

Stockton-on-Tees Borough Council

Highway Infrastructure Asset Management Strategy

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Foreword

The highway infrastructure asset is the most valuable single asset owned by the council and is vital for local economic prosperity and resident's quality of life. The significant levels of funding necessary for the management of these assets are under continuous scrutiny, with increasing pressure from central government and the public for transparency, accountability and ensuring the most efficient use of resources that we have available.

It is imperative that the management of such a vital and valuable asset is undertaken in a systematic and considered manner, which takes account of the council's objectives, service user's expectations, maintenance needs and the available financial resources. It is for these reasons that we have embedded the principals of asset management in the management of our highway infrastructure, as this enables the council to deliver its services and corporate objectives in an efficient and effective manner. Asset management enables the management of the assets through long-term planning, ensuring that standards are defined and achievable, within available budgets, whilst supporting the case for funding and ensuring better communication with customers and stakeholders, giving them a greater understanding of the contribution highway infrastructure assets make to economic growth and the needs of the local community.

This Highway Infrastructure Asset Management Strategy sets out the council's long term approach to managing the highway asset by applying best practice asset management principles and performance monitoring to ensure a safe, serviceable and sustainable highway network.



Councillor Mike Smith

Cabinet Member for Environment and Transport

1. Introduction

1.1 Overview

The local Highways Network Asset represents one of the biggest capital assets of the Authority and is vital to national economic prosperity. The comfort and safety in which people can move from place to place and the appearance of local streets are important contributors to quality of life.

Nationally there is a perception that spending is insufficient to maintain our highways network to satisfactory standards, however the government does not have robust, complete and consistent information about the true cost of holding and maintaining those highway assets, or the size of the maintenance and investment backlogs.

Asset management should and does play a key role in tackling these problems, and in other UK sectors where infrastructure asset management is well established, it has delivered significant value for money savings and service benefits. Those authorities that have established highway asset management regimes have demonstrated both the potential to achieve benefits and that it is possible to prioritise implementation so as to gain early benefits from focused initial investment.

Section 41 of the Highways Act 1980 imposes a duty on the Highway Authority to maintain the adopted highway at public expense, it does not however specify the expected levels of maintenance and guidance on these can be found in the UK Road Liaison Groups published document 'Well Managed Highway Infrastructure – A code of Practice'.

1.2 Purpose and Context

The purpose of this Highway Infrastructure Asset Management Strategy (HIAMS) is to demonstrate Stockton-on-Tees Borough Council's long term approach to managing the adopted highway network assets by defining the expected levels of service applied to the assets, the performance targets assigned to each asset, the expectations of customers and stakeholders, current financial constraints and proposed investment strategies.

Whilst the main purpose of highway asset management is to ensure the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers, it must also support the Council's corporate vision by contributing towards Priority 2D – Transport and Infrastructure of the Economic Strategy 2017 2032 and the Economic Growth Plan 2017 – 2020 through 2D(5) 'maximising opportunities for external funding to develop and maintain key assets and

infrastructure’ and 2D(6) the ‘management and development of key assets to improve resilience and maintain a safe and accessible transport network’.

The 2020 – 2023 Council Plan sets out the key objectives for the Borough, which include;

- Making the Borough a place where people are healthy, safe and protected from harm
- Making the Borough a place with a thriving economy where everyone has opportunities to succeed.
- Making the Borough a place that is clean, vibrant and attractive

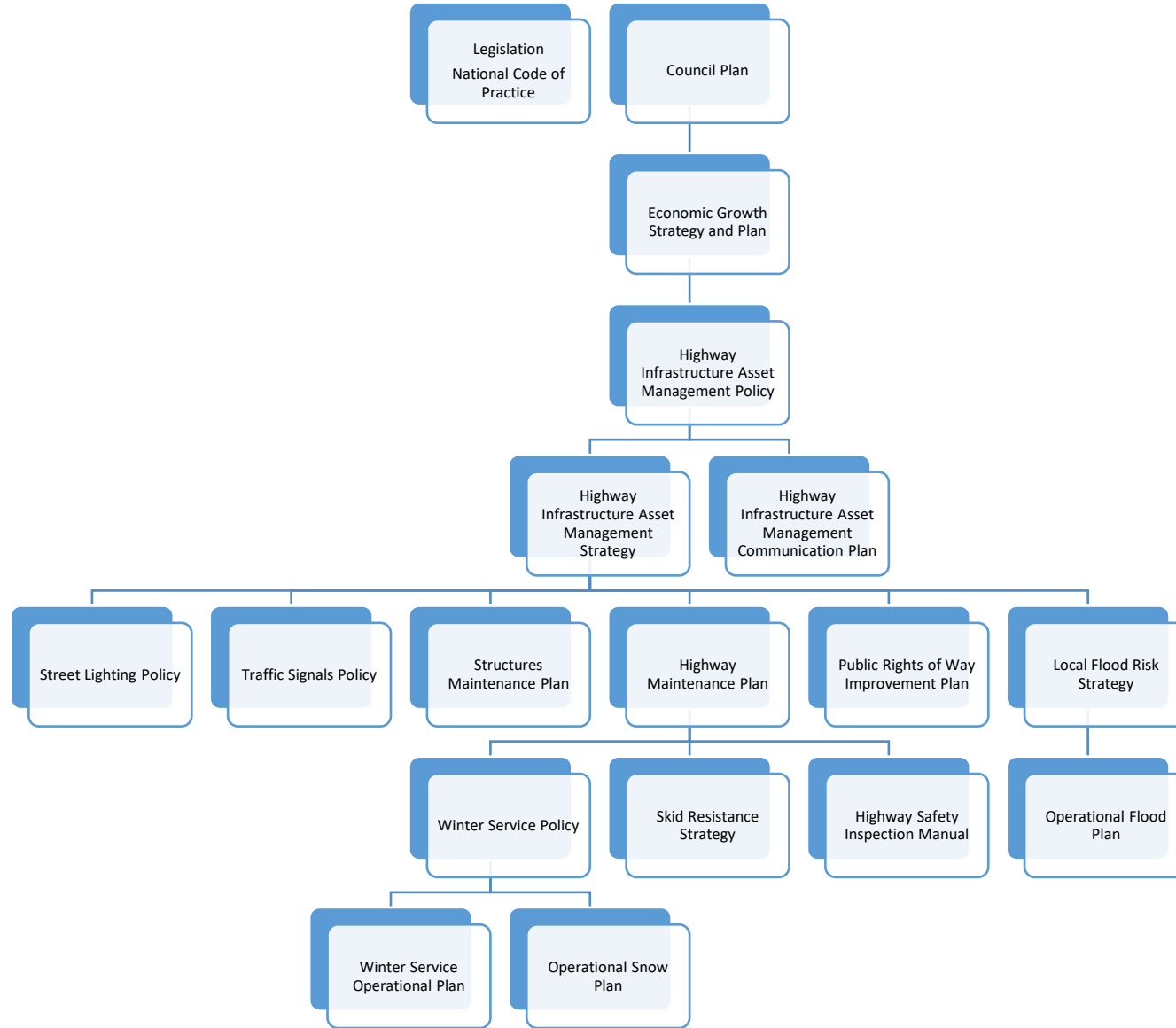
A well maintained highway asset plays a vital role in supporting the key objectives of the Council Plan by maintaining a safe transport network to ensure reliable access to learning and employment and by continuing to work towards carbon reduction targets of the Council through applying and measuring our performance against the primary and secondary objectives of ‘ Well Managed Highway Infrastructure – A Code of Practice’ as follows;

