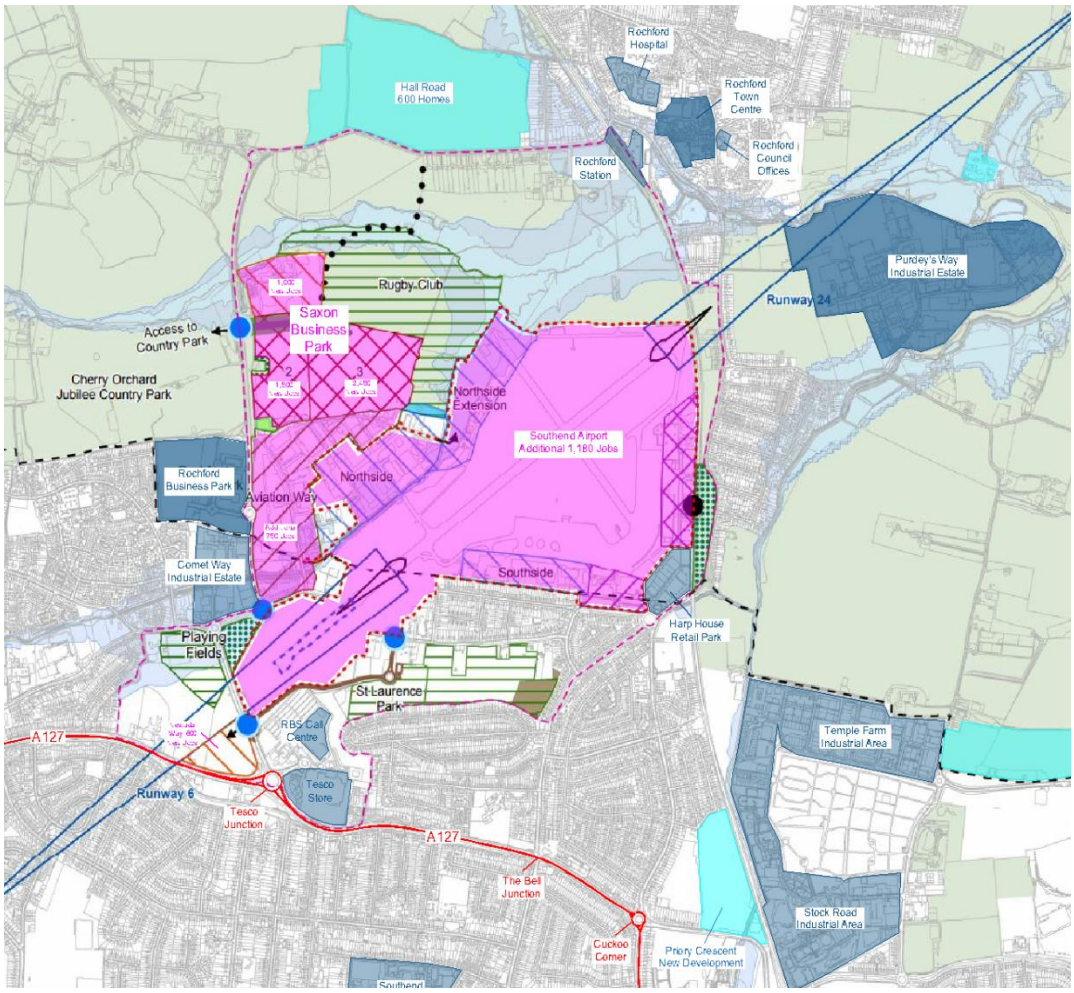
1. PROJECT SUMMARY

1.1. Project name	**A127 Essential Major Maintenance and The Bell Junction Improvement**
1.2. Project type	*Maintenance & Road junction improvement*
1.3. Location	**A127 Borough Boundary to Victoria Gateway and A127/Rochford Road/Hobleythick Lane - The Bell Junction, Southend-on-Sea**
1.4. Local authority area and postcode location	**Southend-on-Sea Borough Council** Civic Centre, Victoria Avenue, Southend-on-Sea, SS2 6ZF
1.5. Description	A127 Corridor The A127 is primarily a 2 lane all-purpose trunk road and is the main route into Southend and as such, carries a high volume of traffic including a significant proportion of HGV's. The section extends from the borough boundary all the way to A127/A13 Victoria Gateway and is approximately 7km in length. The adjoining land use varies but the road is predominantly adjoined by a mix of residential and commercial properties. This scheme seeks to improve the condition and quality of the A127 from the borough boundary to Victoria Gateway in a cost effective manner, addressing the results of years of underinvestment in highway infrastructure. This scheme also intends to support Southend-on-Sea Borough Council's aspiration for increased employment and economic growth by improving journey times and reliability. Detailed investigations and surveys have been undertaken along the route in the form of falling wight deflectometer (FWD), ground penetration radar (GPR), visual inspections and core samples to establish the condition of the carriageway. These indicate a number of locations where the condition has fallen below an acceptable standard for a carriageway of this classification, which if left untreated, will lead to failure in the short term. Further CCTV drainage surveys and road restraint systems (RRS's) visual inspections have indicated a large number of defects which are potential safety issues if left unresolved. Ineffective drainage will also lead to flooding causing traffic delays, increased probability of skidding collisions and expedite deterioration of the pavement, whilst defective RRS's will not provide adequate protection should errant vehicles leave the carriageway at these locations. Gaist Solutions were commissioned to develop forecasts of condition and investment requirements using deterioration models calibrated on condition data and pavement age estimates. The A127 will be modelled alongside the whole of Southend's network and this will support the value for money assessment as part of the emerging asset investment strategy for Southend's carriageways and footways. This deterioration model will become available in November 2018 and inform the development of the programme of works for 2019/2020 to 2020/21 for all carriageway reconstruction and surfacing as without this information the most suitable and cost effective solution cannot be identified.

The works for 2018/19 are to repair/replace the defective drains and sub-standard sections of RRS as shown in the drawings in Appendix 5 & 6. The benefit of programming these works in this way are the immediate improvement of road safety on the A127 and the provision of a robust drainage system in advance of the proposed carriageway solution will afford a much more stable platform to offer longevity of the pavement once treated. Furthermore, during the first phase of construction, more information about the current condition of the carriageway will be gathered giving a deeper insight into the defects already identified allowing the opportunity to innovate with pavement solutions.

The pavement solutions will require extensive/complex traffic management as full carriageway closures are likely to be required. The significant volume of traffic currently using the A127 will have to be diverted on to lower classification roads not designed for this purpose. By delaying the pavement treatment to 2019/2020 and beyond it opens up the opportunity to spend more time in assessing traffic management options to enable any alterations to or upgrade of the local network to better equip for the temporary increase in vehicular traffic.

Circa 65,000 vehicles use the A127 network at Progress Road with this figure reducing to circa 27,500 vehicles at Victoria Gateway, with circa 44,000 total vehicles using The A127 Bell Junction (between 7am - 7pm). The corridor serves London Southend Airport (Ranked London's best airport by Which? 2013, 2014, 2015, 2016 and 2017), Airport Business Parks and it will also serve the area of proposed development adjacent to the Airport (as set out in the Rochford and Southend Joint Area Action Plan – JAAP). The Bell Juction improvements are also defined as a Strategic Junction Improvement in the Southend on Sea Core Strategy Development Plan, in consideration of future demands in employment and housing in both Southend and the neighboroughing Rochford.



Map of JAAP Area

The map above shows the proximity of the A127 corridor to the JAAP area, and therefore its importance as a key component of delivering JAAP outcomes. These outcomes are:

- Creation of sustainable, high quality and high value employment and other land uses within the JAAP area with the delivery of over 7,380 new jobs.

Maximising the economic benefits of a thriving and growing airport and related activity, London Southend Airport has planning permission to expand services for up to 2 million passengers per annum by 2021. With the Aiport estimating to reach 2 million by 2020. Low cost operators easyJet, Flybe and Aer Lingus and soon Ryan Air, operate from the airport, offering flights across Europe and include new routes each year.

- Furthermore demand for aircraft maintenance, repair and overhaul (MRO) has increased and the JAAP includes new facilities to be constructed in the Northern MRO extension, creating new specialist aviation industry jobs.
- Saxon Business Park – range of high tech businesses, and new start-ups has commenced construction and will create high skilled high paid jobs including the Anglia Ruskin Medtech Campus. This has been created to drive growth in medical technology business sector. This partnership between Anglia Ruskin University, Chelmsford City Council, Harlow District Council, and SBC (the funding partners) supported by key stakeholders in the industry, local and central government and the NHS will allow the campus to exploit the considerable advantages offered by business agglomeration on the new site.
- Nestuda Way Business Park – access has been completed as part of the A127/B1013 Junction Improvement and will create up to 500 new jobs.

In order to deliver JAAP objectives, the following is needed:

- Ensure good connectivity to the development area by all modes of transport, with appropriate improvements to sustainable transport and the highway network.
- Ensure a high quality public realm and environment for residents and workers.
- Maximise return on public investment through attracting inward investment.
- Ensure efficient use and upgrading existing employment land resources.
- Ensure the JAAP area is accessible by road, public transport (bus and rail), and networks of walking and cycling routes linking to the wider network, in part delivered through funding secured from Local Sustainable Transport Fund, Better Bus Area Fund and Local Growth Fund.

Realising much of the growth depends upon resolving the key transport barrier to sustainable growth; addressing the significant reliability and resilience issues along the A127. At peak periods, the A127 carries traffic volumes which exceed those on many urban motorways elsewhere in the UK, resulting in a higher level of wear and tear than would normally be expected on a road of this type. Data shows the busiest sections of the route carried in excess of 70,000 vehicles (Average Annual Daily Flow) in 2011, which is in excess of the design capacity of a dual carriageway. With DfT's National Transport Model forecasting traffic can be expected to grow by over 40% by 2040, the adverse impact on Southend's economy could be significant if improvements are not made in the short, medium and long term. These high flows, and the forecast growth in traffic, are and will have an increasingly adverse impact on a route that is currently in need of maintenance if it is to continue in its role as the main road based transport artery for Southend.

A key requirement of the JAAP is to ensure traffic remains on the primary route network, the A127, to access London Southend Airport, Airport Business Parks, and Rochford rather than use local roads. To facilitate this there must be improvements to the functioning of both the local and wider highway network, including key junctions on the A127 which link Southend and Rochford with the M25, and to provide internal solutions to movement and accessibility. Furthermore the JAAP identifies the following items to be taken into account:

- The need for further capacity on the highway network as traffic flows increase, to ensure congestion will not grow further and limit the ability for economic growth.
- The need for a resilient network to ensure defects within the corridor do not have an adverse impact on reliability and journey times.
- Environmental constraints in terms of highway improvements due to availability of land and property boundaries;
- The principal, signed route for highway access will be via the A127 to ensure that new trips in and out of Southend and Rochford do not impact significantly on the local highway network, which has limited capacity for improvement;
- The options for transport improvements within the JAAP area and on the local and wider networks, including the provision of new routes, junction improvements and key points of access to new development areas.
- The location of new development within the JAAP area, in relation to the existing and proposed transport links should be considered early in the master-planning stage to optimise accessibility.
- The need for a major effort to be focussed on managing traffic growth and encouraging greater use of alternative sustainable transport modes, to reduce predicted levels of car borne traffic through traffic management and demand solutions and provision of appropriate infrastructure.

The proposed improvement is part of a package of measures that must be delivered to ensure the A127, which is a vital artery for the economic well-being of Southend, is able to cater for the demands placed on it, as a driver for economic growth.

Successful improvements to the A127 route, in terms of journey time savings and reliability, have been carried out incrementally and as funding has been applied for and granted. The next major A127 junction improvements identified is at the A127 Bell Junction.

Successful improvements to the A127 route, in terms of journey time savings and reliability, have been carried out incrementally as funding has been applied for and granted. The “Better Southend” schemes at A127 Progress Road, A127 Cuckoo Corner and A127 / A13 Victoria Gateway and Pinch Point A127 / B1013 Tesco Junction Improvement were accepted for grant funding on the basis that they were required to support delivery of employment and housing, particularly at the Nestuda Way Business Park, the London Southend Airport area, airport business parks, Town Centre and Shoeburyness. The Progress Road and Cuckoo Corner schemes delivered journey time savings in the peak and significantly reduced queuing, and were a catalyst to Stobart’s £120m investment in London Southend Airport and Easyjet flights.

The ongoing works at Kent Elms and further improvements at The Bell Junction will increase capacity at these junctions and reduce journey times to the network. These

proposed significant maintenance works will enhance the previous, ongoing and future junction improvements by providing a carriageway that is both robust and fit for purpose which will keep the route functioning as an integral part of the access improvements supporting the delivery of employment to the Airport Business Parks in areas adjacent to LSA, and new Rochford housing as well as Southend and Rochford's growth.

Without improvement to the existing carriageway, the A127 will continue to deteriorate and increase the risk of failures occurring. Each failure will require reinstatement in the short term and reconstruction in the long term, this will result in ad hoc closures of the A127 to address the initial problem with planned closures required for the reconstruction of each instance of failure. This approach will not provide an A127 corridor that offers the resilience required to serve the Town as none of the underlying issues have been addressed and will result in a programme of delays and congestion on the adjacent roads.

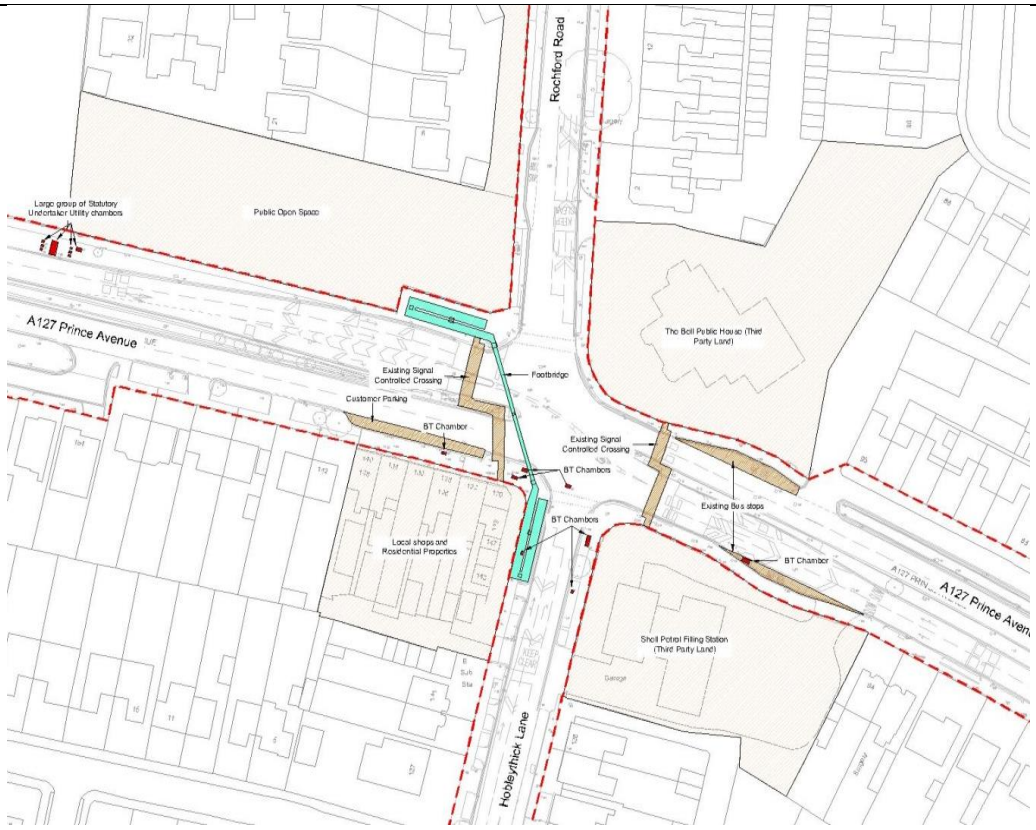
The Bell Junction

- The eastbound A127 currently experiences significant delays in the AM peak for vehicles turning left towards Rochford, London Southend Airport and also travelling towards the town centre, the seafront, Shoeburyness and for those turning right into Hobleythick Lane.
- The westbound A127 currently experiences delays in the PM peak for vehicles turning left into Hobleythick Lane and also travelling towards the Borough boundary, and turning right towards Rochford.
- An at-grade improvement / approach is proposed; 1) to extend the eastbound right turn lane, 2) provide a dedicated eastbound left turn lane and; 3) remove the westbound right turn lane into Rochford Road, to improve the overall effeciency of the junction.

Implimenting these measures will enable the installation of a more suitable wider pedestrian crossing island on the junction's east arm, promoting pedestrian/cycling use and provide a new signal controlled crossing facility on Rochford Road and Hobleythick Lane. There is presently no east-west traffic controlled pedestrian crossing facility at this junction. The new crossings on Rochford Road and Holeythick Lane will enable safer continuity of pedestrian/cycle movements along the A127 strategic transport corridor. This junction is also a critical location on the local bus network and Stansted to Southend-on-Sea X30 airport link route.

There is currently a north-south footbridge at the junction over the west arm. Access to the non compliant Equality Act footbridge is via ramps with steps at both ends of the footbridge.

