Sandwell
Metropolitan Borough Council

ATKINS

Sandwell MBC Highway Infrastructure Asset Management Plan

December 2017

Notice

This document and its contents have been prepared and are intended solely for Sandwell Metropolitan Borough Council's information and use in relation to Asset Management.

ATKINS assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 60 pages including the cover.

Document history

Job number:			**Document ref:**			
Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 1.0	Highway Infrastructure Asset Management Plan	DR	CC	AW		
Rev 1.1	Addressing SMBC comments	EM	CSC	ACW	EM	11/12/17

Client signoff

Client	Sandwell Metropolitan Borough Council
Project	Sandwell MBC Highway Infrastructure Asset Management Plan
Document title	Sandwell MBC Highway Infrastructure Asset Management Plan
Job no.	
Copy no.	
Document reference	

Table of contents

Foreword

If you live, work or pass through Sandwell whether on foot, cycling, using public or personal transport you will use the largest and most visible asset Sandwell Council is responsible for the highway network.

A well maintained and managed network that is safe, serviceable and sustainable is one of the best ways to foster job creation, encourage economic growth and support local communities. It makes an important contribution to social inclusion, community safety, education and health. The appearance of our streets helps to shape the character and quality of the local environment in which people live.

Highway Asset management brings a strategic approach to the management of the highway network to help meet the needs of current and future customer demands. We believe it can bring about significant value for money savings and service benefits to our highway users whether they are residents, businesses or visitors.

Highway Asset management is a process of continual development, refinement and improvement and this plan, originally developed around a common framework agreed with other West Midlands councils, aims to ensure Sandwell's highway infrastructure is well maintained and managed in an efficient, affordable and customer focused way.

With a focus on doing more with scarce resources, the Department for Transport (DfT) has sponsored the Highways Maintenance Efficiency Programme (HMEP), a sector led transformation initiative, which is driving the introduction of business like asset management thinking into highway maintenance.

To help authorities HMEP has published new asset management guidance (May 2013). This asset management framework will be further developed building on our current work using the HMEP guidance and recommendations in the coming years.

Executive Summary

The DfT is challenging local authorities to manage their highways assets more effectively to deliver timely treatments and effective use of scarce resources. In December 2014, they announced that £6 billion would be made available for local highways maintenance based on an Incentive Fund Self-Assessment process. The Incentive Fund Self-Assessment process assesses the maturity of an authority in Asset Management.

This Highway Infrastructure Asset Management Plan forms part of a suite of highway asset management documents that have been developed in accordance with best practice asset management guidance, it demonstrates Sandwell's commitment to highway asset management and supports future funding through the DfT Incentive Fund Self-Assessment process.

The highway infrastructure is probably the most visible and valuable asset for which Sandwell Council is responsible. It is used daily by residents, businesses and visitors alike making important contributions to economic growth, social inclusion, community safety, education and health.

This Highway Infrastructure Asset Management Plan (HIAMP) is the developing framework that sets out how we invest in, manage and operate the highway infrastructure to meet legal obligations, high public expectations for safe, reliable and convenient travel and the wider objectives of transport strategy set out in the West Midlands Strategic Transport Plan 'Movement for Growth' and its associated '2026 Delivery Plan for Transport' document with links to Sandwell Council's corporate vision.

The purpose of asset management is to make how we manage the highway infrastructure more evidence led to support better decision making and to deliver a customer focused highway service in a way that provides improved value for money.

In Sandwell, we recognise the importance of consulting with all stakeholders at the appropriate time to understand their views about the service they expect from the highway network. It is essential to seek the views and opinions of key individuals or organisations to help the council deliver its strategic objectives. Through a greater understanding of the asset base and stakeholder needs the council executive and officers will be better informed to make long term strategic investment decisions in the most efficient, affordable and sustainable manner.

A key function of the HIAMP is to set out how we intend delivering an affordable service with the resources available. Developing lifecycle plans will cover a wide range of activities, from inspections, to routine and cyclic maintenance, and include structural maintenance and more substantial refurbishments and improvements to all the Council's highway assets.

The HIAMP sets out financial plans required to deliver the lifecycle activities. The financial plans provide an indication of the level of investment that is required to deliver the agreed level of service for the critical assets. It is also fully recognised that there are considerable pressures on public finances which impact on these financial plans. Thus, maintenance strategies have been developed for the critical asset to make best use of the available funds and ensure that the highway network remains fit for purpose.

Updating the HIAMP

The Council is committed to continually improving asset management practices and these will be reflected in future periodic reviews and updates of the HIAMP.

1. Introduction

The purpose of the highway maintenance service is the holistic stewardship of the highway which embraces both its operational role and its wider contribution to the community. The core objectives of the service are to deliver a highway network that is safe, serviceable and sustainable through sound financial and risk management including arrangements for inspection, standard setting and performance.

The purpose of this HIAMP is to define Sandwell Metropolitan Borough Council's (SMBC) policies and methods for maintenance of the Highway Network. This will be aligned to "Well Managed Highway Infrastructure – A Code of Practice" (October 2016) and how SMBC aims to deliver its standards.

This plan also references the Highways Maintenance Efficiency Programme (HMEP) which is a DfT funded, sector-led transformation programme. HMEP provides tools and resources to help manage the transformation of delivery of roads and services through greater efficiencies. Where possible, Sandwell has aligned itself with this programme to improve the condition of the road network through a sound asset management based approach to highway maintenance.

1.1. Sandwell's Highway Network

The Council's highway network is over 800 km in length comprising of multiple highway infrastructure asset types, such as carriageways, footways, structures (including bridges and retaining walls), traffic signals, traffic signs, highway drainage and street lighting. Sandwell is predominantly urban, consisting of strategic and principal (A) roads, non-principal (B&C) roads, unclassified roads plus a number of rural roads. The highway network is vital to the local economy, and the community. The roads carry high volumes of commercial and private vehicles and for the Council to fulfil its potential, it is important that this network is effectively maintained.

The urban nature of the highway network means that it is in constant demand and must cater for all types of users. The network is crucial for the day to day functioning of the Borough; thus, the condition and availability of highway assets is of great importance and value. The Council is committed to ensuring the highway network is maintained in a manner that supports its corporate vision, aims and objectives.

1.2. West Midlands Combined Authority (WMCA)

Council leaders from the constituent local authority areas of Birmingham, Coventry, Dudley Sandwell, Solihull, Walsall and Wolverhampton have made an agreement in principle to work as a Combined Authority in a move which will attract hundreds of millions of pounds of investment to create jobs and improve transport links.

The WMCA works together with neighbouring district and county councils and the Local Enterprise Partnerships (LEPs). With a population of four million, the WMCA is the largest combined authority in the UK and the second biggest economy area, after London.

The WMCA has identified five early delivery priorities:

- Developing an overarching Strategic Economic Plan for the West Midlands
- Access to a Finance and Collective Investment Vehicle
- Getting the transport offer right for the long term
- Creation of an economic policy and intelligence capacity
- A joint programme on skills

As a key member of the Combined Authority, Sandwell will be at the heart of boosting business, improving lives and transforming the region's landscape, and with the support of the Combined Authority, make sure Sandwell receives its share of investment and the wider benefits of devolution.

2. Legal Framework

2.1. Duty of Care for Highway Maintenance

Sandwell Metropolitan Borough Council is the Highway Authority for all highways in the borough except for motorways - for which Highways England is the Highway Authority. There are no trunk roads in the Borough, therefore any reference to trunk roads is for information only.

Much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time as a result of case law. It is crucially important that all those involved in highway maintenance, including elected members, have a clear understanding of their powers and duties, and the implications of these. Even in the absence of specific powers and duties, highway authorities have a general duty of care to users and the community to maintain the highway in a condition fit for purpose, as far as is reasonably practicable.

In addition to the duty of care there are several pieces of legislation which provide the basis for powers and duties relating to highway maintenance that are worthy of specific reference:

- Highways Act 1980
  - Section 41 – imposes a duty to maintain a highway which is maintainable at public expense.
  - Section 41 (1A) – imposes a duty to ensure, so far is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.
  - Section 56 – any person may apply to the Courts for an order requiring the Highway Authority to take remedial action within a reasonable period, specified by the Court.
  - Section 58 – provides for a defence against action relating to alleged failure to maintain on grounds that the authority has taken such care as in all the circumstances was reasonably required to secure that the part of the highway in question was not dangerous for traffic.

- The New Road and Street Works Act 1991
  - Section 53 – highway authorities shall keep a street works register for each street for which they are responsible showing information about current or proposed works.
  - Section 56 – highway authorities have the power to give directions as to the timing of undertakers' work that are likely to cause serious disruption to traffic.
  - Section 59 – highway authorities have a duty to co-ordinate works to minimise inconvenience and disruption, protect the structure of the street and integrity of apparatus and ensure safety for all users.
  - Section 74 – as amended by the Transport Act 2000 requires an undertaker executing works in a maintainable highway to pay a charge where the work is unreasonably prolonged.

- Road Traffic Act 1988
  - Imposes a duty on highway authorities to promote road safety, including accident studies, and to take such measures to reduce the possibilities of accidents when new roads come into use.

- The Traffic Management Act 2004
  - Imposes a duty of network management, principally securing the expeditious movement of traffic including avoiding, eliminating or reducing disruption.

3. Sandwell's Highway Infrastructure Asset Management Plan (HIAMP)

This document is the HIAMP for Sandwell's highway network. It provides a framework for continuous improvement to ensure the highway network is well managed in a cost effective and customer focused way. The HIAMP provides strategic tools to facilitate and underpin value for money savings and service benefits for highway users whether they be residents, businesses or visitors. It will allow the Council to meet the needs of current and future customer demands within the constraints of statutory obligations, customer expectations and funding limitations.

The HIAMP demonstrates long term highway infrastructure investment to the Council's strategic goals. Key to the HIAMP is the development of lifecycle plans for each critical highway asset, financial planning and spending priorities. This HIAMP provides a framework for asset management in Sandwell.

The Council aims to ensure that the most economic cost options are identified and used for the works programming and funding decisions.

Key elements of the Council's infrastructure asset management approach and set out in this HIAMP include:

- Taking a lifecycle approach to the management of critical infrastructure assets;
- Developing cost-effective management strategies for the long term;
- Providing affordable levels of service and monitoring service performance;
- Managing risks associated with highway infrastructure assets;
- Sustainable use of physical resources;
- Establishing continuous improvement in asset management practices;

The Council's HIAMP is consistent with the Highway Infrastructure Asset Management Guidance (HIAMG), which is regarded as best practice. The Guidance makes 14 recommendations and is based around an asset management framework approach to aspire to all the benefits from infrastructure asset management.

3.1. Development of HIAMP

Sandwell's former Highway Asset Management Plan (HAMP) was based upon the 2004 CSS Framework for Highway Asset Management. This 2017 updated HIAMP builds upon the existing HAMP and uses the principals of the UKRLG Highway Infrastructure Asset Management Guidance (HIAMG), which is recognised as industry best practice, to achieve a reasonable level of benefit from asset management.

3.2. Scope of HIAMP

This HIAMP sets out the processes used for the management of the highway infrastructure assets, highlights the present strengths and weaknesses of the current management approach and seeks ways Sandwell can improve its asset management service.

An effective HIAMP requires good quality data, long term programming and whole life costing models, works programming and funding decisions processes. Key elements of the Council's HIAMP include the following:

- Policy and Strategy;
- Levels of service;
- Communications;
- Performance Management Framework;
- Information and Data;
- Lifecycle planning;
- Works programming;
- Risk Management;
- Network Resilience;
- Continuous improvement

3.3. Asset Management Context

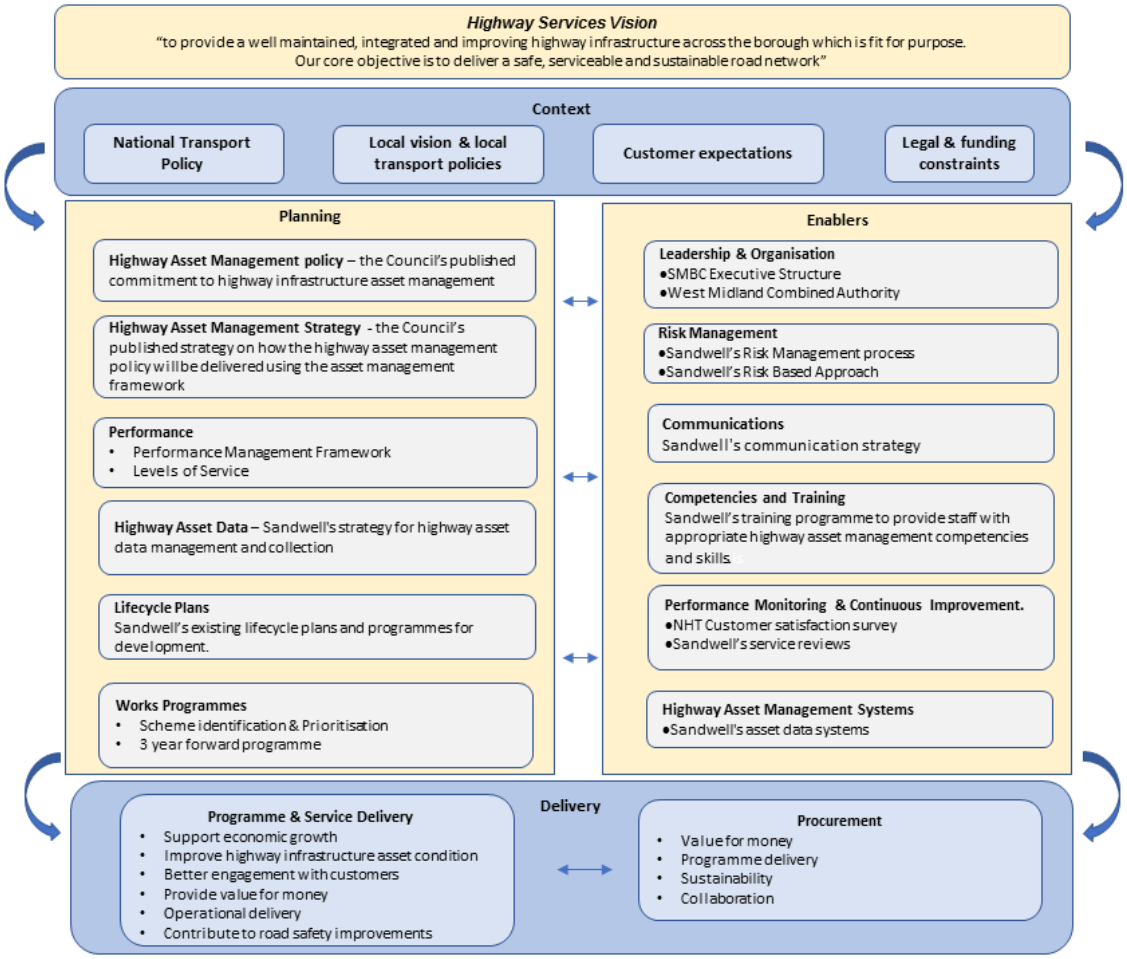
The asset management context includes a variety of relevant and influencing factors that need to be taken into consideration when determining the Council's expectations for the highway asset management service. These factors include: National transport policy, the Council's vision and local transport policies, the expectations of stakeholders together with legal and financial constraints.