| Primary Objective | Secondary Objective | Measure |
|--------------------------|-------------------------------------|--|
| Network Safety | Complying with statutory objectives | Repudiation rate of Public Liability Claims |
| | Meeting user’s needs for safety | Percentage of Cat 1A, 1B and 2H safety defects rectified within stated response times |
| | | Maintain skid resistance of road surfaces (%age of tested network below investigatory level) |
| Customer Service | User experience / satisfaction | NHT Public Satisfaction Survey |
| | | Maintenance Scheme Feedback Questionnaires |
| | Communication | NHT Public Satisfaction Survey |
| | | Maintenance Scheme Feedback Questionnaires |
| | Information | NHT Public Satisfaction Survey |
| | | Maintenance Scheme Feedback Questionnaires |
| | Levels of Service | NHT Public Satisfaction Survey |
| Annual condition surveys | | |

| | | |
|------------------------|---------------------------------------|---|
| | | Maintenance Scheme Feedback Questionnaires |
| Network Serviceability | Ensuring Availability | NHT Public Satisfaction Survey |
| | Achieving Integrity | Annual condition surveys |
| | Maintaining Reliability | NHT Public Satisfaction Survey |
| | Resilience | Not quantifiable |
| | Managing Condition | Forward programme of preventative maintenance Annual condition surveys |
| Network Sustainability | Minimising cost over time | Lifecycle planning |
| | Maximising value to the community | Not quantifiable |
| | Maximising environmental contribution | Reducing energy consumption Reducing CO ₂ emissions |

Full details of our service standards, performance targets and measures against the objectives are given in section 6 of this strategy document.

The following document framework shows how this HIAMS relates to other Council plans and policy documents.



2. Asset Description

2.1 Asset Inventory

In order to set relevant levels of service for each of the highway assets it is important to know how much of each asset there is and where it is at. Within Stockton this information is held in databases in the form of an inventory and the following table outlines the major highway assets managed by the Council as at 31st March 2020;

| Asset | Element | Unit | Quantity | Data Confidence |
|-------------------------------------|-------------------------------|------|----------|-----------------|
| Carriageway | A – Roads | Km | 93.50 | High |
| | B – Roads | Km | 13.80 | High |
| | C – Roads | Km | 108.10 | High |
| | Unc Roads | Km | 667.70 | High |
| Footways | Adopted Network | Km | 1,070.55 | High |
| | Public Rights of Way | Km | 196.00 | High |
| Structures | Bridges | No | 73 | High |
| | Footbridges | No | 125 | High |
| | Culverts | No | 123 | High |
| | Retaining Walls (>1.5m) | No | 54 | High |
| | Subways & Underpasses | No | 7 | High |
| | Vehicle Restraint Systems | Km | 18.52 | Medium |
| | Other Structures | No | 29 | High |
| Street Lighting | Columns | No | 29,497 | High |
| | Feeder Pillars | No | 231 | High |
| | Illuminated Signs | No | 1,701 | High |
| | Illuminated Bollards | No | 392 | High |
| | Subway Units | No | 92 | High |
| Drainage | Gullies | No | 43,601 | High |
| Traffic Management | Junction Traffic Signals | No | 70 | High |
| Traffic Management Street Furniture | Pedestrian Crossing Signals | No | 91 | High |
| | School Crossing Patrol Lights | No | 58 | High |
| | VAS Signs | No | 44 | High |
| | SID Signs | No | 29 | High |
| | CCTV | No | 84 | High |
| | Urban Traffic Cameras | No | 35 | High |
| | Non Illuminated Signs | No | 15,041 | Low |
| Street Furniture | Pedestrian Barrier | Km | 1.91 | Medium |
| | Bollards | No | 10,842 | Medium |

| | | | | |
|--|------------------|----|-------|--------|
| | Litter Bins | No | 1,203 | Medium |
| | Weather Stations | No | 2 | High |
| | Salt Bins | No | 365 | High |
| | | | | |

Where an asset has a red or amber data confidence level then an inventory improvement action plan is developed based on priorities and available resources. Action Plans will only be implemented where there are demonstrable benefits when compared to the cost of collecting and maintaining the data.

2.2 Asset Growth

The quantity of highway infrastructure assets, managed by the Council, continues to grow on an annual basis due in the main to the development of land for housing, resulting in the adoption of the highway infrastructure assets.

As these are relatively new at the adoption stage, it is anticipated that this additional infrastructure will have little impact on short term funding requirements but the impacts will increase as the assets age.

On average approximately 3km of new carriageway is added to the network each year together with associated footways, street lighting, drainage, traffic signals, signs and street furniture. There are no expectations that this growth rate will differ over the next 5 years.