1.6. Site Constraints	**Existing Site Constraints** The A127 is bounded on both sides by a combination of residential, retail, industrial and green spaces (refer to Appendix 2), all in the ownership of third parties. There are no proposals within the scheme to take land from. From the borough boundary up to Progress Road the A127 is bounded by residential properties, however these properties all back onto the A127 and do not directly access it except for a small number of dwellings that access via a service road. The A127 Progress Road junction (carries 65,000 vehicles between 7am – 7pm) provides access to a significant industrial estate/business park and takes the highest volume of traffic along the corridor, it is also bounded by ancient woodland on the A127 which extends towards A127 Bellhouse Lane junction. Access to the industrial area/business park is required for throughout the day and has 16,000 vehicles using Progress Road between 7am – 7pm to access/exit the A127 Progress Road Junction. A127 Progress Road junction is also a key primary link from Eastwood to the north and Leigh from the south via The Fairway. The section between A127 Bellhouse Lane/Bellhouse Road junction (carries 46,500 vehicles between 7am – 7pm) and A127/A1015 Kent Elms junction serves as direct access to both industrial estates and residential properties. As with the industrial areas at Progress Road there is a need for access for significant periods of the day. The residential properties are set back from the carriageway however they are accessed by a service road with direct connections only onto the A127. The section between A127/A1015 Kent Elms (carries 53,500 vehicles between 7am – 7pm) and A127/B1013 Tesco junction is bounded by residential properties through the A1158 junction (carries 43,500 vehicles between 7am – 7pm), the properties to the north are directly accessed via the A127 while those on the southern side are access via a service road. Beyond A1158 junction there are no properties or business that access the A127. A127/B1013 Tesco junction (carries 51,500 vehicles between 7am – 7pm) serves both the 24 hour Tesco supermarket, Tesco petrol station, The Royal Bank of Scotland Visa Centre offices, Premier Inn and Beefeater. The B1013 Nestuda Way route north to Rochford provides direct access to the Nestuda Way Business Park (with a JAAP allocation of up-to 500 jobs) provides access to London Southend Airport and Airport Business Parks. Therefore 24hour access is required. From A127/B1013 Tesco to The Bell junction the A127 is bounded by residential properties and businesses, the majority are accessed via service roads which connect to the A127, however there are a few that have direct access. This section also has a number of side roads that link the surrounding neighbourhoods to the A127. The Bell junction (carries 44,000 vehicles between 7am – 7pm) is constrained to the north-east, south-east and south-west by third-party land. The land to the north west of the junction is owned by the local authority as a tree-bounded 'open space', and is presently not within the highway boundary. It is proposed to transfer a portion of the open space to highway use under a 'permitted development' agreement. Refer to the Constraints plan within Appendix 1 with a snapshot shown below.



Map of The Bell Existing Site Constraints

From the Bell junction through to A127/A1159 Cuckoo Corner (carries 46,500 vehicles between 7am – 7pm) the A127 is bounded by residential properties which are directly accessed from the A127. There is a small parade of shops to the southeast of the Cuckoo Corner junction that is accessed by a service road.

The section of the A127 from Cuckoo Corner to the junction with Priory Crescent/Fairfax Drive (carries 28,000 vehicles between 7am – 7pm) is also bounded by residential properties that are directly accessed from the A127. Priory Park, containing Prittlewell Priory, is also accessed along this section and is a popular leisure destination within the Town for residents and visitors.

The section of the A127 between the junction with Priory Crescent/Fairfax Drive and East Street/West Street (carries 29,500 vehicles between 7am – 7pm) sees significant east /west vehicle movements. There are also a number of businesses and residential properties along this section that are also directly access for the A127. It is also a key link for the Southend United Football Ground which sees significant volumes of traffic on match days

A127 Victoria Avenue is the primary access link into the Town Centre and Victoria Station at A127/A13 Victoria Gateway (carries 27,500 vehicles between 7am – 7pm) and is bounded on both sides by residential, business and cultural centres including Southend Central Museum, Beecroft Art Gallery and Local Growth Funded Southend Growth Hub that are access directly from the A127.

Existing Statutory Undertaker Apparatus

Statutory Undertakers equipment is present throughout the A127 corridor and carries a significant proportion of key 'trunk' networks for a variety of companies. Whilst it is not anticipated that a diversion of this equipment is required, at least those not in the direct vicinity of the Bell junction, close coordination will be required to ensure any major

refurbishment or network improvements along this corridor are undertaken in advance of any reconstruction/resurfacing of the carriageway through Section 58 notices.

Those in the direct vicinity of The Bell junction, as shown below, will be impacted by the works.

Plan showing Statutory Undertakers Equipment at The Bell Junction

Any alteration to the existing apparatus as result of the works will result in costs to the scheme. For this reason the scheme proposals, were possible, will avoid impacting on the existing apparatus. Recent schemes on the A127 have shown the greatest cost in diverting existing apparatus are associated with telecommunication equipment. BT apparatus is extensive on the A127 westbound carriageway.

Existing Traffic Flows

The A127 carriageway at A127 The Bell Junction experiences in excess of 36,000 vehicles during both AM and PM peaks. Hobleythick Lane and Rochford Road experience 2-way traffic volumes in excess of 10,000 vehicles and 8,600 vehicles during both AM and PM Peaks respectively.

Traffic congestion is experienced during both the AM and PM traffic peak periods and on all arms of the junction. Presently the junction operates at the maximum 128 seconds cycle time.

During both AM and PM peak times, the volume of traffic on the A127 eastbound right turn lane is such that vehicles queue back from the stop line to encroach into the ahead-only offside lane. This prevents free flow of the A127 eastboud traffic during 'green times', significanlty reducing capacity and late weaving of vehicles effect road safety.

Existing Pedestrian Flows

Pedestrian movements along the A127 are predominantly restricted to east-west movements, the exceptions being at signalised junctions and at discrete locations where controlled pedestrian crossing facilities are provided. There are also three pedestrian

footbridges that cross the A127, two of which are at junctions, Kent Elms and the Bell, the third is at a remote location between Tesco roundabout and the Bell.

Pedestrian flows are moderate but do peak in the AM and PM, both on a north/south and east/west direction.

The Bell Weekday flows

The predominate movements are on the eastern side of the junction (north/south on Hobleythick Lane/Rochford Road and towards the east of Prince Avenue on the northern footway. This is associated with pedestrians using transport facilities such as the bus stop on Prince Avenue and the parade of shops adjacent to the Toby Carvery. The busiest location is on the eastern footway of Hobleythick Lane, this side of the footway has commercial such as a news agency and a pharmacy.

The peak period for the junction is between 08:00 and 09:00 when flows range from 12pph to 104pph, this suggests a commuter/school run pattern of movement with the busiest locations being Hobleythick Lane and Rochford Road.

Although the overall number is lower than the western crossing during the peak morning period, the footbridge is mainly used by school children and adults with pre-school children. Percentage wise there are twice as many pre-school children using the footbridge compared to the crossing and almost five times as much for primary school children.

Adults form the majority of all categories recorded at the junction, followed by people with bicycles/buggies and students. Looking at specific locations, in both Hobleythick Lane and Rochford Road, approximately 18% of all users are students with secondary schools making up the highest percentage of this split. The footbridge is a popular choice amongst students crossing the junction. Overall the number of mobility impaired and elderly people in the area is low. The average number elderly people using the footbridge and the eastern crossing are the same, however elderly people were not recorded on the western crossing suggesting that the footbridge is the preferred choice.

The eastern crossing is shown to be the busiest location compared to the footbridge and western crossing (combined), however almost twice as many people use the western crossing compared to the footbridge, the only time when this is not the case is during the morning and afternoon peak when school children use the footbridge.

The Bell Weekend Flows

The pedestrian movements are reduced over the weekend, however the busiest locations are consistent with those recorded during the weekday.

During the weekend adults are again the majority with almost 65% of the users, followed by people with bicycles/buggies. Naturally the number of school children is very low at 7% implying that this is not area where teenagers and young adults do not come to at the weekends. A higher percentage of elderly people is observed compared to the weekday, specifically of Hobleythick Lane and on the eastern side of the junction.

The weekend flows along the footbridge is low, and once again the eastern crossing is the busiest location, followed by the western crossing.

The Bell Footbridge User Routes

Analysis has shown that compared to the at-grade crossing the footbridge is the least popular means of crossing the A127. There are two main reasons, lack of convenience (at grade crossing are more direct with less changes of directions saving pedestrians time) and unsuitable design (the stepped ramps makes it inaccessible for mobility impaired people and those with bicycles). However the footbridge is possibly seen as the safest option by adults with young children and/or students, which explains the relatively higher number of users during the morning and afternoon school peak times. To that end investigations were undertaken to establish how many had deviated from their natural, more convenient route

to deliberately access the footbridge.

The first key finding was that there has been no east-west movement when the footbridge was included in the route. All movement when the footbridge were a north-south one where 32% walked northbound and the remaining 68% to the opposite direction.

For the northbound movement, seven came from Midhurst Avenue and three from Hobleythick Lane western footway and continued to Rochford Road via the footbridge. Two came from Hobleythick Lane eastern footway, crossing to the western side before continuing to Rochford Road via the footbridge.

For the southbound movement, 20 originated from Rochford Road western footway, 12 went into Midhurst Avenue, seven continued along Hobleythick Lane western footway and one crossed Hobleythick Lane to access the shops on the eastern footway. Two originated from Prince Avenue western side and went south along Hobleythick Lane on the western footway.

This suggests that the footbridge is on the natural path, as very few people deliberately deviated on their path to access the footbridge directly.

1.7. Scheme Options	**A127 – Drainage Improvements** Exstensive surveys have been undertaken on the drainage network along the A127 corridor which has shown areas that require attention to ensure the netowrk can operate as intended. These works will be programmed in advance of the carriageway works. The benefit of programming these works in this way are the immediate improvement of road safety on the A127 and the provision of a robust drainage system in advance of the proposed carriageway solution will afford a much more stable platform to offer longevity of the pavement once treated. Furthermore, during the first phase of construction, more information about the current condition of the carriageway will be gathered giving a deeper insight into the defects already identified allowing the opportunity to innovate with pavement solutions. Details of the extent of drainge works required are shown in Appendix 5. **A127 Safety Barrier Improvements** Condtion surveys of the existing safety barrier system within the central reserve of the A127 have shown section that require remidial works. These are in descrete locations along the corridor and are detailed in Appendix 6. undertaking these works will ensure the current level of protection required from this assest will be maintained and will reduce the potential for substandard protection in these locations. **A127 Pavement Improvements** **Do minimum** The do minimum option would be to continue the Councils current approach to road maintenance, where strategic routes are prioritised but investing a high proportion of funds on reactive maintenance rather than planned maintenance. This potentially could lead to an increase in the number of non-strategic routes which are in a poor condition, resulting in an increased cost to return them to an appropriate condition and more disruptive for local residents and businesses. **Do Something** The carriageway works have been determined by the combination of Gaist's inspections and through surveys such as core samples and FWD, the results of which have demonstrated areas that require works to be undertaken. Details of the extent of carriagewaty works required are shown in Appendix 7 drawing number 7003A. A127 Progress Road Junction to Borough boundary – two sections of carriageway on the London bound A127 has been identified for treatment. The indication in the most westerly section (Phase 14) is that lane 1 and lane 2 both require the surface and binder course to be replaced (to a depth of 100mm). Treatment such as this is a traditional way of extending the life of the carriageway and will be undertaken overnight utilising road closures, this has minimal impact on the network and allows the road to be open for daytime traffic. The second section (Phase 1) requires a more substatial treatment to address the remaining life of the carriageway. This area is reccomended for full depth reconstruction and as a result will require significant works in order to deliver the necessary treatment. As with the surfacing works described above the A127 will need to be closed, the

difference will be that untill significnat works are complete the A127 will need to remain closed, requiring traffic to be diverted onto the surrounding network for extended periods of time. The diversion route is shown in Appendix 24 and the duration of works is currently estimated at 23 days, this will have significant impact on the performance of the A127 and the surrounding network.

A127 Bellhouse Lane/Bellhouse Road junction to A127 Kent Elms Junction – Both the inbound and outbound carriageways (Phase 2 and Phase 3) have been identified for full depth reconstruction, and as a result will require full road closures with associated diversions onto the surrounding network for extended periods of time. The diversion route is shown in Appendix 24 and the duration of works is currently estimated at 24 days on the inbound carriageway and 7 days on the outbound carriageway, this will have significant impact on the performance of the A127 and the surrounding network.

A127/B1013 Tesco Junction to A127/A1159 Cuckoo Corner Junction – significant areas of reconstruction have been identified in this area, from Colemans Avenue through to Cuckoo Corner, on both sides of the carriageway. Full carriageway closures will be required with associated diversions onto the surrounding network for extended periods of time. The diversion route is shown in Appendix 24 and the duration of works is currently estimated at 18 days on the inbound carriageway (Phase 13), 47 days on the outbound carriageway (Phase 4 and Phase 5) and 7 days at the junction (Phase 4a) this will have significant impact on the performance of the A127 and the surrounding network. Less intensive treatment is required (Phase 12 and Phase 13), lane 1 and lane 2 both require the surface and binder course to be replaced (to a depth of 100mm) and will be undertaken overnight utilising road closures, this has minimal impact on the network and allows the road to be open for daytime traffic.

A127/A1159 Cuckoo Corner Junction to A127 Fairfax Drive Junction – both the inbound and outbound carriageway (Phase 10 and Phase 11) have been identified for replacement of the surface course. As at Progress Road this treatment is a traditional way of extending the life of the carriageway and will be undertaken overnight utilising road closures, this has minimal impact on the network and allows the road to be open for daytime traffic.

A127 Fairfax Drive to A127 East Street/West Street – significant areas of full depth reconstruction have been identified in this area (Phase 7 and Phase 7a) on both sides of the carriageway. Full carriageway closures will be required with associated diversions onto the surrounding network for extended periods of time. The diversion route is shown in Appendix 24 and the duration of works is currently estimated at 47 days north of the junction and 7 days on the junction, this will have significant impact on the performance of the A127 and the surrounding network. Unlike the rest of the A127 this section does not have a central reserve, this will provided added complication for traffic management and could result in the full closure of the carriageway.

A127 East Steet/West Street to A127/A13 Victoria Gateway – the southbound carriageway has been identified as requiring full depth carriageway reconstruction (Phase 8). Full carriageway closures will be required with associated diversions onto the surrounding network for extended periods of time. The diversion route is shown in Appendix 24 and the duration of works is currently estimated at 18 days, this will have significant impact on the performance of the A127 and the surrounding network. Also both the inbound and outbound carriageway (Phase 9) have been identified for replacement of the surface and binder course (depth 100mm). As at Progress Road this treatment is a traditional way of extending the life of the carriageway and will be undertaken overnight utilising road closures, this has minimal impact on the network

and allows the road to be open for daytime traffic.

The areas of carriageway reconstruction identified above will cause significant disptruption to the A127 and the surrounding network, as the volumes of traffic expected to use them will exceed the capacity. The durations stated above will also provide adverse impacts in a variety of ways, not just an extended strain on networks not capable of taking these levels of traffic, but also from a sense that Southend could be seen as 'closed for business' with the duration of all the necessary road closures.

It is with this in mind A127 carriageway treatments would be procured through one of the procurement options discussed in the later sections, that will allow access to material expertise (that SBC do not currently have) to formulate design solutions to avoid the need for full depth carriageway reconstruction and offer a less intrusive approach to the problem, enabling the A127 to remian open for longer periods of time, specifically for day time traffic. This would also provide access to expertise in traffic management methods to think differently in the management of vehicles and pedestrians.

The Bell Highway Options

This section looks specifically at the highway improvements that relate to The Bell junction.

A long list of highway options have been considered as part of the early stages of the scheme, these have been compiled and assesed to establish which options should be taken forward. The long list of options is contained within Appendix 9

The following three highway options have been taken forward from the long list and are presented below.

Highway Option 1

A copy of Highway Option 1 scheme layout is contianed within Appendix 3.

Highway Option 1 is based on adressing the issues surrounding the right turn lane from the A127 into Hobblythick Lane, and maintaining the existing footbridge. To overcome

the queuing traffic spilling back into lane 2 on the southend bound A127, additional capacity has been provided by extending the right turn lane by 90m which will accommodate an additional 15 vehicles. This will reduce the likeliyhood of vehicles blocking lane 2 which in turn will provide a greater throughput at the junction as both straight ahead lanes will be unobstructed.

Photo 1 – View westbound from the footbridge showing the right turn lane into Hobelythick Lane.

Option 1 also looks to ban the right turn movement from the A127 into Rochford Road. There are minimal vehicle movements making this manouver and its removal provides the opportunity to reoportion this time back into the junction improving performance. The removal of the right turn lane also provides an opportunity to improve the pedestrian refuge island on the eastern arm of the junction, the space previously allocated to carriageway can be utilised to provided greater space for pedestrians using the crossing facilities.

Photo 2 – View eastward from the footbridge showing the right turn lane into Rochford Road and the existing crossing facilities.

This option is contained within the highway boundary and does not require any additional land beyond this to accommodate the scheme.

Highway Option 2

A copy of Highway Option 2 scheme layout is contianed within Appendix 3.

Highway Option 2 is an alternative to Highway Option 1, this option includes the improvements to the right turn lane and removal of the right turn lane from the A127 into Rochford Road, but it also provides a dedicated left turn facility into Rochford Road.

The benefits of the extension of to the right turn lane into Hobleythick Lane and the removal of the right turn into Rochford Road are the same as those discussed above in

Option 1.

