Transport Asset Management Strategy

Guiding Principles and Action Plan for Development

January 2016

southend onsea BOROUGH COUNCIL

Contents

1 Introduction

The TAMS will be the Council's primary transport asset planning tool to ensure that the Council can manage the highway infrastructure and public realm sustainably and in a way that underpins the wider objectives in the Corporate Plan.

A succinct definition of asset management is provided in the recently published BS ISO55000:2014 (Asset Management) as:

Asset management enables and organization to realize value from assets in the achievement of its organizational objectives

A useful guide for Members has also been produced by the Highways Maintenance Efficiency Programme (HMEP) which provides a briefing on the benefits of asset management.

HMEP (2013) Highways - Maintaining a vital asset: What Should Councillors Know About Asset Management?
http://www.highwaysefficiency.org.uk/efficiency-resources/asset-management/highway-infrastructure-asset-management-guidance.html

In the context of the Council's role in managing the highway infrastructure within the borough the TAMS fulfils the following functions:

1. It sets out the contribution to wider objectives in the Corporate Plan, the Local Transport Plan and other strategies and plans at the local, regional and national level through the prioritisation of investments in maintenance of the highway infrastructure
2. It establishes the Council`s approach to prioritising, mitigating and managing critical risks associated with the highway network and ensuring that the network is resilient to major incidents such as extreme weather
3. It identifies, and where possible, quantifies the long term strategic transport asset planning risks that will affect the ability to deliver highway services in a sustainable fashion. These risks include construction price inflation, climate change and continued reductions in Central Government funding and strategic actions that are needed to mitigate or manage these
4. It identifies the most cost effective way of achieving all of the above using forecasting models that enables the Council to select investment strategies and allocations to different maintenance activities that will minimise costs over the long term.
5. It will form the basis of future LTP funding, as the Government expects local authorities to have such strategies and plans in place to justify bids.

2 Structure of this Report

Section 3 Background - this section provides information on the current asset, the strategic context, the challenges and opportunities and their implications for the TAMS.

Section 4 National policies – this section briefly outlines the key national policies that are driving the way in which the Council will develop the TAMS including the new Government Capital Incentive mechanism

Section 5 Current situation – this section summarises progress so far and the context of recent investments.

Section 6 Issues and options – this section briefly outlines the trends in infrastructure performance and the implications for the medium and long term investment options. The focus of this section is on the options for carriageways and footways that will be taken forward for further appraisal work, due for completion in Autumn 2015.

Section 7 TAMS Framework – this section will describe the various elements of the TAMS and how they will interact with each other. It will also outline the approach to proritisation of investments

Section 8 Summary action plan – this section provides a summary for the development of the TAMS and associated documents.

3 Background

What are Southend's Transport Assets?

Southend-on-Sea's transport infrastructure assets include:-

- 494km of carriageways and 874km of footways (next to the carriageway)
- 109 bridges, 14 subways and underpasses, 22 retaining walls and 15 large culverts (>1.5m width)
- 22,630 drainage gullies
- 14,290 street lights and 3,004 illuminated signs and 833 illuminated bollards
- 196 traffic signal junction approaches and 172 pedestrian crossings
- 4,414 non-illuminated signs and 10,240 bollards

They collectively comprise the most valuable assets under our stewardship with a gross value of **£811M** (in 2014).
The term 'transport asset' is used to refer to highway and traffic management infrastructure because they provide important economic, social and environmental services and benefits to people living, working and travelling in Southend. As with all assets they require careful management to ensure that they continue to provide these benefits at the least possible cost.

What is the purpose of the TAMS Strategy?

The TAMS will be the Council's primary transport asset planning tool to ensure that the Council can manage the highway infrastructure and public realm sustainably and in a way that underpins the wider objectives in the Corporate Plan.

A succinct definition of asset management is provided in the recently published BS ISO55000:2014 (Asset Management) as:

Asset management enables and organization to realize value from assets in the achievement of its organizational objectives

A useful guide for Members has also been produced by the Highways Maintenance Efficiency Programme (HMEP) which provides a briefing on the benefits of asset management. A link to this guide has been provided in **Appendix 2** (References).
In the context of the Council's role in managing the highway infrastructure within the borough the TAMS fulfils the following functions:

1. It sets out the contribution to wider objectives in the Corporate Plan, the Local Transport Plan and other strategies and plans at the local, regional and national level through the prioritisation of investments in maintenance of the highway infrastructure.
2. It establishes the Council`s approach to prioritising, mitigating and managing critical risks associated with the highway network and ensuring that the network is resilient to major incidents such as extreme weather.

3. It identifies, and where possible, quantifies the long term strategic transport asset planning risks that will affect the Council`s ability to deliver highway services in a sustainable fashion. These risks include construction price inflation, climate change and continued reductions in Central Government funding and strategic actions that are needed to mitigate or manage these.
4. It identifies the most cost effective way of achieving all of the above using forecasting models to enable the Council to select investment strategies and allocations to different maintenance activities that will minimise costs over the long term.
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Challenges and opportunities for the TAMS

Challenges

Continued reductions in Central Government funding

The Council faces an on-going challenge in respect of further reductions in Central Government funding and growing pressures across all Portfolios. In this context the TAMS will provide the Council with a comprehensive view clearly defining the expectations from the transport infrastructure and quantify the corresponding levels of capital investment in different maintenance activities to ensure that medium and long term investments deliver high value for money.

Legacy of ageing infrastructure

Southend has a significant stock of infrastructure built during the post-war era from the late 1950s through to the early 1980s. Much of this infrastructure can be characterised by concrete components such as street lighting columns or concrete structures, for example slabs on bridge decks and retaining walls. Service lives may vary between 40 to 120 years dependent on function and material quality. Service lives are also dependent on intervening maintenance operations such as waterproofing of concrete bridge decks.

Regular inspections seek to ensure that these assets are maintained in good condition and repairs and replacements completed before the end of the design life. Additional loading requirements and increased traffic flows add further complications to the asset management process. 10% of the ageing concrete lamp columns will be replaced over the next two years as part of the Challenge Fund to replace all the street lighting with LEDs.

Addressing long term threats to the sustainability of the highway infrastructure

Without an appropriate strategy, underlying risks and threats to the sustainability of the highway network are likely to reach a critical level in the next 10 to 20 year period, which will have significant impacts on economic growth prospects in Southend.

Construction price inflation will continue and combined with budget reductions will mean that, without shifts in maintenance practice and use of materials, maintenance output per £ spent will reduce over the next 20 years.

In the longer term, climate change also presents challenges to the infrastructure and its ability to function adequately. Threats posed by local flooding, coastal flooding and erosion are being addressed through related plans and strategies. Future infrastructure improvements (such as highways, rail and public realm works) must identify how they can be used to deliver flood risk/ surface water management benefits. Flood risk management is being prioritised by implementing a risk-based approach to capital investment decisions, maintenance programmes and activities.

Key areas for employment and housing growth such as the Joint Area Action Plan (JAAP) and the Southend Central Area Action Plan (SCAAP), including important tourist areas, are all dependent on the limited number of routes in and out of the Borough, such as the A127, A1159 and A13. The seafront route is vulnerable to coastal and surface water flooding due to climate related impacts.

Public satisfaction

The Council has been monitoring public satisfaction with the condition and performance of Borough highway network since 2010 through the National Highways and Transportation (NHT) Survey. Whilst performance compares well with other Unitary Authorities, public satisfaction with the condition of roads has declined from 40% in 2010 to 36% in 2014. Similarly in the 2013 Residents Satisfaction Survey, 53% of respondents stated that roads and pavements were most in need of improvement amongst the Council's services.

Addressing the expectations of the users of the transport network is a key element of the TAMS, although a long term view is needed to ensure that the response is proportionate, sustainable and affordable.

Government capital allocations policy for 2015/16-2020/21

Over the period 2015-2021 Central Government has introduced an incentive mechanism within the capital allocation process, which is designed to encourage Local Authorities to adopt asset management strategies and other efficiency measures for their highway networks. Local Authorities that fail to demonstrate continuous improvement and fully embed asset management within their financial plans and forward works programmes will lose up to 15% of their capital allocation by as early as 2018/19 and up to 21% by 2020/21. In Southend's case these incentives will be worth approximately £0.66M over the period from 2016/17-2020/21. Section 5 sets out the implications of these incentives and required actions.

Opportunities

Introduction of competitive bidding for maintenance capital

The Department for Transport (DfT) has allocated a total of 10% of the available national highway maintenance capital budgets for the period 2015-2021 to a competitive Challenge Fund bidding process. The Council has already secured £5.09M from this fund towards the conversion of LED lanterns on street lighting and illuminated signs and bollards. This clearly demonstrates the benefits of an asset management approach for street lighting. However, as the Challenge Fund moves forward to the next stage of

bidding in 2018/19, the Council will need to undertake early preparatory work in preparing an application, principally based upon the TAMS.

New opportunities for accessing cheaper finance for infrastructure investments

There are growing opportunities for funding through alternative financing mechanisms (for example through the Green Investment Bank). A robust asset management strategy is a vital prerequisite to accessing these mechanisms.

Demonstrating the economic benefits of infrastructure maintenance

Investments in capital maintenance very often yield much higher value for money than investments in new transport infrastructure. It is important that the TAMS can provide the evidence base for prioritisation of investments to the South East Local Enterprise Partnership (SELEP). The link between maintenance and economic growth has been recognised by the SELEP in identifying £8M of Local Growth Deal funding for major maintenance on the A127 corridor within the Borough, subject to a robust Business Case supported by the TAMS.

Opportunities to access alternative funding streams via partnerships

Ensuring close links between the TAMS and other strategies such as the Local Flood Risk Management Strategy will enable a more holistic approach to programming of works and planning individual major schemes, which will in turn open up opportunities to access funding streams via partner organisations. This will be crucial in view of the growing need to find substantial local contributions to any funding bids to Central Government.