2.3 Improvement Action Plan

In order to improve the level of confidence of the asset data, the following action plans have been developed;

| Asset | Action Plan |
|---------------------------|--|
| Vehicle Restraint Systems | Data will be updated on a cyclic basis as resources become available. Once resources are available and priorities allow, a programme for updating the vehicle restraint systems will be developed and implemented. In the interim should an emerging technology become available for use its suitability will be assessed. |
| Non-Illuminated Signs | Asset data will be updated as resources become available. In light of emerging AI technologies and the expansion of the asset management system to minor assets analysis is ongoing to identify a cost-effective method of collecting and analysing the inventory data for this asset. |
| Pedestrian Barriers | Asset data will be updated as resources become available. In light of emerging AI technologies and the expansion of the asset management system to minor assets analysis is ongoing |

| | |
|-------------|--|
| | to identify a cost-effective method of collecting and analysing the inventory data for this asset. |
| Bollards | Asset data will be updated as resources become available. In light of emerging AI technologies and the expansion of the asset management system to minor assets analysis is ongoing to identify a cost-effective method of collecting and analysing the inventory data for this asset. |
| Litter Bins | Asset data will be updated as resources become available. In light of emerging AI technologies and the expansion of the asset management system to minor assets analysis is ongoing to identify a cost-effective method of collecting and analysing the inventory data for this asset. |

Those assets that are currently subject to a robust regime of regular condition surveys, safety inspections or special inspections will also be subjected to inventory updates as an integral part of this regime. These assets have been identified with a green (high) confidence rating.

3. Community Requirements

3.1 Stakeholders

One of the fundamental principles of any asset management system is to identify the stakeholders associated with the management of the asset and understand their needs, inputs and expectations when setting the service standards for the various assets.

The stakeholders relevant to Stockton's highway asset management system are detailed in Appendix 1.

In order to obtain information on stakeholder's views the council participates in local and national surveys, including;

- National Highways and Transport Public Satisfaction Survey.
- Stockton Residents Survey

The council also welcomes feedback from stakeholders on any aspect of its highway's services or any aspect of asset management strategy. If you would like to leave feedback please use the following contact details;

- Website: www.stockton.gov.uk
- Email: EGDS@stockton.gov.uk
- Telephone: 01642 526914

Stakeholder contacts with the council regarding highways are managed using a customer relationship management (CRM) system. The system is used to record and categorise contacts, outline the actions taken and log responses provided to the stakeholder.

Additionally when a maintenance schemes is carried out within a urban or suburban setting, the Council pro-actively engages with the stakeholders that have the closest interaction with the scheme through letter drops prior to the scheme commencing and the collection of feedback from a post scheme feedback questionnaire. Feedback from these questionnaires is collated and any issues arising are addressed and, where necessary, lessons learnt are incorporated in future schemes of a similar nature.

3.2 National Highways and Transportation (NHT) Public Satisfaction Survey

From 2019 onwards, stakeholder satisfaction is measured on an biennial basis through the NHT survey. The survey is conducted by Ipsos MORI with questionnaires sent to 3,300 residents of the Borough chosen at random from the electoral register. The survey produces an average response rate of approximately 23%.

The survey gives participating Authorities;

- A better understanding of how they are performing in the eyes of the public.
- A consistent set of historical data for setting service levels and a means of measuring the impact of service improvements.
- Access to the best performing authorities and the opportunity to learn from the good practice of others.
- The ability to benchmark results against similar authorities locally and nationally.

Full results of the most recent survey are available at;

[NHT Networks | National Highways and Transport Network](#)

Key results from the 2019 survey, with a score given out of 100, and historical trends are;

| Key Benchmark Indicator | | 2015 | 2016 | 2017 | 2018 | 2019 |
|----------------------------------|------------------|------|------|------|------|------|
| KBI 01 - Overall | Stockton | 57 | 59 | 60 | 58 | 56 |
| | National Average | 55 | 55 | 54 | 53 | 53 |
| KBI 11 – Pavements & Footpaths | Stockton | 56 | 60 | 59 | 58 | 52 |
| | National Average | 56 | 55 | 55 | 54 | 55 |
| KBI15 Rights of Way | Stockton | 58 | 60 | 62 | 59 | 59 |
| | National Average | 58 | 58 | 58 | 57 | 57 |
| KBI 18 – Management of Roadworks | Stockton | 55 | 56 | 57 | 58 | 53 |
| | National Average | 52 | 52 | 52 | 51 | 52 |
| KBI 23 – Condition of Highways | Stockton | 44 | 45 | 49 | 38 | 39 |
| | National Average | 38 | 38 | 37 | 31 | 36 |
| KBI 24 – Highway Maintenance | Stockton | 59 | 58 | 59 | 56 | 56 |
| | National Average | 54 | 53 | 53 | 51 | 52 |
| KBI 25 – Street Lighting | Stockton | 67 | 71 | 74 | 73 | 67 |
| | National Average | 66 | 66 | 66 | 65 | 64 |

Overall the 2019 survey indicates that results have remained fairly consistent in terms of customer satisfaction, but more importantly Stockton remains consistently above the national average for satisfaction levels for almost all of the key indicators.

The one note-able exception is KBI11 which has shown a decrease in satisfaction of 6% in the space of a single year. We have little background information to support this sudden decrease in satisfaction so will monitor this indicator over the course of the next survey period and formulate an appropriate course of action should a trend become apparent.

3.3 Stockton Residents Survey

Resident surveys are undertaken every 4 years, with the last survey being 2019, to monitor resident's perception of;

- What residents think about the Council, how we work and the key services that we deliver
- How residents think service could be shaped to improve the Borough
- Local communities and their key characteristics
- How residents feel about living in Stockton

Results from the resident survey are considered by the Authorities elected members and executive when deciding on priorities.

4. Financial Summary

4.1 Asset Valuation

The highway asset is valued on an annual basis for the Whole of Government Accounts return based on a Depreciated Replacement Cost (DRC).

DRC is defined as the current cost of replacing an existing asset with its modern equivalent asset (known as the Gross Replacement Cost (GRC)) less the value for all physical deterioration and obsolescence (known as the Accumulated Depreciation (AD)).