The inclusion of a new dedicated left turn lane into Rochford Road seeks to address the impact of left turning vehicles at the junction. As vehciles make this movement they have a tendnacy to slow, due to the tighness of the corner radius, and swing into lane 2, this is compounded further when HGV's make this movement as they move further into lane 2 halting lane 2 vehicles progress through the junction. The new left turn facility will remove this conflict as sufficient geometry and separation of traffic is provided ensuring a greater throughput of traffic heading eastbound on the A127. This facitity will operate under a give way arrangement as it enters Rochford Road as the siganling at the junction will allow a reasonably unobstructed flow onto Rochford Road.

Photo 3 – View looking west towards the A127 – showing location of proposed new dedicated left turn

Photo 4 – View looking south on Rochford Road towards the junction

The inclusion of the left turn lane will require an additional pedestrian crossing, which in turn will increase the journey time for pedestrains crossing the the western arm of the junction.

There is also the provision of a new crossing faciltiy on Rochford Road, the timing of this crossing will be incorporated within the phasing of the junction to optimise the performance of the junction.

There is an extensive spread of Statutory Undertaker Utilities in the north western verge, including several UKPN owned oil filled high voltage cables and a gas main. Encroaching into the north verge will require the need to divert this apparatus, which will come at a cost and will face programming constraints.

The existing footbridge will require removal to accommodate this option as the existing footbridge peirs will encrouch into the proposed carriageway. The inclusion of an alternative footbridge is discussed in later within this business case.

In order to accommodate option 2 there will be a need to utilise land from the northwest of the scheme which is currently designated as public open space. This land is owned by Southend Borough Council but is outside the highway boundary. The necessary procedures will need to be followed in order to transfer the land into highway to enable this option to be constructed.

Highway Option 3

A copy of Highway Option 3 scheme layout is contianed within Appendix 3.

Highway Option 3 provides the largest number of improvements at the junction of the three options. This options provides the same benefits as Highway Option 1 and 2, extending the right turn lane into Hobelythick Lane, removal of the right turn lane into Rochford Road, dedicated left turn lane into Rochford Road and improved pedestrian facilties on Rochford Road, but also includes a pedestrian crossing on Hobleythick Lane.

This option provides a pedestrain crossing faciltiy on Hobleythick Lane. However to cross pedestrians on Hobleythick Lane in one movement requires holding both northbound and southbound traffic, this will introduce an 'All-Red' pedestrian crossing phase within the timings of the junction. This would incur a significant increase in the cycle time of the junction, and will result in delays to vehicles on the A127. For this reason this design option will include a central island, to provide a safe waiting location for pedestrians and enable independent operation of northbound and southbound traffic.

As result of the new pedestrian crossing island on Hobleythick Lane, the road will require widening on the southbound carriageway into the existing grass verge. The northbound stop line will also be moved south to accommodate the pedestrian crossing and vehicle turning movements. The kerb line on the western side of Hobleythick Lane is maintained.

Walking and Cycling Improvements

Each of the highway options will look to improve the walking and cycling within the area. Each option demeonstrate various enhancements to crossing locations in the immediate vicinity of the junction, however there is a greater ambition to improve the wider network.

With the exisitng cycle infrasturce terminating at Richmond Drive to the west and not recomencing to the east until Priory Park there is a significant gap in the A127 corridor.

The project will look to either close these links by directly improving the route along the A127 or by providing "quiet" routes that run adjacent to the corridor. There is the potential to extend the existing cycle network from Richmond Drive to the Bell junction

on the northern side of the A127, this would then connect to the crossing locations at the Bell allowing cyclists to travel south to the the Prittlebrook Greenway with connections to the town centre, or travel north along Rochford Road towards the airport.

Linking the cycleway to the east is more challenging as space within the existing footways is limited, therefore converting these to shared use will be problematic. As an alternative roads that run along the A127 can be utilised, cyclists can be taken up Rochford Road and then through to Hampton Gardens and through to Priory Park.

The north and south routes along Rochford Road and Hobelythick Lane will be assesed to establish what improvements can be made to facilitate cycleing, such as utilising the existing service roads along Rochford Road to reduce conflict between cyclists and motorists.

Photo 5 – View looking south from the footbridge on Hobleythick Lane

Ease of Construction

As part of the scheme, consideration has been given to the the routing of vehicles during the construction period. Alternative routes for HGV's have been investigated to establish if this classification of vehicle can be removed from the junction to ease traffic congestion during the construction phase.

The alternative route currently identified is shown in Appendix 8.

Investigations have shown that minor alterations to this route are required in order for HGV's to navigate the route succesfuly, these would be further investigated with the aim to have the temporary route in place in advance of the main works and would be delivered by SBC's Term Service Contractor.

The use of this route is subject to the public consultation process and discussions with the local residents highlighting to them the benifts of the temporary route.

Joined Up Delivery

Regardless of the option taken forward there is still a need to ensure both the Major Maintenance element and the Bell are delivered harmoniously. One of the most significant areas of reconstruction is situated in the direct vicinity of the works at the Bell junction, it is absolutely imperative that these works are delivered as one piece of work to maximise efficiencies during the construction stage. Should these elements be delivered separately it would have a detrimental impact on the programme of works and will add to the levels of disruption caused to the motoring public as well as businesses and residents as areas of the carriageway will be occupied twice.

The costs of delivering these elements separately will be increased when compared to delivering them together, a single Contractor will reduce the need for interaction between multiple parties which will reduce management costs and time, it also removes any conflict between parties that could impact possession of locations prolonging programme and costs. Traffic management costs will be reduced as elements will be able to overlap rather than have to follow on concurrently bringing the added benefit of reduced disruption. The purchasing power of materials will also be greatly improved, increased quantities from both elements of the projects will offer reductions in costs.

As well as cost savings, combining the two elements allows for a greater communications strategy across the whole project. A more coherent message can be given to stakeholders that demonstrates a single purpose behind the project, providing a single programme that can be reactive to developments on the ground.

The ability to be able to manage the scheme as one single entity will enable greater clarity over the duration of the design and construction, and has an improved outlook on risk as the potential for conflict between elements will be reduced having a lessened impact on both time and cost.

The Bell Prefered Highway Option

A summary of the three options are shown in the table below, with highway Option 2 shown to be the preferred highway option.

Highway Option 2 shows a slightly less beneficial performance at the junction when compared to option 3, however the metrics show this to be very marginal so it is considered that selection of this option as the preferred does not compromise the junction. The network performance is shown to be marginally better than the two other options providing the greatest benefit along the A127 corridor.

The improvement in pedestrian facilities are also shown to be greater as a more coherent network is provided at the junction, without compromising performance.

The requirement for land to the northeast of the junction to accommodate the scheme is not considered to be an issue at this stage, the land is owned by Southend Borough Council and can be transferred providing the necessary processes are followed.

There is an impact on public utilities at the junction but the risks associated with option 2 are less than those attributed to option 3, as fewer companies are effected reducing the risk of conflict for programming diversions.

The design will be developed further subject to the outcome of the public consultation, and engagement with local schools, businesses and local residents. This work will be reflected in the scheme throughout the detailed design stage.

Impacts	Highway Option 1	Highway Option 2	Highway Option 3
Junction Performance	AM PEAK - Able to process higher volumes of traffic than option 2 but less than option 3, with the longest queue lengths of the three options, and also the longest delay. PM PEAK - Lowest volume of traffic passing through the junction, with the longest queue lengths of the three options and also the longest delay.	AM PEAK - Lowest volume of traffic passing through the junction, with reduced queue lengths compared to option 1 but slightly longer than option 3, with marginally shorter delays than option 1 but slightly longer than option 3. PM PEAK – Able to process higher volumes of traffic than option 1 but less than option 3, with reduced queue lengths compared to option 3 but slightly longer than option 1, with marginally shorter delays than option 1 but slightly longer than option 3	AM PEAK -Able to process the highest volume of traffic through the junction, with marginally reduced queue lengths over option 1 and 2, with marginally shorter delays than option 1 and 2. PM PEAK -Able to process marginally higher traffic volume than option 1 and 2, with marginally reduced queue lengths over options 1 and 2, with marginally shorter delays than option 1 and 2.
Network Performance	AM PEAK -Performs slightly better than both option 2 and 3 in all of the metrics. PM PEAK -Performs slightly worse than both options 2 and 3 in all the metrics.	AM PEAK - Performs very similarly to option 3 within the metrics. PM PEAK - performs better than both option 1 and 3 in the majority of the metrics.	AM PEAK -Performs very similarly to option 2 within the metrics PM PEAK - performs better than option 1 but worse than option 2 in the majority of the metrics.
Pedestrians	Improved pedestrian facilities on the eastern arm of the junction.	Significantly improved pedestrian facilities at the junction with the inclusion of improved crossing on the eastern arm of the junction and new crossing provisions on Rochford Road. The introduction of the new left turn lane will have an increased journey time for pedestrians traveling north to south on the western arm of the junction.	Significantly improved pedestrian facilities at the junction with the inclusion of improved crossing on the eastern arm of the junction, new crossing provisions on Rochford Road and Hobleythick Lane. The introduction of the new left turn lane will have an increased journey time for pedestrians traveling north to south on the western arm of the junction. The new crossing on Hobleythick Lane will have an impact on the junction performance.
Land	No additional land is required	Public Open Space to the north west of the junction required	Public Open Space to the north west of the junction required
Statutory Undertakers	Limited diversions required in Central Reservation.	Diversions required to the north west corner and south west corner of the junction.	Diversions required to the north west corner and south west corner of the junction; and along the eastern verge of Hobleythick Lane.
Programme	Shortest programme duration as there are less physical works required on site.	Increased programme duration due to a larger scheme being delivered in option 1 but reduced when compared to option 3 due to the significance of the utility diversions.	Longest programme duration as there are the greatest amount of works to deliver with the most significant utility diversions.
Cost	£2.061M	£4.401M	£6.405M

Footbridge Options

Any highway proposal which encroaches into the northern footway on the eastbound carriageway will result in the removal of the existing pedestrian footbridge. Improvements to the existing footbridge to ensure it is retained are not practical as the existing span is not long enough to traverse a widened carriageway. The current approach ramps are stepped and do not comply with current Equlaity Act 2010 requirements.

Footbridge Option 1

The footbridge options have been considered against the prefered highway option, option 2.

A copy of the Footbridge Option 1 Typical footbridge layout is contianed within Appendix 4.

The widened carriageway to the north, as result of the additional eastbound left turn lane requires a longer span footbridge. This option provides a replacement footbridge that conforms to recommended design standards. In order to meet these requirements steps and separate ramps at a gradient of 1 in 20 are provided at each end.

The gradient will result in ramps that are approximatly 135m in length on both sides of the junction. Due to limited highway space on the southern side of the junction the southern footbridge ramp would need to wrap 'back on itself' several times, occupying the majority of the footway area adjacent to the shops and residential properties on both Hobleythick Lane and the A127, to the west of the junction. This would also mean there would be no footway or access to the shops on the A127. In addition, third Party land will also be required outside of the shops on Hobleythick Lane. Above these shops are residential properties and this option would have a visual impact on these properties, greatly limiting thier view. In order to accommodate the ramps on the northern side, land designated as Public Open Space would be required.

Costs associated with a structure of this size is currently estimated to be in the region of £3.06M. Due to the site constraints this Footbridge Option is not considered viable and the public consutation documents reflect this.

Footbridge Option 2

A copy of the Option 2 footbridge layout is contianed within Appendix 4.

This option provides a replacement footbridge that conforms to the minimum requirements of current design standards with provision of 1:12 ramps with landings at each end.

This 1:12 gradient reduces the length of the ramps (when compared to the recommended design requirements), but requires landings to be provided at a much greater frequency, which then contributes to the overall length. The ramps associated with this gradient are approximatly 85m in length on each side. This reduced length results in less visual impact on the adjacent properties on the southern side but still requires third party land to be taken from both properties and the area of open space to the north.

Costs associated with a structure of this size is currently estimated to be in the region of £2.13M. Due to the site constraints this Footbridge Option is not considered viable and the public consutation documents reflect this.

Footbridge Option 3 (with Steps)

A copy of the Option 3 footbridge layout is contianed within Appendix 4.

This option provides a replacement footbridge with a flight of steps at each end only. The structure, therefore does not provide a route for wheelchair users or those with mobility impairments, users who are unable to use the footbridge will be required to cross via the crossings at carriageway level.

This footbridge option still requires land from Public Open Space to the north, But the steps on the southern side would be contained within the same footprint as the existing footbridge footprint and therefore offers the least impact of all to the adjacent shops and residential properties on the southern side.

Costs associated with this structure is currently estimated to be in the region of £0.759M

Footbridge Option 4 (no Footbridge)

This option does not provide a replacement footbridge and only provides additional

pedstrian movements at the surface crossings as part of the Highway Option.

Preferred Footbridge Options

A summary of the four footbridge options are shown in the table below.

The scheme is not promoting a preferred footbridge option as a fully compliant Equality Act option can not be provided within land owned by the council. Footbridge Option 1 & 2 are not considered viable and this has been communicated within the public consultation documents. The benifits of a replacement footbridge shall be discussed during the public consultation with each of the layouts described to ensure their respective impacts are understood. Should the outcome of the public consultation demonstrate a need from the publics persective for a footbridge, it will be based on the knowledge that only a footbridge with steps could be provided within the space, resutling in a structure that can not be used by all user groups.

Impact	(Not Viable) Footbridge Option 1	(Not Viable) Footbridge Option 2	Footbridge Option 3 (with Steps)	Footbridge Option 4 (No Footbridge)
Equality Act 2010 Compliant	Meets the recommended design criteria	Meets the minimum recommended design criteria	Is not compliant as no ramps are provided	N/A
Accessibility	Those pedestrians using the footbridge will be required to travel 315m across the structure	Those pedestrians using the footbridge will be required to travel 245m across the structure	No ramps available access only possible via steps	Crossing of carriageway via surface crossing only.
Visual Intrusion	Has significant impact on the properties on the southern side of the junction.	Impact is slightly lessened due to the reduced size of the bridge.	No change in impact as the footprint of the bridge remains the same as existing.	None
Land	Land will be required on both the southern and the northern side of the junction from residents and businesses as well as the public open space to the north.	Land will be required on both the southern and the northern side of the junction from residents and businesses as well as the public open space to the north.	Land will be required from the public open space to the north.	No land required
Statutory Undertakers	Significant diversions required on the southern and northern side.	Significant diversions required on the southern and northern side.	Diversions required on the southern side.	None.
Cost	£3.06M	£2.13M	£0.759M	£0

1.8. Lead applicant	Southend-on-Sea Borough Council
1.9. Total project value	The Total Project Value is dependent on the options selected for implementation as follows: • A127 Drainage Improvements £0.671 • A127 Safety Barrier Improvements £0.029 • A127 Pavement Improvements £5.967 • The Bell Highway Option 1 £2.061M, Footbridge Option 3 £0.759M = £2.82 including predicted land transfer costs. • The Bell Highway Option 2 £4.401M, Footbridge Option 3 £0.759M = £5.161 including predicted land transfer costs. • The Bell Highway Option 3 £6.405M, Footbridge Option 3 £0.759M = £7.164m including predicted land transfer costs. The Bell Highway Option selected for implementation is subject to the completion of the review of the Public Consultation exercise, utility diversions and land transfer.
1.10. SELEP funding request, including type (e.g. LGF, GPF etc.)	LGF request: • A127 Drainage Improvements £0.671 • A127 Safety Barrier Improvements £0.029 • A127 Pavement Improvements £5.967 • The Bell Highway Option 1 £2.061M, Footbridge Option 3 £0.759M = £2.82 including predicted land transfer costs. LGF = £2.1M • The Bell Highway Option 2 £4.401M, Footbridge Option 3 £0.759M = £5.161 including predicted land transfer costs. LGF = £4.441M • The Bell Highway Option 3 £6.405M, Footbridge Option 3 £0.759M = £7.164m including predicted land transfer costs. LGF = £6.444M The option selected for implementation is subject to the completion of the review of the Public Consultation exercise, utility diversions and land transfer.
1.11. Rationale for SELEP request	The South East LEP Strategic Economic Plan identifies the A127 as a key corridor for growth. The A127 links London with Basildon and Southend and Rochford. In Basildon, the A127 corridor is home to one of the largest single concentrations of advanced manufacturing companies in the South of England. It makes substantial contributions to the prosperity of the SELEP area and offers considerable growth prospects. London Southend Airport, now with scheduled air services to Europe and hub airports for onward global travel, and planned business parks, will prove attractive to a wide range of global companies and offers capacity for at least 4,200 additional jobs up to 2021 and a further 3,180 post 2021 and is heavily reliant on the efficient functioning of the A127.

Southend and Rochford have agreed the Joint Area Action Plan (JAAP) to unlock these opportunities. The Council has appointed Henry Boot as their development partner on the Airport Business Park with Phase 1 complete and Phase 2 underway.

To enable growth in Thames Gateway South Essex the A127 requires substantial improvement and a higher level of maintenance. The 'A127 Corridor for Growth Economic Plan', approved by Cabinet, sets out the rationale and supporting evidence in detail. The A127 Corridor for Growth package is a partnership project between Essex County Council and Southend-on-Sea Borough Council. The Southend element includes A127 Kent Elms and A127 The Bell junction improvements, and A127 Essential Bridge and Highway Maintenance package.