3.4. Highway Asset Management Framework

The purpose of an asset management framework is to show the structured relationship between the plans, policies, strategies and guidance that inter-relate to highway infrastructure and therefore to asset management. Taking a structured approach to asset management provides a comprehensive understanding of extent and condition of highway infrastructure assets and a clear methodology for linking goals, aspirations and objectives with levels of service.

The Council has developed the following highway asset management framework for all its activities and processes which are necessary to manage, document, implement and continually improve delivery of its highway infrastructure asset management. The framework (Fig.1), which uses the suggested HIAMG format, is summarised below.

Fig. 1 Sandwell MBC Highway Asset Management Framework



3.4.1. Highway Asset Management Planning

The highway asset management planning sets out the key activities that are undertaken by the Council as part of their highway asset management planning process. These activities include:

- **Highway Infrastructure Asset Management Policy** – the Council's published commitment to highway infrastructure asset management and provides the link between the corporate vision and objectives and the highway asset management objectives;
- **Highway Infrastructure Asset Management Strategy** – the Council's published strategy on how the Highway Infrastructure Asset Management Policy will be delivered using the highway asset management framework. It includes all critical assets and the Council's commitment to continuous improvement;
- **Highway Asset Performance** – the Council's agreed levels of service and how the performance will be measured, reported and actions taken to drive improvement;
- **Data Management**– the Council's strategy for highway asset data management and collection, without which informed decisions cannot be made;
- **Lifecycle Planning** – the Council's lifecycle plans for the critical assets to inform decision makers about optimum investments and impacts when combined with investment scenarios and stakeholders desired levels of service;
- **Works Programmes** – the Council's programme of works for each highway infrastructure critical asset;

3.4.2. Highway Asset Management Enablers

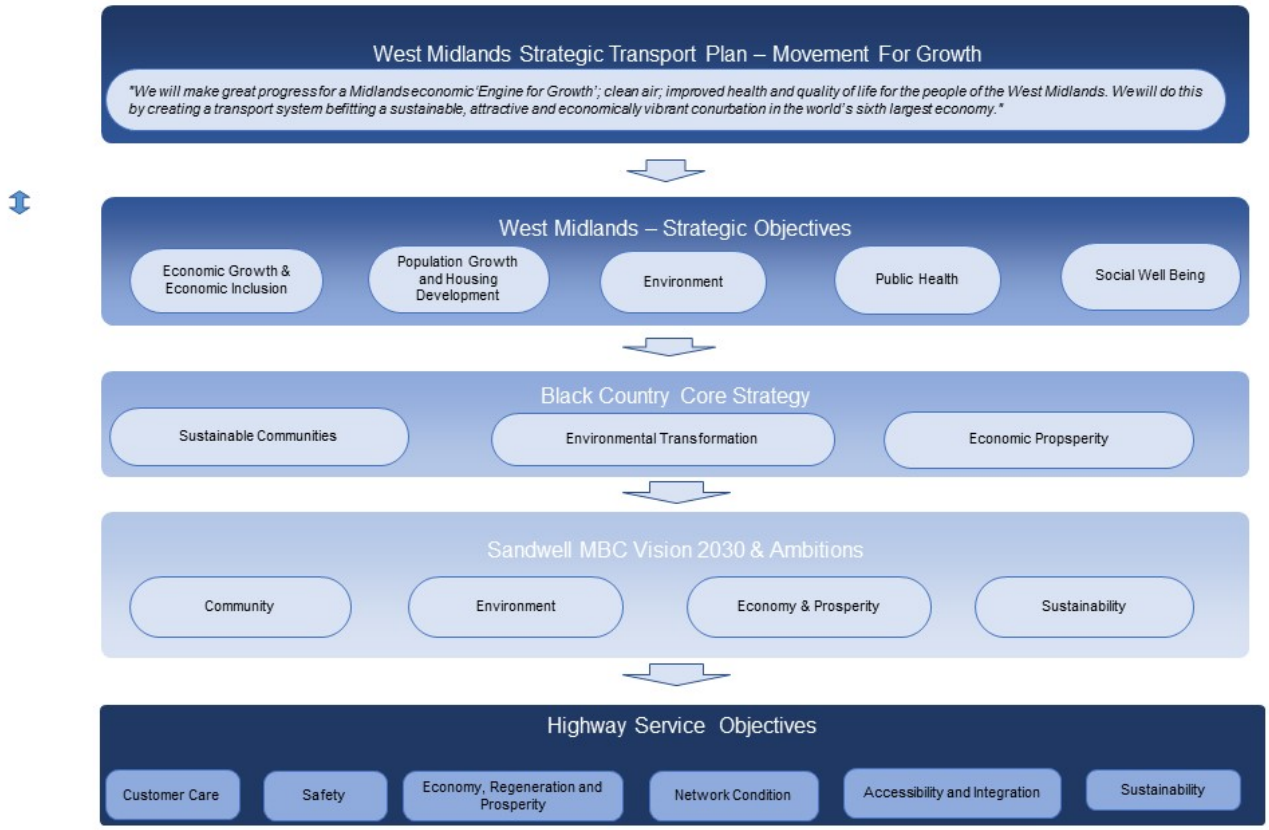
Highway asset management enablers are the series of supporting activities that facilitate the implementation of the Highway Asset Management Framework. They include:

- **Leadership & Organisation -** organisational highway asset management leadership linking councillors, chief officers, highway asset owners and all highway asset management staff; adoption of a highway asset management culture;
- **Risk Management** - effective risk management processes for all critical highway assets;
- **Communications -** effective communications with all highway asset management stakeholders; collaborating with all highway asset management stakeholders and suppliers to deliver an effective service;
- **Competencies and Training -** staff with appropriate highway asset management competencies and skills within the service;
- **Performance Monitoring & Continuous Improvement -** fostering a culture of continuous improvement and innovation in highway asset management practices and in works delivery; highway asset management performance framework; benchmarking highway asset management best practice with neighbouring highway authorities and best in class;
- **Highway Asset Management Systems –** a clear strategy for managing highway asset data;

3.5. Relationship to other documents

This HIAMP forms part of a suite of asset management documents which are linked and aligned to other key strategic documents. The diagram (Fig. 2) below shows the document structure.

Fig. 2 Document Structure



3.6. Key Stakeholders and Communication

There has been an increasing interest in how local government can improve both its customer focus and customer relations. A key to this is an understanding of what drives customer satisfaction, this would enable the authority to prioritise investment in service improvements based on their likely impact on customer satisfaction. However, this is a difficult task as the improvements the public have experienced in other areas of the private sector has led to rising expectations in the services SMBC provides and therefore there are major challenges in meeting those expectations.

The aim is to provide a positive customer experience by engaging with stakeholders to understand their needs and expectations to determine and review the service provided by highway infrastructure assets and hence the highway asset management activities. The management of highway assets impacts directly on a broad range of stakeholders and users of the network including:

- Residents;
- All road users;
- Statutory undertakers;
- Local businesses;
- Visitors/tourists;
- Council staff (operational, managerial, executive)

The information generated by a HIAMP is designed to enable greater involvement by all stakeholders in the management of the highway infrastructure. To successfully deliver the highway asset management message it is essential that the council communicates and engages effectively by having in place clear channels of communicating with all stakeholders.

These are key communication engagement priorities for Sandwell Council:

- To use the most effective internal and external channels which meet the needs of all residents and employees.
- To focus on promoting the Council's services and how the Council acts to protect Sandwell's present and future interests.
- To raise the percentage of the public who feel informed about the Council and have an opportunity to be actively involved in the local democratic processes and community activities.

A Highway Infrastructure Asset Management Communications Strategy has been developed to support the implementation of this HIAMP.

3.7. Highway Network Hierarchy

The highway network hierarchy is the foundation of a coherent, consistent and auditable highway maintenance strategy. The highway network hierarchy is effectively utilised in highway network condition reporting, scheme identification, setting levels of service, inspection regimes and response times. SMBC currently manages the carriageway and footway assets according to hierarchies based on 2005 Well Maintained Highways Code of Practice and detailed in the tables below. However, the 2016 Well Managed Highway Infrastructure - A Code of Practice recommends that local authorities adopt a risk based approach to managing their networks which may include a review of their network hierarchies.

Road Hierarchy

Category	Hierarchy Type	Type of Road
1	Motorway	Limited access motorway regulations apply
2	Strategic Routes	Trunk and some Principal 'A' roads between Primary Destinations
3a	Main Distributors	Major Urban Network and Inter Primary Links. Short - medium distance traffic
3b	Secondary Distributor	Classified Road (B and C Class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions
4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic

Note: There are no trunk roads in SMBC

Footway Hierarchy

Category	Hierarchy Type	Description
1a	Prestige Walking Zones	Very busy areas of towns and cities with high public space and streetscene contribution.
1	Primary Walking Routes	Busy urban shopping and business areas and pedestrian routes
2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres
3	Link Footways	Linking local access footways through urban areas and busy rural footways
4	Local Access Footways	Footways associated with low usage, short estate roads to the main roads and cul-de-sacs.

4. Highway Infrastructure Asset Management Policy and Strategy

4.1. Highway Infrastructure Asset Management Policy

The SMBC Highway Infrastructure Asset Management Policy is a high-level document which establishes the Council's commitment to infrastructure asset management and demonstrates how this approach aligns with the high-level objectives set out in the West Midlands Strategic Transport Plan (WMSTP) – Movement for Growth (MfG) and the Directorate's business plan. The Highway Infrastructure Asset Management Policy is a stand-alone document and will be published alongside the Highway Infrastructure Asset Management Strategy on the Council's website, thus playing a key role in creating the line of sight between our asset interventions and the overall corporate objectives.

4.2. Highway Infrastructure Asset Management Strategy

The Highway Infrastructure Asset Management Strategy adds detail to the Highway Infrastructure Asset Management Policy and sets out how the Highway Infrastructure Asset Management Policy will be delivered, focusing on what SMBC plans to do to build its asset management capability. Further definition of these activities and interventions on assets is provided within this document. The Highway Infrastructure Asset Management Strategy is informed by the adoption of a Highway Asset Management Framework which establishes the activities and processes that are necessary to develop, document, implement and continually improve highway asset management within SMBC. The strategy sets out how the Council will best manage the highway network taking into consideration customer needs, local priorities, asset condition, and available resources. Sandwell's Highway Infrastructure Asset Management strategy is available on the Sandwell MBC website.

5. Levels of Service

5.1. Introduction

The levels of service set out the standard of highway maintenance Sandwell aim to provide. These are measured and monitored against performance outcomes to determine if these satisfy the expectations of the highway network users. There is a direct link between levels of service, corporate objectives, local transport priorities and funding levels.

5.2. Why use Levels of Service?

It is important to have in place defined levels of service to ensure that decision makers have a basis for making strategic planning decisions about future investment. This in turn leads to the prioritisation of maintenance schemes, establishment of suitable performance measures and a measure of the effectiveness of the asset management strategies.

Highway Services' levels of service will be used:

- to develop highway asset specific strategies to deliver the agreed level of service;
- to identify the costs and benefits of the agreed levels of service;
- as a measure of the effectiveness of the HIAMP.

Future developments of this HIAMP will seek to consult with customers of the proposed type and level of service to be offered and whether these align with the individual's expectations.

5.3. Current Approach

In defining levels of service, it is not only important to consider the safety, serviceability and sustainability of the asset but other key factors; including:

- Statutory and legal duties;

- National, regional and local policy and objectives;
- Customer & stakeholder expectations;
- Best practice guidelines;
- Affordability;
- Availability of resources

Historically the approach has been to use performance indicators (local and national) to measure service delivery. The adoption of these performance indicators allows a greater level of accuracy and sophistication on asset management performance. These measures show what effect highway maintenance investment has had on service condition. Service delivery is based upon predicated budgets on an asset by asset approach, aiming to achieve best value with available funding.

However, in 2014 as part of developing the strategic planning approach, a 'Status & Options Report for Carriageways' was produced. The purpose of the report is to inform decision makers about the carriageway asset owned, its current condition and to provide a basis for making strategic planning decisions at a network level about future investment in, and performance of, the carriageway asset. In particular, it sets out long term predictions of the service condition that the carriageway and a range of budgets are able to provide. The aim is to extend this approach across other asset groups as predictive analysis tools become available to support decision making.