The valuation of the highway assets as at 31st March 2019 was;

| Asset | GRC (£000'S) | AD (£000'S) | DRC (£000'S) | Annual Depreciation (£000'S) |
|-----------------------|------------------|----------------|------------------|------------------------------------|
| Carriageway | 1,060,288 | 80,635 | 979,653 | 16,116 |
| Footway | 167,896 | 30,119 | 137,777 | 5,032 |
| Structures | 425,583 | 166,119 | 259,464 | 4,701 |
| Street Lighting | 51,524 | 27,644 | 23,880 | 2,061 |
| Traffic Management | 11,907 | 5,090 | 6,817 | 872 |
| Street Furniture | 15,761 | 7,871 | 7,890 | 788 |
| Land | 790,502 | - | 790,502 | - |
| Total | 2,523,461 | 317,478 | 2,205,983 | 29,570 |

The annual depreciation figure is the calculated cost of all the treatments an asset requires throughout its service life spread over that anticipated lifecycle. This is a theoretical annual maintenance investment needed to keep the asset in a steady state, although in practice the actual budgets and costs should be less than this figure.

4.2 Funding and Budget Allocations

Funding for highway maintenance is a combination of capital and revenue funding. In general revenue funding is provided by the council whilst capital funding is from Central Government. Historic and predicted funding levels provided for the maintenance of highway assets is;

| All figures in £000's | | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| Source | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
| LTP Structural Maintenance Block (Capital) | 2,580 | 2,365 | 2,293 | 2,076 | 2,076 | 2,075 |
| LTP Incentive Fund (Capital) | - | 145 | 220 | 432 | 432 | 432 |
| LTP IT Block (Capital) | - | 450 | 117 | 100 | 100 | 100 |
| DfT Pothole Fund (Capital) | 197 | 116 | 194 | 402 | 146 | 1,565 |
| DfT Challenge Fund (Capital) | - | - | - | - | - | 284 |
| SBC Accruals (Capital) | - | 300 | 965 | - | - | 600 |
| SBC Footway Funding (Revenue) | 707 | 657 | 716 | 607 | 560 | 560 |
| SBC Structures Funding (Revenue) | - | 166 | 169 | 169 | 150 | 150 |
| SBC Traffic Management (Revenue) | - | - | - | 70 | 70 | 70 |
| Totals | 3,484 | 4,199 | 4,674 | 3,856 | 3,534 | 5,836 |

Based on the above funding levels the historic and current allocation for the major highway assets is as follows;

| All figures in £000's | | | | | | |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Asset | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
| Carriageway | 1,921 | 2,176 | 2,635 | 1,679 | 1,295 | 1,793 |
| Footway | 707 | 707 | 816 | 707 | 560 | 810 |
| Street Lighting | 200 | 200 | 407 | 250 | 270 | 664 |
| Structures | 656 | 1,116 | 816 | 950 | 1,194 | 2,140 |
| Traffic Management | - | - | - | 270 | 215 | 429 |
| Totals | 3,484 | 4,199 | 4,674 | 3,856 | 3,534 | 5,836 |

Budget allocation for minor ancillary assets (street furniture, lines etc.) is included within the carriageway and footway allocations as they tend to be replaced as part of wider schemes.

The actual funding levels allocated to the key assets will be reviewed on an annual basis taking into account any specific funding pressures identified.

For planning purposes and for use in lifecycle modelling (detailed in Section 5), the current condition of the highway network and the known pressures from highway structures has resulted in a redistribution of funding from carriageways to structures. Although this redistribution is offset, somewhat, by the current level (£1.5m) of Pothole fund that was announced in Budget 2020 and is expected to be available each year for the next 4 years and will be used, predominantly, on repairing potholes and undertaking longer term resurfacing works to prevent potholes from appearing in the first place.

2020/2021 is the final year of the Department for Transport's current 5 year cycle of indicative funding levels and as such it is not possible to provide any predictions of future budget allocation across the various highway assets.

However, for the purposes of determining the investment strategies the following funding levels and budget allocations have been assumed.

| All figures in £000's | |
|--|--------------|
| Source | 2021/22+ |
| LTP Structural Maintenance Block (Capital) | 2,500 |
| LTP IT Block (Capital) | 100 |
| DfT Pothole Fund (Capital) | 1,565 |
| SBC Footway Funding (Revenue) | 560 |
| SBC Structures Funding (Revenue) | 150 |
| Total Funding | 4,875 |
| Asset Allocation | 2021/22+ |
| Carriageway | 2,010 |
| Footway | 560 |
| Street Lighting | 498 |
| Structures | 1,476 |
| Traffic Management | 331 |
| Totals | 4,875 |

5. Investment Strategies

5.1 Lifecycle Planning

Life cycle planning is used by the council to understand the long term relationship between future funding provision and the resulting condition and performance levels of the highway assets.

In order to assist highway authorities in this planning, the Highways Maintenance Efficiency Programme (HMEP) has developed a set of lifecycle planning toolkits which model the effects on the condition of the asset based on varying funding levels.

The funding levels used can vary from a do nothing approach (i.e. only carry out reactive works as defects arise) to an elimination of backlog in a short space of time followed by maintaining the asset in a pristine condition. However given the existing and predicted levels of funding, neither of the aforementioned extremes of funding are a viable alternative so the two main modelling options that have been analysed are;

- Prediction of the condition of the asset based on the existing funding levels detailed in Section 4.
- The levels of funding required to maintain the assets in their current measured condition.

The level of complexity of each asset model is dependent on the asset data available and the deterioration model used. The inputs to and outputs from the lifecycle plans have been used to summarise the following investment strategies for each asset.

5.2 Carriageways

The outputs from the lifecycle plans, based on existing budget levels, predict that the condition of the carriageway assets at the end of a 20 year lifecycle will be;

| Asset | Subset | Condition | |
|---|-------------------|----------------|----------------|
| | | 2018/19 Actual | 2038 predicted |
| Carriageway (%age of roads where maintenance should be considered) | A Roads (Urban) | 0.0 | 6.2 |
| | A Roads (Rural) | 1.0 | 12.7 |
| | B Roads (Urban) | 1.0 | 3.9 |
| | B Roads (Rural) | 1.0 | 0.7 |
| | C Roads (Urban) | 1.0 | 11.3 |
| | C Roads (Rural) | 1.0 | 9.5 |
| | Unc Roads (Urban) | 7.0 | 38.1 |
| | Unc Roads (Rural) | 18.0 | 32.7 |

From the lifecycle planning toolkit, it is estimated that to maintain the carriageway asset in its current condition will require an investment of £3.2m per annum in planned maintenance works.