4. National Policy

Action for Roads (July 2013)

This command paper provides some of the context for the current Central Government strategy in relation to Local Authority road networks. In summary these are:

1. The commitment to provide £6bn of capital funding to Local Highway Authorities over the period 2015/16-2020/21
2. The promotion of asset management as the key to achieving efficiencies within the local highways sector
3. The endorsement of the Highway Maintenance Efficiency Programme (HMEP) as the primary vehicle through which Central Government seeks to support Local Authorities to deliver more efficient highway maintenance

Highway Maintenance Efficiency Programme

The Highway Maintenance Efficiency Programme, HMEP, is an industry partnership with public and private sector organisations (including Local Authorities and contractors) for the highway sector. In December 2013, HMEP published an annual plan with targets to achieve 15% efficiency gains by 2015 and 30% by 2020 across the industry. HMEP good practice has been adopted in the preparation of the Council`s new highways contract management documents, One key area where the DfT believes greater efficiency will be achieved in the highways sector is through standardisation of practices where appropriate. A wide range of guidance and toolkits are being produced through HMEP and these provide support in developing an asset management approach. DfT will wish to see evidence of Local Authorities using these guidance documents and toolkits either as reference or to benchmark their own practice.

A key document produced through HMEP is the 2013 Guidance on Highway Infrastructure Asset Management which now provides the overarching national standard for asset management in the sector. This is discussed further in Section 7.

Capital allocations policy for Local Highway Maintenance

A new incentive mechanism is being introduced as part of the calculation of capital allocations for highway maintenance over the 6 year spending review period from 2015/16-2020/21. The incentive mechanism is designed to encourage continuous improvement in five areas:

1. Asset Management
2. Resilience – including effective approaches to managing risks on the network and the definition of a 'Resilient network' (see Section 8)
3. Customer focus – two way communication with stakeholders and the public
4. Benchmarking and efficiency – including active participation in Local Authority alliances, shared services and client/contractor collaboration

5. Operational delivery – continuous improvement and service reviews

The mechanism will be introduced from 2016/17 and will increase as a proportion of the total available capital from 5.1% in 2016/17 to 15.5% in 2020/21. Incentives will be applied by allocating Local Authorities to one of three Bands that reflects their performance in these key areas above. This will be achieved by a self-assessment questionnaire that will be submitted annually as part of the Single Data List (SDL) and will require sign-off by the Section 151 Finance Officer.

Authorities that achieve Band 3 at the latest by 2017/18 will receive their full incentive allowance throughout the 6 year period. In order to do this they will need to demonstrate continual improvement and review of their strategies, plans and practices in particular to respond to risks and opportunities.

Authorities in Band 2 will receive 100% of their allowance for 2015/16 and 2016/17 after which they will receive 90% in 2017/18 and this will reduce to only 30% in 2020/21.

The lowest performing authorities in Band 1 will receive 90% of their incentive allowance in 2016/17 and this will reduce to 0% in 2020/21.

The implications of these alternative outcomes, in terms of the Council's capital allocations, over the period 2016/17-2020/21 are shown in Section 5.

The Government published the self-assessment criteria in June 2015 which fall under the five headings listed above. The action plan in Section 8 will focus on these key areas to ensure that the Council can achieve the best outcome from this process.

Two other important elements of the capital allocations policy are:

1. The top slicing of £575M from the total allocation for competitive bidding for larger scheme proposals through the Challenge Fund. The Council has already been successful in securing funding from the first round of the Challenge Fund for LED street lighting lantern replacements. A second round is due to take place for in 2018 for the 2018/19-2020/21.
2. That the Government will no longer allocate capital to a contingency fund for emergency repairs on local highway networks and that this contingency should be managed locally or regionally.

Whole of Government Accounts

Changes to the UK Accounting Code that are due for 1 April 2016 will require all Local Highway Authorities to formally submit the net value of their transport infrastructure assets as part of the Statement of Accounts for 2016/17 by March 2017 in accordance with the CIPFA Code of Practice on Transport Infrastructure Assets (referred to as the CIPFA Code, 2013).

In practical terms, this requirement infers the need for LHAs to have all systems in place to produce a full valuation for the 2015/16 Statement of Accounts according to the CIPFA Code by June 2016. This will ensure that there is consistent basis for the opening and closing balances in the 2016/17 Statement of Accounts.

Codes of Practice Review

A full revision of the Codes of Practice for Well-Maintained Highways, Management of Highway Structures and Well-lit Highways is taking place in 2015 with publication due in Autumn 2015. The key focus of the review is on developing more risk-based approaches to management of the network and assets.

One important aspect of the current (2005) edition of the Code of Practice for Well-Maintained Highways is the definition of hierarchy classifications for carriageways, footways and cycleways. The carriageway and footway hierarchies typically reflect levels of usage of routes and as such provide an important high level guide for management of risk and in particular for establishing inspection frequencies.

However, the new risk-based approach is likely to require Local Highway Authorities to draw on more detailed information on risk in a formalised manner than is currently enabled by the use of the maintenance hierarchies.

In practice this may mean that in some cases standards will be more flexible than in the current Codes of Practice. However, it will also mean ensuring that information on risk should be used at all stages including the establishment of inspection frequencies, intervention levels and response times through to strategic capital planning and management of critical infrastructure risks.

5 The Current Situation

Network Inspection and Assessment

The National Code of Practice states that the establishment of an effective regime of inspection, assessment and recording is the most crucial component of highway asset management. An inspection regime has been established and adapted to suit changing requirements. The regime is designed to:

- Comply with legal obligations to maintain the network in a safe condition;
- Enable funds to be allocated and priorities set effectively;
- Establish the extent of outstanding work and future funding requirements;
- Monitor trends in the condition of the network, both locally and against National criteria
- Undertake safety inspections and condition assessments.

Safety Inspections

Safety inspections are designed to identify defects that are likely to create a hazard or serious inconvenience to the public. These are visual inspections undertaken from a vehicle or on foot. The inspection is designed to be able to identify defects within the adopted highway and determine appropriate hazard levels to enable an appropriate response. Items to be inspected as part of the adopted highway include for example, carriageway, footway, verges, landscaped areas, barriers and signs. Verges and landscaped areas are not expected to receive the same level of use as a footway or carriageway and will receive only a cursory overview during the safety inspection.

A safety inspection regime must be achievable otherwise the whole system of maintenance management will be undermined. A safety inspection regime is typically comprised of the following elements:

- Frequency of inspection
- Items of inspection
- Degree of efficiency
- Nature of response

Currently the following maintenance activities are undertaken:-

Table 5.1

Maintenance Type	Maintenance category
Reactive – responding to emergencies, inspections or complaints	ALL ASSETS For safety reasons: - Sign and make safe or remove obstruction Provide initial temporary repair Provide permanent repair
Routine – scheduled cyclic work	Carriageways, footways and cycle routes – minor works and patching. Drainage system – clean and repair Landscaped areas and trees – management Verges open spaces – grass cutting Fences and barriers – tensioning and repair Traffic signs and bollards – clean and repair Road markings and studs – replacement Lighting installations – clean and repair Bridges and structures – cleansing and minor works
Programmed - planned schemes	Resurfacing Highway improvements Preventative maintenance Asset replacement or reconstruction
Regulatory – Inspecting and regulating the activities of others, Traffic Management Functions	Maintenance of highways register and definitive map Maintenance of national street gazetteer and associated street data Co-ordination of roads and street works (TM Responsibility) Charging schemes and permits for highway occupation (TM Responsibility) Management of Public Rights of Way Construction of vehicle crossings Adoption of new highways Other regulatory functions – encroachment, illegal signs, parking
Emergencies	Flooding High winds Extreme temperatures Major accidents and disasters

Frequency of Inspections

Section 58 of the Highways Act 1980 affords a statutory defence to certain incidents. Essentially, if the Authority has in force a regular system of inspections, keeps records of those inspections, acts upon any reports of defects and generally attempts to fulfil its declared policy in relation to highway maintenance, it may be that, whatever the nature of

the offending defect, it can avoid liability. The frequency of inspections is based on the network hierarchy; Table 5.2 below details the safety inspection frequency currently adopted by the Council.

Table 5.2

Table - Safety Inspection Frequency			
Feature	Description	Category	Frequency
Roads	Strategic Route Main Distributor Secondary Distributor Link Road Local Access	2 3(a) 3(b) 4(a) 4(b)	1 month 1 month 1 month 3 months 1 year
Footways	Prestige Area Primary Walking Route Secondary Walking Route Link Footway Local Access Footway	1(a) 1 2 3 4	1 month 1 month 3 months 6 months 1 year
Cycle Route	Part of Carriageway Remote from Carriageway Cycle Trails	A B C	As for Roads 6 months 1 year

Investigatory Levels

Investigatory levels are the basic definition of defects that require further consideration for action to be required. If a defect exceeds the investigation level then further information of its location and the use of the highway at that location will be needed to determine whether or not it requires attention and if so how quickly it should be attended to. The basic investigatory levels of the most common defects to be considered within a safety inspection are shown in table 5.3:

Table 5.3

Item	Defect	Intervention level
Carriageway	Pothole /Spalling Crowning Depression Rutting Gap/Crack Sunken iron work Missing/Defective Anti Skid Pedestrian desire line/crossing	40mm depth 40mm 40mm (area 2m2) 40mm 40mm depth and 20mm wide 40mm level difference Yes 20mm
Footway	Trip/Pothole Rocking slab/blocks Open Joint Tree root damage Sunken iron work Defective coal plates/basement	20mm depth 20mm vertical movement 20mm wide 20mm trip 20mm level difference 20mm trip

	lights Bubbled mastic asphalt	20mm trip
Kerbing	Dislodged Missing/loose/rocking	50mm horizontal 20mm vertical Yes
Pedestrian Crossing	Trip/pothole Missing markings Damaged posts	20mm depth Yes Yes

Inspectors carry out risk assessments to take into account the severity and location of each defect. It is not the case for example that anything which is greater than 20mm in a footway or 40mm in a carriageway is necessarily an imminent hazard, it is simply that anything that exceeds the investigatory levels must be given careful consideration by the inspector when they are assessing how to categorise the defect.