5.4. Development of Levels of Service

This HIAMP contains initial target levels of service for each asset type which have been determined through consultation with highway asset management stakeholders and includes legislative requirements, customer expectations, the Council's corporate goals and objectives, and best practice guidance. Levels of service will vary from asset type to asset type.

The initial levels of service were based on current practice and will be the subject of continuous monitoring and development. Annual reviews will be undertaken to review actual performance against targets.

6. Measuring Performance

6.1. The importance of performance management

Successful asset management delivery requires the ongoing monitoring of performance to ensure that the agreed levels of service are being delivered. Performance management is important to Sandwell MBC as it provides the ability to:

- Document the differences between actual and planned performance, and identify the reasons for any differences;
- Prioritise and allocate resources effectively;
- Ensure value for money;
- Motivate and engage staff;
- Identify and rectify poor performance at an early stage;
- Learn from past performance to help improve future performance;
- Increase public satisfaction and help improve services for service users;
- Implement action strategies to adapt performance.

6.2. Measuring Performance at Sandwell

The Council has developed a strong performance management framework to support continuous improvement in services. The Chief Executive works closely with Executive Directors to focus on addressing improvement, efficiency and driving performance improvements in relation to delivery of corporate priorities. Through this, other lead members and officers are challenged on issues relating to performance.

Delivery of the Council's highway asset management objectives are monitored and actioned through strategic, operational and tactical performance measures as defined in Table 1 below.

Strategic Measures	Monitor against Council Plan objectives and outcomes	Influence strategic decision makers, senior leadership team and Cabinet, to inform investment decisions
Tactical Measures	Monitor against departmental and highway service objectives and outcomes	Influence departmental leadership team to review and adjust investment priorities and resource requirements
Operational Measures	Monitor against highway service objectives and delivery (contractual) key performance indicators	Influence highway service leadership team to review resource requirements and effective delivery.

Table 1 - Strategic, Operational and Tactical performance measures

6.3. Asset Management Performance Management Framework

Once performance measures and targets to monitor the delivery of the objectives have been determined, it is essential that a Performance Management Framework (PMF) is put in place. This will be the mechanism for evaluating and assessing the level of performance in a clear, consistent, and transparent manner. The current UKRLG Asset management guidance (**Fig. 3**) recognises the importance of measuring performance and has provided guidance to support authorities in developing a framework.

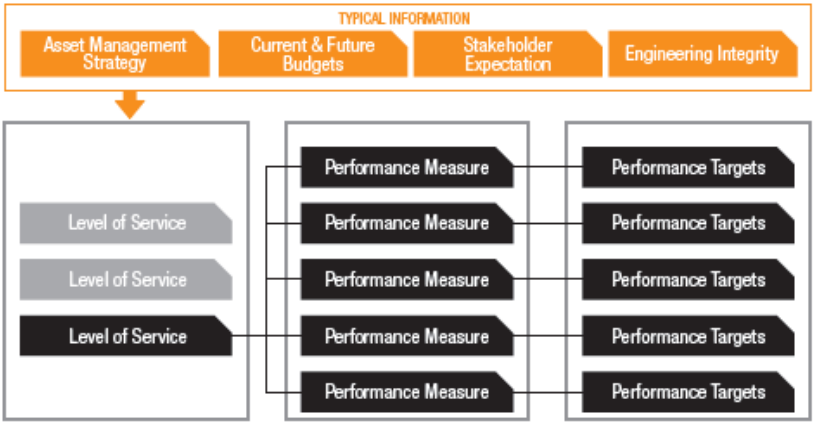


Fig. 3 - UKRLG Asset management guidance - Performance Management Framework

Using the UKRLG guidance as a base, a performance management framework has been developed for the highway service. The framework builds upon and formalises the existing performance information and reporting. The extract below **(Fig 4**) shows the components and layout of the PMF. This simple layout shows the direct link between service targets and strategic objectives. The components of the framework are described in the following sections, however the complete framework, with level of service statements and measures, is provided in **Appendix A**

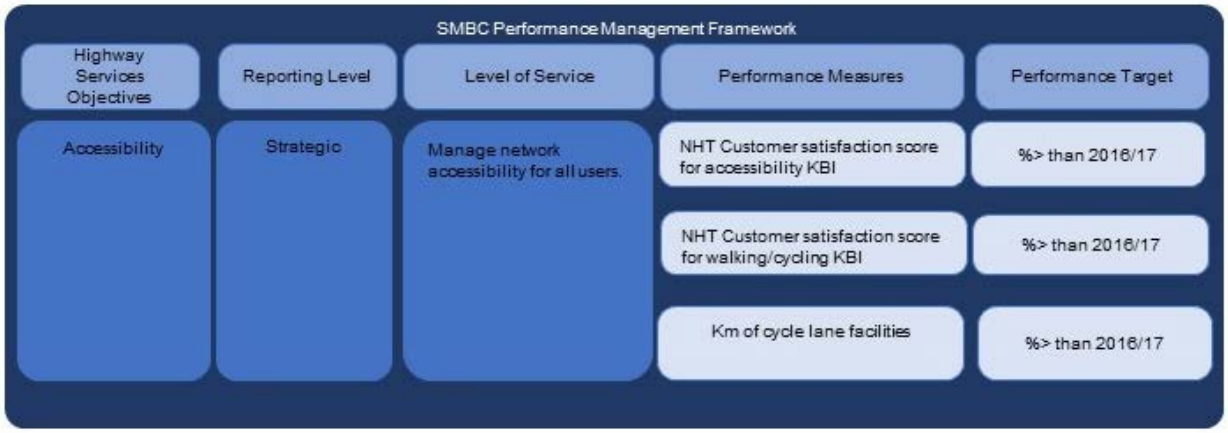


Fig.4 Sandwell MBC PMF extract

6.3.1. Performance Objectives

The main high level performance objectives that reflect the responsibilities of Highway Services and contribute to the corporate aims, objectives and priorities are:

- Health and Safety
- Customer Satisfaction
- Economy and regeneration
- Sustainability
- Asset condition
- Accessibility

6.3.2. Level of Service Statements

To suitably direct engineering activities and resources it is necessary to create a meaningful link between the high level objectives and the performance measures. Therefore, each high level objective is supported by a level of service statement that enables both overall achievement of the objective and individual aspects of performance to be measured. The level of service statement provides a description of what each objective means in terms of the service to be delivered. The proposed PMF contains a total of 15 service delivery statements across the main high level performance objectives. The level of service statements have been developed from:

- The West Midlands Strategic Transport Plan
- Regeneration & Economy Business Plan 2016/17
- Highway Infrastructure Asset Management Policy & Strategy
- Engagement meetings with SMBC staff
- UKRLG Asset management guidance
- UKRLG Well Managed Highway Infrastructure Code of practice

6.3.3. Performance Measures

Performance measures are focused on areas of genuine interest to road users and other stakeholders, enabling the level of satisfaction and expectations to be recorded. It would be prudent for performance measures to maximise the use of data that is readily available, minimising the need for collection of additional data. Therefore, the measures will be a combination of existing SMBC performance indicators and new proposed measures.

6.3.4. Performance Targets

A target can be defined as;

“the desired change in a measure that will show progress toward a goal within a specified period of time”.

Strategic vision and aims can be difficult to communicate but by supporting them with a framework of measures and targets will make them easier to understand. In this way targets form a crucial link between high level objectives, levels of service and day-to-day operations.

Sandwell’s performance targets will be:

- **Clear** - By clearly and simply articulating the vision and aims, then it is easier for stakeholders to understand why targets matter.
- **Consistent -** Avoid confusion among stakeholders, be consistent in relaying why this target matters, what it is connected to, and how it is going to be achieved.
- **Connected -** Provide meaningful connections to day to day activities. If they can see themselves contributing then they are more likely to do so.

For this PMF the targets have yet to be set however consideration is being given to using a combination of both set target values and direction of travel. For example:

Set target values

	Current	Target
Percentage of Category 1 Emergency safety defects made safe / repaired within 2 hours	94%	100%

Direction of travel

	Current	Target
Percentage of Category 1 Emergency safety defects made safe / repaired within 2 hours	94%	↑

6.3.5. The Performance Cycle

All elements of the PMF are built around the annual performance cycle. Performance is managed through a cyclical arrangement to ensure continuous improvement. The Council routinely reviews performance within the Directorate, this includes tracking progress from the previous quarter; recognising achievements and identifying necessary improvement actions. Performance reports are routinely produced to support strategic decision making.

7. Asset Information

The availability of good quality inventory and condition data is essential for asset management decision making. This requires the collection and maintenance of robust, good quality asset data.

7.1. Types of Data

The following asset data types are required:

- **Asset Inventory**: - information on the quantity, location, size, type, age and key components make up of each asset component;
- **Asset Condition**: - quantified and/or observed, a condition rating for a component or whole assets derived from either physical testing, machine based analysis or visual inspection;
- **Asset Use**: - information on the use of assets in the form of information such as traffic counts, heavy vehicle routes, road classification etc.

Good asset data is the foundation on which all asset management processes are built; the availability of appropriate asset data allows all staff involved in the process to obtain an overall view and to apply a consistent management approach.

Asset data is required to support the following asset management functions:

- effective monitoring of, and reporting on, the condition of critical infrastructure assets;
- life expectancy, before intervention of individual assets or asset components;
- asset management levels of service;
- asset management performance indicators;
- future investment scenarios;
- long-term forward works programmes and lifecycle planning:
- Valuation assessments for each of the infrastructure assets and any calculation of asset depreciation.

7.2. Current Asset Data

Sandwell like all Highway Authorities holds asset data, the present position with respect to key assets (carriageways, footways, structures, traffic signals, and street lighting) has been assessed as good, however it is recognised that there are gaps in the data, which will need to be addressed. Therefore, as part of the development of the Highway Infrastructure Asset Management Strategy a review of the key assets was carried out to establish data availability, appropriateness, reliability and accuracy. This was undertaken through involvement with the Council's highway asset stakeholders. The level of confidence in data was established by assessing the extent and reliability of the data and storage arrangements together with assessment of data criticality to service delivery and asset management planning. The details of this review are provided in an appendix to the asset management strategy. Work to review and update data quality, currency, appropriateness and completeness to support asset management is continuous.

7.3. Inspections and Condition Assessments

An effective regime of inspection, assessment, and recording is a crucial component of asset management. To maintain their integrity, safety, and serviceability, highway assets are inspected and recorded in various ways which include:

- Safety Inspections
- Service Inspections
- Carriageway and Footway Condition Surveys

All information obtained from inspections and condition assessments, together with the nature of the response, including nil returns are recorded consistently to facilitate analysis.

7.3.1. Safety Inspections

These inspections are designed to identify all defects likely to pose a hazard or serious inconvenience to users of the highway network or the wider community. Such defects include those that will require urgent attention as well as those where the locations and sizes are such that longer periods of response would be acceptable.

Section 13.4 of this document provides Sandwell's approach to safety inspections.

7.3.2. Service Inspections

Service inspections are focussed on ensuring that the highway network meets the needs of users. They comprise more detailed specific inspections of particular highway elements and inspections for regulatory purposes including NRSWA. Service inspections are primarily designed to identify deficiencies compromising the reliability, quality, comfort and ease of use of the highway network, from the users' point of view. Although not intended for identifying defects that could potentially compromise user safety, any such defects observed during service inspections should be recorded and dealt with in the same way as for a safety inspection.

7.3.3. Condition Surveys

Increasing financial scrutiny requires the information provided through asset management to produce a rational decision process for capital investment and maintenance. The most critical information for decision makers is an understanding of the condition of the assets today and how well they are performing in relationship to users' expectations. It is critical to know they are functioning as needed, functioning efficiently and the costs of maintaining them.

Sandwell currently hold and manage several different types of asset condition information within the Pavement Management System; we intend to build upon this information by adding the newly collected asset inventory data. This will allow us to view and manage all the asset condition and inventory data on a single platform. The benefits of this are:

- Opportunity to link condition assessment with the decision-making process.
- Evaluate the impact of all maintenance works.
- Improve the modelling of preventative maintenance works

- Define performance measures

7.3.3.1. Carriageway Condition Assessment

- **SCANNER** (Surface Condition Assessment of the National Network of Roads)
  SCANNER surveys are a mandatory requirement for reporting of Data Topic 130-01 (formerly NI 168/ BVPI 223), "Condition of principal roads" and Data Topic 130-02 (formerly NI 169/BVPI 224a) "Condition of non-principal classified roads". These surveys are undertaken by a specialist vehicle at traffic speed. The survey collects data on transverse and longitudinal profiles, texture and cracking of the carriageway. The information is both reliable and repeatable giving a consistent survey.

- **Course Visual Inspections (CVI)**
  CVI surveys are a fast and efficient way of covering large areas of the network. CVI surveys are carried out from a slow moving vehicle. They record lengths which have consistent defects rather than a detailed measurement of individual defects.

- **SCRIM** (Sideways force Routine Investigation Machine)
  SCRIM results are used to identify lengths of road with poor skidding resistance. SCRIM surveys are undertaken by a specialist vehicle at traffic speed.

7.3.3.2. Footways Condition Assessment

The condition of footways will be determined using Footway Network Surveys (FNS). These surveys are nationally recognised and provide information for asset management and valuation purposes.