As the proposed budget allocation (£2.010m) is below the required level it will not be possible to maintain the asset in its current condition. However as current condition is better than the performance targets detailed in Section 6 it will be possible to place the asset into a managed deterioration over the short term until its condition reaches the performance targets. The funds released, over the short term, by adopting this approach can be redirected to budget pressures from other assets and the situation monitored and reviewed once these pressures have been addressed and the condition of carriageways reaches the performance targets.

A maintenance strategy based on a ‘prevention is better than cure’ approach through the use of targeted preventative maintenance in preference to reactive repairs works should achieve the best possible condition for the available budget. This will entail the following;

- Continued monitoring of the condition of the carriageway network based on SCANNER surveys, skid resistance surveys and visual inspections.
- Introduction and implementation of a new asset management system which will in time cover all assets and allow for an integrated asset management approach to the maintenance of the network.
- Maintenance schemes identified and prioritised based on up to date condition surveys.
- Targeted use of surface treatments on suitable roads. (Surface dressing on rural roads, micro-asphalt on lightly trafficked urban estate roads).
- Monitoring and review of reactive potholing works to determine if greater efficiency can be achieved through structural patching or the implementation of new techniques.
- Implementation of a risk based approach to defect identification and repair in line with the recommendations of the Well Managed Highway Infrastructure Code of Practice

5.3 Footways

The outputs from the lifecycle plans, based on existing budget levels, predict that the condition of the footway assets at the end of a 20 year lifecycle will be;

| Asset | Subset | Condition | |
|--|----------|-----------|----------------|
| | | 2018/19 | 2038 predicted |
| Footways (%age of footways considered to be FNS condition band 4 | Class 1a | 9.1 | 0.5 |
| | Class 1 | 19.9 | 20.3 |
| | Class 2 | 15.4 | 15.7 |
| | Class 3 | 16.4 | 14.4 |

| | | | |
|-------------------------|---------|------|------|
| (structurally unsound)) | Class 4 | 14.8 | 19.1 |
|-------------------------|---------|------|------|

From the lifecycle planning toolkit, it is estimated that to maintain the footway asset in its current condition will require an investment of £562k per annum in planned maintenance works.

As the proposed budget allocation (£560k) is at the required level it should be possible to maintain the current condition of the asset but this can only be achieved through a targeted maintenance programme of replacing existing flagged footways with bituminous ones in residential areas in preference to planned maintenance schemes on existing bituminous footways thereby placing the bituminous footways into managed decline.

This will entail the following;

- Continued monitoring of the condition of the footway network based on Footway Network condition Surveys (FNS).
- Introduction and implementation of a new asset management system which will in time cover all assets and allow for an integrated asset management approach to the maintenance of the network.
- Maintenance schemes identified and prioritised based on up to date condition surveys.
- Trial the use of surface treatments (slurry seal) on selected residential bituminous footways to determine if it will arrest deterioration and prevent defects arising whilst minimising cost.
- Implementation of a risk based approach to defect identification and repair in line with the recommendations of the Well Managed Highway Infrastructure Code of Practice.

5.4 Street Lighting

The outputs from the lifecycle plans, based on existing budget levels, predict that the condition of the street lighting assets at the end of a 20 year lifecycle will be;

| Asset | Subset | Condition | |
|--|-------------|-----------|------|
| | | 2019/20 | 2038 |
| Street Lighting (%age of columns in a poor condition) | 10/12m high | 0.4 | 47.7 |
| | 8m high | 1.3 | 48.0 |
| | 6m high | 0.7 | 47.9 |
| Illuminated Signs (%age of lit signs in a poor condition) | | 13.9 | 7.1 |

| | | | |
|---|--|------|-----|
| Illuminated Bollards (%age of lit bollards in a poor condition) | | 24.2 | 0.0 |
|---|--|------|-----|

From the lifecycle planning toolkit, it is estimated that to maintain the street lighting asset in its current condition will require an investment of £1.156m per annum in planned replacement works.

As the proposed budget allocation (£498k, of which £330k is for asset replacement) is below the required level it will not be possible to maintain the street lighting stock in its current condition.

The current condition of the street lighting column assets is generally good following the major capital investment scheme on street lighting which completed in 2018. However, this concentration on street lighting columns has left a legacy of defects on the other lit assets in the Borough which will require addressing over coming years.

A maintenance strategy based on a targeted replacement programme should achieve the best possible condition for the available budget. This will entail the following;

- Continued monitoring of the condition of street lighting columns and other lit assets through a targeted programme of structural testing and visual inspections.
- Introduction and implementation of a new asset management system which will in time cover all assets and allow for an integrated asset management approach to the maintenance of the network.
- Replacements programmes identified and prioritised based on condition results.
- De-Illumination of lit bollards as they fail. (Provides an ongoing saving on energy and future maintenance costs)
- De-Illumination of lit signs – only where appropriate and in line with latest national guidelines and local safety considerations.

5.5 Structures

The current condition of the structures asset is reflected in the following summary;

| Asset | Subset | Condition | |
|------------|---|-----------|----------------|
| | | 2019/20 | 2039 predicted |
| Structures | All Structures – Bridge Stock Condition Index (BCI (avg)) | 74.6 | 40.1 |

In line with the Association of Directors of Environment, Economy, Planning and Transport (ADEPT) Bridges Group Document – BCI Vol. 3: Evaluation of Bridge Condition Indicators the above condition would indicate that our bridge stock is currently in a fair condition but some bridges may be in a severe condition with the potential for rapid deterioration in condition if sufficient maintenance funding is not provided and there is a moderate backlog of maintenance work.

From the lifecycle planning toolkit, it is estimated that to maintain the structures asset in its current condition will require an investment of £4.15m per annum in planned replacement works.