Defects Categories and Response Times

The Code of Practice defines two categories of defects identified by safety Inspections:-

- **CAT 1 Defect**
  Those that require prompt attention because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration. Cat 1 defects should be corrected or made safe at the time of inspection if reasonably practicable. Making safe may constitute displaying warning signs, coning off or fencing off to protect the public from the defect. If it is not possible to correct or make safe the defect at the time of inspection then repairs of a temporary nature should be carried out within 24 hrs. Permanent repair should be carried out within 28 working days.

- **CAT 2 All other defects**
  Cat 2 defects should be repaired within planned programmes of work, with priority depending on the degree of deficiency, traffic and site characteristics. These priorities should be considered, together with access requirements, other works on the road network, traffic levels and the need to minimise traffic management in compiling the programmes of work.

Category S81

Defective inspection chambers or chamber covers within the responsibility of statutory undertakers will be reported under the New Roads and Street Works Section 81 protocol for repair by the service owner.

In addition to the above, there are occasions when defects are found that pose an immediate hazard to road users. These are items such as missing chamber covers in footways or carriageways. Such defects are an exception and will be reported by telephone for a rapid response to make safe and/or repair as required.

General Inspection Items

The assets inspected include the following: -

- Carriageways
- Pedestrian crossings
- Footways
- Kerbing
- Ironwork
- Drainage
- Private forecourts
- Private attributes – pavement lights, coal plates, building access hatches
- Grass verges
- Road markings
- Signs
- Bollards
- Street lights – (Night scouting carried out separately by street lighting contractor.)
- Signals
- Safety fence and barriers
- Trees and vegetation
- Highways general – obstructions, poor reinstatements, enforcement issues

The typical defects to be found include: -

- Debris, spillage or contamination
- Displaced road studs lying in carriageway
- Overhead wires in a dangerous condition
- Vandalism, particularly if electrical hazard exposed
- Abrupt level differences
- Potholes, cracks or gaps
- Edge deterioration
- Loss of skidding resistance
- Missing or broken ironwork (gully lids, manholes etc.)
- Standing water, water discharging onto or overflowing across the highway
- Blocked drains or grips
- Damaged, defective displaced missing or misleading traffic signal or signs
- Damaged safety fence, parapet fencing, handrail or other barriers
- Sight lines obscured by trees, unauthorised signs and other feature

Nature of Response

The response times for remedial action are detailed in Table 5.4 and are based on best practice and recommendation from the Code of Practice.

Table 5.4

Category	Priority	Response Time
1	1	2 hours
1	2	Next working day
2	3	3 working days
2	4	28 working days
2		To be programmed where funds permit

Serviceability Surveys

Service inspections are focused on ensuring the highway meets the levels of service required. Service inspections are undertaken as part of and at the same time as the routine walked safety inspections. These will identify the followings:

- Low ironwork
- Poor verge condition
- Poor ride quality
- Settled or poor trench re-instatements
- Tree root damage in footways
- Blocked gullies;
- Other potential drainage problems;
- Faded and missing road markings;
- Signs obscured by vegetation.

Quality Assurance

The Council employ Environmental Care Officers to carrying out safety and visual condition inspections and surveys as part of the area wide generic roles. They work flexibly but are generally assigned areas allowing them greater familiarity with the area. They are all trained in this respect and there are systems checks available through the system software "symology" to ensure consistency and compliance with the spirit of the Code of the Practice.

Developing Levels of Service

This is a continuous process and needs management information and regular reviews to inform change. The delivery of this service and responsibilities under the TAMS will need to assess the degree of change, assess information gathered and review service levels and processes as necessary. This will also include discussions on the safety inspections, formal records, reasons for delays and elements of the detailed inspections which may not have been captured. Part of this process will also include discussions on performance, third party claims and feedback from members and the public as well as compliance with the set frequency inspections.

Planned Maintenance and Prioritising Schemes

Temporary safety repairs are carried out in accordance with Category 1 and 2 priorities.
The repairs carried out have a limited service life and therefore a more sustainable solution to the deterioration of the highway network is achieved by means of a prioritised maintenance programme. The Capital Highway Programmes have been developed and

assessed using structural condition data determined by annual surveys carried out by UKPMS and more recently through the Gaist surveys. Local Officer and Members knowledge has also previously been used as part of the prioritisation process. Section 6 looks at options for prioritising works using information collected from the surveys and investment modelling.

Managing Public Utilities

Members are aware of the works carried out by public utilities and their consequential impact on the highway. Contractors generally carry out the work for the electricity; gas, cable, water and telephone companies and large numbers of different contractors are involved sometimes with the same contractor working for more than one utility. The Council is a Permit Authority and is legally required to co-ordinate all works on the highway and lead in timescales allow time for discussion with Utilities on what works will take place and what conflicts there might be with its own or other utilities works.

Regular meetings between utilities, the Council and their contractors are held to discuss the planning and coordination of works. Site meetings also take place to discuss ways to minimise any difficulties for pedestrians or particular groups of users, to determine what arrangements may be necessary for vehicles and whether they need to be diverted or, with the agreement of the utility, to postpone works if conflicts are too great.

Over 6,000 excavations are carried out in each year by utilities that are required by the Council to notify in advance of the works, except in emergency situations. The notice period varies between 3 days to 3 months depending on the scale and location of their works. Furthermore there are another 4000 plus excavations that the Council undertakes which also need to be inspected and treated in parity.

Officers initially felt that utilities were poor in their ability to provide programmes of works well in advance that makes the council's co-ordination role more difficult. However, this is improving through better control and management.

Fixed Penalty Notices

The Council can issue Fixed Penalty Notices (FPN) to utilities when works are deemed not up to standard and can demand they address the issue within a specific timeframe. The Council's policy is that FPN'S are an important tool to be used to improve notice quality. Fixed Penalty Notices form part of an escalating procedure, the aim of which is the provision of accurate and timely data facilitating the coordination of works and assisting in achieving the authority's network management duty.

Recent trends in capital spend

Table 5.5 summarises the Council`s capital and budgeted future spend on highway infrastructure maintenance since 2010, including information on the financing of investments. Over the last 5 years the Council has prioritised the use of transport capital for investment in planned maintenance including the use of Integrated Transport Block capital for Bridge Strengthening works to secure the long term resilience of the network.

Table 5.5 Capital expenditure on maintenance of highway infrastructure since

PROGRAMME	10/11 £m	11/12 £m	12/13 £m	13/14 £m	14/15 £m	15/16 £m	16/17 £m	17/18 £m
Highways Planned Maintenance Investment	1.493	1.805	0.708	1.582	0.346	0.552	0.502	0.502
Additional Highways Maintenance - Potholes	0.000	0.000	0.000	0.281	0.431	0	0	0
LTP Maintenance Block (Carriageway, footway, Lighting & Bridges)	1.726	0.881	0.813	1.537	1.304	1.393	See Table 5.8	See Table 5.8
Street Lighting - Renewal	0.044	0.145	0.271	0.273	0.632	See Table 5.9		
TOTAL	**3.263**	**2.831**	**1.792**	**3.673**	**2.713**			
FINANCE								
Grant	0.000	(0.767)	(0.807)	(1.815)	(2.318)			
Reserves	0.000	0.000	0.000	0.000	(0.350)			
Council Borrowing	(3.264)	(2.064)	(0.985)	(1.858)	(0.045)			

Crucially the Council has also invested an additional £8.21M through borrowing to support maintenance of carriageways and footways and renewal of street lighting.

A key focus of the TAMS will therefore be towards sustaining the benefits and value of these investments, in particular through preventative maintenance where appropriate.

Medium Term Outlook

Tables 5.6 shows the % allocation of funding allocated by "banding". In the light of the Government's capital policy as described in Section 4 above it is necessary to consider three alternative funding scenarios dependent on the outcomes of the Council's annual self-assessments over the next 3-6 years. Achieving Band 3 status will enable the Council to retain £0.66M of capital funding over this period. This is set out in Tables 5.6 to 5.8.

The Council has also secured additional funding through the DfT Challenge Fund, the Green Investment Bank and SELEP for targeted investments (discussed further in Section 6 below).

However, from 2017/18 the LTP capital begins to fall if Band 3 is not achieved. It is therefore essential that the TAMS provides the context for developing a robust Business Case to secure further external funding for carriageways and footways maintenance. The next tranche of Challenge Fund bidding will take place in late 2017/18 for the period 2018/19-2020/21 and this will present a significant opportunity to close the funding gap for major investments.

Table 5.6 Highways Capital Maintenance Funding formula and indicative incentive allocations, 2015/16- 2020/21 Budget scenarios.

Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Band 1	100%	90%	60%	30%	10%	0%
Band 2	100%	100%	90%	70%	50%	30%
Band 3	100%	100%	100%	100%	100%	100%

Table 5.7 Indicative incentive element by "band" of self-assessment ranking

Fiscal Year	Total LTP allocation (£) announced in December 2014	Band 3 (highest band maximum incentive, see above table)	Band 2 (medium band maximum incentive, see above table)	Band 1 (lowest band maximum incentive, see above table)
2015/16	£1,393,000	No incentive	allocation in	2015/16
2016/17	£1,277,000	£77,000	£77,000	£70,000
2017/18	£1,238,000	£116,000	£104,000	£70,000
2018/19 *	£1,121,000	£233,000	£163,000	£70,000
2019/20 *	£1,121,000	£233,000	£117,000	£23,000
2020/21 *	£1,121,000	£233,000	£70,000	£0

* = Indicative allocation as announced in December 2014.

Table 5.8 shows the maximum amounts available over the fiscal period 2016/17 – 2020/21 (amounts in £m.) against band incentives.

