



Highway Infrastructure Maintenance Plan



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FOREWORD

Middlesbrough Council Highway Infrastructure Maintenance Plan

The highway network is, almost certainly, the most valuable asset that any local authority owns; so looking after the network should be a key priority for every council, and as such its maintenance is a significant factor in ensuring that people and goods move freely, safely and efficiently around Middlesbrough. That is why the Tees Valley Councils have collaborated to produce this “Highway Infrastructure Maintenance Plan”.

In this context the Highway Infrastructure Maintenance Plan is a key document in ensuring that those responsible for delivering the service are aware of the Council’s requirements, procedures and processes.

Following the publication of successive Codes of Practice for Highway Maintenance since 1983 the Middlesbrough Council Highway Infrastructure Maintenance Plan has been developed and is founded on the key principle of Best Value and Risk Assessment, supported by the original themes of a robust regime of safety inspection and a planned investment programme based on whole life costs.

The Plan encourages co-ordination and consistency in the delivery of the local highway maintenance service and aims to facilitate the sharing of best practice.

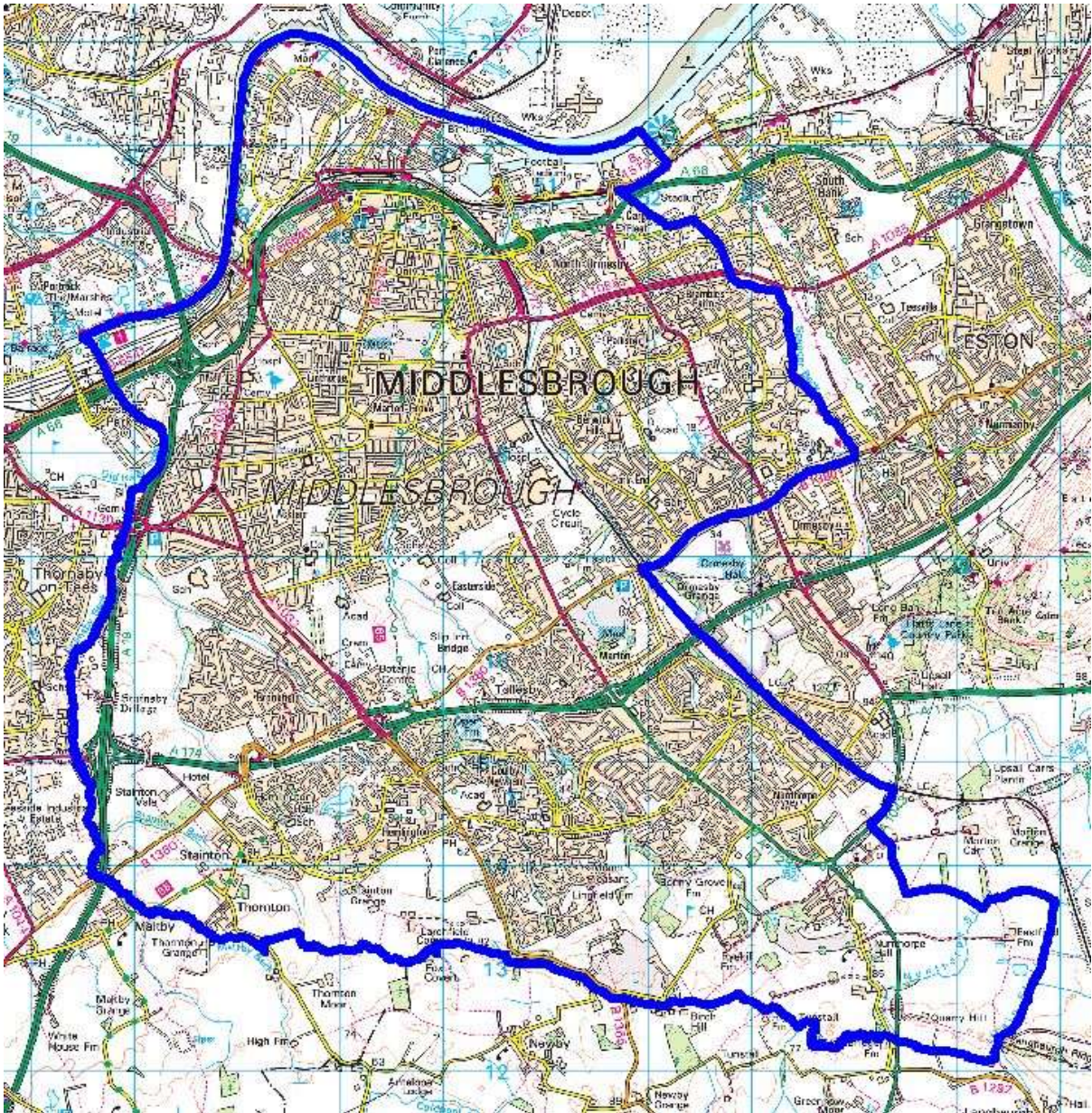
EXECUTIVE SUMMARY

The Middlesbrough Highway Infrastructure Maintenance Plan has been developed to conform to the recommendations set out in the Code of Practice Well-managed Highway Infrastructure, published in October 2016 and founded on the key principles of Best Value and Risk Assessment

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1.0 OVERARCHING PRINCIPLES



MIDDLESBROUGH

INTRODUCTION – THE MIDDLESBROUGH APPROACH

Middlesbrough covers 5,390 Ha with a highway network of over 500 km of roads. The Council is responsible for providing services to 140,000 people including management of the highway network. The Council seeks to provide a high quality service with the aim to work with and support the people of Middlesbrough.