Realising much of the growth depends upon resolving the key transport barrier to sustainable growth; addressing the significant reliability and resilience issues along the A127. At peak periods, the A127 carries traffic volumes which exceed those on many urban motorways elsewhere in the UK, resulting in a higher level of wear and tear than would normally be expected on a road of this type. Data shows the busiest sections of the route carried in excess of 70,000 vehicles (Average Annual Daily Flow) in 2011, which is in excess of the design capacity of a dual carriageway. With DfT's National Transport Model forecasting traffic can be expected to grow by over 40% by 2040, the adverse impact on Southend's economy could be significant if improvements are not made in the short, medium and long term. These high flows, and the forecast growth in traffic, are and will have an increasingly adverse impact on a route that is currently in need of maintenance if it is to continue in its role as the main road based transport artery for Southend.

Elements of the A127 Corridor for Growth package have been designated as a "retained" scheme which, subject to the approval of the business case, will be supported by the Local Growth Fund.

Earlier modelling undertaken indicated significant congestion on the A127 without improvements schemes at the Kent Elms, Tesco and Bell junctions.

The final A127 Kent Elms improvement Highways Phase 3 works requiring the completion of the new London bound lane was open to traffic on 9th September the contractor is to complete the footway, drainage with the footbridge installation programmed for early 2019. Southend are scheduling improvements along the A127 on an incremental basis, focusing on a junction one at a time.

The works to the A127 Bell Junction and the Major Maintenance are programmed to be complete by 2020/21 at the latest. Due to the projects location, interlinkages, management of traffic management clashes, construction methods and potential contractor clashes requirements with these projects it has been decided to combine them as one project. The combined construction costs will also make the project more desirable for tenderers. Discussions are currently underway with the utility companies with the aim to minimise diversionary costs. The works will be undertaken through the Eastern Highways Alliance Framework (EHF2) and supported through Southend Borough Council Term Contract for New Works.

Without the A127 Kent Elms and the A127 Bell Junction improvements, the completed improvements at A127 Progress Road, A127/B1013 Tesco Roundabout, and A127/A1159 Cuckoo Corner will not fully maximise their intended benefits. This will have ongoing consequences for securing investment in Southend.

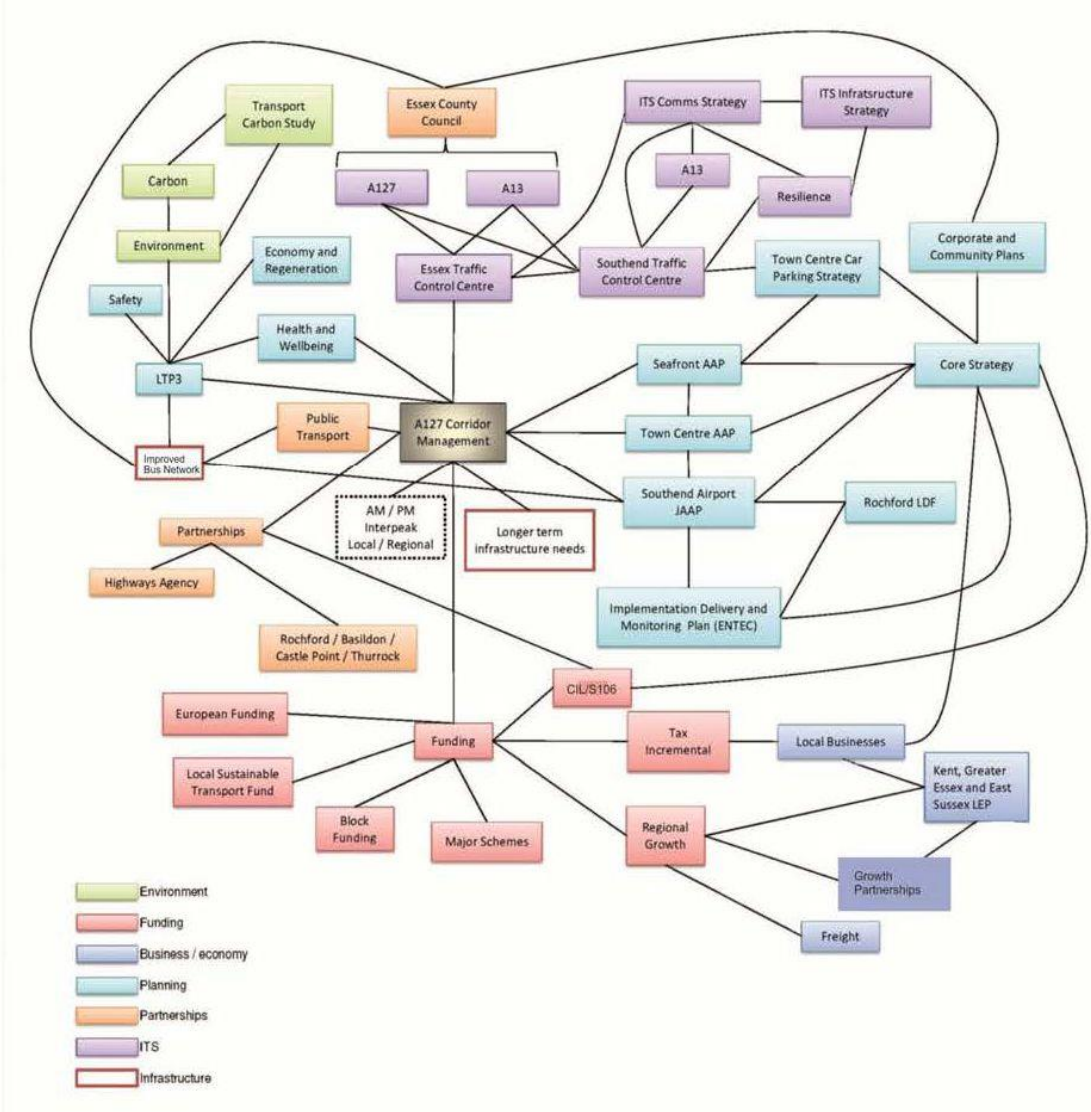
	This intervention will demonstrate a strong commitment to provide the infrastructure needed and infrastructure resilience to support the employment and housing numbers. The modelling has been based on 2021 projections of traffic growth and whilst this is predicated on full development, it is considered that this is the most credible position to adopt at present given the urgency around boosting economic growth. Whilst the development will be phased over the JAAP period, it must be recognised that in order to encourage the investment and increase the viability of the sites a clear, funded, route for infrastructure development must be put forward to support the JAAP developments and further economic growth. The overall programme of investment in the A127 corridor, to support the delivery of growth for Southend and airport business parks is to complete the A127/A1015 Kent Elms Junction Improvement in 18/19 followed by the completion of the A127 Essential Major Maintenance and The Bell Junction Improvement in 20/21.
1.12. Other funding sources	£0.72M – Southend-on-Sea Borough Council £0.063M – S106
1.13. Delivery partners	This scheme will be delivered by Southend-on-Sea Borough Council utilising the in house design team and supported by specialist consultants where necessary and Eastern Highways Alliance Framework Contractor and New Works Term Contractor.
1.14. Start date	April 2019 – commencing with utility diversions
1.15. Practical completion date	Main Works will be complete by March 2021 at the latest.
1.16. Project development stage	~~*Inception, option selection*~~*, feasibility, detailed design, implementation*
1.17. Proposed completion of outputs	Main Works will be complete by March 2021 at the latest.
1.18. Links to other SELEP projects, if applicable	A127 Corridor Package of measures (Essex). Within the boundary of Southend, A127 Kent Elms Junction and A127 Essential Bridge, Highway Maintenance package and London Southend Airport Business Park (ABP) –The outline planning application for the business park site seeking detailed consent for the phase 1 infrastructure works was approved by Rochford District Council in February 2016, together with the sign off by the SELEP Accountability Board for £3.2m to unlock the new site by early development of the access infrastructure. A further application to the new round of Growth Funding for Phase 2 Airport Business Park was approved for £19.9m. The scheme supports the more effective operation of recent junction improvements at A127/A1159 Cuckoo Corner, A127 Progress Road, A127/B1013 Tesco Roundabout, and A127/A13 Victoria Gateway. It also supports the SELEP funded SCAAP Transport scheme Phase 1 with minor junction improvements carried out in 2016/17 at A127/Great Eastern, A127/Carnarvon Road, A127/ East Street.

2. STRATEGIC CASE

The strategic case determines whether the scheme presents a robust case for change, and how it contributes to delivery of the SEP and SELEP's wider policy and strategic objectives.

2.1. Challenge or opportunity to be	**Introduction** The Council has a long standing strategic priority to address capacity issues, accessibility and journey time reliability along the A127 corridor. As identified in LTP3, the A127 is one of two routes into the Town Centre with the A127 being the strategic freight corridor into the town

addressed	and principal access to London Southend Airport (LSA) and Rochford. The following figure below provides a diagrammatic representation of the importance of the A127, not just to the movement of people and goods, but to wider planning, the environment, transport planning, business and the economy, partnership working, and intelligent transport systems. It is vital to the economy and well-being of Southend.



Successful improvements to the A127 route, in terms of journey time savings and reliability, have been carried out incrementally as funding has been applied for and granted. The "Better Southend" schemes at A127 Progress Road, A127/A1159 Cuckoo Corner and A127/A13 Victoria Gateway were accepted for grant funding on the basis that they were required to support delivery of employment and housing, particularly at the A127 Progress Road Business Park, the London Southend Airport (LSA) area (Saxon Business Park), Town Centre and Shoeburyness. This and the improvements to the A127 Progress Road and the A127/A1159 Cuckoo Corner schemes delivered journey time savings of up to 15 minutes in the peak, significantly reduced queuing, and were a catalyst to Stobart's investment in LSA of c£150m and the commencement of EasyJet flights from LSA. The airport's growth is continuing having increased passenger numbers to over 1m per annum since 2012, with a target of 2m per annum by 2020. Achieving this ambitious target will be helped by Ryanair's €300m investment to commence services from LSA in 2019

Further improvements to the A127 are presently ongoing at the A127/A1015 Kent Elms Junction and A127 The Bell Junctions, as well as maintenance improvements as an integral part of the access improvements supporting the delivery of Business Park employment in areas

adjacent to LSA, and provision of new housing in Rochford.

Policy context and compliance

South East LEP Strategic Economic Plan identifies the A127 as one of the 12 growth corridors that are vital to for growth in the LEP area. As the vital strategic link between London, the M25, Basildon, Southend and Rochford that carries commuters, leisure traffic, and freight it is critical to the functioning of the economy of south Essex.

London Southend Airport and the new adjacent business park developments is a key employment area with a major focus on growth in the Thames Gateway South Essex area and is heavily reliant on the efficient functioning of the A127. The corridor is also home to one of the largest concentrations of advanced manufacturing in the South East.

Plans for LSA involved releasing further land for business development (Airport (Saxon) Business Park), providing improved access to employment, supporting development in and around the airport, and within Southend itself. LSA and planned business parks, will prove attractive to a wide range of global companies and offers capacity for at least 4,200 additional jobs up to 2021 and a further 3,180 post 2021.

Southend and Rochford Councils have adopted the London Southend Airport and Environs Joint Area Action Plan (JAAP) to unlock these opportunities. As a further boost to occupier interest, the Airport Business Park is one of the intended locations for a MedTech Campus. This is being proposed by Anglia Ruskin University in partnership with local government including SBC, central government, the NHS, private healthcare providers and the healthcare industry and will ultimately deliver up to 12,500 new jobs. The Southend Central Area (including Victoria Avenue) will be regenerated as a new quarter for offices and mixed use, including the City Deal secured Growth Hub. Including the significant redevelopment 60's office blocks to dwellings underway in Victoria Avenue with flats already occupied. Comprehensive redevelopment plans for Basildon Town Centre are well advanced, including the relocation of South Essex College's Basildon Campus to the Town Centre.

Realising much of the growth depends upon resolving the key transport barrier to sustainable growth; addressing the significant reliability and resilience issues along the A127. At peak periods, the A127 carries traffic volumes which exceed those on many urban motorways elsewhere in the UK. Data shows the busiest sections of the route carried in excess of 70,000 vehicles (Average Annual Daily Flow) in 2011, which is in excess of the design capacity of a dual carriageway. With DfT's National Transport Model forecasting traffic can be expected to grow by over 40% by 2040, the adverse impact on Southend's economy could be significant if improvements are not made in the short, medium and long term.

Investment in this corridor is wholly compliant with the aspirations of the Economic Plan for Essex and the Economic Plan for Southend that will update and incorporate the Greater Essex Integrated County Strategy and the ECC Economic Growth Strategy. The package of improvement proposed supports the delivery of both the Southend and Essex Local Transport Plan, and has the support of partner authorities.

Furthermore, improving the A127 would support delivery of the growth aspirations of the South East Strategic Economic Plan, and contribute to the national economy as it recovers from the longest recession in living memory.

The improvement will support not only delivery of employment in the JAAP area, but more widely in Southend with over **16,000 new jobs** as shown by the following table:

Sector	Number of jobs
Production including manufacturing	788
Distribution, transport, accommodation and food	11,429
Financial and insurance activities	183
Public administration, education, health	183
Other services and household activities	4,108
Total	**16,690**

The GVA impact to Southend's economy is estimated to be **£4.51bn** over a 60 year period (ref to A127 Corridor for Growth in Appendix 10). Further details of the role of the A127 in delivering economic growth in Southend and Greater Essex can be found in *A127 – Corridor for Growth* which accompanies this submission in Appendix 10.

Southend on Sea Local Plan

Southend Borough Council is currently in the process of preparing a new Local Plan for the Borough. The Southend new Local Plan will set out the Council's strategic vision, policies and site allocations, as appropriate, and will also identify areas for protection. It will provide the planning framework for Southend to 2036, beyond the current plan period of 2021.

Southend's Core Strategy (Development Plan Document 1), 2007, sets the ambition to deliver 13,000 net additional jobs and 6,500 net additional dwellings in the period 2001 to 2021. Policy CP3 recognises the importance of improving the A127 to provide better access to and from Southend, and stipulates The Bell as one of the junctions which requires improvement.

2.2. Description of project aims and SMART objectives

Please outline primary aims and objectives

Please present the SMART (specific, measurable, achievable, realistic and time- bound) benefits and outcomes on the local economy that will arise following delivery of the scheme in terms of numbers of jobs, new homes, GVA).

GVA impact - £4.51bn over a 60 year period.
Jobs – 13,000 across the Borough by 2021

National / Regional Objectives	Local Objectives	Scheme Objectives ✓✓✓= high, ✓✓ = medium, ✓ = low
Releasing new investment Investing in our growth corridors and growth sites Boosting our productivity	A thriving and sustainable local economy in the Borough	✓✓✓ The scheme will enable delivery of area actions plans throughout the Borough, particularly the JAAP and development around the airport and access to the town centre.

	Minimise environmental impact, promote sustainability for a greener Borough	✓✓✓ Freer flowing traffic along the A127 and through the busy Bell Junction will deliver positive environmental benefits. The provision of facilities for walking and cycling will encourage modal shift for local journeys.
	A safer Borough	✓✓✓ Provision of better crossing points will reduce pedestrians crossing the road between traffic, improve road safety for walkers, cyclists and the less mobile. An improved junction layout will improve road safety.
Improving our skills	Reduce inequalities in health and wellbeing, and a more accessible Borough	✓✓✓ Provision of crossing facilities will promote non-vehicular movements along the strategic corridor, improving residents' access to local shops and education facilities. Enable the delivery of the JAAP Business Parks including growth Hub.
Building more homes	A thriving and sustainable local economy in the Borough	✓✓✓ Delivery of the JAAP is an important objective for this junction improvement, including new homes on the Southend/ Rochford Boundary, as well as more dwellings around the Borough. Providing a more resilient access into Southend via the A127 will encourage economic growth.