FISCAL YEAR	BAND 3 £m	BAND 2 £m	BAND 1 £m
2016/17	£1.354	£1.354	£1.347
2017/18	£1.354	£1.342	£1.308
2018/19	£1.354	£1.284	£1.191
2019/20	£1.354	£1.238	£1.144
2020/21	£1.354	£1.191	£1.121
Total	**£6.770**	**£6.409**	**£6.111**

Table 5.9 details the Challenge Fund Street Lighting replacement programme funding profile:

	2015/16 £m	2016/17 £m	2017/18 £m	TOTAL £m
Department for Transport	1.425	2.291	1.374	5.090
Green Investment Bank	2.343	3.705	2.200	8.248
Southend Borough Council	0.000	0.060	0.060	0.120
TOTAL	3.768	6.056	3.634	13.458

Table 5.10 details the Local Growth Fund A127 Highway Maintenance funding profile, (subject to SELEP approval):

	2015/16 £m	2016/17 £m	2017/18 £m	2018/19 £m	2019/20 £m	2020/21 £m	TOTAL £m
LGF A127 Highways Maintenance	0.400	0.300	0.300	1.000	3.000	3.000	8.000

6 Issues and Options

Carriageways

In 2013, The Council commissioned a full condition survey of the carriageway network across the entire Borough to provide critical information in developing the asset management strategy.

This survey demonstrated that the general condition of the network was good by comparison with other Councils and this reflects the investments that have been made over the previous 5 years. The data has been used to prioritise maintenance schemes in the medium term capital programme.

An initial set of long term investment options were also developed by inputting this condition data into a software developed by the University of York that simulates the deterioration of carriageways and the effects of varying levels of investment in different maintenance operations. The software also calculates an optimum investment strategy that minimises long term costs.

Following initial consideration of these options it was decided that further work was required to develop the model and validate it against actual trends in condition.

Since then a second survey has been undertaken in 2014/15 of half of the network and work has been commissioned to use this data to develop a more detailed model to inform our investment strategy.

The 2014/15 condition summary

Figure 6.1 shows results of the 2014/15 condition survey on a map. The survey focused on those areas where there was a concentration of roads that were likely to deteriorate faster.

The colours on the map are interpreted as follows:

	Grade 1 – Free from defects	These reflect roads that have been recently resurfaced or reconstructed.
	Grade 2 – Signs of surface wear	The roads are still in good condition although there has been some ageing of the surface and signs of material wearing off
	Grade 3 – Mid life	There are signs of fatigue and defects appearing on the road surface including cracking and loss of material although none of these present any problems to road users
	Grade 4 – Functionally Impaired	The condition of the road surface is poor and there are either defects that present problems to road users or the level of deterioration is such that major defects are likely to appear within a year
	Grade 5 –	This is similar to Grade 4 except that the nature of the

	Structurally Impaired	defects seen on the surface indicate that there are deeper structural problems that will be more expensive to repair (eg subsidence or cracking in the wheeltrack)

Figure 6.2 below shows a summary of how the condition of the roads surveyed in 2014/15 compares with the condition of the same roads in 2013/14. Figure 6.3 and 6.4 shows the condition profile for each road class in 2013/14 and 2014/15 respectively. The 2014/15 condition survey shows that the network has remained relatively stable since 2013/14. However, there has been some decline in the condition of the Principal (A) Road network with an increase of 1% in the percentage in poor condition (ie requiring resurfacing or reconstruction). In particular there has been significant deterioration on the Eastern Esplanade and other routes that have been affected by flooding in 2014.

Importantly, the proportion of the network that is mid-life has grown whilst the proportion of Grade 1 (free from defects) has declined. Some reassessment of the 2013/14 baseline data has also been undertaken because the survey methods have been updated to reflect some structural defects that have been prevalent in Southend. This has been possible through the use of video survey imagery that was captured at the same time as the original condition assessments were undertaken. The reassessment has shown that there was a higher proportion of the network in poor condition than previously indicated although the results are still favourable when compared with other Local Authorities.

Figure 6.1 Carriageway condition (2014/15 update)

Figure 6.2 Summary of change in condition between 2013/14 and 2014/15

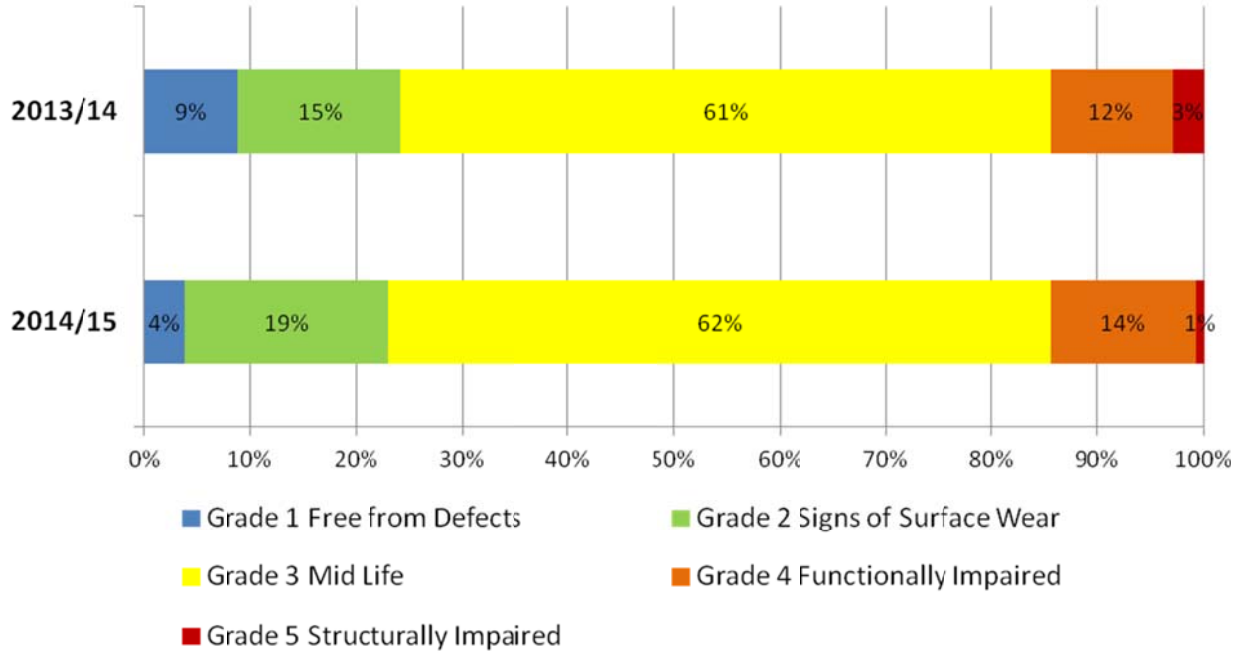


Figure 6.3 2013/14 condition by road class (roads selected for comparison with 2014/15 survey)

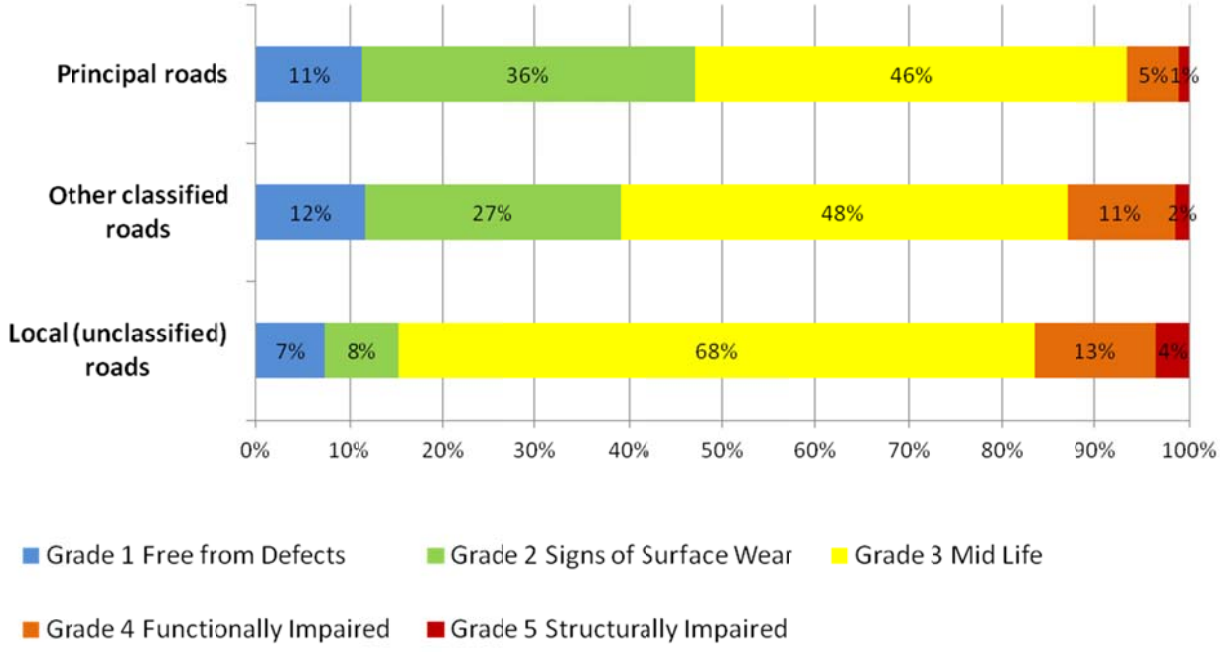
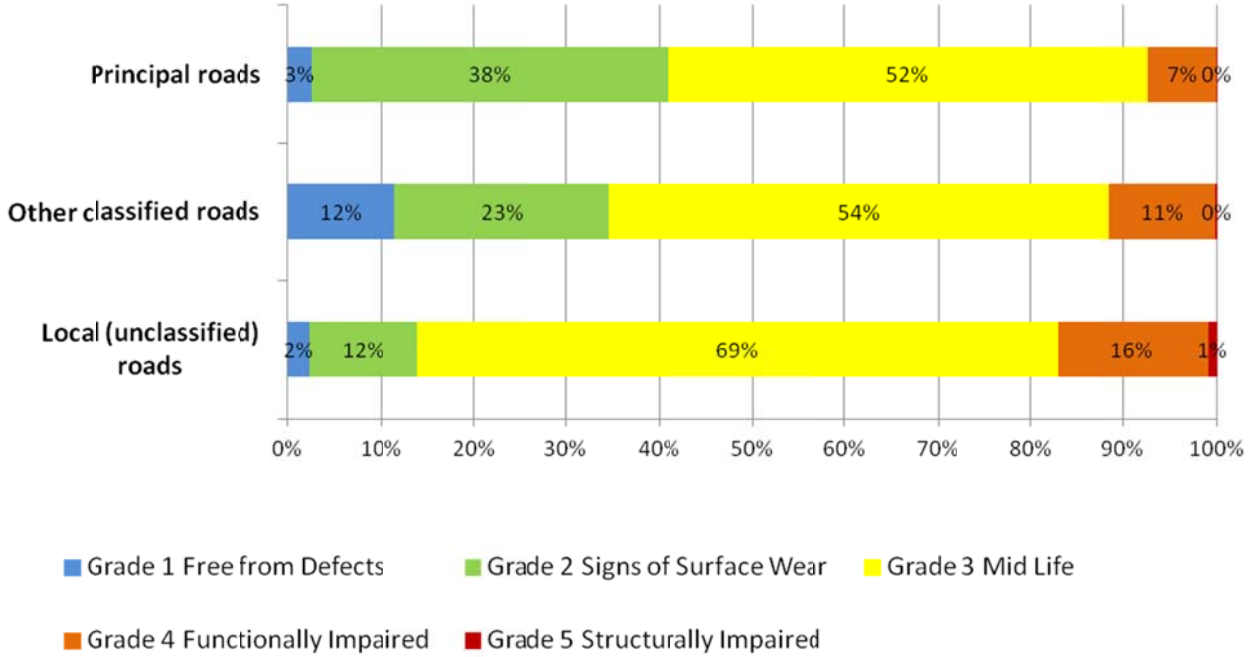