The Elected Mayor, Andy Preston, has identified nine key priorities for Middlesbrough which have been published in the Councils Strategic Plan 2020-23. They centre around 3 main areas:

- **PEOPLE**
- **PLACE**
- **BUSINESS**

STRATEGIC PRIORITIES 2020-23

| | |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>People</p>  | <ul style="list-style-type: none"> ● Tackling crime and anti-social behaviour head on ● Ensuring Middlesbrough has the very best schools ● Ensuring our town is an absolute leader on environmental issues |
| <p>Place</p>  | <ul style="list-style-type: none"> ● Transforming our town centre with new buildings that inspire awe ● Building more town centre homes - and protecting our green spaces ● Making Middlesbrough look and feel amazing |
| <p>Business</p>  | <ul style="list-style-type: none"> ● Winning investment and creating jobs ● Introducing a new era of Council transparency and openness ● Creating positive perceptions of our town on a national basis |

The strategic plan sets out clearly how the Mayor's agenda will be supported and delivered over the coming three years, and the priorities are reflected in the Highway Infrastructure Maintenance Plan.

The highway network is fundamental to the economic, social and environmental wellbeing of the community, therefore, the successful management and use of appropriate management systems is essential in delivering and achieving our objectives.

STRATEGIC OBJECTIVES: ENVIRONMENT and COMMERCIAL SERVICES 2020-23

The strategic plan specifies a number of objectives that are specifically deliverable by the Environment and Commercial Services Directorate, namely:



People

Priority

We will tackle crime and anti-social behaviour head on, working with our partners to establish a stronger and more visible presence in the town centre and in local communities, tackling the harm caused by drugs and imposing tougher penalties on persistent offenders to ensure local people feel safer.

We will ensure our town is an absolute leader on environmental issues, working with local people to protect and create public and green spaces, and promote sustainable lifestyles.

We will work with local communities to redevelop Middlesbrough's disadvantaged estates, and introduce locality working with our partners, placing services at the heart of communities.



Place

Priority

We will transform our town centre, tackling crime anti-social behaviour, improving accessibility, developing Centre Square as an iconic Tees Valley office, leisure and residential location, and creating other iconic spaces for digital, media and leisure businesses.

We will make Middlesbrough look and feel amazing, working closely with local communities to make sure that our roads, streets and open spaces are well-designed, clean and safe, and revitalising unused buildings and heritage assets.



Priority

We will introduce a new era of Council transparency and openness, giving local communities a real say in the future of the town, and how our services are developed and delivered.

We will develop and deliver balanced budgets every year, protecting front-line services wherever possible, and dealing with the projected shortfall in our budget to 2023 through improved commissioning and procurement, increasing our commerciality, digitising our services and working more closely with local businesses and communities.

We will make sure that our business management practices, including how we manage finance, performance, projects, risks and assets, compare with those of the best-performing councils, and achieve good outcomes for our communities.

The above objectives will form the basis in the development of policy and strategy, however four other elements shall also be taken into consideration:

- the councils Integrated Transport Strategy 2018-2028,
- Best Value principles, including:
- Promoting Continuous Improvement,
- Risk Management principles and Legislation.

Safe and dependable transport is essential to UK society and the economy within which highway maintenance is placed as a key priority for investment.

Although highway maintenance is a contributory element to some of the objectives and targets in the Plan, the key objectives will be:

- Better Road and footpath conditions
- Reduced casualty numbers
- Reduced noise
- Enhanced personal safety

The Middlesbrough Highway Infrastructure Maintenance Plan will endeavour to achieve these objectives by

- Progress longer term, non-adversarial and sustainable contracts
- Seek opportunities to Invest to save
- Seek funding from other organisations for Crime reduction and Environmental improvements
- Work with all partners to deliver additionality to projects
- Improve public perception of road works by early informative consultation with all stakeholders
- Highway Management Policies and objectives based on the recommendations within the new Codes of Practice

- Base priorities on reviewed hierarchies, technical requirements and whole life costing
- Maintain accurate and updated inventory details, necessary for Asset Management valuation
- Inform developers of sustainable requirements
- Apply One Planet Living ethos throughout to save energy and mitigate effects of climate change.

Highway maintenance policy should be developed integrally with the overall management of the network so that the whole is managed holistically to provide consistent and appropriate levels of service through all the modes of transport and their constituent activities. It is essential that consistency exists across all the service boundaries.

Managing highway maintenance needs to be consistent with arrangements for managing an authority's wider asset base, such as: land and property set within the context of an asset management regime. The key principles of asset management are:

- focus on lifecycle costing
- management strategies for the long term
- establishing and monitoring levels of service
- managing risk of failure or loss of use
- sustainable use of physical resources
- continual improvement.

CODE OF PRACTICE FOR HIGHWAY INFRASTRUCTURE MAINTENANCE MANAGEMENT

The most recent Code of Practice for Well-managed Highway Infrastructure, published in October 2016 by the Roads Liaison Group, which supersedes previous editions back to the original version in 1983, is founded on the key principles of Best Value, that services should be based upon the needs of users and the community rather than the convenience of service providers. It has also been designed to facilitate the conduct of Best Value Reviews including highway maintenance, and to provide a stimulus to the pursuit of improvement.

The importance of highway infrastructure maintenance and its relevance to the integrated transport agenda is widely recognised and it is important that the service is closely integrated, not only with overall transport policy, but also with other key areas of policy.

Maintenance policy and practice should be sufficiently flexible to respond and add value to a wide range of local circumstances, whilst retaining the level of consistency expected by users, particularly for those parts of the network serving more than a local function.

The object of the Code is to encourage co-ordination and consistency in the delivery of local highway infrastructure maintenance services and to facilitate sharing of developing best practice. The Code comprises a framework of guidance and standards that, if generally applied, should contribute significantly to the achievement of this objective.