The FNS surveys record defects in four categories:

- As new
- Aesthetically impaired
- Functionally impaired
- Structurally impaired

7.3.4. Bridges and structures

Structures include bridges, footbridges, subways, culverts, gantries and retaining walls. Structures inspections exclude all drainage that is defined as a pipe with a diameter or span less than 600mm. At present, all structures on the SMBC highway network are inspected on a regular basis, including those not in the ownership of the Council, on the basis of a duty of care. Structures not owned by the Council do not receive Principal Inspections. Inspections are divided into four categories:

1. Routine Surveillance comprises notification of obvious defects observed during the routine safety inspections of the highways – In addition all highways staff are encouraged to be vigilant in travelling around the borough and to report any defects observed. Every 1 month in shopping centres, every 6 months elsewhere
2. General Inspections comprise a visual inspection of all parts of the structure and adjacent elements e.g. earthworks without the need for special access or traffic management arrangements. The frequency is every 2 years except where a structure is identified as sub-standard then 2 years reduced to 6 months
3. Principal Inspections comprise of a close examination, within touching distance, of all accessible parts of a structure and adjacent elements utilising special access, traffic management and CCTV where necessary. The frequency is every 6 years as a norm although this may be extended up to 12 years where risk can be managed in accordance with Interim Advice Note 171/12 – Risk Based Principal Inspection Intervals.
4. Special Inspections concentrate on a particular part of a structure in specific circumstances or following certain events: - 1, 3, 6 and 12 monthly or as requested.

These include a programme of bridges to be monitored following an assessment failure or where there is some on-going movement. In addition, there is a programme of inspections where structures are known to be at risk from the effects of scour.

7.3.5. Street Lighting & Illuminated Traffic Signs and Bollards

During the inventory data collection refresh in 2013/14 every item of recorded illuminated highway infrastructure was visually inspected. The visual inspection identified structural defects that required prompt attention, these were recorded and prioritised for repair.

At each maintenance or repair visit a visual inspection of the following components is completed;

- Electrical equipment and wiring
- Visual condition survey of the street lighting column
- The condition of lighting columns protective systems
- The visual structural condition of each lighting column

The following inspection regime applies:

- Electrical testing carried out every 6 years
- Structural visual inspection every 6 years
- Structural testing of steel columns every 5 years unless identified as a higher risk

7.3.6. Non-Illuminated Traffic Signs and Bollards

The primary objective is to keep all signs legible, visible and effective as far as possible. These assets are maintained on a reactive basis resulting from routine inspections, customer reports and accident damage however, important warning and regulatory signs will be replaced as quickly as possible.

7.3.7. Traffic Signals & ITS equipment

The priority objective is to provide and maintain all traffic signals and controlled pedestrian crossings to a high standard to ensure the safety of all road users and to ensure the efficient operation of the highway network.

Annual inspection of traffic equipment is carried out by the asset contractor with defects managed through the TRAMMS system. Highway Safety Inspectors provide an overview of condition as part of their routine safety inspections.

7.3.8. Highway Drainage Systems

The highway drainage inventory for this asset is limited, however there is good inventory for highway gullies. All highway gullies are cleansed on an annual basis. Highway Safety Inspectors provide an overview of condition as part of their routine safety inspections, any non-functioning gullies are recorded for more frequent or detailed attention.

7.3.9. Highway Trees

All established trees within the highway are visually inspected as part of condition surveys to identify obvious potential hazards. Surface damage to carriageways, footways and cycleways, associated with root growth will be recorded as part of Safety or Condition Inspections for those elements. Most of the tree lined streets have trees which are either nearing maturity or have outgrown their location and as such there is a need to plan for their eventual removal and replacement. This needs to be linked to a full tree and condition survey.

8. Data Management

8.1. Current Data Management Practices

Good asset management relies upon good data management. To turn data streams into useful information that can be used within the asset management process there is a need to ensure that data is managed effectively. In the past data was satisfactorily managed using many disparate paper, plan and electronic systems. Whilst this may have been the case, asset management has now brought about an essential need to have an ability to efficiently combine, view and interrogate, large and varied and at times complex amounts of data. To do so and to improve and fully integrate the information management of these assets, a partnership with Symology Limited has been established that provides a competitively priced integrated highway management solution, Insight Enterprise.

The Insight Enterprise solution comprises of a universal set of fully integrated core modules that offers:

- National Street & Property Gazetteer linked multiple network location referencing
- Flexible asset register with comprehensive data warehousing and reporting
- Graphical and GIS capabilities
- Asset condition evaluation and valuation
- Treatment selection and schemes, works contract options, works management processes and works monitoring.

The highway network is surveyed routinely using a variety of different methods. Asset data is collected and verified through these methods and new details are identified as part of an ongoing process. For new asset sets that have not previously been collated a specific means of surveying is identified and implemented accordingly. This method allows the quality and integrity of the data to be regularly reviewed and any inaccuracies amended ensuring the overall data quality. This data is further reviewed by maintenance operations that identify changes to assets at a component level which are not necessarily easily seen.

8.2. Data Use

Asset data is required to support the following SMBC activities:

- Maintaining asset inventory; so that the extent of the highway assets owned by the council is known.
- Routine Maintenance management; to enable the council to demonstrate that inspections and repairs are undertaken in accordance with policies
- Customer queries and service requests; to track customer queries and to demonstrate that the council have responded efficiently and appropriately to them.
- Performance Reporting; to enable progress and performance to be reported to a range of stakeholders including the collation and dissemination of national and local performance indicators

The current quality of the Council's asset data is assisting the development of highway asset management practices however, an improvement in asset data management will enable enhancements by providing:

- The ability to predict future needs; enabling better coordinated and more cost-effective plans.
- The ability to meet future government requirements for asset valuation.
- An understanding of the risks associated with managing the road network.

In simple terms, better data management will enable the council to make more informed decisions about its road network and therefore provide a better value service.

9. Lifecycle Planning

9.1. What is Lifecycle Planning?

Lifecycle planning is the approach to the maintenance of an asset from construction to disposal. It is the prediction of future performance of an asset based on investment scenarios, forecast use of the asset and planned service levels. The lifecycle plan is the documented output from this process.

9.2. The Benefits of Lifecycle Planning

There are considerable benefits to be gained from lifecycle planning:

- Identify long term investment for highway assets and develop an appropriate maintenance strategy;
- Predict future performance of highway assets for different levels of investment and different maintenance strategies;
- Determine the amount of investment required to achieve the required performance;
- Determine the performance that will be achieved for available funding and/or future investment;

- Support decision making, the case for investing in maintenance activities and demonstrate the impact of different funding scenarios;
- Minimising costs over the lifecycle while maintaining the required performance.

9.3. Lifecycle Plan Development for Sandwell's Key Assets

Sandwell MBC is adopting the principles of asset management to establish long term predictions of the levels of service that the carriageway can provide at a network level. Lifecycle planning is used to predict service standards against different budget allocations for planned maintenance (reconstruction, resurfacing and protective treatment) embracing the 'prevention is better than cure' approach.

This lifecycle planning work is reported to the council's executive decision makers to provide a basis for making strategic financial planning decisions at a borough wide level about future investment in, and performance of, the carriageway asset over the medium to longer term.

Highway asset management systems allow the modelling of deterioration around varying parameters. Whilst capturing the overall network condition and future deterioration, they also allow modelling based on funding levels and condition. Varying funding levels can be modelled to predict the likely impact on condition and hence the associated measures. Condition levels can be set based on the network hierarchy to ascertain the necessary funding model required to maintain the condition or performance level. This modelling is available for several asset types allowing for a more predictive means to manage the asset and project future funding requirements. However, the current depth of asset data for certain asset groups does not allow the benefit of deterioration modelling for lifecycle planning, at present the Council is only in the position to model deterioration for its carriageways.

The status of the lifecycle planning programme for each asset type is summarised below.

- **Carriageways –** A lifecycle plan was developed in 2014, this will be reviewed using HMEP Lifecycle Planning Toolkit.
- **Footways & Cycleways -** A lifecycle plan is to be developed using HMEP Lifecycle Planning Toolkit.
- **Structures -** A lifecycle plan is to be developed using HMEP Structures Toolkit.
- **Drainage –** Asset lifecycle plans are to be developed by taking account of the recommendations within the HMEP Highway Drainage Assets Guidance document.
- **Street Lighting, Traffic Signals -** Lifecycle plans are to be developed for these assets using existing processes and procedures.

10. Works Programming

10.1. Introduction

A forward works programme is a frequently used method of demonstrating that the long term needs of an asset have been considered and evaluated. The process of preparing a forward works programme is most important because it drives consideration of the evaluation and ranking of alternative improvement projects and maintenance treatments.

10.2. Sandwell's Forward Work Programmes

The Government's commitment of £5.8 billion over the six years 2015 – 21 via the Local Transport Capital Grant to local highway authorities for carriageway maintenance is a welcome driver for longer term planning. The certainty of capital funding for the six-year period 2015 – 21 together with the network level analysis will enable the development of a forward programme of planned maintenance.

Historically managers of key asset groups develop local programmes covering more than one year, these are predominantly based on asset condition along with sources of information that include safety inspections, condition surveys, complaints, service requests and insurance claims data.

Whilst a longer term forward works programme will ensure that all work is carried out in accordance with whole life costing principles they may however, be less reliable in terms of the exact location and type of project to be carried out because the programme is constructed from projections using available data and knowledge. This is work in progress. In the meantime, the council operate a rolling 2 year forward programme of planned carriageway maintenance works.

10.3. Current Works Programmes

10.3.1. Carriageways & Footways:

SMBC currently operate a rolling 2 year forward programme of planned maintenance works. In addition to this, there is a 6 year classified carriageway surfacing programme generated from the Challenge Fund as an additional funding stream with outcome to deliver an improved network. The annual footway works programme is developed using the prioritisation tool with the addition of priority locations such as schools etc.

10.3.2. Highway Structures:

The forward programme is generated from the bridge inspections; however, the number of schemes is governed by the availability of annual funding. The current programme covers a 3-year period.

10.3.3. Street Lighting - Programmed Replacements:

Electrical inspection and testing to BS 7671 is required to be carried out on a 6 year cyclic basis and an inspection certificate issued. A pilot electrical inspection of around 500 street lighting columns was carried out by the service provider in 2013/14. Based on this pilot 5,000 street lighting columns and powered installations were subsequently inspected in 2014/15 and in each year, thereafter, which is the Sandwell 6-year inspection programme.

10.3.4. Signs and Safety Fences:

A works programme for signs or safety fences is not currently in place. These assets are maintained on a reactive basis resulting from safety inspections, routine inspections, customer reports and accident damage.

10.3.5. Traffic Signals & Pedestrian Crossings:

There is currently no annual programme of renewals and replacements. Works are identified for replacement/alterations as part of long term capital funding.

11. Performance Monitoring

11.1. Performance Monitoring

Sandwell currently monitor service levels through a range of performance indicators which are routinely reported to senior management, however this is reliant upon having a repeatable series of data to enable the production of trending reports. Ongoing performance reviews focus on looking at the results, the factors contributing to performance and options for dealing with poor performance.

To communicate performance to the public Sandwell has developed a 2030 Vision and ambitions to establish strategic direction for the council as a whole. This is written around ‘outcomes’ that have a real meaning for people and through it they can make their own judgement about the council’s performance in an informed way. Highway Services supports many environmental and regeneration outcomes in the 2030 Vision.

11.2. Bench Marking

Local and national benchmarking is used to compare the performance of the Council’s highway asset management framework and to share information that supports continuous improvement.

- **West Midlands Combined Authority (WMCA)**
  Within the WMCA, authorities exchange objective and subjective data on all areas of highway asset management from stakeholder satisfaction through to national road condition data.

- **Midlands Highway Alliance (MHA)**
  Membership of the MHA enables the Council to work collaboratively with other authorities, contractors and suppliers with the common aim to improve performance, share best practice and make efficiency savings in the delivery of highway services.

- **West Midlands Highways Alliance (WMHA)**
  Membership of the WMHA helps the Council keep abreast of industry developments and to measure where Sandwell are, in terms of performance standards, compared to its peers. It also allows for prudent procurement of goods and services and helps with achieving economies of scale for both plus supply of contract management.

  National Highways & Transportation Network (NHT) Sandwell MBC is a member of the NHT's CQC Efficiency Network. Highway Services supplies data on an annual basis to the CQC Efficiency Network which serves to provide details on customer satisfaction, technical quality and cost effective delivery enabling Sandwell and other participating local highway authorities to share efficient practices.

  Sandwell MBC also signs up to the NHT Public Satisfaction Survey annually, which provides details of customer perceptions on Highway and Transport Services in Local Authority areas. This published information clearly and effectively ensures members of the public and other highways stakeholders are fully informed about the current service performance. It also provides an independent sector standard that enables comparison with others..

- **National Reporting**
  The Council's annual submissions of condition data to the DfT gives a clear indication of how the council is performing relative to other authorities. Sandwell uses this data to identify key areas for improvement.

11.3. Continuous Improvement

The Council is driving continual improvement in highway asset management practices through:

- Regular liaison and sharing of information with other highway authorities, both formal and informal, locally and nationally
- Encouraging staff to challenge practices on an on-going basis, looking for areas for improvement and efficiencies.
- Keeping abreast of latest issues, sharing information and experiences, developing best practice through involvement in appropriate groups and national forums.

11.4. Highway Asset Management Competence and Training

The Council recognises the importance of competent staff to deliver its highway asset management aspirations and therefore, continues to review the skills available within the organisation and identify potential gaps. The aim is to develop and roll out highway asset management training courses across the organisation to address these gaps and ensure that highway asset management capabilities are continually improved and aligned with the latest good practice.

12. Risk Management

A risk can be defined as an uncertain event which influences the desired performance of an asset. A risk factor is the product of the severity of an event and the likelihood of its occurrence. Sandwell has a well-established risk management process that overarches all service areas.

Neighbourhood Services, of which Highway Services is part, has accordingly identified and prioritised its high level risks and through appropriate mitigation and other control measures aims to reduce assessed risk factors to an acceptable level. Within the context of highway asset management risk is one of the key drivers for the decision making process involved in establishing service options. It is therefore important that the adoption of specific levels of service or service options is done in the full knowledge of their inherent risks.