Figure 6.4 2014/15 condition by road class



At the time of this report the reassessment of the baseline has been completed so far as to enable direct comparison with 2014/15 survey results although further work is required to revise the remainder of the 2013/14 survey to reflect new thresholds and this will be completed in summer 2015 to support the development of the investment model.

Interpretation of the results

Many of the sections of poor condition across the borough are associated with roads constructed with a bituminous surface course laid on a concrete base. In Southend these 'composite' roads were constructed extensively throughout the 1950s through to the 1970s and many are showing signs of fatigue and cracking which penetrate through the bituminous layer to form cracks on the surface. This form of defect is referred to as 'reflective cracking' and is very common across the Borough. Importantly many of the mid-life roads also show early signs of this form of cracking.

On routes such as the A127 which carry in excess of 3000 HGVs every day, fatigue and thermal cracking in the base can lead to rapid deterioration of the surface and break-up of the base itself into smaller unstable blocks. Further structural surveys are being undertaken on the A127 to assess the level of deterioration of the base and determine whether or not complete reconstruction will be required. This work will support the on-going development of the A127 Business Case for SELEP as part of the A127 Corridor Strategy.

The deterioration in the condition of roads in areas prone to flooding (such as the seafront routes and in critical flood risk areas) is of particular concern. It is proposed that these routes are identified as part of Southend's Resilient Network (see Section 8 below) and prioritised for preventative and structural maintenance.

On other less heavily trafficked roads a roll out of preventative treatments on mid-life roads should be considered to delay the deterioration of the road surface due to these cracks. Preventative treatments may include sealing newly emerged cracks or reinforced overlays such as micro-asphalt.

In view of the financial challenges that the Council faces over the medium term the use of less expensive preventative treatments could form an important part of the strategy to retain the value of the investments made since 2010.

Investment options

The forecast model will be used to test a set of options using the capital budgets as set out in the tables in Section 5 above (and reflecting different self-assessment outcomes). It is also proposed to identify an optimum investment option that may require further elevated investment. This will form the basis for a Challenge Fund bid to be prepared in 2017/18.
Within the basic LTP capital budgets and Growth Fund capital projected to 2020/21 the high level options for carriageways are set out below:

1. Prioritise reconstruction of strategic roads, namely A127, A1159 and A13 and routes that are vital for the resilience of the town (as defined in the Resilient Network in Section 8 and Annex 3) where there are signs of structural failure. This would be at the expense of local residential roads which would be likely to begin to decline in condition. This would be most likely to negatively impact on public satisfaction through the NHT survey.
2. Enable a more even spread of investment to minimise decline in the condition on any of the road classes. This would require that less extensive treatments are applied on the strategic and Resilient Network routes that will have less longevity (such as replacing the surface course only instead of reconstructing) and overall would be difficult to sustain beyond the medium term with projected levels of funding.
3. As with Option 2 but increase the use of preventative treatments such as microasphalt on mid-life and more lightly trafficked roads at the expense of some resurfacing and reconstruction of roads in poor condition. This may have less impact on public satisfaction in the short to medium term but will reduce long term costs and slow deterioration to a manageable rate.

The 4th option will be to explore a strategy that will require additional funding to provide an optimum mix of reconstruction, resurfacing and preventative maintenance spread across the road classes.

Footways

Introduction

A complete footway condition survey was undertaken in 2013/14 along with the carriageway condition survey. The results of the survey are shown on the map in **Figure 6.5** and a summary of the condition profile is given in **Figure 6.6.** The Grades shown can be interpreted in a similar fashion to those of the carriageway survey with Grade 4

and 5 representing poor condition. **Figure 6.7** shows a breakdown of the surface types of footways in the Borough.

Figure 6.5 Footway condition survey 2013/14

Figure 6.6 Summary of footway condition

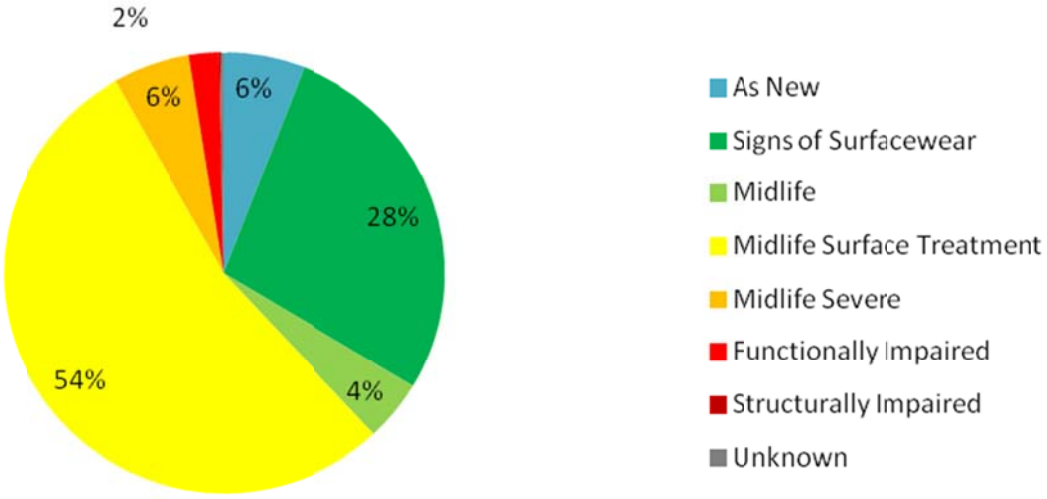
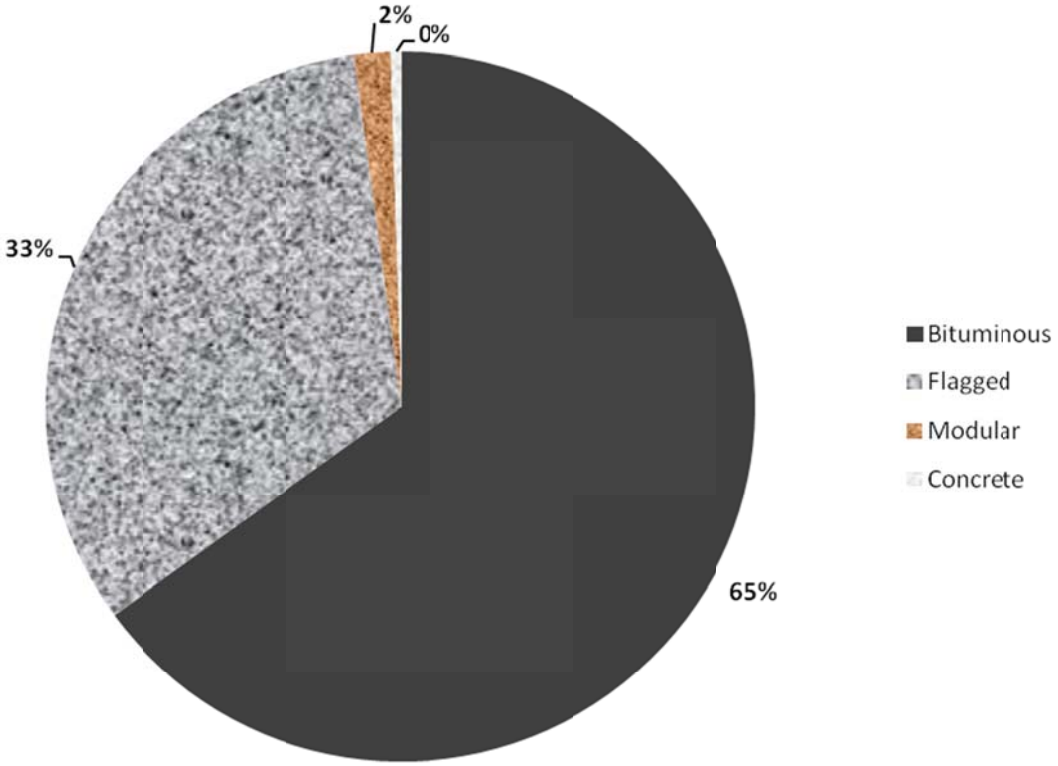


Figure 6.7 Summary of footway surface types in the Borough



A further survey update has not been undertaken in 2014/15 owing to the difficulty of capturing sufficient video coverage of footways where there are parked cars. A strategy for future cyclical condition assessments of the footway network will be developed as part of the Asset Information Management Plan (see Section 8).