2.3. Strategic fit (for example, with the SEP)	*Please detail the SELEP and local objectives/strategies/work programmes/ services which the investment will support* **Strategic Economic Plan 2014** The South East LEP's Strategic Economic Plan (SEP) set the following growth objectives to 2021: • Generate 200,000 private sector jobs, an average of 20,000 a year or an increase of 11.4% since 2011; • Leverage £10bn to accelerate growth, jobs and housing: and • Complete 100,000 new homes, increasing the annual rate of completions by over 50% compared to recent years. The SEP focuses on four key areas: • Enhanced transport connections; • Increasing business support and productivity; • Raising local skills levels; and • Supporting housing and development. The SEP identified its key growth sectors as advanced manufacturing, logistics and life sciences / med tech. These accounted to for 5.7% of total SE LEP employment, 4.2% of SE LEP businesses and 12.2% of the LEP's total GVA. It recognised that delays on major routes in the LEP area had detrimental impacts on business costs and efficiency. The SEP focuses on the development of 12 growth corridors across the LEP area. One of these is the A127 London-Basildon-Southend Corridor and would unlock capacity to support the accelerated delivery of housing and employment. The SEP makes reference to the fact that London Southend Airport, now with scheduled air services to Europe and hub airports for onward global travel, and its neighbouring business park, is proving attractive to a wide range of global companies and offers capacity for at least 4,200 additional jobs up to 2021 and a further 3,180 post 2021. The SEP states: *"The A127 Corridor is vital to the economic growth of the SELEP area, connecting London to the manufacturing hub of Basildon, and to Rochford, Southend, London Southend Airport and surrounding employment areas."* The A127 Bell Junction improvement scheme is highlighted in the SEP as a key component of the transport based growth plan for the A127 corridor. At a more local level Southend Borough Council and Essex County Council have developed a joint "A127 Corridor for Growth" economic plan to identify, plan and coordinate investment decisions and manage the asset. This is primarily to establish the conditions, in transport terms, to unlock growth in the key locations of Southend, Rochford and Basildon will see nationally significant growth in the advanced manufacturing and medical technologies sectors. **SELEP Strategic Economic Plan Evidence Base Update September 2017** This Evidence Base has been produced as part of a process for preparing the next Strategic Economic Plan for the South East Local Enterprise Partnership and so it comprises updated analysis worthy of reflecting on compared with the 2014 SEP referenced above (which remains the "adopted" SEP for the LEP until it is superseded). The purpose of this remains to create a

	more prosperous, skilled, connected and resilient region and the analysis is informed by extensive consultation across the LEP area. Some key aspirations from local authorities consulted as part of this are highlighted below: • An economy that is built on high value productivity (manufacturing); • A focus on strategic investment in areas and sectors of potential – particularly in the infrastructure; • An economy where businesses can grow and thrive, with an emphasis on the sectors that will deliver real growth in the future, but which does not ignore established sectors; • Improved infrastructure and built environment; • Ensure employment land and quality facilities are available especially grow-on space; and • More employment and grow-on space for businesses to land, grow and work together. The evidence base update also identified: • The analysis identified that a major priority for all the authorities in the SELEP area is to improve the availability of commercial premises in the area – particularly incubation centres, co-working spaces and grow on premises – to respond to the growing freelancer community being created by the changing working conditions, but to also address the impact of Permitted Development Rights. • It suggests that Government is clearly interested in connecting place with specialised business clusters. There is presently a lack of specialist 'business' clusters in the SELEP region – and or centred in the region and /or extending further afield. • It identifies a need to promote the LEP area as an international gateway and a region which is important to driving growth across the whole of the UK. SELEP is also a gateway to the UK and the gateway to Europe. The national economy and a major portion of our international trade depend upon SELEP's infrastructure. That infrastructure therefore needs to be treated as a top national priority matched by investment – ensuring good-quality access to the Ports to the M25 corridor, the M20, the A2/M2 and, the Lower Thames Crossing. The proposals for the A127 to support the development of key growth sectors and London Southend Airport as a key regional asset fully support the ambitions presented by consultees within this. **Major Road Network** Government proposals for the development of a Major Road Network (MRN) in England include designating sections of the A127 as part of the MRN. Southend on Sea Borough Council supports the proposal for the A127, with the caveat that it extends to the whole length of the A127 to Victoria Gateway. However, at this stage the criteria for the MRN have not been confirmed, but it is envisaged there will be standards around free flowing traffic and a minimum standard of maintenance that will need to be met.
2.4. Planning policy context and permission	Southend-on-Sea's Core Strategy (2007) states that improvements to transport infrastructure and services will be sought to secure a 'step change' in provision that will be necessary to unlock key development sites for employment led regeneration and growth of Southend. This particularly includes improving the A127/A1159 east-west strategic transport and freight corridor including junction improvements at A127 Progress Road, A127/A1015 Kent Elms,

s	A127 The Bell, A127/A1159 Cuckoo Corner, Sutton Road, Fairfax Drive, East/West Street and A127/A13 Victoria Gateway. Some of these improvements have been delivered, but Kent Elms, A127 Essential Major Maintenance and The Bell junctions in particular form a key pinch point where improvements would make the A127 within the Southend boundary provide a more resilient network, operate more effectively by providing increased capacity and reducing congestion and associated delays. The Core Strategy is supported by a suite of daughter documents, of which, two are particularly relevant: Southend Airport and Environs Joint Area Action Plan (JAAP - 2014) and the Southend Central Area Action Plan (SCAAP). Although the JAAP's focus in the immediate area around the airport, it recognises that the location's attractiveness for investment is partly based on its proximity to the A127 which provides a strategic link to Essex, London and beyond. However, there are issues of reliability, congestion and delays with the route that need to be addressed if it not to be seen as a barrier to investment in the area. This is particularly important for the LEP prioritised sectors that have indicated a willingness to locate in JAAP area business parks, but could conceivably be put off by concerns related o being able to access the wider labour market, and getting their products to customers. Similarly, the SCAAP has a focus on development on the immediate area, but it too is linked to the far end of the A127 which will be the main route for visitors to Southend arriving by road based transport. An A127 that does not work well, subjecting travellers to delays and congestion, will be a significant barrier to enticing people to Southend, irrespective of the attractiveness and inducements of the developed central area.
2.5. Delivery constraints	*High level constraints or other factors which may present a material risk to delivery* **Main constraints are:** <u>A127 Traffic</u> The A127 is the primary route into Town, the closure of the A127 for any extended period of time during the peak periods will have a significant impact on the surrounding roads in the Borough. Extended closures and the impact felt from them, has the potential for reputational damage for the Council. The schemes will look to minimise the duration of closures to ensure any impact of the work is lessened. <u>Transfer of land use</u> For the The Bell Preferred Highway Option 2 – the transfer of a small area of public open space to highway may cause concern to the residents immediately adjacent to the open space area. Mitigation measures involving enhancing the landscaping will be considered with the residents. <u>Relocation of utilities</u> Discussions with Utility Undertakers are at an initial stage and the design is subject to change, dependent upon the responses from the utility companies. Where practical, the design will be reviewed to minimise diversion works. From lessons learnt with the A127/A1015 Kent Elms scheme, extensive trial holes and slip trenches will be carried out to determine/confirm the location of utility apparatus to inform the design and minimise coming across unknown apparatus during the construction phase. <u>Traffic Regulation Orders</u> Road space for scheme implementation is required before works commence. For any necessary Temporary and Traffic Regulation Orders the Chief Executive and Deputy Chief (Place) will have delegated authority. It is anticipated that a Traffic Regulation Order will be

	required to remove the existing permitted westbound right turn movement. <u>Public Consultation</u> Public Consultation on the Bell options commenced on 16th July 2018 and continued into September 2018. This included an online consultation questionnaire launched via the Better Southend website (www.bettersouthend.co.uk) and supported with two events within the local Schools on 17th and 18th July 2018. Dependent upon the results of the consultation a decision on the Scheme Highway Option and Footbridge Option to be implemented will be made following a review of the public consultation and the transfer of Public Open Space to Highway. A public engagement exercise is underway with the residents and businesses in the immediate vicinity of the junction with the purpose to minimise anxiety of the improvement and listen to the issues and concerns they have over the current junction and proposed improvement. An All Member and Ward Member exercise was carried out in January 2018 to highlight the constraints of the junction and any issues they may have. Full details of the risk register are contained within Appendix 14.
2.6. Scheme dependencies	*Please provide details of any related or dependent activities that if not resolved to a satisfactory conclusion would mean that the full economic benefits of the scheme would not be realised.* Benefits realisation will be maximised if recently improved junctions on the A127 (A127/B1013 Tesco Roundabout, A127 Progress Road, A127/A1159 Cuckoo Corner, A127/A13 Victoria Gateway), A127 Kent Elms Improvement can be supported through the delivery of the A127 Essential Highway Maintenance and The Bell Junction improvement.
2.7. Scope of scheme and scalability	*Please summarise what the scope of the scheme is. Provide details of whether there is the potential to reduce the projects costs but still achieve the desired outcomes.* The Safety Barrier improvement works are a defined set of defects that need addressing to ensure the system is compliant with current standards, therefore these works have no scalability. The Drainage improvements are intended to address known issues with the network, however there is the potential, when on site, to reduce the amount of work currently indicated. Due to the inadequacy of some of the gully pots, it may be possible to reduce the number of proposed connections, once they have been exposed and inspected. This we enable the works to be delivered quicker and with reduced expense. Three highway options for the Bell are being consulted on as described in 1.5 above. Briefly, these are: • The Bell Highway Option 1 – provides an extension to the right turn lane from the A127 into Hobleythick Lane and removes the right turn lane from the A127 into Rochford Road. • The Bell Highway Option 2 Preferred Option– provides an extension to the right turn lane from the A127 into Hobleythick Lane and removes the right turn from the A127 into Rochford Road, along with the provision of a dedicated left turn facility from the A127 into Rochford Road. • The Bell Highway Option 3 – provides an extension to the right turn lane from the A127 into Hobleythick Lane, removes the right turn from the A127 into Rochford

	Road, along with the provision of a dedicated left turn facility from the A127 into Rochford Road and the provision of a new pedestrian crossing facility on Hobleythick Lane Additionally there are two options for a new pedestrian footbridge to replace the current footbridge which requires to be removed due to the supports being positioned within the new carriageway in options 2 and 3. In addition two non-viable footbridge options have also been identified within the consultation documents. The Bell Highway Option 2 £4.401M combined with Footbridge Option 3 £0.759M totalling £5.161M, is being put forward in this Business Case as the preferred option. These provide the maximum benefits possible without requiring land from business or residents and supports the scheme objectives. Total scheme costs LGF ask going forward is £4.377M with Southend contribution of £0.72M and £0.063M S106. Should it not be possible to arrange for the transfer of public open space to Highway within the required timescale for Option 2 to proceed and subject to the review of the Public Consultation exercise, Highway Option 1 £2.061M would be constructed. On completion of the review of the Public Consultation exercise and subject to the outcome of the transfer of land, the Chief Executive and Deputy Chief Executive (Place) will have delegated authority to agree the Option to be taken forward for implementation. Should the Option to be taken forward be less than the allocated amount, the excess contribution will be returned. The pavement improvements will be taken further during the design. The current proposals base the construction on traditional methods utilising full depth carriageway reconstruction. The innovation gained from engagement with material specialists are expected to yield alternative methods to achieve the same solution, reducing construction programmes and have less impact on the A127 corridor. Where these innovations save cost, this can be put to use on other areas of the A127.

2.8.	**Options if funding is not secured**	*Please summarise what would happen if the funding for the scheme was not secured - would an alternative solution be implemented and if so please identify how it differs from the proposed scheme.* *Is doing nothing an option?* The do nothing option for the Major Maintenance would be to continue the Councils current approach to road maintenance, where strategic routes are prioritised by investing a higher proportion of funds on reactive maintenance. This could potentially lead to an increase in the number of non-strategic routes which are in a poor condition, resulting in an increased cost to return them to appropriate condition and more disruptive for local residents and businesses. Without this improvement at the Bell, the completed improvements at A127 Progress Road, A127/B1013 Tesco Roundabout, A127/A1159 Cuckoo Corner, A127/A13 Victoria Gateway and A127/A1015 Kent Elms will not fully maximise their intended benefits. This will have ongoing consequences for securing investment in Southend. This intervention will demonstrate a strong commitment to provide the infrastructure needed to support the employment and housing numbers. The modelling has been based on 2021 projections of traffic growth and whilst this is predicated on full development, it is considered that this is the most credible position to adopt at present, given the urgency around boosting economic growth. Whilst the development will be phased over the JAAP period, it must be recognised that in order to encourage the investment and increase the viability of the sites a clear, funded, route for infrastructure development must be put forward to support the JAAP developments and further economic growth. The overall programme of investment in the A127 corridor to support the delivery of growth for Southend and airport business parks is to complete the A127 Kent Elms Junction Improvement installation of the footbridge in early 2019 followed by the completion of the A127 The Bell Junction Improvement in 20/21 at the latest and supported by the A127 Essential Bridge and Highway Maintenance package of measures scheduled for completion in 2020/21. Due to the overlap in works and interlinkages it has been decided to combine the A127 Essential Major Maintenance and The Bell Junction improvement.

3. ECONOMIC CASE

The economic case determines whether the scheme demonstrates value for money. It presents evidence on the impact of the scheme on the economy as well as its environmental, social and spatial impacts. For projects requesting over £5m of SELEP directed funding, a full economic appraisal should be undertaken and supplied alongside this application form.

3.1. Impact Assessment

Please provide a description of the impact assessment of the scheme with some narrative as to why other options have been discounted.

This should include a list of significant positive and negative impacts and a short description of the modelling approach used to forecast the impact of the scheme and the checks that have been undertaken to ensure that the approach taken is fit for purpose.

A127 Major Maintenance Do Nothing scenario
The assessment period of 20 years is based on the continuing deteriorations of the A127 corridor. As the network continues to fail journey times will increase as the speeds travelled along the corridor become lower due to the quality of the carriageway, and as deterioration increases sections of the carriageway will fail requiring intermittent closures of the carriageway to reconstruct those areas which have failed.

It is therefore assumed for assessment purposes that this would result in a permanent speed limit change in these sections from the current 40 mph to a lower 30 mph, in order to prolong the life and reduce failures.

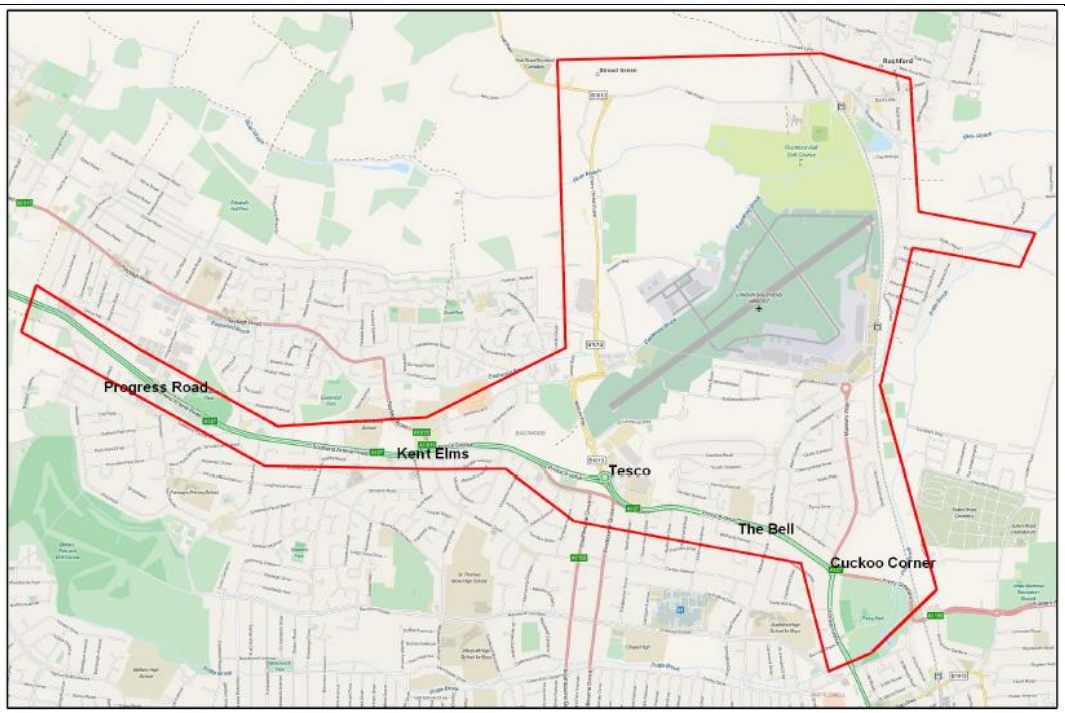
A127 Major Maintenance Do Something scenario

The assessment period will be for 20 years based upon the first year with diversions in place for the works and the remaining 19 years with the A127 operating with the current 40 mph speed limit for the Do Something scenario. The impact of the first year diversions on the A127 will be assessed using the DfT's Quadro software. For the pavement improvements the duration of the works and the diversions routes will be assessed to establish the impact. This will be for a 12 months period as per the programme, the remaining 19 years will be based upon the network performing optimally and will be compared to the performance of the do nothing scenario.

A127 The Bell Junction Improvement

The assessment makes use of an existing VISSIM micro-simulation model originally developed by Atkins validated to a 2012 base. Further details of the existing model development and revalidation can be found in the Atkins 'A127 Corridor Study – Proposed Junction Option Testing Technical Note' issued in May 2013 contained within Appendix 20.

A future modelling year of 2021 will be used as with the previous modelling with the traffic flows revised to accommodate subsequent changes. The network extents of the VISSIM model are shown in Figure below. The key junctions along the A127 have also been identified.



Comparisons will be provided for a 2021 Do Minimum scenario and the three 2021 Do Something scenarios. The assessment is based upon a Do Something (DS) VISSIM model produced as part of the Kent Elms project, which now forms the Do Minimum (DM) base.

2021 Forecast Method

A consistent forecast methodology has been used as per the previous studies undertaken by Atkins.
The methodology involves using the Southend-on-Sea Multi Modal Model (SoSMMM) as follows:

- 2021 SATURN absolute differences calculated (Future year – base);
- SATURN differences then divided by 4 (to get 15 min equivalent) and profiled to VISSIM flows
  based on a modified version of the existing flow profile (with a flatter flow profile to allow all forecast growth to be accommodated within the peak period);
- If negative values resulted then percentage difference used instead; and,
- Resulting VISSIM 2021 interim flows manually balanced.

The resulting flows for the 2021 scenarios for all hours assessed are provided in Appendix A.

The Bell 2021 Do Minimum

The assessment is based upon a DS VISSIM model produced as part of the Kent Elms project, which now forms the Do Minimum (DM) base.

The Bell 2021 Do Something Scheme Options

The Do Something options include changes to the A127 Bell junction only the rest of the network is identical to the Do Minimum network.