The most commonly understood risks affecting the highway relate to safety but other risks are a crucial part of the asset management process and may include:

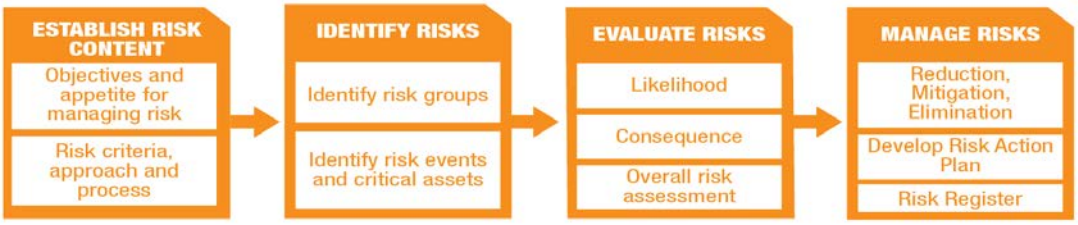
- Reputation;
- Asset loss or damage;
- Service reduction or failure;
- Operational;
- Environmental;
- Financial and contractual.

Risk management assists option selection and appraisal by assisting with the assessment of the comparative risks of:

- providing differing levels of service
- varying funding levels between asset groups
- funding improvements as opposed to maintenance works

The risk management process concentrates on four main issues (Fig. 5), by applying these risk management principles the council will be able to more appropriately target resources and to deliver services and projects in a way that ensures that the council's overall exposure to risk is minimised.

Fig. 5 The risk management process

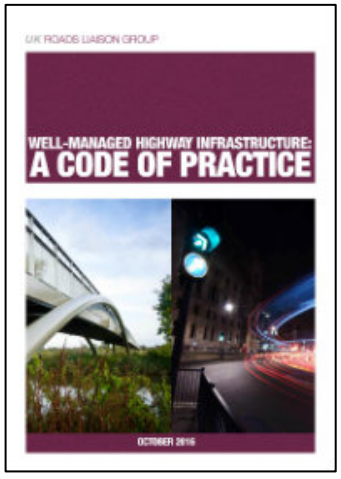


A key service risk relates to safety and the liability claims arising from accident and injury due to the condition of the highway infrastructure. A statutory defence exists if an authority can prove it has in place adequate policies and procedures to maintain the highway, they are performed and there was no prior knowledge of the defect. The HIAMP sets out the council's planned safety inspection regimes for mitigating this risk. This provides for a practicable and reasonably deliverable response given resources available.

13. Risk Based Approach

13.1. Well-Managed Highway Infrastructure: A Code of Practice

The 'old' Code of Practice, Well Maintained Highways (2005), set or encouraged standards to be established for risk mitigation processes. These became very challenging for local highway authorities to maintain and therefore potentially increased the risks and certainly increased the liability.



Therefore, developing a risk based approach must consider the balancing of existing resources across the network, i.e. reducing the mitigation processes (inspections, reactive responses to defect repairs) where the risks are lower to facilitate increasing them for those parts of the network where the risks are greater. A risk based approach should also create an agility in the management of these risks so that the mitigation processes can quickly flex to respond to changing circumstances of reducing or increasing risk, for example change of adjacent land use, new development or emerging travel patterns. However, authorities have to be careful that adopting a risk based approach is not seen as a money saving exercise, with decisions evidenced and suitably approved.

The new risk-based code, Well-Managed Highway Infrastructure: A Code of Practice, represents a significant shift away from the previous more prescriptive approach to highways maintenance. Recommendation 7 of the code states that:

A risk based approach should be adopted for all aspects of highway infrastructure maintenance, including setting levels of service, inspections, responses, resilience, priorities and programmes

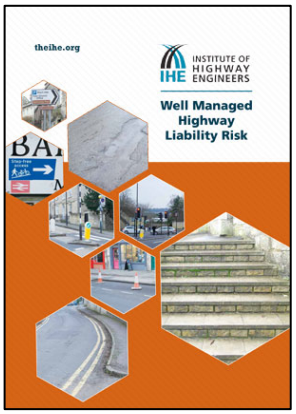
Therefore, there will be a need to review current performance of risk mitigation processes including:

- Inspection frequencies achieved
- Defect response times achieved

This will determine the gap, if any, between the current stated targets and actual performance. The size of this gap, if any, will be key in determining the urgency of the development of a risk based approach – the larger the gap the more urgent change is needed to off-set potential increased costs from liability claims;

13.2. Well Managed Highway Liability Risk 2017

This document follows on from the publication of the UKRLG document "Well Managed Highway Infrastructure" and seeks to provide further insight and advice on the risk and evidence-based approach to service delivery and the effective management of highway liability risk exposures. It acts as a reference source and practical guidance on best practice in the management of highway liability risk, in particular how to apply the principles of risk management and a risk based approach to highway liability claims exposure.



13.3. Risk Based Approach and Highway Liability – Risk Management

Under Section 41 of the Highways Act 1980 SMBC has a statutory duty to maintain a highway maintainable at public expense. Neglecting this duty can lead to claims against the Council for damages resulting from a failure to maintain the highway.

Under Section 58 of the 1980 Highways Act, the highway authority can use a "Special Defence" in respect of action against it for damages for non-repair of the highway if it can prove that it has taken such care as was reasonable. The key criteria where the court is required to consider as part of the authority's defence are:

(a) The character of the highway, and the traffic which was reasonably to be expected to use it;

(b) The standard of maintenance appropriate for a highway of that character and used by such traffic;

(c) The state of repair in which a reasonable person would have expected to find the highway;

(d) Whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;

(e) Where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed;

The Institute of Highway Engineers Well Managed Highway Liability Risk 2017 (WMHLI) provides practical guidance on best practice in the management of highway liability risk exposures. It is designed to inform users how to apply the principles of risk management and risk based approach to highway liability claims exposure.

The guidance recommends adopting the standard *ISO31000:2009 Risk Management Principles and Guidelines*, which sets out the principle of risk management and the process required to develop and implement a risk based approach (RBA). A diagram of the risk management process is shown in **Fig 6**

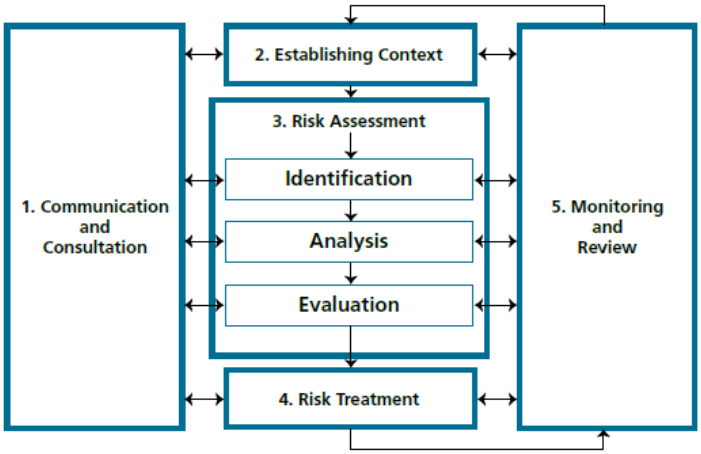


Fig. 6 Risk Management Process as described in ISO 31000

13.4. Safety Inspections - Sandwell approach

Sandwell MBC and for that matter other local authorities are not statutorily obliged to undertake highway safety inspections. However, the Code of Practice– "Well Managed Highway Infrastructure" recommends that local authorities should undertake regular safety inspections to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community.

The council currently undertakes safety inspections and they form a key aspect of its strategy for managing liabilities and risks. Through them the council are not only able to ensure the safety of Sandwell's highway network but to support a defence to repudiate third party highway liability claims under Section 58 of the Highways Act 1980.

Section 58 requires highway authorities to demonstrate that they carry out highway safety inspections in accordance with their policies and national guidance. This requires that a court shall have regard to 'whether the highway authority knew or could reasonably be expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway'. Highway inspection reports are part of the evidence used to show that the highway authority has acted reasonably.

A key element of the defence is being able to provide good evidence and/or reasoning on each decision the authority made that lead to the response decision. In accordance with the Code of Practice, the Council's safety inspections regime is based on an assessment of risk that provides for a practicable and reasonable approach to the risks and potential consequences of the defects identified. The inspections take account of potential risks to all road users and in particular those most vulnerable.

To support a risk based approach the current highway safety inspection procedure has been reviewed and amended where needed to reflect Sandwell's highway network priorities and the new code of practice recommendations.

13.5. Method of Inspection

The survey vehicle will be equipped with high intensity roof-mounted flashing beacons and high visibility reflective markings. The inspection of any traffic sensitive lengths should be surveyed at off-peak times.

Highway Safety Inspections
All carriageways are normally walked.

All footways must be walked, if there is a footway on both sides of the road the footways are to be inspected by one person on foot in both directions.

Sandwell's inspections cover the entire street scene and therefore will not only identify defects on the surfaces of carriageways, footways, footpaths, subways and hard/soft verges but also include other items such as street lighting, signage, drainage, ironwork, trees and street furniture.

Health and Safety

Inspections must be carried out in a safe manner so as not to endanger staff or the public. All operations will have a current risk assessment which must be followed by staff.

Information to be recorded

All highway safety inspections shall be properly recorded into the Insight Enterprise System and retained by the Authority for future reference. As well as any defects found, the overall condition of the carriageway and footway will be assessed and this information can be used to identify potential preventative maintenance and renewal schemes. Highway safety inspection data is captured on hand held devices which automatically time and date stamp the inspection.

13.6. Frequency of inspection

The council base frequencies for undertaking safety inspections upon road hierarchy categories as recommended in the Code of Practice. Whilst typical inspection frequencies are recommended within the Code these are only intended to be a starting point as it advocates local authorities should, when establishing frequencies, also take wider consideration of:

- category within the network hierarchy;
- type of asset, e.g. carriageway, footway, embankment, cutting, structure, electrical apparatus, etc;
- critical assets;
- consequence of failure,
- network resilience;
- use, characteristics and trends;
- incident and inspection history;
- characteristics of adjoining networks elements;
- the approach of adjoining Highway Authorities; and
- wider policy or operational considerations

Sandwell's current safety inspection frequencies are shown in Table 3 and were approved for the period covered by the HAMP, Table 3a is the revised and updated version based upon the recommendations of the 2016 Code of Practice.

Table 3 – Highway Safety Inspection Frequencies

Feature	Description	Category	Suggested "starting point" for frequency in Code of Practice	Frequency Approved April 2002	Frequency Revised 13th April 2012	% of Network Length based on Category	Notes
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	6 months 6 months 6 months 6 months 6 months	6 months 6 months 6 months 6 months 1 year	13% 11% 16% 19% 41%	
Footways	Prestige Area Primary Walking Route Secondary Walking Route Link Footway Local Access Footways	1(a) 1 2 3 4	1 month 1 month 3 months 6 months 1 year	6 months 6 months 6 months 6 months 6 months	6 months 6 months 6 months 6 months 6 months	1% 1% 14% 57% 27%	All footways adjacent to Local Access Roads 4(b) will be inspected as 1 unless designated a Shopping Area
Shopping Areas	Main Shopping Centre roads & footways	Mixed	As above	1 month	1 month	3%	
Cycle Routes	Part of Carriageway Remote from Carriageway Cycle Trails	A B C	As for Roads 6 months 1 year	6 months 6 months N/A	As for revised roads N/A		
Subways	Ramps, steps and paved areas	-	-	At the frequency applied to the adjacent footway / footpath	At the frequency applied to the adjacent footway / footpath		

Table 3a – Sandwell Highway Safety Inspection Frequencies											
Feature	Description	Category	Critical[1] Assets affected	Part of the Resilient network	Incident and inspection history	Adjoining network alignment	Operational Considerations	current safety inspection frequency	inspection frequency 2017	% of Network Length	Evidence for departure from COP recommended frequency
			Yes, No	Yes, No	Good, Ave, Poor	Yes, No	Yes, No	Approved 13/04/2012			
Roads	Strategic Route	2				Yes	Yes	6 months	6 months	13%	
	Main Distributor	3(a)				Yes	Yes	6 months	6 months	11%	
	Secondary Distributor	3(b)				No	Yes	6 months	6 months	15%	
	Link Road	4(a)				No	Yes	6 months	6 months	19%	
	Local Access	4(b)				No	Yes	12 months	12 months	42%	
Footways	Prestige Area	1(a)				No	Yes	6 months	6 months	1%	
	Primary Walking Route	1				No	Yes	6 months	6 months	1%	
	Secondary Walking	2				No	No	6 months	6 months	14%	
	Route	3				No	No	6 months	6 months	57%	
	Link Footway	4				No	No	6 months	6 months	27%	
	Local Access Footways					No	No	12 months	12 months	%	
Shopping Areas	Main Shopping Centre roads & footways	Mixed				No	Yes	1 month	1 month	3%	
Cycle Routes	Part of Carriageway	A				N/A	N/A	6 months	6 months	%	
	Remote from Carriageway	B				N/A	N/A	6 months	6 months		
	Cycle Trails	C				N/A	N/A	N/A	N/A		
Subways	Ramps, steps and paved areas	N/A				N/A	N/A	As adjacent footway / footpath	As adjacent footway / footpath	%	

[1] Critical assets include Bridges, Structures, Street Lighting, Traffic signals,

13.7. Degree of Deficiency

During highway safety inspections, observed defects that provide a risk to users are risk assessed to determine the level of response. The degree of risk is a crucial contributory factor in determining the nature and speed of response. For example, the degree of risk from a pothole depends not merely on its depth but also on its size and location. On site judgement will always need to take into account the particular circumstances of individual defects.

The Code of Practice defines safety defects in two categories:

1. Defects which are considered to require urgent attention should be corrected or made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute displaying warning notices, coning 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, repairs of a permanent or temporary nature should be carried out as soon as possible. If temporary repairs have been used, permanent repair should be carried out within a reasonable period.