As the proposed budget allocation (£1.35m) is below the required level it will not be possible to maintain the current condition. Prior to 2015/16 a number of years of under investment in structures asset has resulted in the identification of significant works being required on several bridges within the Borough over the next 3 – 5 years. This has resulted in a redistribution of funding from carriageways to structures in order to address the identified issues an example of which are shown below;

| Structure | Description of Works | Estimated Cost | Dates | |
|------------------------------|--|----------------|---------|-----------|
| | | | Design | Construct |
| Mandale Bridge | Concrete abutments repairs, cathodic protection, bearing replacement, waterproofing and resurfacing. | £1.9m | 2019/21 | 2020/21 |
| Bishopton Road West Bridge | Replace existing cantilevered footway | £500,000 | 2020/21 | 2021/22 |
| Wolviston Bypass Bridge | New bearings, concrete repairs, deck joint renewal, waterproofing and resurfacing | £500,000 | | |
| Jubilee Bridge | Repairs to joints, footways and vehicle restraint system. | £450,000 | | |
| Tees Newport Approach Bridge | Waterproofing, expansion joint replacement, drainage works bearing shelf repairs, corrosion removal and repainting | £300,000 | | |
| Bishopton Avenue Culvert | Concrete repairs to soffit | £250,000 | | |

| | | | | |
|-----------------------------|----------------------------------|----------|--|--|
| South Street Retaining Wall | Concrete repairs throughout wall | £165,000 | | |
| | | | | |

5.6 Traffic Signals

The outputs from the lifecycle plans, based on existing budget levels, predict that the condition of the street lighting assets at the end of a 20 year lifecycle will be;

| Asset | Condition | |
|---|-----------|----------------|
| | 2019/20 | 2039 predicted |
| Traffic Signals (%age of stock approaching or at end of useful life) | 6.00 | 11.7 |
| Pelican Crossing (%age of stock approaching or at end of useful life) | 0.00 | 0.00 |
| Puffin Crossing (%age of stock approaching or at end of useful life) | 6.00 | 13.18 |
| Toucan Crossing (%age of stock approaching or at end of useful life) | 25.00 | 0.00 |
| Zebra Crossing (%age of stock approaching or at end of useful life) | 0.00 | 0.00 |

From the lifecycle planning toolkit, it is estimated that to maintain the traffic signal and associated assets in their current condition will require an investment of £483K per annum in planned replacement works.

As the proposed budget allocation (£331k) is below the required level it will not be possible to maintain the traffic signal stock in its current condition. However, a targeted programme of works on entire junctions rather than individual signal units should ensure that all priority junctions are maintained in a good condition whilst minimising the number of other junctions that exceed their designed 'useful' life. In most instances the useful life of a traffic signal equipment is determined by the age and availability of replacement parts, whilst this is nominally quoted as 20 years for most equipment in reality traffic signal equipment can be maintained in working order beyond this.

5.7 Street Furniture

This covers a wide range of assets including non-illuminated signs, pedestrian barriers / guardrails, litter bins, salts bins etc. The age of many of these assets is unknown and as such it is extremely difficult to model the lifecycle and deterioration of the asset. The process of collecting and maintaining asset data is relatively expensive in terms of cost and resource for an asset that is generally maintained on a replace on fail strategy and as such no formal investment strategy is provided for this asset. Items of street furniture will only be considered for replacement under larger schemes or through reactive maintenance.

As new technologies emerge it may become easier to collect and maintain the asset data and these will be considered as advances are made.

In order to declutter the highway network where a non-regulatory highway sign fails and requires replacement a review should be undertaken to determine if the asset is still necessary and signs will not be replaced where appropriate.

6. Service Standards

6.1 Purpose

To measure our performance in delivering this highway asset management strategy the following service standards have been developed based on data and information that is already collected for other purposes.

Publishing these standards enables stakeholders to understand what they can expect from our transport assets. The risks that may prevent these service standards being met are given in section 7 of this strategy.

Performance measures to meet the Code of Practice objectives as detailed in section 1.2 are;

| Primary Objective | Secondary Objective | Performance | | |
|-------------------|-------------------------------------|--|-----------------------|-----------------------------|
| | | Measure | Actual | |
| | | | 2018/19 | 2019/20 |
| Network Safety | Complying with statutory objectives | Repudiation rate of Public Liability Claims | 86.3 | 84.8 |
| | Meeting user's needs for safety | Percentage of defects rectified within stated response times. Cat 1A Cat 1B Cat 2H | 100% 100% 65.7% | 100% 100% 98.1% |
| | | Maintain skid resistance of road surfaces (%age of tested network below investigatory level) | 38.1%** | Data not reported (COVID19) |
| Customer Service | User experience / satisfaction | NHT Public Satisfaction Survey KBI 01 (2019 National Average = 53) | 58 | 56 |
| | Communication & Information | NHT Public Satisfaction Survey KBI 18 (2019 National Average= 52) | 58 | 53 |
| | Levels of Service | NHT Public Satisfaction Survey KBI 24 (2019 National Average = 52) | 56 | 56 |
| | | 73 | 67 | |

| | | | | | |
|------------------------|---|---|---|--------------------------------------|--|
| | | KBI 25 (2019 National Average = 64) | | | |
| | | Annual condition surveys | See Section 6.2 | | |
| | All Customer Service secondary objectives | Scheme Feedback Questionnaires – Carriageway Schemes (%age of returns indicating overall satisfaction with all aspects of the scheme) | 92% | 94% | |
| | | Scheme Feedback Questionnaires – Footway Schemes (%age of returns indicating overall satisfaction with all aspects of the scheme) | 83% | 90% | |
| Network Serviceability | Ensuring Availability | NHT Public Satisfaction Survey KBI 17 (2019 National Average = 45) | 52 | 50 | |
| | Achieving Integrity | Annual condition surveys | See Section 6.2 | | |
| | Maintaining Reliability | NHT Public Satisfaction Survey KBI 23 (2019 National Average = 36) | 38 | 39 | |
| | Resilience | Not quantifiable | | | |
| | Managing Condition | Forward programme of preventative maintenance | Multi-year forward program for major assets | | |
| | | Annual condition surveys | See Section 6.2 | | |
| Network Sustainability | Minimising cost over time | Lifecycle planning | See Section 5 | | |
| | Maximising value to the community | Not quantifiable | | | |
| | Maximising environmental contribution | Reducing energy consumption | 5.5m kWh saved annually | 5.5m kWh saved annually | |
| | | Reducing CO ₂ emissions | 3140t CO ₂ | 3140t CO ₂ saved annually | |

| | | | | |
|--|--|--|-------------------|--|
| | | | saved annually | |
|--|--|--|-------------------|--|

** it should be noted that the skid resistance figures for 2018 are particularly high as a result of the surveys being carried out during a prolonged spell of dry weather, when the road surface temperatures were very high which resulted in an unusually high proportion of results being marginal i.e. at or only just below the investigatory level. Results of future years surveys will be closely monitored to determine if this anomaly has rectified itself or is a true reflection on the network that will require addressing.