Summary

A consistent forecast methodology has been used as per the previous studies undertaken by Atkins. The methodology involves using the SoSMMM to derive the forecast flows based on the differences between the SoSMMM forecast and base model flows applied to the VISSIM base model flows. This method retains the operational flows from the base whilst still applying the WebTAG compliant forecast from the SoSMMM.

3.2. Outputs/wider benefits

Identify jobs, floor space and housing starts connected to the intervention, quantify the outputs in tabular format and provide a short narrative for each theme (i.e. jobs/homes/floor space) explaining how the project will support the number identified. ***Please describe the methodology used for calculating jobs and homes numbers.***

Homes

SHLAA Update 2014

Potential Housing Supply in Southend on Sea

The NPPF requires planning authorities to be able to demonstrate a five year supply of housing plus an additional 5%.

The Core Strategy phased housing requirement for the next 5 year period (2013 to 2018) is 1,570. An additional 5% would equate to 1,649.

The implementation of all outstanding residential planning permissions would result in an additional 2,033 net additional dwellings, of which 1,608 are predicted to be delivered in the next five years, which falls slightly short of the 5 year housing supply target + 5% of 1,649. However, past performance and delivery of windfall sites indicates that a windfall allowance of 402 can be applied to the housing delivery in Southend for the next 5 year period, resulting in a supply of 2,010 net additional dwellings, providing sufficient supply of housing to meet the targets. This information demonstrates that Southend has a good supply of readily available housing sites to meet a five year housing supply and beyond.

According to the above results a 6.4 year housing land supply can be demonstrated for Southend. [2,010/ (1570/5) = 6.4].

Applying the 5% buffer to the housing target results in a 6.09 year housing land supply [2,010/ (1649/5) = 6.09]

Summary of 15-year Dwelling Provision

	To date 2001/2014	5 Year Supply 2014/2019	10 Year Supply 2014/2024	15 Year Supply 2014/2029
Completions	4,237			
Outstanding Planning Permissions		553	582	582
SHLAA Sites with Planning Permission		1055	1451	1451
SHLAA Sites without Planning Permission		0	966	2106
Windfall (small sites)		402	892	1807
Total Completions/Projection for period	**4,237**	**2010**	**4304**	**6359**
Target for period*	4310	1570	3090	4590
minus overprovision 2001/2013	N/A	-73	-73	-73
Number of dwellings left to achieve phased target		1643	3163	4663
Cumulative overprovision/ shortfall	-73	367	1141	1696

Southend Core Strategy states:

Policy CP1: Employment Generating Development

Provision is made for not less than 6,500 net additional jobs by 2011, and not less than 13,000 net additional jobs by 2021, distributed[6] as follows:

.	2001-2021	Per Annum
Town Centre and Central Area	6,500	325
Shoeburyness*	1,500	75
Seafront**	750	37.5
Priority Urban Areas***	2,750	137.5
Intensification****	1,500	75
TOTAL	13,000	650

* Further detailed guidance into development in Shoeburyness will be provided in the "Shoeburyness SPD".
** 'Seafront': subject to the safeguarding of the biodiversity importance of the foreshore
*** Priority Urban Areas these comprise the District Centres of Westcliff and Leigh, the Southchurch Road shopping area and the West Road/Ness Road shopping area in Shoebury, together with the town's main industrial estates/employment areas as identified on the Key Diagram and listed at paragraph 2.4. Those Priority Areas falling within the boundaries of proposed Area Action Plans and Supplementary Planning Documents provide a jobs contribution towards these areas rather that the 'Priority Urban Areas' category.
**** In broad terms, intensification takes into account the modern forms of working such as home working and 'hot desking' as well as small scale employment generating mixed use development within the community.

The proposed Junction Improvement works will support the JAAP and in the short term support unlocking Phase 1 of the development scheme for the Airport Business Park which could deliver the following outputs (as reported within the Southend Airport Business Park Phase 1 Business case):

	16/17	17/18	18/19	19/20	20/21	Totals
Commercial floor space (sq.m)		2,348	10,268	3,852	5,943	22,410
Gross Jobs (non-construction) (with 10% running void)		141	356	231	357	1,084
Net Additional Jobs (non-construction)		98	237	160	247	742
Net Additional GVA (non-construction) (discounted over 10 year period)						£372m

3.3. Standards

Provide details of anticipated standards (such as BREEAM) that the project will achieve.

TD 9/93 Highway Link Design,
TD 27/05 Cross Sections and Headrooms

TD 50/04 The Geometric Layout of Signal Controlled Junctions and Signalised Roundabouts
TA 57/87 Roadside Features
TA 90/05 The Geometric Design of Pedestrian, Cycle and Equestrian Routes
HD 33/16 Surface and Sub-surface Drainage Systems for Highways
HA 102/00 Spacing of Road Gullies
HA 40/01 Determination of Pipe Bedding Combinations for Drainage Works
BD 29/17 Design Criteria for Footbridges
HD 24/06 Traffic Assessment
IAN 73/09 Rev 1 Design of Pavement Foundations
HD 26/06 Pavement Design
HD 39/16 Footway and Cycleway Design
HD 31/94 Maintenance of Bituminous Roads
HD 32/16 Maintenance of Concrete Roads
HD 36/06 Surfacing Materials for New and Maintenance Construction
TD 19/06 Requirement for Road Restraints System
HD 19/15 Road Safety Audit
LTN 1/95 The Assessment of pedestrian crossings
LTN 2/95 The design of pedestrian crossings
The SuDS Manual

3.4. Value for money assessment

A127 The Bell Junction Improvement

The following table below shows a summary of scheme costs and benefits over a 60 year appraisal period; all Do Something scenarios show a "very high" BCR based on the DfT definition of the term. The BCR range is22.0 to 53.8.

Option / Variant	Construction Cost (£m)	Discounted Benefit (£m)	Discounted Cost (£m)	BCR
Option / DS1	2,821,289	130,176,847	2,419,995	53.8
Option / DS2 Preferred Option	**5,160,796**	**137,536,979**	**4,426,736**	**31.1**
Option / DS3	7,164,182	135,316,986	6,145,165	22.0

This is based on:

- 60 year appraisal period;
- Includes 44% Optimism Bias; and
- Is in 2010 prices.

The junction's performance in the AM shows that all scheme options are forecasted to result in an improvement over the Do Minimum both at the Bell and network wide, with major reductions in delay and average queue lengths. For example the average queue length in the final hour for option 3 is 23 times smaller than in the same period for the Do Minimum. When comparing scheme options, option 3 performs better than option 1 and 2, in average queue length and delay, but only marginally. The travel times network performance again show similar results between all Do Something options and large improvements over the Do Minimum.

The PM junction performance results in option 3 as the optimal performer, especially in terms of delay and average queue length. The travel times show option 3 performing

marginally better than option 1 and 2, however the Do Minimum shows better travel times within some westbound sections. As with the AM, the PM network performance displays similar results between all the Do Something options, whilst showing large improvements over the Do Minimum.

The Do Something Option 1-3 schemes have also been assessed in an economic spreadsheet with all options resulting in very large BCRs of between 22.0 – 53.8.
The largest BCR results in the DS1 scheme (due to the low costs), however, the DS2 has the highest benefits (but higher costs). The lowest BCR result is the DS3 scheme due to the higher costs which still results in a very healthy 22.0.
Sensitivity tests have been conducted to reduce the journey time savings or increases the costs and show that the journey times savings would have to decrease significantly, or the costs increase significantly to affect the scheme viability (to reduce the BCR below 2).

Whilst the project will look at improving cycle links within the immediate area it is not anticipated that there will be any monetarised benefit to the scheme, nor is it anticipated that there will be any significant modal split to be captured.

A127 Major Maintenance
The table below shows a summary of scheme costs and benefits over a 20 year appraisal period for the DS2 and DS3 Bell Schemes. The construction costs are based on 2018 prices but are then discounted to 2010 consistent with the benefits.

Scenario	Construction Cost	Discounted Cost	Discounted Benefit	BCR
Diversions 1st year	£7,200,034	£5,927,475	-£5,718,685	-1.0
30mph DM/40mph DS2			£53,859,373	9.1
Overall	**£7,200,034**	**£5,927,475**	**£48,140,688**	**8.1**

Scenario	Construction Cost	Discounted Cost	Discounted Benefit	BCR
Diversions 1st year	£7,200,034	£5,927,475	-£5,718,685	-1.0
30mph DM/40mph DS3		£5,927,475	£49,752,871	8.4
Overall	**£7,200,034**	**£5,927,475**	**£44,034,186**	**7.4**

The above tables show that even if considered in isolation the A127 maintenance schemes show good BCRs regardless of the Bell scheme selected (DS2 or DS3).

Combined Bell and A127 Major Maintenance
When the above schemes are combined the resulting economic assessment is summarised below for DS2 and DS3 Bell schemes.

Scenario	Construction Cost	Discounted Cost	Discounted Benefit	BCR
The Bell DS Option 2	£5,160,796	£4,426,736	£137,536,979	31.1
A127 Maintenance	£7,200,034	£5,927,475	£48,140,688	8.1
Overall	**£12,360,830**	**£10,354,211**	**£185,677,666**	**17.9**

Scenario	Construction Cost	Discounted Cost	Discounted Benefit	BCR
The Bell DS Option 3	£7,164,182	£6,145,165	£135,316,986	22.0
A127 Maintenance	£7,200,034	£5,927,475	£44,034,186	7.4
Overall	**£14,364,217**	**£12,072,640**	**£179,351,172**	**14.9**

The resulting BCRs are still very strong for either DS2 and DS3 combined with the A127 Maintenance works with a BCR of 17.9 and 14.9 respectively.

3.5. Transport scheme assessment

Provide a brief description of a modelling and appraisal methodology – including details of data source (supported by LMVR, forecasting report, data collection and analysis reports following the Major Schemes Business Case checklist)

Show sufficient information to demonstrate the analysis supporting the economic case fitness for purpose.

The level of detail in the appraisal summary table should be proportionate to the scale of expected impact with particular emphasis placed on the assessment of carbon, air quality, bus usage, sustainability modes, accessibility and road safety.

Please include information on wider economic benefits

The Bell Junction Improvement

The performance of three potential junction improvement schemes at the A127 The Bell junction on the A127 using the microsimulation software VISSIM and traffic flow inputs from the strategic Southend-on-Sea Multi Modal Model (SoSMMM). An existing model created by Atkins was updated with as built network improvements to create a Do Minimum network. Three Do Something models were created from the Do Minimum with changes only to the A127 The Bell junction and a committed scheme at A127 The Bell. A future year of 2021 was used for all assessments.

A consistent forecast methodology has been used as per the previous studies undertaken by Atkins. The methodology involves using the SoSMMM to derive the forecast flows based on the differences between the SoSMMM forecast and base model flows applied to the VISSIM base model flows. This method retains the operational flows from the base whilst still applying the WebTAG compliant forecast from the SoSMMM.

The full details of the scenario testing can be found in the *A127 The Bell VISSIM Modelling Assessment* technical note which accompanies this submission in Appendix 20.

A127 Major Maintenance Do Nothing scenario

The assessment of the reduced 30 mph speed limits will be coded into the VISSIM model for the A127 corridor and via a manual spreadsheet method for those areas outside the model area and compared to the Bell DS2 and DS3 models with the 40 mph speed in place (as above). The spreadsheet method involved estimating the link journey time and junction delay (more details provided in Appendix 21.

A127 Major Maintenance Do Something scenario

The impact of the first year diversions on the A127 will be assessed using the DfT's Quadro software. For the pavement improvements the duration of the works and the diversions routes will be assessed to establish the impact. This will be for a 12 months period as per the

programme, the remaining 19 years will be based upon the network performing optimally and will be compared to the performance of the do nothing scenario.

Ten sections of road have been identified for maintenance. The traffic flows used in the Quadro assessment are consistent with The Bell VISSIM model based on the 2021 assignment from the SoSMMM. Quadro requires 12 hour flow inputs so factors from the permanent count site on the A127 were used to derive a suitable AM/PM peak to 12 hour factor. The latest version at the time of writing was used (Quadro 2017).

3.6. Options assessed

1. Assessment of options considered- including do nothing, do minimum etc.
2. Recommended option. How do its impacts compare with the other options considered?

Transport assessment of options

Please provide a description of at least 4 options (or choices) for investment, together with their relative advantages and disadvantages (a SWOT analysis):

- Do nothing
- Do minimum
- Do something
- Do optimum

Please bear in mind that:

- these options may differ in potential business scope, service solution, service delivery, implementation and funding, depending on the nature of the investment
- the investment appraisal for each option should be contained as an appendix and prepared in accordance with the tools and techniques set out in the WebTAG, Capital Investment Manual and HM Treasury Green Book.

A127 The Bell Junction Improvement

The economic summary for the three options is provided below:

Criteria	Option / DS1 Highway Option 1 & Footbridge Option 3	Option / DS2 Preferred Option Highway Option 2 & Footbridge Option 3	Option / DS3 Highway Option 3 & Footbridge Option 3
Journey time benefits over assessment period (2010 market prices)	£379,593,447	£401,058,547	£394,585,037
Journey time benefits over	£130,175,847	£137,536,979	£135,316,986

assessment period discounted to 2010 (2010 market prices)			
DS1 Construction Cost (2016 Q1)	£2,821,289	£5,160,796	£7,164,182
Net Construction Cost	£2,821,289	£5,160,796	£7,164,182
PRI Factor to 2010	0.786614011	0.786614011	0.786614011
Net Construction Cost (2010 Prices)	£2,219,265	£4,059,554	£5,635,446
Market Price Factor	1.209	1.209	1.209
Net Market Cost (2010 value at Market Prices)	£2,683,092	£4,908,001	£6,813,254
Discounted Benefit (2010 market prices discounted to 2010)	£130,175,847	£137,536,979	£135,316,986
Discounted Cost (2010 market prices discounted to 2010)	£2,419,995	£4,426,736	£6,145,165
BCR	53.8	31.1	22.0

All the options have very high BCRs of between 22.0 – 53.8. It should be noted that these are based on a single assessment year and as such the benefits could be overstated.

The largest BCR results in the DS1 scheme (due to the low costs), however, the DS2 has the highest benefits (but higher costs). The lowest BCR result is the DS3 scheme due to the higher costs which still results in a very healthy 22.0.

A127 Major Maintenance

The A127 maintenance schemes have been assessed for 2 scenarios, firstly for the impact if the maintenance does not occur as a Do Nothing, and secondly with the maintenance occurring as a Do Something. In addition the schemes have been assessed with The Bell DS2 and DS3 scenarios in place.

Combined Schemes

The economic assessment of the two elements have then been combined. The BCRs are summarised in section 3.4 and are very strong for either DS2 and DS3 combined with the A127 Maintenance works with a BCR of 17.9 and 14.9 respectively.

3.7. Assumptions

List all assumptions made for transport modelling and approach. WebTAG sets out assumptions that should be used in the conduct of transport studies.

In addition, please list any further assumptions supporting the analysis.

See 3.5 and 3.6, and the *A127 The Bell VISSIM Modelling Assessment* technical note which accompanies this submission in Appendix 20.

3.8. Sensitivity tests

Set out your sensitivity tests considering risks, uncertainties and sensitivities associated with the project

Refer to A127 The Bell VISSIM Modelling Assessment technical note which accompanies this submission in Appendix 20.

The results of the sensitivity testing for the Preferred Option (DS2 – Highway Option 2 and Footbridge Option 3) combined with the A127 Maintenance schemes are as follows (DS1 and DS3 are similar):

Impact of reducing AM Peak Journey Time Saving on BCR

JT Saving/Veh (s)		
AM	PM	BCR
63.9	24.5	17.9
53.9	24.5	16.5
543.9	24.5	15.0
33.9	24.5	13.6
23.9	24.5	12.1
13.9	14.5	9.0

Impact of Cost increase on BCR

Cost	BCR
£10,354,211	17.9
£12,927,497	14.4
£15,500,784	12.0
£18,074,071	10.3
£20,647,358	9.0
£23,220,644	8.0
£25,793,931	7.2

	The above show that the journey time savings would have to reduce or costs increase significantly before the BCR drops below 2.

3.9. Appraisal summary – see AST in Appendix 11

3.10. Transport value for money statement – *See guidance*

	Present values in 2010 prices and values
PVB	£185,677,666
PVC	£10,354,211
NPV = PVB – PVC	£175,323,456
Initial BCR = PVB/PVC	17.9

3.11. Value for money summary - Preferred Option – The Bell Highway Option 2 and Footbridge Option 3 *worked example*

Please identify the category of VfM based on Benefit Cost Ratio (BCR) of the scheme using monetised impacts in line with WebTAG guidance.

VfM assessment should take into account qualitative and quantitative impacts in 2 stages:
I) Construct 'adjusted' BCR
II) Take into account all impacts that could not be monetised

VfM statement report should include:
I) VfM category
II) PV of benefits, costs and range around BCR
III) Summary of assessed benefits and costs, including assumptions that influenced the results
IV) Assessment of non-monetised impact
V) Key risks, sensitivities and uncertainties

	Assessment	**Detail**
Initial BCR	17.9	Preferred Option – Highway Option 2 and Footbridge Option 3, and the A127 Major Maintenance scheme gives a BCR of 17.9 which is very high.
Adjusted BCR	N/A	N/A
Qualitative Assessment		
Key risks, sensitivities	Medium	Land transfer required which will allow the preferred option to be delivered. Public consultation – review in progress.
VfM category	Very High	For all three options the BCR exceeds four and thus fits the DfT category of 'very high'.