The duty of Best Value means regular review, comparing performance and challenging present arrangements in order to secure continuous improvement or “step change” in pursuing defined outcomes and this requires a robust regime of performance indicators, benchmarks and targets. The broadly based performance improvement agenda of Comprehensive Performance Assessment has evolved from Best Value with due consideration within this plan.

A key area of the Best Value regime is that of procurement, with the expectation that reviews should specifically consider the potential for competition in service delivery. Consideration should be given to “Rethinking Construction” arising out of the Egan Report with the emphasis on new forms of partnering arrangements including public-private partnerships and the use of framework agreements.

The Government’s Efficiency Review undertaken by Sir Peter Gershon during 2004 has promoted increased stimulus for review in the delivery of services.

The strong focus on the needs of users rather than providers brings a requirement for greater emphasis on consulting and involving users, and will need careful local consideration of how to undertake this most effectively for such a wide ranging and complex service.

Finally, the importance should be stressed of the need for highway maintenance to meet the challenge of sustainability. This requires that the wider economic, social and environmental implications of both the service and its individual schemes are first of all understood, and then modified as far as practicable to ensure Best Value outcomes for the community.

The Council fully endorses the principles of the Code of Practice and will seek to ensure that all highway maintenance activities in Middlesbrough are undertaken in accordance with the requirements of the Code.

PRINCIPLES AND CONTEXT OF THIS CODE

The objectives of the new Code of Practice and accordingly, therefore, the objectives of this Highway Infrastructure Maintenance Plan are:

- to encourage the adoption of asset management planning as a means of demonstrating value for money in the delivery of highway maintenance.
- to encourage the development, adoption and regular review of policies for highway maintenance, consistent with the wider principles of integrated transport, sustainability and Best Value
- to encourage a focus on the needs of users and the community, and their active involvement in the development and review of policies, priorities and programmes
- to encourage harmonisation of highway maintenance practice and standards where this is consistent with users expectations, whilst retaining reasonable diversity consistent with local choice
- to encourage the adoption of an efficient and consistent approach in the collection, processing and recording of highway inventory, highway condition and status information for the purpose of both local and national needs assessment, management and performance monitoring
- to encourage the adoption and regular review of a risk management regime in the determination of local technical and operational standards, rectification of defects arising from safety and serviceability inspections, and investment priorities.
- to encourage innovation in the procurement of highway maintenance contracts, whilst complying with the high standards of corporate governance.
- to seek continuous improvement in environmental performance and operate in such a way as to safeguard personal safety, public safety and to minimize the potential harmful effects of treatments on the environment.

Although the main purpose of highway maintenance is to maintain the highway network for the safe and convenient movement of people and goods, this needs to be set within the wider context of integrated transport, Best Value and the corporate vision of the Council.

The principles that underpin and define the objectives of highway infrastructure maintenance are:

Network Safety

Complying with statutory obligations

Meeting users' needs for safety

Network Serviceability

Ensuring availability

Achieving integrity

Maintaining reliability

Enhancing condition

Network Sustainability

Minimising cost over time

Maximising value to the community

Maximising environmental contribution.

The scope of the highway infrastructure maintenance service is very wide ranging and encompasses the following types of activity:

- Reactive – responding to inspections, complaints or emergencies
- Routine – regular consistent schedule for patching, cleaning, landscape maintenance and other activities
- Programmed – planned schemes, primarily of resurfacing, reconditioning or reconstruction
- Regulatory – inspecting and regulating the activities of others
- Winter Service
- Weather and other emergencies

All technical and operational standards contained in this Highway Maintenance Plan are for guidance as investigatory levels only. Decisions for action must be taken in accordance with the risk management strategy of the Council.

STATUS OF THE CODE AIMS AND DUTIES

The Council has a duty as the local highway authority for Middlesbrough, excluding the A19, A174 trunk roads, to ensure that all highway infrastructure is maintained in a safe condition having regard to the amount and nature of the traffic using them. It is also the aim to provide a road network with a condition and environment that are acceptable to the people of Middlesbrough and the travelling public. In the pursuit of this aim, the Council is committed to ensuring that all funds available for the service are used as effectively as possible.

To undertake this duty and in seeking to achieve these aims, the following strategies have been incorporated:

- to monitor the proportion of the maintenance budget spent on programmed structural maintenance to bring it in line with the national average
- to continue to give a high priority to the Principal Road Network, heavily trafficked routes and areas of high pedestrian usage
- to engage in regular consultations with users to ascertain views, needs and priorities
- to programme and prioritise works, having taken into account the results of user consultations, consistent with the risk management strategy
- to maximise expenditure on works on the highway, whilst ensuring that sufficient and appropriate data is collected to enable informed decisions on priorities for expenditure to be taken
- to continue to develop the use of condition data and other management information in accordance with the development of UKPMS
- to ensure that highway infrastructure maintenance activities are undertaken in accordance with the principles of the Well-managed Highway Infrastructure Code of Practice, published in October 2016” as contained in this Maintenance Plan

HIERARCHY

The Council's hierarchy uses an updated version of the UKRLG guidance hierarchy which reflects the single Code replacing Well-maintained Highways, Well-lit-Highways and Management of Highway Structures as shown in Figure 1. It also applies to Management of Electronic Traffic Equipment.