Interpretation of the results

The condition survey showed a very positive picture with only 2% of footways in poor condition. However, there is a concentration of problems in the Town Centre where the condition of the footways may begin to have an impact on the attractiveness of the area for retail and inward investment. This overall positive picture reflects the elevated investment that the Council has made in footways maintenance since 2010.

Another factor that contributes to low rates of deterioration is the relatively low level of vehicle override and pavement parking. This risk was also assessed as part of the footway condition survey and shows that vehicle override and pavement parking affects approximately 2% of the pavements across the Borough. In many places the prevalence of street trees is beneficial in preventing pavement parking. However, it is important to consider the benefits of the coordinated verge maintenance programme, and the benefits of parking enforcement and Controlled Parking Zones in reducing the impact of traffic on pavement condition This is particularly important where there may be growing pressure for on-street parking in the growth areas and in particular where the pressure may be to park on both sides of a street with limited width. Some schemes in the Borough have taken a proactive approach in strengthening the footway in a manner that can also improve the appearance of the street.

The combination of investment in footways and a robust approach to defence against injury claims on footways has also resulted in a very high rate of repudiation and low levels of payouts. However, these remain a risk in particular associated with flagged footways which constitute 33% of the total surface area of footway in the Borough.

The current Code of Practice for Well-Maintained Highways sets out broad criteria for prioritisation of inspections and maintenance although, as mentioned in Section 5, these are due to be revised. The TAMS will include a Prioritisation Framework that will detail the criteria for assessing risk on footways and condition based thresholds at which maintenance is required.

It is likely that the revised Code of Practice will place greater emphasis on the use of local data to inform classifications. It is also crucial to establish a process for continued validation and review of the classifications in response to new data.

Investment options

In the short to medium term, the current condition assessment points to the need for a programme of renewals for footways and pedestrianised areas in the Town Centre.

In the medium term, the options need to consider the overall levels of investment required in footways and cycleways as compared with the other infrastructure types, how footway and cycleway maintenance programmes are prioritised within budgets and the appropriate materials to be used. The key questions are:

- Is the overall level of service appropriate?
- Should it be enhanced or conversely is the Council willing to allow some decline in service level in favour other priorities such as carriageways, drainage and structures?

- Do we focus only on the highest risk locations for claims or
- include locations that are important for people with mobility impairments or
- seek to invest additional money in maintenance of local and district centre footways to improve the attractiveness of these areas for inward investment?
- How effective is the ad-hoc expenditure on reactive maintenance and how does this fit within the capital programme?
- Finally, there is a desire to balance the need for an attractive public realm with the risk and cost that flagged and modular footways present in terms of their resistance to vehicle overrun and severe trip hazards. Careful detailing of construction details and restricting the likelihood of vehicle intrusion is essential

The prioritisation of footway and cycleway programmes needs to be informed by the use of a risk hierarchy following the recommended approach in the Code of Practice for Well-Maintained Highways. The current Code of Practice for Well-Maintained Highways sets out broad criteria for prioritisation of inspections and maintenance although, as mentioned, these are due to be revised and the hierarchy classification will be revised in line with this review. The TAMS will inform this process by including a Prioritisation Framework (see Section 7.4 below) that will detail the criteria for assessing risk on footways and condition based thresholds at which maintenance is required.

It is likely that the revised Code of Practice will place greater emphasis on the use of local data and issues to inform classifications rather than stipulating exactly what the criteria should be. It is therefore crucial to establish a process for continued validation and review of the classifications in response to new data.

A key challenge therefore remains to obtain better detail on the following:

- The geographical distribution of injury and damage claims and their association with footway condition and safety defects.
- The geographical distribution and cost of maintenance and repairs and their association with footway condition and safety defects.
- Areas of high footfall in residential areas and on routes to local facilities
- Routes that are particularly important for people with mobility impairments either by virtue of the obstruction free width of the footway or by the link to and from facilities or sheltered accommodation.
- Routes that are used by an increasingly ageing population who use public transport or walking routes

This data is needed to support statistical analyses and modelling that will help us to understand the costs and benefits of different approaches and to further refine our policy towards the use of different types of interventions (such as replacement of flags with bituminous surfacing).

Drainage

The Council has produced a draft Local Flood Risk Management Strategy (LFRMS) which sets out the high level strategy and action plan to address flood risk from different sources identified as potentially affecting the Borough. The LFRMS has been produced as a requirement of the Council`s duties as Lead Local Flood Authority (LLFA) in accordance

with the Flood and Water Management Act 2010 and the Flood Risk Regulation 2009. The Council has also developed a Surface Water Management Plan (SWMP) that provides key evidence in support of the LFRMS as well as setting out options for addressing surface water flood risk in identified Critical Drainage Areas.

At a high level the TAMS will contribute to the delivery of the LFRMS by identifying measures that will address:

1. the vulnerability of the highway network to flooding, in particular where highways are critical to the functioning of the town and key services as well as to local and regional growth aspirations
2. instances where highway infrastructure itself are required to provide critical roles in managing flood risk and protecting adjacent properties

A strong link is needed between the delivery of the TAMS, SWMP and LFRMS to ensure that forward works programmes are holistic and can draw on opportunities to meet multiple objectives. This is all the more important in view of the wider agencies that are involved in flood risk management that will also have access to different funding streams. These funding streams can add considerable strength to any proposed major scheme bids through the Growth Fund or Challenge Fund.

HMEP has also produced guidance on the Management of Drainage Assets. This provides guidance on risk prioritisation, data management and sharing of information with partners. The Council will undertake a full review of its practices against the recommendations within the guidance for completion by Autumn 2016.

Condition and connectivity surveys of drainage along the A127 are to be commissioned in support of the development of the A127 work programme funded by the SELEP.

It is proposed that further condition surveys are carried out of drainage assets on the Resilient Network within the Critical Drainage Areas identified in the SWMP for completion by autumn 2017.

Street lighting

A borough wide investment strategy for LED lantern replacements, street furniture's and column replacement and installation of a CMS for fault monitoring has been developed and this formed the basis for securing £5.09M of grant through the Challenge Fund as well as a further £8.25M of finance through the Green Investment Bank. This addresses the current deficiencies in the street lighting asset and addresses the significant maintenance backlog that has built up, reducing energy and maintenance costs significantly.

Structures

Maintenance of bridges and structures is prioritised on the basis of Principal Inspections carried out on a 6 yearly cycle. Further work is required to develop a long term investment strategy for structures. It is proposed that an interim scoping of investment needs is undertaken on the basis of the current backlog of maintenance identified through Principal Inspections combined with the use of a standard model that is provided to Local Authorities by the UK Bridges Board (the Structures Asset Management Planning Toolkit). This work should be completed by Autumn 2016.

However, the final strategy should be based on lifecycle plans developed for individual bridges to ensure that maintenance and renewal operations are timely and minimise disruption to traffic. It is proposed that this is undertaken for completion by Autumn 2017. A strategy for managing critical slopes supporting highways such as the cliffs will also be included within the structures strategy.

7 Outline of the Transport Asset Management Strategy

This section provides a brief summary of the key elements of the Transport Asset Management Strategy as well as their current status. Figure 7.1 below shows these elements and how they fit within an overall framework that provides a 'line of sight' from the Corporate Plan priorities through to the development of operational maintenance policies and planned maintenance programmes.

Transport Asset Management Policy

The Transport Asset Management Policy is an important element within the asset management framework as it sets out the guiding principles for the way in which the Council carries out its asset management functions. In particular, it dictates the way in which the Council responds to the expectations of stakeholders and the wider challenges and risks that the Council faces in the medium and long term. The formal adoption of a Transport Asset Management Policy is a specific recommendation within the HMEP Guidance on Highway Infrastructure Asset Management as well as BS ISO55000:2014.
A draft Transport Asset Management Policy is contained in **Appendix 1**.

Core Strategy and Objectives for Transport Asset Management

The purpose of the core strategy is to clearly set out where transport asset management should contribute to wider corporate strategies including the Local Transport Plan and Local Flood Risk Management Strategy. It also identifies the key issues and risks that we face over the longer term. It then brings these together to define a set of broad objectives for asset management.

This document is under development.