2. Defects that do not represent an immediate or imminent hazard or risk of short term structural deterioration may have safety implications, although of far less significance than those which are considered to require urgent attention. They are more likely to have serviceability or sustainability implications. If repairs are to be undertaken these are likely to be within a planned programme of works with their priority determined by risk assessment. Access requirements, other works on the network, traffic levels and the desirability of minimising traffic management should also be considered as part of the response.

In Sandwell, safety inspections solely consider **Category '1**' defects because annual condition surveys look at deficiencies in the fabric of the highway and serviceability over the longer term to inform planned renewal. Repairs to serviceability defects and customer reported defects that do not represent an immediate or imminent hazard or a risk of short-term structural deterioration are carried out as part of planned asset renewal (e.g. surface patching, resurfacing or another repair treatment). In deciding the severity of the defect, it will be necessary to refer to **Appendix C.**

For **Category '1**' defects, a risk assessment is required to determine the appropriate level of response in relation to them presenting either an imminent or immediate hazard. All risks identified through this process are evaluated in terms of their significance, which means assessing the likely impact should the risk occur and the probability of it happening.

13.8. Defect Risk Assessment

Risk assessment involves determination of the **likelihood** and **consequence** of an event. Risk assessment allows the identified risks to be analysed in a systematic manner to highlight which risks are the most severe and which are unacceptably high.

The '**Ris**k' is normally determined by: **Likelihood x Consequence**

Likelihood is the chance of an event happening, for example, the likelihood of sustaining damage to an individual or vehicle as a result of a defect. It can be measured objectively, subjectively, qualitatively or quantitatively.

Consequence is the outcome of an event, such as personal injuries, vehicle damage, litigation, public satisfaction, or organisational integrity

The assessment of likelihood and consequence are used by inspectors to identify the overall seriousness of the risk and consequently assign an appropriate target of response. An example of assessment of the likelihood and consequence through a qualitative matrix approach is illustrated in Fig. 7, this model has been used to develop Sandwell's defect risk assessment. (Table 4)

Fig.7 Risk matrix (UKRGL Highway Infrastructure Asset Management Guidance Document 2013)

LIKELIHOOD OF EVENT OCCURRING	CONSEQUENCE OF EVENT OCCURRING				
	NEGLIGIBLE	LOW	MEDIUM	HIGH	SEVERE
NEGLIGIBLE	1	2	3	4	5
VERY LOW	2	4	6	8	10
LOW	3	6	9	12	15
MEDIUM	4	8	12	16	20
HIGH	5	10	15	20	25
KEY TO RISKS					
LOW		MEDIUM		HIGH	

Table 4 Sandwell's defect risk assessment – Category 1 defects

		Risk Management for **Category 1** defects					
Risk	Impact	Risk Scores				Existing Control Measures in Places	Action to be taken to address deficiencies
		Likelihood	Consequence	Combined scores	Overall Risk		
Personal injury to road user	Reputational damage financial loss customer satisfaction	Med 4	High 4	16	High	On site risk assessment	
Damage to vehicles	Reputational damage financial loss customer satisfaction	Med 4	High 3	12	Medium	On site risk assessment	
Possible failure to comply with statutory duties.	claims, litigation	Low 3	Med 3	9	Medium	Inspection policy	
Lane restrictions / Road closures	Delays /Congestion to road users	Low 3	Low 2	6	Low	On site risk assessment	

Category 1 Defect - Defects which are considered to require urgent attention should be corrected or made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute displaying warning notices, coning 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, repairs of a permanent or temporary nature should be carried out as soon as possible. If temporary repairs have been used, permanent repair should be carried out within a reasonable period.

Table 4a Sandwell's defect risk assessment – Category 2 defects

Risk	Impact	Risk Management for Category **2** defects					
		Risk Scores				Existing Control Measures in Places	Action to be taken to address deficiencies
		Likelihood	Consequence	Combined scores	Overall Risk		
Personal injury to road user	Reputational damage financial loss customer satisfaction	Very Low 2	Low 2	4	Low	On site risk assessment	
Damage to vehicles	Reputational damage financial loss customer satisfaction	Low 3	Low 2	6	Low	On site risk assessment	
Possible failure to comply with statutory duties.	claims, litigation	Low 3	Low 2	6	Low	Inspection policy	
Delays /Congestion to road users	customer satisfaction	Very Low 2	Low 2	4	Low	On site risk assessment	

Category 2 defect - Defects that do not represent an immediate or imminent hazard or risk of short term structural deterioration may have safety implications, although of far less significance than those which are considered to require urgent attention. They are more likely to have serviceability or sustainability implications. If repairs are to be undertaken these are likely to be within a planned programme of works with their priority determined by risk assessment. Access requirements, other works on the network, traffic levels and the desirability of minimising traffic management should also be considered as part of the response.

13.9. Nature of Response

The Code of Practice– "Well Managed Highway Infrastructure" specifies five parameters needed for an appropriate and effective response to highway deficiencies.
They are:

- Frequency of inspection
- Items for inspection
- Type of traffic and intensity;
- Method of inspection;
- Nature of response

13.10. Targets for Response

The council will endeavour to inspect and categorise all defects within **a specified number of** working days of the original report to determine the level of response required.

The current treatment response times for defects in Sandwell are as follows:

Category 1 defects - immediate hazard
Temporary or permanent repair within 2 hours (when a defect is temporarily repaired then complete permanent repair within 6 months)

Category 1 defects – imminent hazard
Temporary or permanent repair within 5 working days (when a defect is temporarily repaired then complete permanent repair within 6 months)

The target for responding to highway defects representing an imminent hazard was changed on 6 March 2013 (approved under an Action on Matter of Urgency) following service review. It was found that the previous target of *'to respond by the end of the next working day to carry out a temporary or permanent repair…'* is inflexible, inefficient and driving poor quality temporary repairs resulting in earlier failure and repeat visits. The 5 working day response time allows work to be planned more effectively and efficiently releasing operational capacity to do more repairs right first time with the same resource.

Category 2 defects
These defects are not recorded during planned safety inspections as current budgets are not sufficient to repair non-dangerous defects. These defects will be repaired during other planned maintenance works.

13.11. Methodology to support defect response times

This section provides guidance on the timescales for the repair of safety defects.

The information extracted and analysed from the Insight Enterprise system provided the evidence to support the most appropriate response times to defect repairs.

- Annual number of Category 1 defects – The 3-year data shows that the number of defects has decreased
- Annual number of Category 1 defect related claims – The 3-year data shows that the number of defect related claims has decreased
- Annual number of Category 1 defect related claims refuted – The 3-year data shows that the number of refuted defect related claims has increased
- Percentage of Category 1 – immediate defect repairs completed within 2 hours – 81% of defects were repaired within 2 hours
- Percentage of Category 1 – urgent defect repairs completed within 5 working days – 92% of defects were repaired within 5 working days

- Carriageway and footway condition data – The 3-year data shows the following:
    - Condition of Principal and Non-Principal Classified Roads is improving
    - Condition of Unclassified Roads is steadily declining
    - Condition of Footways is steadily declining

All defects identified on the network during planned or reactive inspections are assessed in accordance with the risk assessment principals set out earlier in this section.

13.12. Inspection Frequencies and Defect Response

13.12.1. Carriageways

Category	Hierarchy Description	Type of Road	Inspection Frequency	Defect Category	Risk Assessment rating	Response
2	Strategic Routes	Trunk Roads and Primary A Roads.	6 months	1	High	5 days*
				2	Low	Planned works
3a	Main Distributor	Non-primary A Roads and important/ Heavily Trafficked B Roads.	6 months	1	Medium	5 days*
				2	Low	Planned works
3b	Secondary Distributor	B Roads and Heavily Trafficked C Roads.	6 months	1	Medium	5 days*
				2	Low	Planned works
4a	Locally Important Roads	Routes linking into the main/ secondary distributor network, which are normally C Class Roads and have greater local significance in rural areas, plus heavily trafficked unclassified roads.	6 months	1	Low	5 days*
				2	Low	Planned works
4b	All other metalled Roads	All other C roads and much of the unclassified network.	12 months	1	Low	5 days*
				2	Low	Planned works

* For all **'immediate'** hazards – carry out a temporary or permanent repair within 2 hours
Defects risk assessed as an **immediate** hazard can typically include missing gully gratings, manhole covers and extreme carriageway failure.

13.12.2. Footways

Category	Hierarchy Description	Inspection Frequency	Defect Category	Risk Assessment rating	Response
1a	Prestige Area	6 months	1	High	5 days*
			2	Low	Planned works
1	Primary walking route	6 months	1	High	5 days*
			2	Low	Planned works
2	Secondary Walking route	6 months	1	Medium	5 days*
			2	Low	Planned works
3	Linked footway	6 months	1	Low	5 days*
			2	Low	Planned works
4	Local access footways	6 months	1	Low	5 days*
			2	Low	Planned works

* For all **'immediate'** hazards – carry out a temporary or permanent repair within 2 hours
Defects risk assessed as an **immediate** hazard can typically include missing ironwork, slabs etc. and extreme footway failure.

13.12.3. Shopping Areas

Hierarchy Description	Type of Road	Inspection Frequency	Defect Category	Risk Assessment rating	Response
Shopping Areas	Main Shopping Centre roads & footways	1 months	1	High	5 days*
			2	Low	Planned works

* For all **'immediate'** hazards – carry out a temporary or permanent repair within 2 hours

Defects risk assessed as an **immediate** hazard can typically include missing or raised slabs, and extreme footway failure.

13.12.4. Cycle Routes

Hierarchy Description	Type of Road	Inspection Frequency	Defect Category	Risk Assessment rating	Response
Cycle routes	Part of Carriageway	6 months	1	High	5 days*
			2	Low	Planned works
	Remote from Carriageway	6 months	1	Medium	5 days*
			2	Low	Planned works
	Cycle Trails	N/A	N/A	N/A	N/A

* For all **'immediate'** hazards – carry out a temporary or permanent repair within 2 hours

Defects risk assessed as an **immediate** hazard can typically include missing ironwork, major obstructions, and extreme surface failure.

13.12.5. Subways

Hierarchy Description	Type of Road	Inspection Frequency	Defect Category	Risk Assessment rating	Response
Subways	Ramps, steps and paved areas	At the frequency applied to the adjacent footway / footpath	1	Medium	5 days*
			2	Low	Planned works

* For all **'immediate'** hazards – carry out a temporary or permanent repair within 2 hours

Defects risk assessed as an **immediate** hazard can typically include flooding, exposed lighting equipment, extreme footway/stairs/ramp failure.

13.12.6. Bridges and Structures

The overall purpose of inspections, assessment, testing and monitoring of the highways structures stock is to ensure that they are safe for use and fit for purpose.

The condition of the structures asset is measured primarily by two factors, BSSCI (Bridge Structural Stock Condition Indicator) and BSCI crit (Bridge Structure Condition Indicator critical) which are derived from principal inspections (PI) and general inspections (GI). The inspections record the extent and severity of any defects and makes recommendations on how improvement should be considered.

Types of Bridge Inspections

Routine Surveillance comprises notification of obvious defects observed during the routine safety inspections of the highways – In addition all highways staff are encouraged to be vigilant in travelling around the borough and to report any defects observed.

General Inspections comprise a visual inspection of all parts of the structure and adjacent elements e.g. earthworks without the need for special access or traffic management arrangements. The frequency is every 2 years except where a structure is identified as sub-standard then 2 years reduced to 6 months.

Principal Inspections comprise of a close examination, within touching distance, of all accessible parts of a structure and adjacent elements utilising special access, traffic management and CCTV where necessary. The frequency is every 6 years as a norm although this may be extended up to 12 years where risk is reduced.

Special Inspections concentrate on a particular part of a structure in specific circumstances or following certain events: - 1, 3, 6 and 12 monthly or as requested. A visual inspection is carried out on those known structures that could be affected by 'Scouring' as a result of severe weather events.

Nature of fault	Response time
Bridge strike	A bridge strike is an event in which a vehicle collides with a bridge and as such is dealt with as an 'Incident' and not a defect repair. An experienced engineer will attend and decide on the required response. 2hrs – 24hrs depending on the incident
Damaged parapet	This is a safety defect and a risk management approach is used to allocate the correct priority of response. However, if it is classed as an emergency then it will be a 2hr response. Initial action would be to make the site safe for road users (2hrs – 24hrs depending on the incident)
Expansion joint failure	This is a safety defect and a risk management approach is used to allocate the correct priority of response
Crack or multiple cracks	This is a safety defect and a risk management approach is used to allocate the correct priority of response. However, if it is classed as an emergency then it will be a 2hr response (2hrs – 24hrs depending on the incident)
Retaining wall problem	This is a safety defect and a risk management approach is used to allocate the correct priority of response. However, if it is classed as an emergency then it will be a 2hr response (2hrs – 24hrs depending on the incident)
Earthworks/embankment defect	This is a safety defect and a risk management approach is used to allocate the correct priority of response. However, if it is classed as an emergency then it will be a 2hr response (2hrs – 24hrs depending on the incident)

13.12.7. Street Lighting

To maintain the service to the public there is a need to identify lighting units and illuminated traffic signs which have failed or have mechanical defects, and then to repair them within predetermined timescales.

Identification of illumination, serviceability or visible safety faults (e.g. missing doors) is recorded during planned highway safety inspections or by public reporting through the council's improved public communication channels such as the Contact Centre or local Neighbourhood Forums. Ad-hoc illumination scouting patrols may be carried out and recorded from time to time where area wide concerns are reported. Routine faults are entered on to the Mayrise system on the day following report for repair programming. Emergency faults are reported to the Highways Operations service for immediate repair.