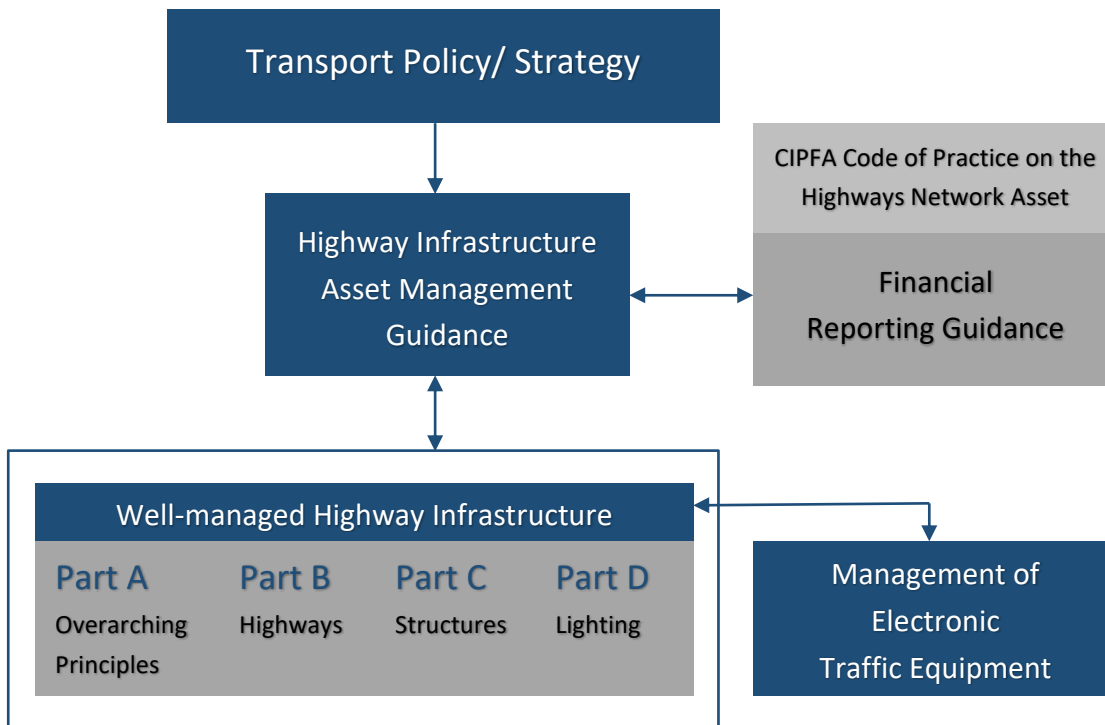


Figure 1 - Hierarchy

It is understood that the UK Roads Liaison Group's Highways Infrastructure Asset Management Guidance Document 2013 sets out the approach to asset management and the Well-managed Highway Infrastructure a Code of Practice 2016 is intended as additional guidance.

This Highway Infrastructure Maintenance Plan therefore aims to set out the Council's

- approach to highway asset management;
- the asset management planning process; and
- enablers to support implementation of asset management

TERMINOLOGY

Publicly understood definitions are used for the major parts of the highway. English terms are used when defining legal systems in the UK.

The main relevant definitions are:

- The term 'highway' is used to include 'road' and 'street'.

- The term 'authority' is used to include all forms of national and local authorities having responsibility for highway infrastructure management.
- The term 'carriageway' is used for facilities used by motor vehicles.
- The term 'footway' is used for that part of a highway over which the public have a right of way on foot only, e.g. segregated surfaced paths used by pedestrians. 'Footway' includes the commonly understood use of the term 'pavement'. The term 'remote footway' is used where a footway is not immediately adjoining a carriageway. The term 'housing footway' is used for those footways serving predominantly housing areas which may be un-adopted as public highways but have established public rights of access and may be maintained separately by the housing authority. Users will make no distinction and will consider the footway network as a whole.
- The term 'footpath' is used for the majority of Public Rights of Way (PROW).
- The term 'cycle route' is used as the collective term for facilities used by cyclists. These include cycle lanes on carriageways, cycle tracks adjacent to or away from carriageways, on carriageway provision with cycle symbols and shared use facilities.
- The industry term 'running surface' is used as the collective term for all hardened surfaces within the highway, including carriageways, footways and cycle routes.
- The industry term 'pavement' is used for the construction of running surfaces, particularly carriageways.

RELATED ACTIVITIES

There are a number of related functions within the Council which can be affected by or have an influence on highway infrastructure maintenance activity. These occasions are referenced throughout the document.

MAINTENANCE PRACTICE PRINCIPLES AND OBJECTIVES

Highway maintenance will be undertaken with a systematic logical approach based upon a strategy developed in accordance with the principles of Best Value. Delivery of the strategy is dependent on the relationship between the Highway Infrastructure Asset Management Guidance published by the UK Roads Liaison Group, LTP 2, and the Code of Practice Well-managed Highway Infrastructure and the delivery of the operational aspects of maintenance. The principles of the strategy are:

- to deliver the statutory obligations of the Council
- to be responsive to the needs of users and the community
- to provide effective management of the highway network and maintain the asset value
- to support effective delivery of the statutory network management duty
- to support and add value to local transport objectives
- to support and add value to wider policy objectives.

These principles are incorporated into the maintenance regime with the three core objectives of:

- network safety
- network serviceability
- network sustainability.

The Council utilises various types of maintenance practice in order to meet its core objectives and these are accounted for in the Council's highway documents and policies.

The main types of maintenance are:

- Reactive – responding to safety inspections, complaints or emergencies;
- Routine – such as cyclical maintenance and regular activities like grass cutting, gully cleansing, bridge drainage cleansing, lamp replacements etc.;
- Programmed – such as the Council's 4 Year Highway Maintenance Programme, that includes reconditioning like, resurfacing and painting etc.; or renewal at end of life, and which are in line with the various life cycle plans;
- Regulatory – where we inspect and regulate the activities of others e.g. street works
- Winter Service – such as gritting and snow removal
- Resilience and emergencies – for major incidents to ensure continuity of service.

The Council's core objectives are to be set within a comprehensive asset management regime based on:

- effective risk management
- needs based budgeting
- competitive service delivery management.