Prioritisation Framework

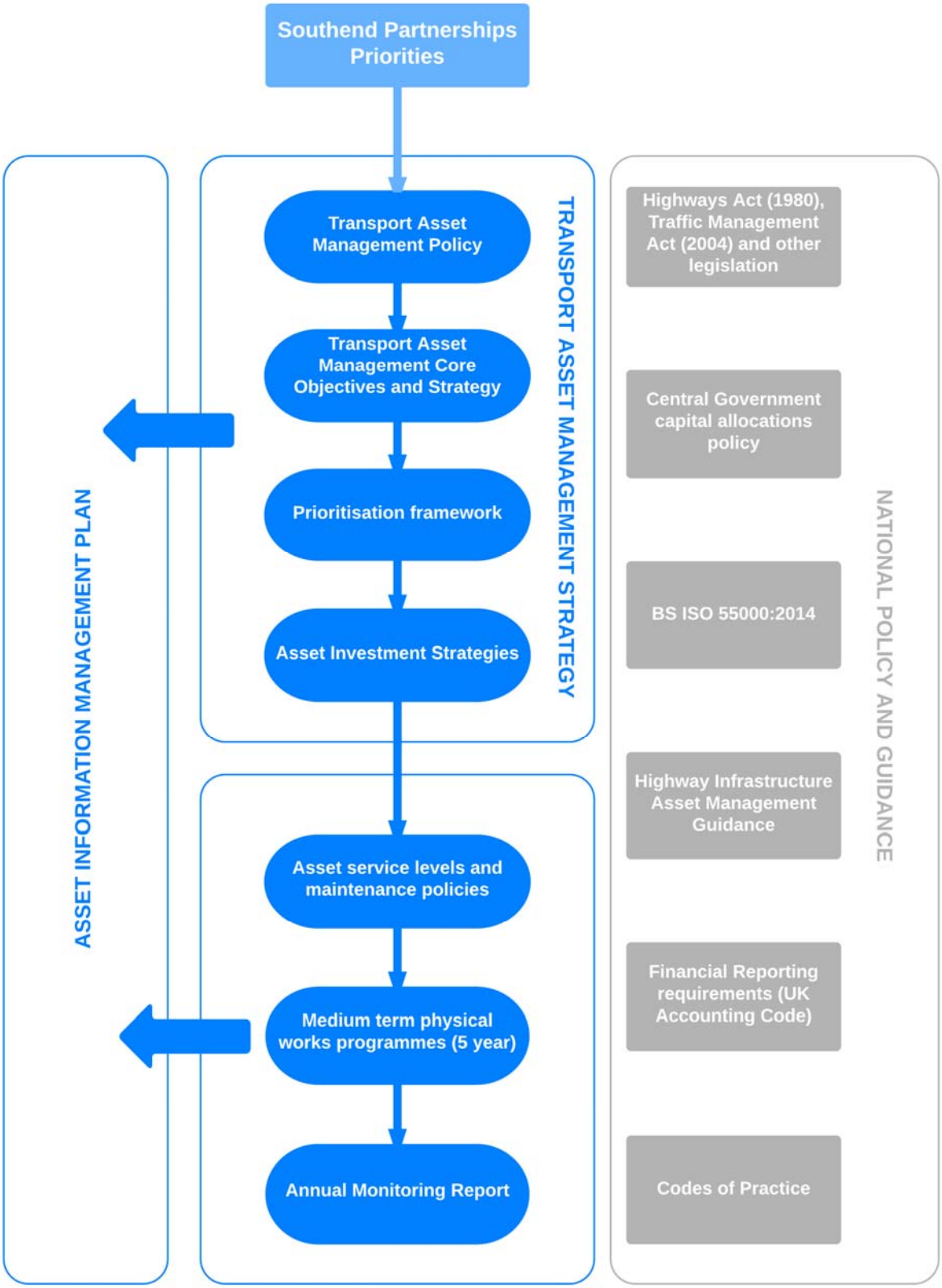
The aim of the prioritisation framework is to ensure that the Council can manage critical risks in an effective manner whilst also maximising the contribution of the maintenance programmes to the broad objectives set out in the Core Strategy.

The prioritisation framework will contain details of the criteria and thresholds for identifying potential risks and *appropriate treatments. The Council will need to undertake significant development of its* asset information systems to support this process whilst alleviating pressure on staff resources in the development of the annual and medium term capital programmes. The means by which this will be achieved will be set out in an "Asset Information Management Plan" which has been commissioned for development over the Autumn 2015. This will examine current processes and systems and establish robust procedures for recording asset information. This will be developed in conjunction with the Council`s service providers.

It is proposed that a two tier process is adopted to enable effective prioritisation of risk.

Tier 1 will contain proposals that address asset risks that are assessed as critical. These are shortlisted and subject to detailed risk assessment as part of the development of the programme.

Figure 7.1 Key elements of the TAMS



This includes risks to infrastructure identified as part of Southend's Resilient Network. The Resilient Network is defined as the network of infrastructure that is crucial to ensure that the town remains resilient to events such as extreme weather.

A draft list of routes contained within the Resilient Network is given in **Appendix 3.** It is recommended that this list be consulted upon with emergency services, Flood Risk Management Partners (the Environment Agency and Anglian Water) and community forums with a view to formal adoption by Summer 2016.

Tier 1 also addresses more dispersed risks that may have localised but nonetheless severe consequences (such as road traffic accidents).

The Tier 2 programme contains other scheme proposals that are not associated with strategic asset risks and are selected according to the extent to which they support the strategic objectives of the TAMS.

Asset Investment Strategies

Asset investment strategies are developed for individual asset groups (eg carriageways, footways, drainage etc).

As most of the infrastructure assets have service lives of greater than 10 or even 20 years the use of long term forecasting is fundamental to the development of the TAMS. These enable the development of measurable targets for each asset type and to quantify long term risks. In order to do this, software will be used to identify the most cost-effective approach to meeting alternative service level options under different funding regimes.

Rates of asset deterioration can be highly variable (for example the length of time before potholes start to develop on a road surface) and so, beyond the 3-5 year time horizon the aim of forecasting is not usually to predict exactly which assets will need maintenance in which year. Rather, data is used on the real world performance of assets to enable us to model how the risk of asset failure increases (or decreases in some cases) over time and in turn it is then possible to anticipate the quantities and associated costs of different types of planned and reactive maintenance.

In the case of bridges, we will aim to identify as far as possible into the future when the optimum time to intervene will be taking into account the failure risks of individual components of the bridge, the need to minimise the need for expensive repairs and resulting traffic disruption.

In each investment strategy the following information will be presented

- Asset performance trends
- Performance forecasts and investment options
- Identification of the preferred investment option on the basis of economic, environmental or social benefits and costs
- Assessment and management of risks affecting the delivery and outcomes of preferred investment options

- Outcome of consultations and option testing
- Outcome of equality analysis

8 Summary Action Plan

Table 8.1 below provides a summary action plan for the development of the TAMS and associated documents. The action plan is designed to reflect the key themes within the self-assessment process described in Section 4, namely:

1. Asset management
2. Resilience
3. Customer focus
4. Benchmarking and collaboration

Table 8.1 Summary action plan

Action	Timescale
Asset management	
Complete the modelling and appraisal of investment options for carriageways	Autumn 2015
Develop Asset Information Management Plan	Autumn 2015
TAMS Policy, Core Strategy, Prioritisation Framework and Carriageway Investment Strategy to be approved by Cabinet	Autumn/Winter 2015
Undertake a review of staff training needs in relation to the Institute of Asset Management competencies framework	Spring 2016
Develop initial options and scope for Structures Investment Strategy	Autumn 2016
Develop full Structures Investment Strategy	Autumn 2017
Resilience	
Complete a gap analysis of current practice against the HMEP Guidance on Management of Drainage Assets	Autumn 2015
Complete surveys of condition and connectivity of drainage assets on the A127	Autumn 2015
Revise maintenance hierarchies for carriageways, footways and cycleways in line with the revised Codes of Practice	Spring 2016
Undertake consultations with emergency services, Environment Agency and Anglian Water on the Resilient Network	Spring 2016
Approval of Resilient Network by Cabinet	Summer 2016
Complete surveys of drainage condition on the Resilient Network in Critical Drainage Areas	Autumn 2016
Customer focus	
Produce a Stakeholder Communication Plan for the TAMS	Autumn 2015

Action	Timescale
Benchmarking and collaboration	
Develop common approach to production of Whole of Goverment Accounts with Local Councils' Highway Investment Group	Autumn 2015
Develop performance benchmarking with Local Councils' Highway Investment Group	Spring 2016

APPENDIX 1 Overarching Policy for Transport Asset Management

1 Scope

1.1 This policy covers the management of highway infrastructure assets for which Southend on Sea Borough Council is the Highway Authority, including:

- Carriageways, footways and independent footways and associated drainage
- Bridges and other highway structures
- Street lighting and illuminated signs and bollards
- Traffic management (including traffic signals and pedestrian crossings)
- Signs, bollards and other street furniture

1.2 The focus of the Transport Asset Management Policy is on the high level principles guiding the overall management of these asset types.

2 Policy statement

2.1 Effective asset management will be at the heart of the Council's approach to managing transport infrastructure and ensuring that it meets the needs and aspirations of both present and future generations. In particular the approach to asset management will support the following Corporate Priorities:

- Achieving excellence: continuing to deliver excellent services for highways and transportation and by making best use of intelligence and forecasting to identify investment options that are most cost effective in the long term and represent very good value for money
- Prosperous: by delivering levels of service that will support vibrant retail and business centres in the Borough, including major growth areas on the A127 and London Southend Airport.
- Increasing the life chances of people living in Southend: by maintaining a safe and accessible network that encourages people of ages and abilities to get out and about, live independent lives and take active travel
- Minimising our impact on the environment: by proactively pursuing innovative maintenance options that achieve significant reductions in waste and emissions of carbon and maintains or enhances the local natural environment.

The Council will adopt a Transport Asset Management Framework to achieve these aims and to continually improve the asset management processes. This will enable learning from past performance to guide decisions in the face of growing financial challenges and demands across all services. This will fulfil obligations contained in relevant legislation and other requirements relating to the management of Council owned transport infrastructure as detailed in relevant Codes of Practice.

3 Principles

Below are the principles that will guide the development of the strategy for transport asset management.

1. The first priority will be to minimise risks to the safety of people living, working or travelling in the Borough. Operational maintenance policies will be kept under regular review to ensure that they reflect evidence from local data and best practice in risk assessment and management.
2. Maintenance options will be prioritised that minimise disruption to traffic, residents and businesses over the whole life of the highway infrastructure.
3. The maintenance options will be prioritised that improve the overall resilience and reliability of the network, particularly in the context of climate change and the growing frequency of extreme weather events.
4. A 5 year rolling programme of work will be developed and maintained covering the transport assets. The Council will maintain accountability in developing programmes by regularly reviewing, updating and publishing the criteria for approving scheme proposals. Critical infrastructure risks will be prioritised and addressed through the capital programmes by using a robust risk assessment process.
5. Decisions on short and medium term budgets will take account of the future year costs in terms of whole lifecycle planning
6. Forward looking budget forecasts for the infrastructure assets will enable assessment and management of long term risks and guide support minimising costs over the life cycle of the infrastructure. Investment options will be prioritised where they are very likely to achieve high value for money or where there is evidence of significant social benefits.
7. Optimum levels of service will be consulted on with residents, businesses and stakeholders and using appropriate methods to assess the changing needs of the local population and businesses and balancing these with the need to minimise costs over the life of the assets.
8. Innovation will be a fundamental part of the strategy to reduce whole life costs without compromising safety or network reliability. Innovation will be critical to meeting the challenges that the Council faces in meeting growing demands on budgets across all portfolios. Developing innovation with the supply chain to draw on their expertise and supporting R&D in identifying new solutions will be encouraged. Participation in Local Authority alliances and groupings to draw on and share best practice will be supported
9. Appropriate targets to reduce levels of waste, use of raw materials and emissions of carbon incurred by our infrastructure maintenance operations will be set
10. Asset information systems must be fit for the purposes of supporting all of the above principles and in doing so have regard to current and emerging standards for asset information management. Suppliers and contractors providing appropriate information to support the asset management systems are key to the information and knowledge base and will be encouraged to bring good practice and innovation.