6.2 Asset Performance

For each individual asset type the following service levels have been adopted to measure performance against this strategy;

| Asset | Measured By | Performance Levels | | |
|-----------------|---|--------------------|----------------|----------------|
| | | Target | 2017/18 Actual | 2018/19 Actual |
| Carriageway | %age of Principal Roads where maintenance should be considered (A-Roads) | 6% | 1% | 2% |
| | %age of Non-Principal Roads where maintenance should be considered (B-Roads) | 6% | 1% | 3% |
| | %age of Non-Principal Roads where maintenance should be considered (C-Roads) | 6% | 1% | 3% |
| | %age of Unclassified Roads where maintenance should be considered | 12% | 15% | 18% |
| Footways | %age of footways in FNS condition band 3 & 4 (structurally impaired and structurally unsound) | 15% | 17.3% | 17.9% |
| | Monitor ease of use of the PROW network against appropriate criteria | 90% | 88% | 91% |
| Structures | Bridge Stock Condition Indicator ($BCI_{(avg)}$) | 80 | 79.3 | 80.4 |
| | %age of bridges with critical elements in a poor condition ($BCI_{(crit)} < 55$) | 10% | 10.8% | 14.0% |
| Street Lighting | %age of columns exceeding their average expected service life | 10% | 16.2% | 17.6% |
| Traffic Signals | %age of installations that have exceeded their expected service life (15 years) | 5% | 10.4% | 10.4% |

In general the asset performance data for 2019/20 has not been collected by Central Government due to the Covid19 Pandemic and therefore will not be reported as part of this strategy going forward.

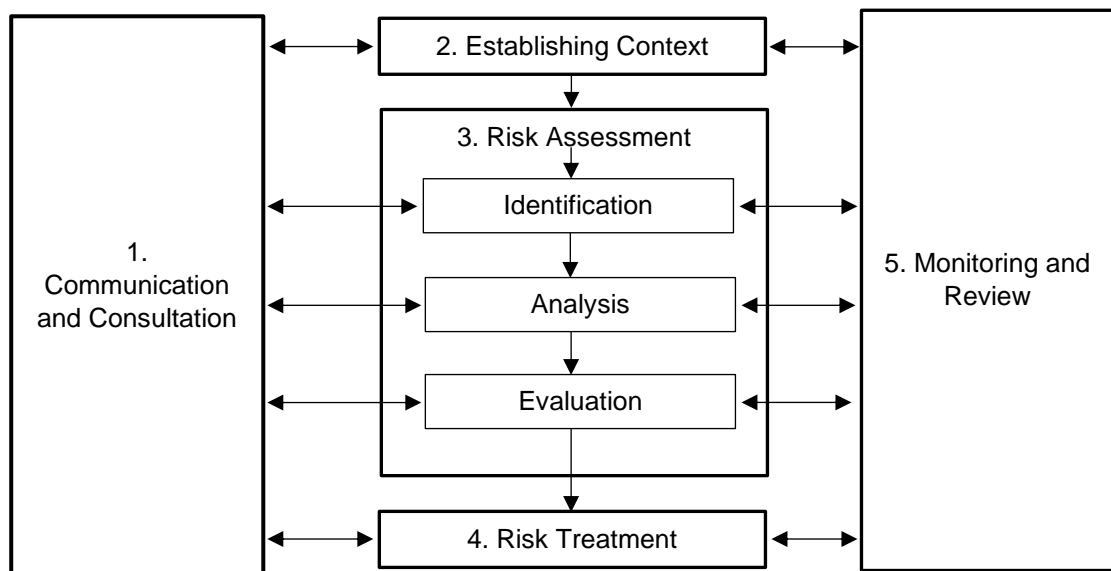
From the above it can be seen that whilst stakeholder satisfaction remains quite high in comparison to the national average of all Authorities participating in the NHT surveys it is becoming increasingly difficult to maintain condition levels of some of the assets at their target levels which will necessitate a redistribution of funding between assets. This has been reflected in the investment strategies detailed in section 5 and will be monitored over forthcoming years.

7. Risk Management

7.1 Risk Management Strategy

As the highway authority we have to manage a variety of risks at corporate, strategic, tactical and operational levels. The likelihood and consequence of these risks can be used to inform and support our approach to managing the assets and inform key decisions regarding our service standards and investment strategies.

The adoption of a risk based approach to asset management is advocated within the Well Managed Highway Infrastructure Code of Practice, with the 5 stage risk management process illustrated below being utilised to support the successful implementation of this Highway Infrastructure Asset Management Strategy;



The risks associated with the successful implementation of this strategy have been identified and are detailed in section 7.2

Tactical and operational risks associated with the management of the highway asset are the responsibility of the individual service teams with risks identified from experience of the teams. Information highlighted via this process is captured electronically and reviewed as required particularly in relation to programmes or individual projects.

Significant risks are escalated in line with the corporate risk management process via the Service manager to the Directorate Management Team and onwards as required.

7.2 Risks to this Strategy

The main risks to the successful implementation of this strategy which could prevent the attainment of the service standards specified in this strategy are;

| Risk | | Action if risk occurs |
|---|---|--|
| Assumption | Consequence | |
| Strategy assumes normal winter weather rather than severe or extreme | Adverse weather can lead to accelerated deterioration of the asset than have been allowed for in the models | Lifecycle plans, budgets and this strategy will be updated as required. |
| Available budgets have been assumed based on latest available information | Funding levels reduce over the term of the strategy | Lifecycle plans, budgets and service standards will be revised to accurate levels. |
| Lifecycle plans are based on current condition data and deterioration models | Assets deteriorate quicker than modelling would suggest and the investment required to meet the service standards is insufficient | Service standards revised to reflect altering deterioration rates. |
| Reduction in revenue funding which would reduce the level of resource available to deliver the strategy | Staff and other resources are not allocated to delivering and monitoring the delivery of the strategy against service standards | Predictions and this strategy will be revised. |