These objectives will also provide the basis for establishing the outcomes with which performance can be measured. The framework, upon which both performance and continuous improvement can be measured, essential for Best Value requirements, is through the development of appropriate performance indicators, benchmarking and targets.

The component elements of the strategy are:

- a detailed inventory of all relevant components to be maintained
- a defined hierarchy for all elements of the network
- a robust framework of levels of service linked to core objectives.

For the strategy to operate effectively, these key elements need to be supported by:

- a comprehensive management system for inspecting, recording, analysing prioritising and programming maintenance works so as to optimise their asset management condition.
- A risk management strategy clearly identifying and evaluating the risks and consequences of investment decisions and measures to mitigate them.
- arrangements to finance, procure and deliver maintenance works in accordance with the principles of sustainability and Best Value
- arrangements to monitor, review and update as necessary, each component of the strategy and the performance of the strategy as a whole in delivering the core objectives.

A further key principal is that the strategy should support and add value to the Council's wider corporate objectives of:

| | |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>People</p>  | <ul style="list-style-type: none"> ● Tackling crime and anti-social behaviour head on ● Ensuring Middlesbrough has the very best schools ● Ensuring our town is an absolute leader on environmental issues |
| <p>Place</p>  | <ul style="list-style-type: none"> ● Transforming our town centre with new buildings that inspire awe ● Building more town centre homes – and protecting our green spaces ● Making Middlesbrough look and feel amazing |
| <p>Business</p>  | <ul style="list-style-type: none"> ● Winning investment and creating jobs ● Introducing a new era of Council transparency and openness ● Creating positive perceptions of our town on a national basis |

The maintenance strategy will be incorporated into all other highway activities in order for proper co-ordination to occur, thereby ensuring that future maintenance needs are fully considered. In this regard, a maintenance audit process will be set up and will include some or all of the following items for all highway schemes:

- What is the estimated design life?
- Is this design life compatible with the adjacent infrastructure?
- Are the design and materials suitable for the predicted traffic use?
- Can the materials be readily replaced throughout the design life?
- Can the materials be satisfactorily re-laid after utility works?
- Are the materials liable to fading or discolouration?
- Can the surfaces be cleaned?
- Can the infrastructure be easily accessed for maintenance purposes?

- Could tree planting be redesigned to avoid future obstruction to signs or visibility and consequent maintenance requirements whilst maintaining compatibility with the urban environment?

MAINTENANCE MANAGEMENT SYSTEM

A computerised maintenance management system is an essential tool in managing the large volumes of data associated with the highway network together with modelling analytically the needs, options and priorities for maintenance strategies and programmes. These systems are known as Management Information Systems.

The current system adopted in Middlesbrough uses the 'Insight by Symology suite of Management Information Systems holds, where a condition survey has been carried out Coarse Visual Inspection (CVI), Detailed Visual Inspection (DVI), Sideways Coefficient Routine Investigation Machine (SCRIM), Griptest, Deflectograph, Ground Penetrating Radar (GPRS) and (Surface Condition Assessment of the National Network of Roads (SCANNER) survey condition data, in addition to Highway Inventory.

In addition to the highway maintenance information the system also holds the structures inventory. Street Lighting is currently held in Geoworks. We are in the process of returning the Street Lighting information to the Symology Insight package in order to improve the co-ordination of service delivery and monitoring.

Middlesbrough condition and asset data is provided by both machine and visual surveys in accordance with national guidelines and specifications.

We currently undertake the following data collection as follows, however these survey standards can change in line with national guidelines.

SCANNER

| | | |
|-----------------------|------------------------------------|-----------------|
| Principal A roads | 100% of network in both directions | – annual survey |
| Non Principal B roads | 100% of network in both directions | – annual survey |
| Non Principal C roads | 100% of network in both directions | – annual survey |

GRIPTESTER

| | | |
|-----------------------|-------------------------------------------------------|-----------------|
| Principal A roads | 100% of network in both directions | – annual survey |
| Non Principal B roads | 100% of network in both directions | – annual survey |
| Non Principal C roads | 100% of network in both directions | – annual survey |
| Bus Routes | Main Bus Routes not already undertaken in ABC network | |

If strategic routes become traffic calmed they are not included in the cycle.

COARSE VISUAL INSPECTION (CVI)

Unclassified Road 25% of network - annual survey

FOOTWAY NETWORK SURVEY (FNS)

Footways and Footpaths 25% of network annual survey

All of the surveys above are used to determine carriageway and footway schemes submitted for the 4 year highway maintenance programmes.

RESPONSIBILITIES

Responsibility for highway maintenance lies with Middlesbrough Council as the local Highway Authority. Highways England (delivered by Autolink) are responsible for the A19 and A174 within Middlesbrough's boundaries. In addition, Highways England are also responsible for a small section of the A66 from the boundary with Stockton on Tees Borough Council to the A19.

All matters of policy, funding and standards of performance are the sole responsibility of the Middlesbrough Council to specify and the implementation of any activity is the responsibility of the Council and its appointed service deliverers.

It is the statutory duty of the highway authority to maintain that part of the highway defined as being maintainable at public expense. This duty is presently consolidated in S 41 of the Highways Act 1980. Under S 56 of the Act any person may apply to the courts for an order requiring the highway authority to take remedial action in cases of alleged non-repair by that authority that may also face an action for damages resulting from failure to maintain the highway.

S 58 of the Act provides that in the event of an action it shall be a defence to show that the road was kept in a reasonable state of repair having regard to the traffic using it, the standard of maintenance appropriate to its use and public safety.