Appendix 2 References

HMEP (2013) Highways - Maintaining a vital asset: What Should Councillors Know About Asset Management?

http://www.highwaysefficiency.org.uk/efficiency-resources/asset-management/highway-infrastructure-asset-management-guidance.html

BSI (2014) BS ISO 55000:2014 *Asset management*
Well-maintained highways: A Code of Practice for Highways Maintenance Management
Management of Highway Structures: A Code of Practice for Highway Bridges and Structures
Well-lit Highways: A Code of Practice for Highways Lighting Management

Appendix 3 Draft Resilient Network

Table A.3.1 Suggested resilient network and impact criteria

Link name	Safety	Third party	Economic	Accessibility	Environment
A127 (Full length)			50,000 AADT No alternative routes with sufficient capacity. Access to all TGSE Key Development Sites (London Southend Airport, Central Area, Seafront and Shoeburyness)		High population density along corridor results in potential high exposure to NO2 and particulates during major congestion events
A13 London Road			18,000 AADT Access to and from Central Area, Westcliff and Leigh Disruption leads to excess traffic pressure on A127 which is currently beyond capacity		Mixed priority route, bus corridor and high incidence of cycle accidents, parking over most of the length. Passes through dense residential areas
A13 Queensway			20,000 AADT Access to the Central Area and Seafront		
A1160 Queensway			16,000 AADT Access to the Central Area including seafront		
A1159 Manners Way			13,000 AADT TGSE Key Development Site at		

Link name	Safety	Third party	Economic	Accessibility	Environment
			London Southend Airport and Airport Business Park Traffic flows will grow with development in JAAP Area		
A1159 Priory Crescent			36,000 AADT Access to and from development in west Southend and Shoeburyness	Access to Southend Hospital from Shoeburyness	
A1159 Eastern Avenue	Access from Essex County Fire and Rescue Service		36,000 AADT Access to and from development in west Southend and Shoeburyness	Access to Southend Hospital from Shoeburyness	
Sutton Road	Access from Essex County Fire and Rescue Service				
A1159 Royal Artillery Way			36,000 AADT		
A13 Bournes Green Chase			21,000 AADT		
A13 North Shoebury Road			21,000 AADT		
A1158	Access to Southend		9,000 AADT		

Link name	Safety	Third party	Economic	Accessibility	Environment
Southbourne Grove	University Hospital				
A1158 Westbourne Grove	Access to Southend University Hospital		7,000 AADT		
Prittlewell Chase	Access to Southend University Hospital				
Kenilworth Gardens	Access to Southend University Hospital Access from Leigh Fire Station				
Fairfax Drive (between A127 and Prittlewell Chase)	Access to Southend University Hospital				
Mountdale Gardens (access from Leigh Fire Station to junction with Kenilworth Gardens)	Access from Leigh Fire Station				
Cliff Parade	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage	Key route within the Sea Front Area		

Link name	Safety	Third party	Economic	Accessibility	Environment
		properties			
Grand Parade	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the Sea Front Area		
The Ridgeway	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the Sea Front Area		
Chalkwell Esplanade	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the Sea Front Area		
The Leas	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the and Seafront Area		
Western Esplanade	Stability of cliffs are critical to safety of large numbers of visitors, residents and	Cliffs supporting road also support large number of adjacent residential, business	Key route within the Town Centre and Seafront Area		Adjacent to Benfleet and Southend Marshes SSSI

Link name	Safety	Third party	Economic	Accessibility	Environment
	employees	and heritage properties			
Marine Parade (Leigh)	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key seafront route		Adjacent to Benfleet and Southend Marshes SSSI
Westcliff Parade	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the Town Centre and Sea Front Area		
Clifftown Parade	Stability of cliffs are critical to safety of large numbers of visitors, residents and employees	Cliffs supporting road also support large number of adjacent residential, business and heritage properties	Key route within the Town Centre and Sea Front Area		
B1016 Eastern Esplanade	Within critical areas for coastal flooding	Adjacent to residential and business development	Key route within Sea Front Area and access to Shoeburyness		Adjacent to Benfleet and Southend Marshes SSSI
B1016 Thorpe Esplanade	Within critical areas for coastal flooding	Adjacent to residential and business development	Key route within Sea Front Area and access to Shoeburyness		Adjacent to Benfleet and Southend Marshes SSSI Pollution incidents could impact on Foulness SSSI and

Link name	Safety	Third party	Economic	Accessibility	Environment
					Essex Estuaries SAC
B1016 Ness Road			Key route within Sea Front Area and access to Shoeburyness		Adjacent to Benfleet and Southend Marshes SSSI Pollution incidents could impact on Foulness SSSI and Essex Estuaries SAC

Table A.3.2 Resilient network critical failure modes

Road name	Resilience risks	Critical Failure modes	Preventative interventions	Monitoring method
A127 (Full length)	High risk of surface water flooding on Arterial Road, Eastwood and Prince Avenue in Prittlewell Eastwoodbury and Prittlebrook Critical Drainage Areas Continuous central reservation prevents temporary diversion of traffic to contraflow in case of closure of one of the carriageways	Blocked or damaged gulley pots Blocked or damaged carrier pipes Concrete road base can become unstable where fatigue/ local settlement or thermal cracking combined with heavy loading from HGVs causes it to break up into blocks	Use of crack sealing/ overbanding of newly emerging cracks prevents damage to road base from ingress of water and debris with minimal traffic disruption. High frequency of gulley cleansing	Visual assessment using Carriageway Treatment Survey Ground Probing Radar to identify settlement, high moisture content and associated damage Falling Weight Deflectograph Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A13 London Road	High risk of surface water flooding between Leigh Gardens and Canvey Road	Blocked or damaged gulley pots Blocked or damaged carrier pipes Concrete road base can become unstable where fatigue, local settlement or thermal cracking combined with heavy loading from HGVs causes it to break up into blocks	Use of crack sealing/ overbanding of newly emerging cracks prevents damage to road base from ingress of water and debris with minimal traffic disruption. High frequency of gulley cleansing	Visual assessment using Carriageway Treatment Survey Ground Probing Radar to identify settlement, high moisture content and associated damage Falling Weight Deflectograph Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A13 Queensway	High risk of surface water flooding	Blocked or damaged gulley pots	High frequency of gulley cleansing	Gully cleansing and blockage frequency

Road name	Resilience risks	Critical Failure modes	Preventative interventions	Monitoring method
		Blocked or damaged carrier pipes		Drainage connectivity surveys Drainage CCTV surveys
A1160 Queensway	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A1159 Manners Way				
A1159 Priory Crescent	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A1159 Eastern Way	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A1159 Royal Artillery Way	High risk of surface water flooding Temple Sutton and Southchurch Critical Drainage Areas	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing Trash screen clearance	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A13 Bournes Green Chase	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A13 North Shoebury Road	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys

Road name	Resilience risks	Critical Failure modes	Preventative interventions	Monitoring method
		pipes		Drainage CCTV surveys
A1158 Southbourne Grove	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
A1158 Westbourne Grove	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
Prittlewell Chase	High risk of surface water flooding at entrance to Southend University Hospital	Blocked or damaged gulley pots Blocked or damaged carrier pipes Concrete road base can become unstable where fatigue, local settlement or thermal cracking combined with heavy loading from HGVs causes it to break up into blocks	High frequency of gulley cleansing Use of crack sealing/ overbanding of newly emerging cracks prevents damage to road base from ingress of water and debris with minimal traffic disruption.	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
Cliff Parade	Risk from land slippage	Blocked or damaged drainage pipes or culverts		Geotechnical surveys Ground movement monitoring
Grand Parade	Risk from land slippage	Blocked or damaged drainage pipes or culverts		Geotechnical surveys Ground movement monitoring
The Ridgeway	Risk from land slippage	Blocked or damaged drainage pipes or culverts		Geotechnical surveys Ground movement monitoring

Road name	Resilience risks	Critical Failure modes	Preventative interventions	Monitoring method
Chalkwell Esplanade	Risk from land slippage	Blocked or damaged drainage pipes or culverts		Geotechnical surveys Ground movement monitoring
The Leas	High risk of surface water flooding Risk from land slippage	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys Geotechnical surveys Ground movement monitoring
Western Esplanade	High risk of surface water flooding at Pier Hill junction High risk from river and estuarine flooding (Environment Agency Flood Risk Area 3) Risk from land slippage	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys Geotechnical surveys Ground movement
Marine Parade	High risk of surface water flooding Risk from land slippage	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
B1016 Eastern Esplanade	High risk of surface water flooding	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts	High frequency of gulley cleansing	Gully cleansing and blockage frequency Drainage connectivity surveys Drainage CCTV surveys
B1016 Thorpe	High risk from river and estuarine flooding	Condition defects on Shoeburyness Sea Wall		

Road name	Resilience risks	Critical Failure modes	Preventative interventions	Monitoring method
Esplanade	(Environment Agency Flood Risk Area 3)	Scour		
B1016 Ness Road	High risk from river and estuarine flooding (Environment Agency Flood Risk Area 3)	Condition defects on Shoeburyness Sea Wall Scour		
Westcliff Parade	Risk from supporting land slippage	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts		Geotechnical surveys Ground movement monitoring Visual assessment using Carriageway Treatment Survey (longitudinal cracks and subsidence indicators)
Clifftown Parade	Risk from supporting land slippage	Blocked or damaged gulley pots Blocked or damaged carrier pipes Blocked or damaged culverts		Geotechnical surveys Ground movement monitoring Visual assessment using Carriageway Treatment Survey (longitudinal cracks and subsidence indicators)