4. COMMERCIAL CASE

The commercial case determines whether the scheme is commercially viable. It presents evidence on risk allocation and transfer, contract timescales, implementation timescales and details of the capability and skills of the team delivering the project.

4.1. Procurement

Please provide details of the procurement route and strategy that will be used for the project. This should include details of the procurement mechanism to be used, details of whether it is an existing framework and contract, the timescales associated with the procurements and details of other routes that were considered for delivery and reasons why these were rejected.

Southend-on-Sea re-let the Highways contracts into five "Lots" which divide the work into distinct areas; Planned and Reactive Maintenance; New Works; Traffic system Control, Traffic system Maintenance, and Resurfacing. The procurement process has complied with OJEU with the new contracts based on the HMEP/NEC3 Term Service Contract commencing on 1st April 2015 for initially 7 years.

Southend-on-Sea Borough Council appointed the successful tenderer for the Lot 2 New Works Contract in April 2015 to undertake all projects that are considered to be improvements the Councils highway network, such as highway, pedestrian, bus priority and cycling schemes. However there may be elements that involve works along footpaths, bridleways, in car park and on private land.

The Framework is based on the NEC3 Term Service Contract April 2013 utilising Option A, priced Contract with price list. The work is commissioned via Option X19: Task Order. With Option A it determines the amount to be paid by the Contractor for carrying out a specified task. Option X19 provides the Council with the facilities to control work on a task-by-task basis.

The procurement for the completion of the project will be made through existing framework the Eastern Highways Alliance Framework and supported by Southend Borough Council Term Contract for New Works.

Southend-on-Sea Borough Council joined The Eastern Highway Alliance Framework (EHF1) in order to carry out major projects such as the Local Pinch Point scheme A127/B1013 Tesco Junction Improvement.

The EHF1 is an unincorporated Association by Agreement involving nine local authorities engaged in developing ways to provide highway services in a cost effective and efficient way. The EHF1 commenced on 18th June 2012 and expired on 17th June 2016. Due to the success of EHF1 the local authorities agreed to engage contractors for EHF2. EHF2 contractors have been appointed with the Inter-authority agreement finalised to allow for an overlap of frameworks. The Council joined the Framework due to the underlying EHA ethos which is that of collaboration and encapsulates:

- A flexible approach to the procurement of highway services and goods based on an inter-authority strategy;
- The further development of Best Value, VfM and construction best practice using the partnering approach for the procurement of private sector partners involving the whole of the relevant supply chains;
- The rationalisation of systems and procedures enabling duplication of effort and administrative and support costs to be reduced for the EHA Members;

- The opportunity to foster innovation within the EHA and to make financial savings;
- The creation of more open processes and performance benchmarking partnerships through regional initiatives and with other highway authorities; and
- The development of skills to help implement and deliver best practices across the EHA.

The EHA is led by the Highways and Transport (H&T) Board comprising chief officers or their nominees. A Framework Steering Group (FSG) comprising senior officers of each member authority is responsible to the H&T Board for setting up and running the EHF1/2. A Framework User Group (FUG) comprising of officers and contractors deals with all matters related to the use of EHF1/2 within parameters set by the FSG.

The Framework is based on the NEC3 Framework Contract June 2013. Each authority commissioning work can use either direct award or mini competition to award work to the framework contractors.

The A127 Kent Elms junction improvements were procured using the Eastern Highways Alliance Framework (EHF2) which is based on the NEC3 Frameworks Contract April 2013. This fostered the same principles as EHF1 and provides the users of the alliance access to six Contractors which enable members to place either a Direct Award Contract or Mini Tenders.

Both the A127 Tesco Improvement and the A127 Kent Elms Improvements both utilised mini competition to procure the works to ensure a competitive costs was achieved for the works and to have a cost for the actual schemes.

The procurement route will utilise a combination of both SBC's own Contractors and those on the EHA2 framework.

The drainage improvements and VRS repairs will be procured through SBC's existing Lots. These elements of the scheme are clearly defined and are able to be progressed immediately upon approval of the business case.

The carriageway elements will need to be procured in an alternative method, this is due to the current position of the proposals. While the extent of carriageway works is known, traditional methods of design and construction do not lend themselves to keeping Southend open for business as it requires the A127 to be closed for significant periods, therefore alternative methods are required to accomplish the same goals, but through innovative methods that result in less disruption.
Three strategies have been developed to understand what procurement options are available in order to deliver the carriageway proposals. These are shown in Appendix 17.

Delivery Option 1
This delivery option would be to
This delivery option would be to procure a Consultant via SBC procurement procedures, to provide access to the relevant skill set required to develop innovative solutions to the remedial works identified.

This will lead to a fully formed Tender Package that will be let under the EHA2 Framework. However this route would not have a fully formed Traffic Management strategy at this stage. This Tender will result in the appointment of a Contractor that will develop the construction methodology in collaboration with SBC in the form of a

	Design & Build for Traffic Management and Communications. This will ensure that the TM proposals are agreed significantly in advance and will be based on the most suitable measure for each area identified for works. There is however a risk that due to the elements being worked upon separately that buildability issues may arise that could result in the need for rework. This delivery options has the longest programme relating to design and pre-construction works which will result in a reduce construction period. Delivery Option 2 This delivery option would procure a Contractor through the EHA2 Framework to gain access to their design staff for the innovative solutions required to reduce the need for the full depth reconstruction of existing carriageway, along with the expertise in TM and the establishment of a Communications Team that will provide information at the appropriate times. The benefit of the D&B with a Contractor allows design solutions, TM and Communications to be worked up in tandem. This approach generates time saving resulting from the removal of a second Tender process and reduces the risk of reworking proposals resulting from buildability issues of any of the proposed solutions. Delivery Option 3 This delivery option would take the model of SBC undertaking traditional design and construction principles utilising full carriageway closures to undertake the work, this design package would then procure a Contractor would be via the EHA2 Framework, The Contractor would then be tasked with delivering the solutions to the remedial works, along with Communications. This method does allow a quicker route to construction however it has a greater potential to cause issues/problems during the construction phase. It will require road closures for significant durations resulting in the need for diversion along alternative routes that are not designed to take these volumes of traffic, which in turn will cause significant delays. The Communications within this delivery option will be key to the success of the project. The preferred route is delivery option 2, procurement of a Contractor for a Design & Build utilising the EHA2 framework. The Bell junction improvements will be procured as part of the D&B contract described in delivery option 2. Whilst the design will be fully formed it will beneficial to deliver this work utilising the same Contractor as there are significant areas of overlap between the two schemes due to the projects end dates, location, interlinkages, management of traffic management, construction methods and potential contractor clashes requirements. The combined construction costs will also make the project more desirable for tenderers and provided reduced preliminaries costs. The Principle contractor will be the Senior Supplier on the Project Board and the Project Manager will be the NEC3 Project Manager for the construction works which has worked well on the A127/B1013 Tesco Junction Improvement works and A127/A1015 Kent Elms Junction Improvement Works.
4.2. Commercial dependencies	*None*
4.3. Commercial sustainability	*Please can you identify how the project will be commercially sustainable? Will the project require on going revenue support? If so how will this be funded?*

	The project will not require an increase in operation costs, maintenance costs or renewal costs. The footprint of the scheme is not increasing significantly enough to draw additional costs towards it, when offset against the efficiencies that will be saved as part of the design by utilising updated techniques and equipment on site.
4.4. Compatibility with State Aid rules	*State aid declaration – N/A*
4.5. Commercial viability	*Please provide:* 1. *Evidence to show the risk allocation and transfer between the promoter and contractor and timescales identified in procurement and/or contract management strategy* The contract will be in accordance with Eastern Highways Alliance Framework 2 NEC3 2013 Design and Build Option A.

5. FINANCIAL CASE

*To be completed in conjunction with the spreadsheet in **Part B***

5.1. Total project cost and basis for estimates

The options selected for implementation are subject to the completion of the review of the Public Consultation exercise and the outcome of the land negotiations

- A127 Drainage Improvements £0.671
- A127 Safety Barrier Improvements £0.029
- A127 Pavement Improvements £5.967
- The Bell Highway Option 1 £2.061M, including predicted land acquisition costs.
- The Bell Highway Option 2 £4.401M, Footbridge Option 3 £0.759M = £5.161 including predicted land acquisition costs.
- The Bell Highway Option 3 £6.405M, Footbridge Option 3 £0.759M = £7.164m including predicted land acquisition costs.

The total project cost have been produced from:

- Works estimates using 2016 prices from the Eastern Highways Alliance Framework (EHA),
- costs Management Fees, Design Fees and Supervision costs
- C3 estimates from Statutory Undertakers for plant diversions,
- calculation of risk utilising a Monti Carlo simulation through the use of @risk software (Appendix 13 this has been included as within the scheme costs below.
- the provision of a 26.378% Optimism Bias (WebTAG Unit A1.2 scheme costs Table 8) been included.

The Works costs are based on 2016 prices within the EHA, inflation has been accounted for by utilising the construction price indices, with a percentage increase applied to bring them up to April 2018.

5.2. Total SELEP funding request

LGF request:

The total allocation of Essential Major Maintenance amounts to £8m within the SELEP Programme. Two previous Essential Major Maintenance business cases have been successful in drawing down funding to the value of £1.4m. Therefore the A127 Essential Major Maintenance element of this Business Case seeks to draw down the remaining £6.6m allocation.

September 2016 Accountability Board approved £0.8m contribution to A127/A1015 Kent Elms Junction Improvement project therefore the economic case will refer to £8m - £0.8m = £7.2m

- The Bell Highway Option 1 £2.061M, Footbridge Option 3 £0.759M, A127 Drainage Improvements £0.671, A127 Safety Barrier Improvements £0.029, A127 Pavement Improvements£5.967 = £8.731including predicted land transfer costs. LGF = £7.948M

	• Highway Option 2 £4.401M, Footbridge Option 3 £0.759M, A127 Drainage Improvements £0.671, A127 Safety Barrier Improvements £0.029, A127 Pavement Improvements£5.967 = £11.829including predicted land transfer costs. LGF = £11.046 • Highway Option 3 £6.405M, Footbridge Option 3 £0.759M, A127 Drainage Improvements £0.671, A127 Safety Barrier Improvements £0.029, A127 Pavement Improvements£5.967 = £13.832m including predicted land transfer costs. LGF = £13.050M The option selected for implementation are subject to the completion of the review of the Public Consultation exercise, utility diversions and land transfer.
5.3. Other sources of funding	Refer to item 5.4 for Southend-on-Sea Borough Council contribution which is dependent on the outcome of the Public Consultation exercise. £63,027 - S106 Contribution from Bellway Homes in Hall Road, Rochford *"To be used towards highway improvements at the Bell Junction on the A127 Junction at Hobleythick Lane and Rochford Road with Prince Avenue including new signage road markings and kerb realignments which are required to satisfy and facilitate additional traffic flow resulting from the Development set out above."*
5.4. Summary financial profile	

A127 Major Maintenance and The Bell Highway Option 1							
(£m)		**-**	**Up to 17/18**	**18/19**	**19/20**	**20/21**	**Total**
Source of funding – *List here the amount of funding sought*							
SELEP request				1.110	4.074	2.763	7.948
Southend-on –Sea contribution			0.191	0.012		0.517	0.72
Third party contributions S106					0.063		0.063
Local contribution total (leverage)							
Total							
(£m)	**Cost estimate status**	**-**	**Up to 17/18**	**18/19**	**19/20**	**20/21**	**Total**
Costs - *List here the elements of gross costs, including optimism bias.*							
e.g.							
Procurement				0.051	0.016		0.067
Feasibility			0.041	0.028			0.068
Detailed design			0.010	0.241	0.364		0.616
Management including contract supervision costs			0.140	0.156	0.277	0.270	0.844
Construction				0.399	2.381	2.002	4.783
Other cost elements. (utility and land costs)				0.050	0.019		0.069
Risk				0.041	0.459	0.588	1.088
OB				0.153	0.619	0.419	1.192
VAT							
Total			0.191	1.122	4.137	3.280	8.731
A127 Major Maintenance and Highway Option 2 & Footbridge Option 3							
(£m)		**-**	**Up to 17/18**	**18/19**	**19/20**	**20/21**	**Total**
SELEP request				1.255	3.904	5.887	11.046
Southend-on –Sea contribution			0.191	0.012		0.517	0.72

Third party & other contributions S 106					0.063		0.063
Local contribution total (leverage)							
Total							
(£m)	**Cost estimate status**	**-**	**Up to 17/18**	**18/19**	**19/20**	**20/21**	**Total**
e.g.							
Procurement				0.051	0.038		0.089
Feasibility			0.040	0.028			0.069
Detailed design			0.010	0.376	0.439	0.009	0.834
Management including contract supervision costs			0.140	0.156	0.238	0.465	1.000
Construction				0.399	1.706	3.972	6.077
Other cost elements. (utility and land costs)				0.050	0.615		0.665
Risk				0.049	0.446	0.783	1.279
OB				0.157	0.485	1.174	1.816
VAT							
Total			0.191	1.267	3.967	6.404	11.829
A127 Major Maintenance and Highway Option 3 & Footbridge Option 3							
(£m)		**-**	**Up to 17/18**	**18/19**	**19/20**	**20/21**	**Total**
SELEP request				1.414	4.997	6.639	13.050
Southend-on –Sea contribution			0.191	0.012		0.517	0.72
Third party & other contributions **S106**					0.063		0.063
Local contribution total (leverage)							
Total							
(£m)	**Cost estimate**	**-**	**Up to**	**18/19**	**19/20**	**20/21**	**Total**

	status		17/18				
e.g.							
Procurement				0.051	0.053		0.105
Feasibility			0.040	0.028			0.068
Detailed design			0.010	0.482	0.499	0.009	1.000
Management including contract supervision costs			0.140	0.156	0.238	0.556	1.091
Construction				0.399	1.705	4.218	6.323
Other cost elements. (utility and land costs)				0.050	1.581		1.631
Risk				0.064	0.461	0.901	1.426
OB				0.194	0.522	1.471	2.187
VAT							
Total			0.191	1.426	5.060	7.156	13.833

5.5. Viability: How secure are the external sources of funding?	*Please provide evidence of the security of the specified third party contributions* S106 contribution requires to be spent by 2023.
5.6. Is any of the SELEP contribution recoverable?	No
5.7. Cost overruns	*Please describe how cost overruns will be met by other funding sources given that SELEP contributions will be capped at the offer awarded* Southend-on-Sea Borough Council will fund the Option to be implemented option less S106 and LGF contribution from the Council's Capital Programme.
5.8. Delivery timescales	*What are the main risks associated with the delivery timescales of the project? Please identify how this will impact on the cost of the project* See Risk Register in Appendix 14.
5.9. Financial risk management	*Identify key risks to the scheme funding and any mitigations* The Council is committed to the proactive management of key external and internal risks and actively promotes the principles of effective risk management throughout the organisation. The Risk Management Strategy and Framework aims to apply best practice to the identification, evaluation and control of key risks and ensure that residual risks are monitored effectively. This will be achieved by: • Enabling senior management and Members to support and promote risk management; • Developing and embedding clear strategies and policies for risk; • Equipping and supporting staff and partners to manage risk well;

	• Establishing and promoting effective arrangements for managing risks with partners; • Developing effective risk management processes to support the business; • Ensuring risks are handled in a way which gives the Council assurance that risk management is delivering successful outcomes and supporting creative risk-taking; and • Using risk management to contribute to the delivery of improved outcomes. Southend Borough Council will achieve these aims by implementing and maintaining a Risk Management Framework, comprising this risk policy statement, the strategy and toolkit (Appendix 15). These documents will be reviewed regularly against good practice guidance to ensure that they are fit for purpose and continue to drive forward a robust approach to risk management. Risks to the scheme have been recorded with those risks identified attributed a cost to mitigate them see Risk Register in Appendix 114. A separate Monti Carlo risk simulation has also been undertaken to quantify risk on the project see Risk Analysis in Appendix 13.
5.10. Alternative funding mechanisms	*If loan funding is requested how will it be repaid?* *Do you anticipate that the total value of the investment will be repaid? If not, how much will be repaid?* N/A

6. DELIVERY/MANAGEMENT CASE

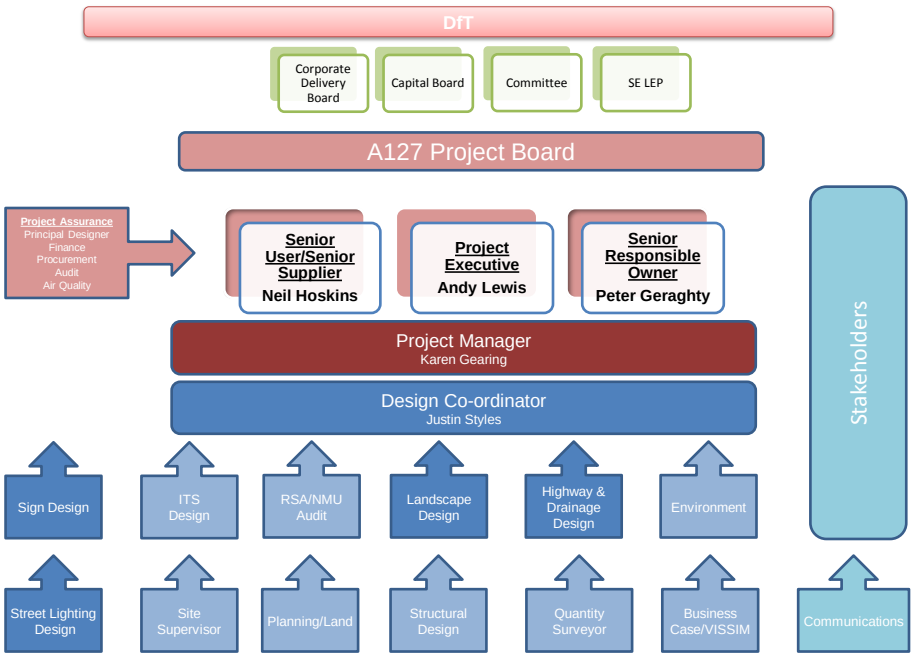
The management case determines whether the scheme is achievable. It provides evidence of project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