S 150 of the Act requires the highway authority to clear obstructions from the highway resulting from the accumulation of snow or from the falling down of banks on the side of the highway, or from any other cause. The Railways and Transport Safety Act 2003 introduced an amendment to S41 of the Highways Act 1980 which appears to extend the requirement to undertake pre-salting of the network to also include footways. The revision requires the highway authority to take such measures, as are "reasonably practicable" within the resources available.

Road openings in the highway executed by or on behalf of statutory undertakers under the provisions of the New Roads and Street Works Act 1991 (NRSWA) are backfilled and maintained by the organisation making them. The role of the highway authority is mainly that of coordinating and controlling road works and designating traffic sensitive routes and structures of special engineering difficulty.

The Council maintains the Street Works Register, carries out a co-ordination role, and regulates all activities on the highway. As of 1st July 2020, the Council will be fully managing all street works under Permit Schemes.

There is a wide range of other legislation affecting highway maintenance, either directly or indirectly, imposing powers or duties on highway authorities.

FURTHER ADVICE AND GUIDANCE

Council officers have access to The Highways Maintenance Efficiency Programme (HMEP) through CIPFA that has developed a wide range of guidance on topics from asset management to procurement, and provides CPD certification of attendance.

POLICY FRAMEWORK

The planning and delivery of services will be integrated within the wider aims and objectives of the corporate vision and coordinated with other business objectives. This is crucial in ensuring a high quality service that offers good value for money to the people of Middlesbrough.

INTEGRATED TRANSPORT STRATEGY 2018-2028

In accordance with the requirements of the Local Transport Plan 2 guidance, the Council has published a Local Transport Strategy 2018-2028 for Middlesbrough. This sets out details of how transport will contribute towards a longer term 10 year vision for Middlesbrough.

The Integrated Transport Strategy aims to deliver a fully integrated transport network, which not only provides ease of access within the authority boundary, but also provides a gateway to the rest of the Tees valley; bringing centres closer together. The following objectives have been identified:

- To develop an efficient and capable transport network to attract investors, allowing them to develop business cluster areas appropriate to their business and customer needs.
- To identify how different modes of travel can be integrated together to provide a seamless transport network which will facilitate economic growth.
- To set out high-level initiatives for each mode of travel, which can be individually delivered, in addition we aim to provide those using the network the ability to switch travel mode easily.
- To seek to actively manage the available network more effectively, including measures to achieve modal shift.
- To reduce the dependence on the private car to reduce congestion, improve air quality, and assist with both social and economic regeneration.
- To provide an integrated transport network, which: promotes and incentivises sustainable travel, reduces the dependence on the private car, which releases the

capacity on the road network without relying on expensive highway improvement schemes, to further develop and enable economic growth to occur.

- To seek to balance the competing demands placed upon the transport network and maximise the use of finite resources, while providing the necessary infrastructure to enable all transport users to make informed decisions.
- To promote and make the heart of everything we do, a hierarchy of highway users that identifies the network of existing and proposed strategic networks for non-car accessibility (walking/ cycling/ public transport).
- To develop walking and cycling routes that will connect to public transport infrastructure at key points, and that which will have higher quality facilities such as bus super stops.

DELIVERING BEST VALUE

From 1 April 2000 the new duty of Best Value was placed on local authorities in respect of the funding, procurement and delivery of all services. It requires authorities to:

- ensure that services are responsive to the needs of the community not the convenience of service providers.
- secure continuous improvement in the exercise of all functions, whether statutory or not, having regard to a combination of economy, efficiency and effectiveness.

The Government stated that Best Value could lead to "genuine and long term improvements in the social, economic and environmental wellbeing of communities", which is reflected by the requirement to produce a community strategy.

The principles of Best Value are particularly relevant to highway maintenance for the following reasons:

- highways are a major public asset highly valued by the community
- maintenance attracts a high level of public interest and concern
- performance indicators have historically been difficult to quantify
- there has tended to be no robust framework for local comparison
- there has been an inefficient approach to whole life costing
- there is a wide and developing range of service delivery options.

Best Value has developed through the process of Comprehensive Performance Assessment (CPA) which focuses on the corporate and service performance of the authority, promising greater flexibility in return for performance improvement. The involvement of highway users and the community during a Best Value consultation exercise is both desirable and relevant and is essential in generating understanding in order to pursue Best Value. Consistency of standards is also an important element in delivering Best Value. There must be consistent standards demonstrated by the Council and, moreover, there should also be reasonable consistency with the networks maintained by housing authorities or other agencies. The Council has adopted a standard computer system throughout to record inspections, which can then be assessed by insurance/legal services to deal with claims.

Best Value reviews are built on the 4 C's (Challenge, Compare, Consult and Compete) and each of these must be fully examined and incorporated into the process. Authorities need to show that for every review their process is:

1. Challenge - How and why are particular services being provided? Are we doing it right?
2. Compare - The Council's performance against other authorities.
3. Consult - Investigate the communication channels held between the council and service users.
4. Compete - Ensure that all services are open to fair competition.

It is important that reviews should:

1. Identify all areas of interaction of highway infrastructure maintenance with each of the key corporate objectives of the Council
2. Investigate and pursue added value when opportunities arise through these interactions and ensure sustainability is considered throughout.
3. Investigate and resolve conflicts which arise through these interactions.

The goal of Best Value to secure continuous improvement will only be effective in an organisation that is able to embrace change, encourage risk and innovation, and is able to learn from both its successes and failures. As continuous improvement will be measured through performance indicators, benchmarking and targets, these will clearly need to be appropriate and meaningful.

The authority embraces the principles of competition in procuring the delivery of services taking into account both price and quality. Comparison and consultation shall be exercised to ensure efficiency.

The Council's Standards and Policies are being developed through consultation and will take into account local needs. Information on these is being made available through the Council's website. The website is also being developed to show information on both authority and utility road works, which will help to alleviate inconvenience and disruption. Procedures are also in place to manage all calls to the council, via a call centre.