Appendix 1 – Stakeholders

Version – March 2020

| Stakeholder | Needs / Requirements | Inputs (To asset management process) | Outputs |
|---|---|---|--|
| Central Government Departments | Legislative / Regulatory | Acts of Parliament Codes of Practice | Condition Data (Single Data List) Inventory Returns (R199b) Transport Asset Valuation (Whole of Government Accounts) |
| Cabinet Cabinet Member Regeneration and Transport Select Committee Director of Community Service and Transport (CS&T) Director of Finance and Business Services Highway Transport and Design Manager Finance and Business Service – Finance, Governance and Asset Finance and Business Services – Business Support and Information External Auditors (Mazars) | Manage adopted highway in line with statutory duty and in support of corporate vision. Valuation of adopted highway asset in line with statutory requirements. Performance Indicators | Corporate Plan Service Plan Valuation processes (deadlines) | Transport Asset Valuation (Whole of Government Accounts) Asset Management Policy Asset Management Strategy Highway Infrastructure Asset Management Plan Highway Maintenance Plan Highway Safety Inspection Manual Structures Maintenance Plan Street Lighting Policy Surface Water Management Plan Local Flood Risk Management Strategy Performance Indicators Highway Infrastructure Strategic Risk Register |
| Highway Maintenance Efficiency Programme (HMEP) | Collaborative Working | Lifecycle Planning Toolkits Valuation Guidelines | Transport Asset Valuation (Whole of Government Accounts) |

| | | | |
|---|---|--|---|
| <p>Local Government Association</p> <p>Highway Asset Management Finance Information Group (HAMFIG)</p> <p>Chartered Institute of Public Finance and Accountancy</p> <p>United Kingdom Roads Liaison Group and associated boards (asset management, bridges, lighting)</p> | | <p>Highway Infrastructure Asset Management Guidelines</p> <p>Learning Toolkits</p> <p>Training</p> <p>Networking Opportunities</p> <p>HMEP Connect and Share website</p> | |
| <p>North East Highways Alliance</p> | <p>Collaborative Working</p> | <p>Best Practice sharing</p> <p>Networking Opportunities</p> | <p>Knowledge Hub</p> <p>Mutual Assistance Catalogue</p> |
| <p>Members of Parliament</p> <p>Members of European Parliament</p> <p>Elected Members</p> <p>Town and Parish Councils</p> | <p>Responding to constituents needs and concerns</p> | <p>Correspondence</p> | <p>Responses in line with corporate guidelines</p> <p>Scheme Lists and feedback on satisfaction</p> |
| <p>All users of the adopted highway network</p> <p>Local Businesses</p> <p>PD Ports</p> <p>Petrochemical Industries</p> | <p>Managed / Maintained Network</p> <p>Responses to Correspondence</p> <p>Satisfaction with Service</p> | <p>Defect Reports</p> <p>Works Requests</p> <p>Stakeholder Satisfaction Surveys</p> | <p>Maintenance Schedules (Scheme Lists)</p> <p>Responses in line with corporate guidelines</p> <p>Reactive Maintenance responses in line with defined levels of service.</p> |
| <p>CS&T – Highway, Transport & Design, Highway Network & Flood Risk Management</p> <p>CS&T – Highway, Transport & Design, Traffic & Network Safety</p> | <p>Asset Management Processes.</p> <p>Maintenance Regimes</p> | <p>Condition survey results.</p> <p>Safety inspection reports.</p> <p>Special inspection reports.</p> <p>Requests for work.</p> | <p>Highway Infrastructure Asset Management Plan</p> <p>Highway Management Plan</p> <p>Structures Management Plan</p> <p>Street Lighting Policy</p> <p>Surface Water Management Plan</p> |

| | | | |
|---|---|---|--|
| <p>CS&T – Highway Transport & Design, Design Services</p> <p>CS&T – Commercial and Community Services (Care for Your Area)</p> <p>CS&T – Construction and Facility Services</p> <p>Framework Suppliers (Tarmac Ltd)</p> <p>Consultancy Partners (Jacobs / ARUP / Atkins)</p> <p>Underwater Inspection Specialists</p> | | | <p>Scheme Lists</p> |
| <p>Local Media / Broadcasters and Social Media</p> <p>HR, Legal and Communications – Communications, Consultation and Engagement</p> <p>Emergency Planning</p> | <p>Communication</p> | <p>Informatory Only</p> | <p>Timely information relevant to the current situation or request</p> |
| <p>Finance and Business Services, Finance, Governance and Assets, Procurement and Governance</p> <p>North East Procurement Organisation</p> <p>Tees Valley Combined Authority</p> <p>Tees Valley Highway Infrastructure Asset Management Group</p> <p>North East Highways Alliance</p> <p>Local Enterprise Partnerships</p> | <p>Collaborative working and bargaining</p> | <p>‘Enhanced’ buying power</p> <p>Procurement processes</p> | <p>Scheme lists</p> <p>Framework contracts</p> |

| | | | |
|--|---|--|---|
| <p>Condition survey supplier (Ginger Lehmann)</p> <p>Skid resistance survey supplier (Middlesbrough BC)</p> <p>Skid Resistance survey Data processors (Xais)</p> <p>United Kingdom Pavement Management System software supplier (Yotta Ltd)</p> <p>Asset Management Software supplier (Yotta Ltd)</p> <p>Gazetteer data validation supplier (GeoPlace)</p> | <p>Data</p> | <p>Survey data</p> <p>Street Gazetteer</p> | <p>Condition data</p> <p>Maintenance backlog</p> <p>Inventory data</p> <p>Valuation data</p> <p>NSG</p> <p>Integrated Transport Network</p> |
| <p>National Highways and Transport Network</p> <p>Framework Surfacing Contractor</p> | <p>Collaboration</p> | <p>Customer Satisfaction Surveys (NHT Surveys)</p> <p>Benchmarking Surveys (CQC Surveys)</p> <p>Post scheme satisfaction surveys</p> | <p>Data analysis and lessons learnt</p> |
| <p>Statutory Undertakers</p> <p>Developers</p> <p>Highways England (+ appointed maintenance agents)</p> <p>CS&T – Construction and Facility Services</p> | <p>Co-ordination of works</p> <p>Supervision of works</p> | <p>Permit notices</p> <p>S50 Licenses</p> <p>S38 / S278 Agreements</p> | <p>Resolution of conflicts</p> <p>Adoption of new assets</p> <p>Embargo's on highway maintenance schemes.</p> <p>Maintenance of strategic diversion routes.</p> |