Once a street lighting defect is reported, the target response times are shown below:

Nature of fault	Response time
Non-emergency faults involving the replacement of components	10 working days
Non-emergency faults involving the replacement of a complete unit of apparatus, including those made safe as emergency faults	15 working days
Non-emergency faults involving the replacement of mandatory traffic signs and illuminated traffic bollards, including those made safe as emergency faults.	10 working days
Non-emergency faults involving works by the DNO	25 working days
Non-emergency faults involving the rectification of non-operating Belisha beacons and flashing school warning signs	5 working days
Emergency faults	2 hours

13.12.8. Traffic signals

Reactive maintenance of the traffic signal equipment is carried out under a collaborative contract with Black Country and Telford & Wrekin local authorities by Telent technology. The contract contains service response targets.

13.12.9. Highway Trees

Nature of fault	Response time
Loose branch	
Overhanging branch	
Sight-lines obscured	
Other tree/ hedge defect	

13.12.10. Defects that are not the responsibility of the council

During an inspection, defects may be identified which are not the responsibility of the Council to repair. The Council does however have a duty of care to the users of the road. Therefore, the defect must be recorded and the party responsible for the repair must be made aware of the defect. If the defect is identified as a Category 1 defect, it should be made safe either by signing and coning or by a temporary repair.

13.12.11. Statutory Undertakers' Defective Apparatus

Where defective apparatus belonging to undertakers is identified, the defect must be recorded and the utility contacted in accordance with the New Roads & Street Works Act 1991.

14. The Resilient Network

Sandwell Council's Resilience Unit works with a wide range of agencies and organisations to prepare for and respond to events as and when they occur. The Council's partners include the police, the fire and rescue service, the ambulance service, surrounding councils, utility companies, voluntary organisations and many others. All services and organisations work together to ensure that the best possible preparations and plans are in place for emergencies. These are regularly tested and updated so that agencies can respond immediately and effectively to any threat.

Resilience in the context of the HIAMP is the ability for the highway network to recover from planned or unexpected events and return to providing the required level of service for stakeholders. It is about increasing the physical resilience of highway systems to extreme weather and other events, so when these occur the highway network continues to function.

14.1. Department for Transport Resilience Review

In 2014, the DfT undertook a review of the resilience of the UK transport network to extreme weather events. This followed a period of extreme weather in 2013/14, which saw high winds and heavy rainfall.

The key recommendation from that review for local roads was:

"Local Highway Authorities identify a 'resilient network' to which they will give priority, in order to maintain economic activity and access to key services during extreme weather. Where Authorities have held formal reviews of the winter's events, they should ensure that these are enacted; Authorities which were not affected should nevertheless continue to prepare themselves for future extreme weather."

This recommendation aligns with Sandwell's wider strategies including the Winter Service Plan, Local Flood Risk Management Strategy and the Climate Change Action Plan. The Climate Change Action Plan sets out our corporate strategy for adaptation to the future impacts of climate changes.

14.2. West Midlands Resilience Forum

The West Midlands Conurbation Local Resilience Forum (LRF) is a partnership, made up of all the organisations needed to prepare for and respond to any major emergency in the conurbation.

The West Midlands Conurbation covers the following areas:

- Birmingham
- Coventry
- Dudley
- Sandwell
- Solihull
- Walsall
- Wolverhampton

The LRF partners include the emergency services, the seven local authorities, health agencies and the Environment Agency along with voluntary and other agencies. Under the Civil Contingencies Act (2004) every part of the United Kingdom is required to establish a resilience forum.

The aim of the West Midlands Conurbation (WMC) LRF is to ensure that there is an appropriate level of preparedness to enable an effective multi-agency response to emergency incidents, which have a significant impact on the communities of the WMC.

West Midlands Conurbation LRF has produced a Community Risk Register (CRR) to look at the likelihood and impact of a range of hazards happening.

A detailed review of these risks and mitigation measures are within the LRF *Community Risk Register (CRR)* https://www.wmfs.net/wp-content/uploads/2015/08/CommunityRisk2014.pdf

14.3. Aim of a Resilient Network

The Council aims to develop and maintain a core highway network which is reliable in operation and resilient to disruptive events, maintaining access for people and resources wherever possible.

14.4. Developing a resilient network

Resilience is the ability of assets, networks and systems to anticipate, absorb, adapt to and / or rapidly recover from a disruptive event. Resilience is secured through a combination of activities or components; the four principal strategic components are:

1. Resistance – preventing damage (e.g. a flood wall or embankment).
2. Reliability – designing processes to operate under a range of conditions.
3. Redundancy – availability of alternatives or spare capacity.
4. Recovery – enabling a fast response to and recovery from disruptive events.

Maintaining a network which is resilient to disruption is a critical function of a local highway authority. In recent years, severe weather events and flooding have been the primary cause of widespread disruption. As the local highway authority SMBC aim to ensure that the highway infrastructure they are responsible for is resilient to disruption, where practicable.

14.5. The Resilient Network

Sandwell's winter maintenance network (**Appendix B**) is already well established and therefore will be an initial starting point for the development of the resilient network. To move this forward a Resilient Network a guidance document has been produced to enable the development and establishment of Sandwell's resilient network.

14.6. Communication

People and transport customers increasingly expect immediate information about network disruptions including changes and closures, therefore it is important that the incidents and events that may affect the resilient network are communicated in accordance with the Highway Infrastructure Asset Management communications strategy.

14.7. Monitor and Review

The network will be periodically tested by the Resilience Unit and should it be activated in the event of a real incident, a post incident review should be carried out by the Unit to assess the effectiveness of the adaptation and mitigation measures employed. Actions required to improve the resilience of the network in future events should be identified and implemented where practical.

15. Financial Management and Valuation

This section describes the financial implications of this HIAMP. A number of financial processes, procedures and techniques can be employed in highway asset management to help ensure funding is based on need

rather than through historical allocation. Several approaches may be adopted for determining that need, which includes asset valuation, risk management, whole life costing and the forward works programme.

There continues to be a major challenge for Highway Services to make efficiency improvements in annual budgets. Neighbourhood Services, of which Highway Services is part, see the application of sound asset management principles as one of the most appropriate ways to deliver these efficiencies and accordingly the implementation of the HIAMP has been identified as a key objective.

15.1. Sources of Funding

Maintenance of highway assets is generally funded by a combination of Capital and Revenue budgets.

Capital allocations are made directly by Central Government considering factors such as road length, classification, traffic figures and road condition data derived from the national and local condition surveys and the maturity of the Council's highway asset management framework.

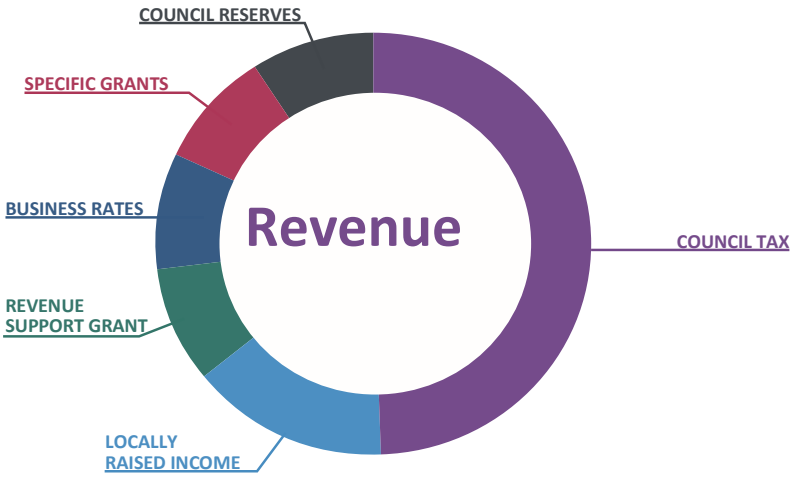
The Council's Capital budget provides the funding for planned and programmed works and is provided through:

- Central government grants
- Special grants e.g. Pothole Action Fund

It is not unusual that programmed maintenance budgets are unable to address all the maintenance that the Council would ideally like to undertake. This means different maintenance needs are competing for the same money. It is important to ensure that the available budget is spent on the most deserving sites with demonstrable maintenance needs in a manner that is consistent with Sandwell's highway maintenance policies and objectives. With ever increasing pressures on resources and budgets it is important that the Council carry out the right works at the right time in the right place.

Revenue allocations are generally funded by the Council from a combination of local council tax, business rates, Central Government revenue support and other grants. The Council's Revenue budget provides the funding for reactive and routine maintenance works such as gully cleansing, grass cutting, and pothole repairs.

The budget is provided through:

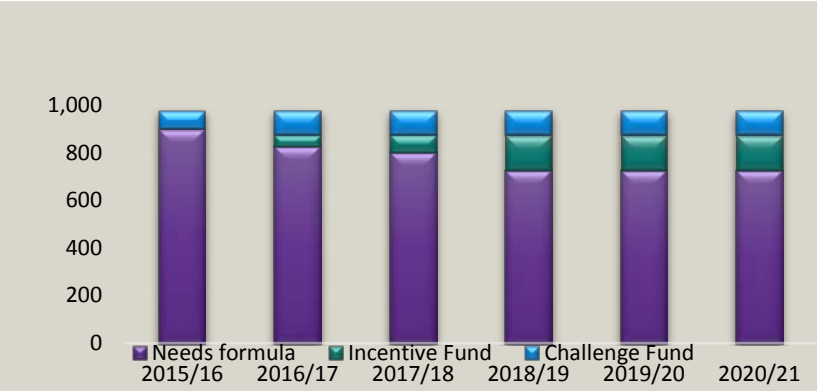


15.2. Department for Transport & Local Government Plans

Local Highway Authorities receive capital funding from Central Government for highways maintenance through the Highways Maintenance Capital Block Grant. This funding is allocated to each authority based on a formula that was created in 2005 and, along with the Integrated Transport Block Formula, was used to

determine the Local Capital Transport Settlement from 2006 onwards. However, from the financial year 2015/16 the DfT introduced a new approach to the allocation of the Highways Maintenance Capital Block Grant. The revised model is based upon three elements;

1. Needs based formula
2. Incentive funding
3. Challenge fund



The 2016 Incentive Fund Self-Assessment placed Sandwell within Band 3 for the 2016/17, this means that Sandwell received 100% allocation of the incentive funding, however, should Sandwell not remain in Band 3 then this allocation will fall to 90% in 2017/18 and then to 70%, 50% and 30% over the following three years respectively. Maintaining Band 3 will ensure that Sandwell will continue to receive 100% allocation of the incentive funding in each and every year up to 2020/21.

Table 7

	Indicative incentive element by "band" of self-assessment ranking (£)			
	Band 3	Band 2	Band 1	Loss to Sandwell if at Band 2
2017/18	£267,000	£240,000	£160,000	£27,000
2018/19	£538,000	£376,000	£161,000	£162,000
2019/20	£538,000	£269,000	£54,000	£269,000
2020/21	£538,000	£161,000	£0	£377,000
				£835,000

15.3. Highways Maintenance Expenditure

All West Midlands local authorities have jointly set out their transport strategy and policies in a statutory document, known as the West Midlands Strategic Transport Plan (WMSTP) – Movement for Growth (MfG). The 2026 Delivery Plan for Transport sets out the schemes which will deliver a large amount of the Movement for Growth Strategy. The annual plan also supports the strategy by outlining the delivery programme for that specific year.

15.4. Allocation of Funding

Table 8 shows the funding allocation available to support highway infrastructure asset management in 2017/18. Sandwell received a total allocation of £2,853,000 from the Highways Maintenance Block – Needs Based Formula.

Table 8

Activity	Type	Funding £000's
General Highway Maintenance • Carriageways • Traffic Signals & UTC • Footways • Winter Service • Street Furniture • Highways Drainage	Highways Maintenance Block Fund Capital - Needs Formula	2,063
	Highways Maintenance Block Fund Capital – Incentive Funding	274
	Highways Maintenance Block Fund Capital - Challenge Fund	1,831
	Capital Block Funding – Pothole Action Fund	225
	Highways Maintenance Target Revenue	3,101
	Highways Maintenance Target Revenue Traffic Signals Energy	170
	Total	**7,664**
Structures Maintenance	Highways Maintenance Block Fund Capital – Needs Formula	611
	Highways Maintenance Target Revenue	40
	Total	**651**
Street Lighting	Highways Maintenance Block Fund Capital – Needs Formula	179
	Highways Maintenance Target Revenue	823
	Highways Maintenance Target Revenue Energy	1,600
	Total	**2,602**
Total		**10,917**

15.5 Future Needs

Demands upon the existing highway network will continue to grow as planned growth areas are developed. Sandwell's highway network will need to respond to various changes including climate change and the need for increased resilience to adverse weather. This HIAMP, predictive deterioration assessments and future maintenance strategies will need to take these factors into account.

Levels of service and service options will set out and identify the most economic and efficient way of delivering an acceptable level of service over the long term. Pressures on council funding and increasing demands on the highway network may mean it is not always possible to secure the required funding to deliver the optimum solution. Lifecycle plans are one of the key mechanisms used in establishing funding needs.

15.5. Asset Valuation

During each financial year, local authorities have been working towards compiling their Whole of Government Accounts (WGA) returns as well as their own Statements of Accounts.

Whole of Government Accounts (WGA) is a set of financial statements for the UK public sector that consolidates the audited accounts of over 1,500 organisations to produce a comprehensive, accounts-based picture of the fiscal position in any one year.

Up to 2017, local authorities have been recording the value of their highway infrastructure assets at historical cost within their accounts. However, in March 2017, CIPFA/LASAAC, the body responsible for the Code of Practice on Local Authority Accounting in the United Kingdom (the Accounting Code), made the decision not to support WGA for local highway authorities.

Sandwell has been working to provide depreciated replacement costs for its critical assets and as this work is done and does provide information on its highway asset values, the following is the present Sandwell highway asset valuation.