The Council and service providers embrace the requirements of equal opportunity, and the philosophy of "investors in people" processes including appraisal, training and development.

USING THE CODE IN THE DEVELOPMENT OF ASSET MANAGEMENT POLICY

Asset management is widely accepted as a means to deliver a more efficient and effective approach to management of highway infrastructure assets through longer term planning and ensuring that levels of service are defined and achievable for available budgets. It supports making the case for funding, for better communication with stakeholders, and facilitates a greater understanding of the contribution highway infrastructure assets make to economic growth and social well-being of local communities.

STAKEHOLDERS AND COMMUNICATION

Stakeholder expectations and the importance of good communications and liaison are dealt with in the departments Transport & Infrastructure Communication Strategy 2016 reviewed 2018.

As an open and accountable organisation, Middlesbrough Council is committed to ensuring effective communication takes place throughout its service areas. Effective communication safeguards and improves the department's reputation, and ensures the department is correctly represented to all its stakeholders.

By engaging in two-way communication with our stakeholders, we ensure that any thoughts, ideas and concerns are given appropriate levels of consideration and due diligence when planning how the service operates and in the schemes we deliver.

By adopting the communication strategy, the service area is able to demonstrate and report to its customers and stakeholders:

- How it sets the Levels of Service;
- Disseminate reports on performance, key outputs and our ambition to deliver value to all our stakeholders;
- Enabling appropriate levels of consultation in the decision making process.

This strategy complements existing corporate policies, such as the Social Media Policy, Media Protocols, and Safeguarding Policy.

OTHER AUTHORITIES

Consultation with other local, combined and strategic Highway Authorities, and in particular the Tees Valley Combined Authorities takes place in meetings held regularly e.g. The Tees Valley Highway Maintenance Engineers Group which meets monthly.

Assets on the authority's boundaries are dealt with in Cross Boundary Agreements. Consultation and co-ordination is also undertaken with utilities, and public transport operators.

INTEGRATED NETWORK MANAGEMENT

The Middlesbrough Transport Asset Management Plan (TAMP) is the framework for an integrated asset management approach to the Council's highway network assets.

By influencing maintenance choices, it determines the way we manage the upkeep of our highway network as a whole in an integrated network management approach.

RISK BASED APPROACH

Risk management is defined as “The identification, measurement, control and financing or risks, which threaten the existence, the assets, the earnings or the personnel of an organisation or the services it provides.” Risk management is recognised as an integral part of good management practice. The process of risk management consist of steps, which when undertaken in sequence, enable continual improvement in decision making.

The main elements of the risk management process will consist of the following:

- Establish the context – the strategic, organisational and risk management context.
- Identify risks – what, why and how things can arise.
- Analyse risks – consider the range of potential consequences and how likely those consequences are to occur.
- Evaluate risks – compare and rank the level of risks so as to identify management priorities.
- Treat risks – develop and implement specific management plan to control or reduce the impact of the risks.
- Monitor and review – monitor and review the performance of the risk management system and changes, which might affect it.
- Communicate and consult - at each stage of the risk management process, communicate and consult with both internal and external stakeholders concerning the process as a whole.

The sources of risk are divided into two broad categories:

Strategic – these are hazards and risks which relates to medium to long term goals and objectives of the authority. Such risk may be political, economic, social, technological, legislative, environmental, competitive and customer / citizen / stakeholder.

Operational – these are hazards and risks which managers will encounter in the work on a day by day basis, such as financial, legal, physical, contractual, technological or environmental.

In regard to highway liability, highway authorities have an absolute duty to maintain highways pursuant to S 41 of the Highways Act 1980 although a “special defence” exists under S58 of the Act. This allows authorities to successfully defend actions arising from accidents that occurred due to the condition of the highway where the authority can demonstrate it acted “reasonably”. Clearly risk management is an integral element of being able to demonstrate reasonableness. All highway maintenance activities, whether the management or the operation, should be undertaken against a clear and comprehensive understanding and assessment of the risks and consequences involved.

The highest profile risks affecting the highway maintenance service are those relating to the safety of the network and accident, injury or health risks to users including employees.

There is a wide range of other risks relating to network serviceability and sustainability including:

- network loss or serious failure
- operational
- environmental
- financial
- contractual.

The understanding and management of risk is fundamental to the effective management of highway maintenance. Risk assessment is fundamentally the structured and systematic expression and recording of collective good judgment based on the best available data.

Middlesbrough Council has a Risk Management Strategy, “A Sense of Proportion” which is based on the British IRM /ALARM / AIRMIC Risk Management Standard 2002, the Office of Government Commerce Risk Guidance, and the Australian Standard on risk management (AS / NZS 4360:2004).

SECURITY MINDED APPROACH

The Council has adopted a security-minded approach to our assets, information and people through understanding and routine application of appropriate and proportionate security measures to deter and or disrupt hostile, malicious and fraudulent and criminal behaviours or activities.

INFORMATION MANAGEMENT

The Council uses effective and sustainable management of its information in the following ways:

- Records of construction and maintenance treatments of the highway assets are kept to inform life cycle plans
- Information and actions from highway inspections is recorded and managed electronically within Symology software using a UKPMS management system.
- The Authority is aware of the need to identify and protect information which could impact on the safety of security of individuals, sensitive assets and systems and the benefits which the sensitive asset or system exist to deliver, through the adoption of a security-minded approach to the handling and management of data and information. All staff members have undertaken training in the new General Data protection Regulation (GDPR). The training focusses on Information management, Cyber Security and the handling of Personal Data.
- Our information systems support the ability to report to government via the Councils web site and other software e.g. national street gazetteer sent to national hub.
- The Council will be looking to develop Better Information Management (BIM) technology and collaboration that can provide 3D or other visualisation tools that will enable risks to be identified and addressed pre-delivery. An example:

- Bringing together data about underground assets as services, with ground conditions, burst and leak history and weather conditions to gain insight in to how the assets are likely to degrade over time – this insight can then be used to inform maintenance regimes and future capital investment needs.