6.1. Project management

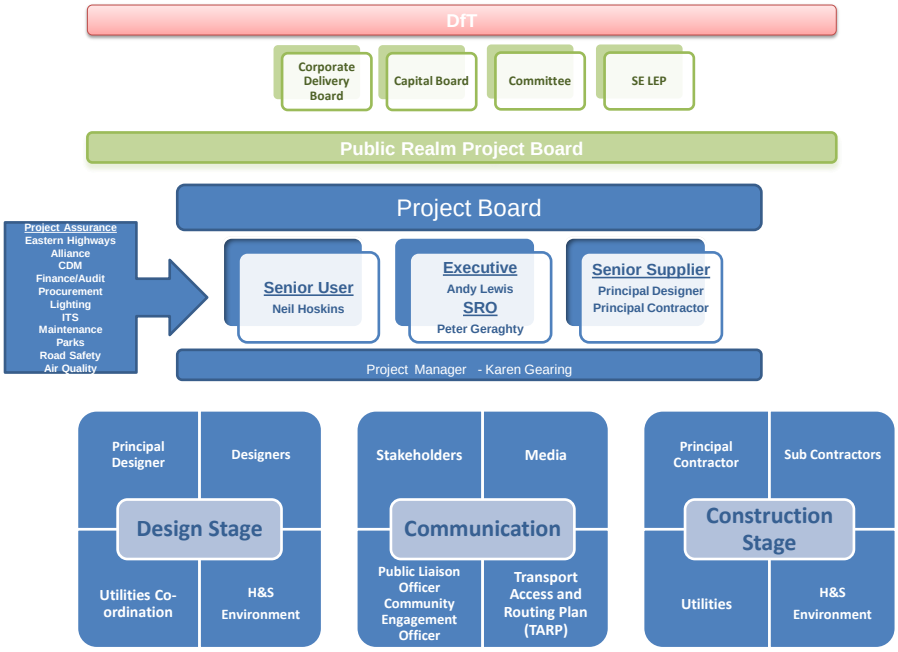
Please provide details of who will be responsible for delivering the scheme and the different roles and responsibilities they will play. Please also detail the governance structure for the project identifying how key decisions have or will be made, how the scheme will be monitored and details of the contract management arrangements. Please provide an organogram if available.

The A127 Bell Junction Improvement will build upon the delivery of the "Better Southend" Major Schemes (£25m package of CIF2 and DfT funded project and £5m Local Pinch Point Fund), LTP3 and LSTF projects. The project will be based upon PRINCE2 methodology with the Project Manager and Senior User PRINCE2 Practitioners. The following organisation chart shows the governance structure that is already in place and ensured the delivery of Phase 1 works.

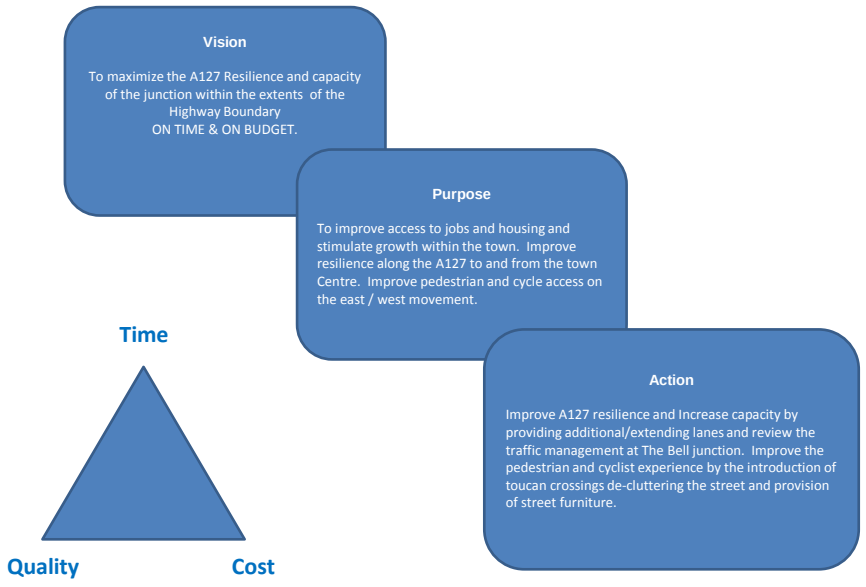
The design shall be carried out in house and engage specialist support services i.e. geotechnical, environmental, Road Safety Audit, surveys, from consultants/contractors through existing frameworks.



A127 Essential Major Maintenance and The Bell Junction Improvement Project – Design Stage



A127 Essential Major Maintenance and The Bell Junction Improvement Project Structure



A127 Essential Major Maintenance and The Bell Junction Improvement Project Structure

The "Better Southend" projects, including the A127 Progress Road Junction Improvement, the A127/A1159 Cuckoo Corner Junction Improvement, A127/A13 Victoria Gateway and City Beach improvements and the A127/B1013 Tesco Junction Improvement were all completed on time and within budget.

Lessons learnt from A127/A1015 Kent Elms Junction Improvement delays will be brought into this project. Mitigation measures to confirm utility apparatus will be further improved within The Bell Junction improvement and build upon the Ground Penetration Radar and utility plans to carryout extensive trial hole and slip trenches to identify utility apparatus within the footway and carriageway. These will be recorded by Southend-on-Sea own competent staff to ensure accuracy of information and obtaining accurate programmes from

utility companies. The core project team for A127/A1015 Kent Elms Scheme shall also be the core project team for A127 Essential Major Maintenance and The Bell Junction Improvement and lessons learnt embedded within this project.

The majority of decisions are taken by the project team and will utilise the Gateway process adopted by the design team (refer to Appendix 25 for details), however key decisions are taken by the project team to the Project Board to allow a full discussion to be had regarding their impact on the project and whether they have an adverse effect on programme, budget or reputation. This is possible due to the Chief Executive and Deputy Chief Executive (Place) having delegated authority from Cabinet to agree the Option to be taken forward for implementation and any subsequent changes that may arise as the project continues. Should it be considered at any stage that the changes to the scheme are considerable enough that it begins to depart form the outcomes and objectives of the project, it would then be taken back to Cabinet for discussion.

Andy Lewis – Deputy Chief Executive (Place)
Andy will be ultimately responsible for the programme and ensure that all elements are correctly focussed on achieving their aims, objectives and outcomes, and reports to the Corporate Delivery Board. Andy has been the Corporate Director and Executive for all previous "Better Southend" projects. Andy's strong Executive support for this project and his experience will ensure A127 The Bell Junction is completed on time and to budget

Dr Peter Geraghty – Director of Planning and Transport – Senior Responsible Owner
Peter is the Head of Service responsible for managing the strategic planning and transport functions. Peter will oversee the budgetary requirements and approve the resourcing and investment. Peter undertook the SRO role for the A127/B1013 Tesco Junction Improvement and A127/A1015 Kent Elms Junction Improvements.

Neil Hoskins – Senior User/Senior Supplier – Chartered Civil Engineer and PRINCE2 Practitioner
Neil is responsible for the quality of the elements as delivered by the Project Manager and the team. Neil is responsible for ensuring alignment with strategic transport and planning policy and scheme objectives, co-ordination with other authorities and achieving value for money and delivering the benefits.

Principle Contractor – TBA - Senior Supplier
During the construction stage the Principle Contractor will undertake the Senior Supplier Role and attend Project Board meetings.

Justin Styles – Design Coordinator -
Justin will be responsible directing design resources to ensure the Design stage and Tender Stage is completed on time and to quality. Provide Project Assurance support Justin will also provide undertake the role of NEC Project Manager during the Construction Stage. Justin has significant NEC3 Project Manager experience including A127/A1015 Kent Elms project and SCAAP Transport (S'CATS).

Karen Gearing – Project Manager – Chartered Civil Engineer and PRINCE2 Practitioner
Karen will be responsible for the project management of the Project, ensuring that the project is aligned with the project objectives, and that the appropriate monitoring is implemented to assess progress on the outputs and monitor the outcomes. Karen was responsible for delivering three of the "Better Southend" major schemes valued at £15m and delivery of the current A127 Kent Elms major scheme. Project Board meetings will be held regularly, which will consider project status against deliverables and cost, mitigation as well as reviewing the Risk Register and any exception reports and necessary actions.

Other Key Staff – The communications lead is Michael Sargood who is Communications and Media Relations Advisor to the council who is the lead advisor on the consultation process and communications during construction phase. A full time Public Liaison Officer will be provided by the successful contractor to inform businesses, residents, drivers, Members and key stakeholders of the progress of the scheme and address issues as they arise. This has worked well on previous major schemes and we feel is a necessity for the A127 Essential Major Maintenance and The Bell project.

6.2. How will outputs be monitored?

The table below provides a summary of the proposed measurement and thresholds of acceptability that will be used to evaluate the benefits of the scheme.

Monitoring Indicator	Measurement	Threshold
Journey times	Improved Journey times	Reduction in journey time within 3 year period compared with pre implementation
Traffic Data	Number of vehicles traveling through the junction	number within 3 year period post implementation of scheme compared with existing data
Safety benefits	Recorded no. of accidents	Reduction in accidents within the junction 3 year period post implementation of scheme compared with existing 3 years previously.
Integration and accessibility- Pedestrian/cycle/disability impaired modal split	Combined % of pedestrian /cyclist/disability impaired trips within the junction	Increased number within 3 year period post implementation of scheme compared with existing data
Scheme delivery	Main works completion date	By March 2021

Using SELEP templates Southend Borough Council will conduct a full evaluation of the impact of the scheme in the period after it is completed. The Council will prepare evaluation reports one year and three years after scheme opening, using the information to be collected as set out above to gauge the impact of the scheme, and assess the success in meeting the scheme objectives. Unexpected effects of the scheme will be reported upon and, where appropriate, remedial measures identified.

6.3. Milestones

Please identify the key milestones and projects stages relating to the delivery of this project in the table below. Please ensure a Gantt chart has been attached to this application form, clearly identifying the milestones for the project, the key construction stages, the critical path and all interdependencies.

Refer to programme in Appendix 16

Project milestone		**Indicative date**
Issue Tender Documents		May 2019
Appointment of Contractor		August 2019
Footbridge Fabrication		March 2020
Commencement of Main works		September 2020
Installation of Footbridge		June 2020
Completion of Main Works		March 2021

6.4. Stakeholder management & governance

Please provide a summary of the stakeholder management plan for the scheme. Include any governance arrangements which will materially impact on the delivery of the scheme.

Provide brief description of how key statutory stakeholders will be managed and engaged, in line with Communication and Stakeholder Management Strategy.

In broad terms consider: supplier, owner, customer, competitor, employee, regulator, partner and management. Specifically consider: local authorities, the Highways Agency, statutory consultees, landowners, transport operators, local residents, utility companies, train operating companies, external campaigns, etc.

Identify champion, supporter, neutral, critic, opponent and blocker

Define stakeholder's involvement (response, accountable, consulted, support, informed)

The consultation process for this project is based on the "Southend Together" toolkit which seeks to engage and inform residents businesses and key stakeholders throughout the life of the project.

Stakeholder engagement commenced in December 2017 for the A127 Bell Junction Improvement. A live engagement and consultation plan identifying stakeholder mapping, stakeholder analysis matrix, engagement types, strategies and action plan has been developed as part of the consultation process; and will take on board lessons learnt from the completed A127/B1013 Tesco Junction Improvement scheme and the current A127/A1015 Kent Elms Junction Improvement scheme.

The consultation process focus on community engagement conversations, to explore the issues and problems around the junctions; to hear the views of residents, businesses, key stakeholders and drivers. All councillors have been given the opportunity to attend a Member briefing on constraints and issues at the junction and provided feedback on issues and options, to consider and offer input about potential improvements to the junction.

Engagement with local schools, residents, bus companies, Airport and businesses have commenced and will continue throughout the 8 week public consultation period. The consultation period commenced on 16th July. The same process as the A127/A1015 Kent Elms Junction Improvement will be followed as this worked well. This includes an online consultation questionnaire (see A127 The Bell Junction Improvement Options for Consultation consultation document and questionnaire in Appendix 18), which is accessed

	via the Better Southend website http://www.bettersouthend.co.uk. The public were also invited to have their say on the **stickyworld portal** which allows freeform text to added. The output from the public consultation questionnaire is contained within Appendix 26 and is currently being reviewed. Output from Stickyworld portal is currently being collated. Two public consultation events were held in the local schools, 17th July at Prince Avenue School to the north of the A127 and 18th July at Earls Hall School to the south of the A127. The A127 Bell Junction consultation process will continue throughout the life of the project and those principles of the Better Southend communications plan will be adopted. The Better Southend website will inform residents, businesses and visitors of the progress of the works throughout the design and construction. Subject to feedback from the consultations, it is anticipated that conversations will also be held with local residents affected by the options. A decision on the Scheme Option will be made following a review of the public consultation. As with the A127/B1013 Tesco Junction Improvement scheme and the A127/A1015 Kent Elms Junction Improvement Scheme, a dedicated Public Liaison Officer will be appointed via the contractor to ensure residents, businesses, schools, Airport, bus operators, emergency services, members and drivers are kept up-to-date and engaged on the progression of the works. Drivers will be informed via variable message signs and local radio. It is imperative that this project adopts the principles of the Better Southend Transport Access Routeing Plan (TARP), which seeks to minimise disruption and delay to road users and residents. Investigation and consultation will continue during the design and construction process to determine the best way to maintain access to the businesses, residents and the town during the construction of the works.
6.5. Organisation track record	*Please briefly describe the track record of the organisation in delivering schemes of this type, including whether they were completed to time and budget.* The Council has successfully delivered the following DfT / government funded projects: • A127 Progress Road Junction Improvement £4.7m (HCA & SBC funded) A127/A1159 Cuckoo Corner Junction Improvement £5m (DfT & SBC funded) A127/A13 Victoria Gateway £6.7m (HCA & SBC funded) City Beach £6.7m (HCA &SBC funded). Collectively they were winners of the RTPI National Awards in 2011 for the Public Realm category. • The Council carried out Better Bus Area schemes during 2012/13 – 2013/14 funded by DfT. The main lesson learned was to consult the bus user groups, particularly elderly and disabled users, other road users and the bus companies before implementing any changes. Public involvement enabled participants to rightly claim that their contribution made a positive difference. Other lessons learned were; the need to monitor and evaluate progress throughout the implementation period. On completion, annually report on outcomes highlighting any key outcomes. • DfT's Local Pinch Point Fund for Southend's £4.7m A127/B1013 Tesco Junction Improvement scheme was completed on time and to budget. It has been a success as the Communications Plan included early contractor involvement and early public consultations. This project utilised PRINCE2 methodology, which has ensured good time management, control and organisation of the project. • A127/A1015 Kent Elms Junction Improvement has suffered delays due to un-known

utility apparatus, in adequacy of utility apparatus records, inaccurate GPR records. Lessons learnt from this scheme have ensured extensive trial holes and slip trenches will be carried out to determine/confirm the location of utility apparatus to inform the design and minimise coming across unknown apparatus during the construction phase. Obtaining accurate programmes from utility companies and minimise any diversions within the scheme.

6.6. Assurance

Please provide s151 Officer confirmation that adequate assurance systems are in place

Specify where the business case is subject to ITE assessment

6.7. Monitoring and evaluation

Please explain how you will monitor and evaluate the project, referring to the use of key performance indicators as appropriate.

The table below provides a summary of the proposed measurement and thresholds of acceptability that will be used to evaluate the benefits of the scheme.

Monitoring Indicator	Measurement	Threshold
Journey times	Improved Journey times	Reduction in journey time within 3 year period compared with pre implementation
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7. RISK ANALYSIS

See Quantified Risk Analysis and Risk Register in Appendix 13 & 14

8. DECLARATIONS

8.1.	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?	*N/A*
8.2.	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	*N/A*
8.3.	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?	*N/A*

If the answer is "yes" to any of these questions please give details on a separate sheet of paper of the person(s) and business(es) and details of the circumstances. This does not necessarily affect your chances of being awarded SELEP funding.

I am content for information supplied here to be stored electronically and shared in confidence with other public sector bodies, who may be involved in considering the business case.

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. I also declare that, except as otherwise stated on this form, I have not started the project which forms the basis of this application and no expenditure has been committed or defrayed on it. I understand that any offer may be publicised by means of a press release giving brief details of the project and the grant amount.

8.4. Signature of Applicant	Neil Hoskins
8.5. Print Full Name	Neil Hoskins
8.6. Designation	Group Manager Major Projects and Strategic Transport Policy
8.7. Date	10.10.18