The summary of asset valuation for the **2016-2017** submission is as follows (Table 9):

Table 9

Highway Asset Type	Gross Replacement Cost (GRC) Estimate £'000	Depreciation £'000	Depreciated Replacement Cost (DRC) Estimate £'000
Carriageway	1,095,031	-75,694	1,019,337
Footways	243,826	-37,894	205,932
Structures	503,508	-158,970	344,538
Street Lighting & Illuminated Signs	43,227	-31,210	12,017
Traffic Signals & Integrated Traffic Systems	5,292	-2,696	2,596
Street Furniture	19,664	-12,657	7,007
Land	1,745,873	N/A	N/A
Totals £'000	3,656,421	-319,121	1,591,427

Table 10 shows the accumulated depreciation of Sandwell's assets over a three year period

Table 10

	Accumulated Depreciation £'000		
Highway Asset Type	**2014/15**	**2015/16**	**2016/17**
Carriageway	-66,780	-78,950	-75,694
Footways	-44,654	-38,228	-37,894
Structures	-84,417	-155,253	-158,970
Street Lighting & Illuminated Signs	-33,245	-32,077	-31,210
Traffic Signals & Integrated Traffic Systems	-2,344	-2,521	-2,696
Street Furniture	-12,382	-12,645	-12,657
Land	Not required	Not required	Not required
Totals £'000	-243,822	-319,674	-319,121

16. Winter Service

Sandwell produce a separate Winter Maintenance Service Plan which holds all relevant information for this service. Information included is as follows:

- Policies and Responsibilities
- Quality Plan
- Route Planning
- Weather Prediction and Information
- Organisational Arrangements and Personnel
- Plant Vehicles and Equipment
- Salt and Other De-Icing Materials
- Salt Bin Policy
- Operational Communications
- Information and Publicity

The complete document is available on the SMBC website:

Appendices

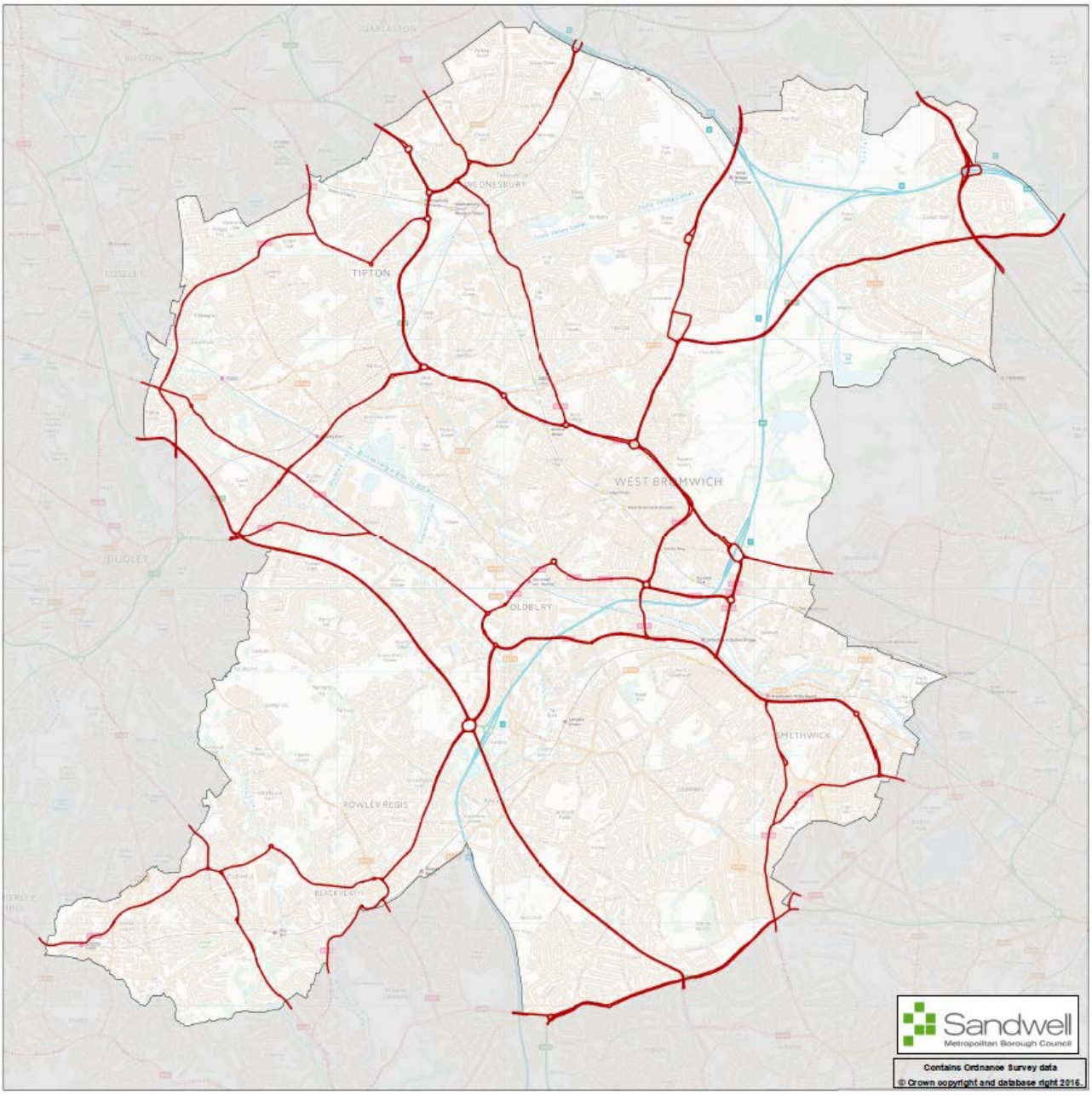
Appendix A. Performance Management Framework

R & G Objectives	Reporting Level	Level of Service Statement	Performance Measures	Current position 2016/17	Performance Target 2017/18	Actual 2017/18
Safety Provide a safe highway network reducing the number of people killed or seriously injured.	Strategic	Improve confidence in local road safety for all road users	NHT Customer satisfaction score for Road Safety KBI		↑	
	Strategic	Reduce Number of people killed or seriously injured	Percentage reduction in number of people killed		↑	
	Strategic		Percentage reduction in number of people seriously injured		↑	
	Operational	Quickly repair safety defects that present an immediate or imminent hazard to road user	Percentage of Category 1 Emergency safety defects made safe within 2 hours		100%	
	Operational		Percentage of Category 1 Urgent safety defects made safe within 5 working days		100%	
	Tactical	Pro-actively reduce likelihood of accidents occurring on network	Percentage of inspections carried out with prescribed timescales		100%	
R & G Objectives	**Reporting Level**	**Level of Service Statement**	**Performance Measures**	**Current position 2016/17**	**Performance Target 2017/18**	**Actual 2017/18**
Customer Satisfaction Keep traffic moving to minimise avoidable congestion particularly on principle route	Strategic	Manage the highway service in the interest of customers	NHT Overall Satisfaction score KBI.		↑	
	StrategicTactical,Operational	Respond in an effective and timely manner to customer enquiries within specified timescales	Percentage of customer enquiries replied to within the specified timescale		↑	
	Strategic	Consider customer requirements when planning maintenance	NHT Overall Satisfaction score KBI.		↑	
	Strategic	Minimise disruption caused by severe winter weather	NHT Overall Satisfaction score KBI.		↑	
	Operational		Score from Single Data set Ref 251 – 01; salt stock holdings		↑	
R & G Objectives	**Reporting Level**	**Level of Service Statement**	**Performance Measures**	**Current position 2016/17**	**Performance Target 2017/18**	**Actual 2017/18**
Economy & Regeneration Ensure value for money whilst supporting social regeneration and economic growth.	Strategic	Minimise disruption and inconvenience caused by essential **planned** maintenance	NHT Customer satisfaction - Experience of congestion		↑	
	Strategic		NHT Customer satisfaction with the frequency of roadworks		↑	
	Operational	Respond to emergencies as quickly as possible and within specific maximum timescales	Percentage of incident responses within the required timescales		↑	

R & G Objectives	Reporting Level	Level of Service Statement	Performance Measures	Current position 2016/17	Performance Target 2017/18	Actual 2017/18
Condition Ensure Highways Assets are maintained to a high, functioning, efficient standard that is fit for purpose	Strategic,Tactical	Maintain and Improve condition of Assets	Percentage of Principal roads where maintenance should be considered		↓	
	Strategic,Tactical		Percentage of Non - Principal roads where maintenance should be considered		↓	
	Strategic,Tactical		Percentage of Unclassified roads where maintenance should be considered		↓	
	Strategic,Tactical		Percentage of Footways where maintenance should be considered		↓	
	Strategic,Tactical		Percentage of structures with BSCI average condition score between 80 and *90*.		↓	
	Tactical+Operational		Percentage of street lights not working as expected		↓	
	Tactical+Operational		Percentage of Traffic Signals not working as expected		↓	
	Operational		Number of reported blocked drainage gullies		↓	
	Operational		Number of reported 'Highway tree' incidents		↓	
	Strategic	Effective Highway Maintenance interventions improving condition of Highways	NHT Customer satisfaction score for Highways Maintenance KBI		↑	
R & G Objectives	**Reporting Level**	**Level of Service Statement**	**Performance Measures**	**Current position 2016/17**	**Performance Target 2017/18**	**Actual 2017/18**
Sustainability Promote sustainable travel to reduce congestion minimising carbon emissions.	Strategic	Manage carbon consumption	NHT Customer satisfaction score Tackling Congestion KBI		↑	
	Strategic	Manage Air quality	Level of CO^2 emissions originating from road transport		↓	
R & G Objectives	**Reporting Level**	**Level of Service Statement**	**Performance Measures**	**Current position 2016/17**	**Performance Target 2017/18**	**Actual 2017/18**
Accessibility Provide and maintain suitable access for all users of the network.	Strategic	Manage network accessibility for all users	NHT Customer satisfaction score for Accessibility KBI		↑	
	Strategic		NHT Customer satisfaction score for Walking/Cycling KBI		↑	
	Strategic		Km of cycle lane facilities		↑	

Appendix B. Winter Maintenance

Map of Sandwell's Winter Maintenance Priority One gritting routes



Appendix C. Defect Categories

The following are examples of highway defects together with a description of those classed as **Category 1 or Category 2**

The list is *not* exhaustive and the Inspector will need to use their judgement as to what is likely to be hazardous.

The examples may be reviewed in relation to "Well Managed Highway Infrastructure – A Code of Practice"

Carriageways

Defect	Category 1	Category 2	Additional advice
Pothole (sharp edged vertical trip)	Greater than 20mm deep within pedestrian crossings & cycle lanes. Greater than 40mm deep elsewhere.	Less than 20mm deep within a pedestrian crossing. Up to but not exceeding 40mm deep elsewhere.	
Surface Defects Spalling ** Depressions ** Rutting ** Gap/crack ** Sunken ironwork **			** Undertake an on-site risk assessment to determine the degree of risk
Debris, spillage, contamination: Constituting a hazard on straight sections of road, bends, roundabouts and junctions **			** Undertake an on-site risk assessment to determine the degree of risk

Drainage covers etc.: Defective gully grates, manholes, service covers etc. constituting a hazard, especially for powered 2 wheeled vehicles and cyclists	Missing or collapsed covers. Broken gully grates, manholes, service covers etc. Raised or low gully grates, manhole/ service covers. Displaced gully grates or manhole covers		Utility defect should be dealt with under NRSWA Section 81
Surface water: Ponding/discharging across highway.** Constituting a hazard of aquaplaning, vehicle avoidance measures or skidding, and requires signing and guarding** Minor discharge across the carriageway.** Excessive standing water on the footway / carriageway**			** Undertake an on-site risk assessment to determine the degree of risk Where applicable serve notice to landowner. During Winter, maintenance manager needs to be informed.

Footways

Defect	Category 1	Category 2	Additional advice
Pothole	Greater than 20mm deep including on dedicated cycleway	Less than 20mm deep or greater than 20mm on dedicated cycleway	
Trip hazards Crack in surface Raised/damaged	Greater than 20mm vertical		** Tree Root – Seek Advice

paving slab Trip/pothole Rocking slab/block Tree root damage ** Sunken ironwork	movement Open joint/cracks 20mm width	Less than 20mm vertical movement Open joint/cracks less than 20mm width	from Urban Forestry Team
Kerbing Damaged, rocking, missing or dislodged kerbs.	Creating trip hazard greater than 20mm vertically.		

Verges/Visibility

Defect	Category 1	Category 2	Additional advice
Overgrown verges/vegetation or obstruction at road junctions and roundabouts Overgrown verges / vegetation or obstruction to footway	Visibility at junctions & roundabouts severely restricted. Footway impassable	Visibility at junctions & roundabouts partially restricted.	

Traffic signs, Road Markings, Street Lighting and Street Furniture

Defect	Category 1	Category 2	Additional advice
Signs	Damaged or missing Stop or Give Way Sign Loose sign face In danger of falling on pedestrian, or falling into carriageway – refer to highway safety inspector Faded or missing other mandatory road markings Vegetation overhanging mandatory signs	Obscured, faded or dirty sign face Damaged or missing advance Give Way sign	
Street Lighting ALL ELECTRICAL HAZARDS MUST BE REPORTED IMMEDIATELY TO STREET LIGHTING TEAM	Lighting column or illuminated sign knocked down. Exposed live electrical wiring; Lighting column or illuminated sign damaged. Lighting column or illuminated sign inspection door loose or missing. Illuminated bollard damaged, missing or unlit.		Refer to Street Lighting Team

<u>Traffic Signals</u> ALL SIGNAL DAMAGE MUST BE REPORTED TO HIGHWAY SERVICES	Exposed live electrical wiring; Seriously damaged or defective traffic signals; Inoperable traffic signals	Minor damage	
<u>Fencing / Barriers</u>	Causing obstruction of carriageway or footway. Damaged or missing temporary barriers or signs at road works *(refer to NRSWA guidance)* Damaged or missing vehicle safety barriers Damaged or missing pedestrian barrier/guardrail or fencing**		** Undertake an on-site risk assessment to determine the degree of risk