GENERAL AND SPECIFIC REQUIREMENTS

Much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time as a result of claims and legal proceedings. It is crucially important that all those involved in highway maintenance, including Council Members, have a clear understanding of their powers and duties, and the implications of these.

Even in the absence of specific duties and powers, authorities have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. This principle should be applied when developing policy and strategy.

In addition to a general Duty of Care, there are a number of specific pieces of legislation which provide the basis of powers, duties, and responsibilities relating to Highway Infrastructure Maintenance, regulating the environmental effects of operations, and Health and Safety. All relevant legislation can be found in Appendix 2

In the development of policy and strategy the first priority will always be to ensure compliance with our statutory duties and fulfilling our duty of care.

STRATEGY AND HIERARCHY

HIGHWAY INFRASTRUCTURE ASSET MANAGEMENT STRATEGY

This Transport Asset Management Plan is a strategic document that is intended to develop and improve the efficiencies and levels of satisfaction in the way that the highway management and maintenance functions are carried out throughout Middlesbrough.

It allows the authority to take a longer-term approach to highway management, and allows for the optimal allocation of resources based on life cycle planning, whole life costing and customer expectations. It considers the most cost effective way of using available financial resources, ensuring it achieves the best maintenance outcome.

The Council proposes to develop the plan to enable systems to be established to manage all transportation assets, linking to wider ranging transport modes, and regional transport strategies.

By influencing maintenance choices, it determines the way we manage the upkeep of our highway network as a whole in an integrated network management approach.

The planning and delivery of services will be integrated within the wider aims and objectives of the corporate vision and coordinated with other business objectives. This is crucial in

ensuring a high quality service that offers good value for money to the people of Middlesbrough.

This then results in an economically affordable ‘Optimum Level of Service’, determined through life cycle planning and whole life costing processes. It looks at maximising the life cycle of each individual highway asset at the minimum cost.

The processes within the TAMP show how we carry out a ‘Gap Analysis’ between the current guidance and existing policy, and also between existing Council practices against preferred practices.

GOVERNANCE FRAMEWORK

The Council’s governance framework In terms of Highway Infrastructure Maintenance Plan is shown in figure 2 below:

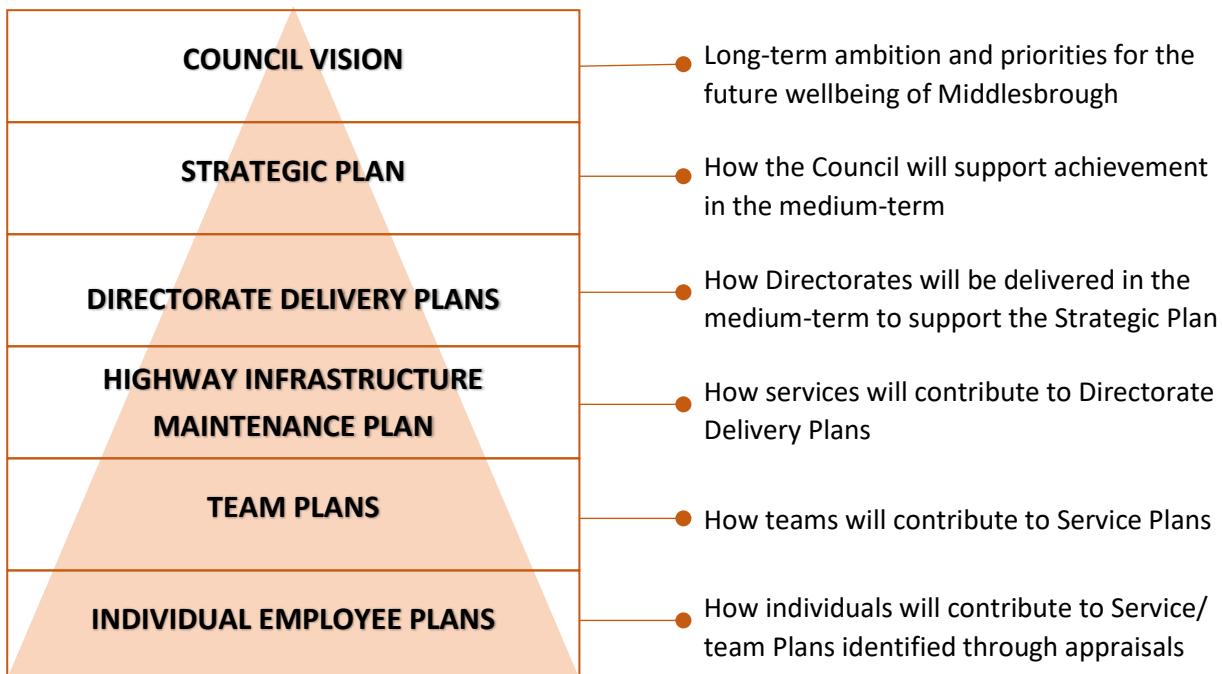


Figure 2

INVENTORY SURVEY DATA COLLECTION

The data collection strategy is reviewed annually, and conforms or exceeds the recommendations defined in the new Code of Practice. The strategy will also have to take into account any additional inventory requirements as well as the data collection regime for Best Value Performance Indicators and local key performance indicators.

The Council is committed to the United Kingdom Pavement Management System (UKPMS), and in this regard Middlesbrough Council has a tranche 3 accredited system.

The automatic processing of UKPMS (known as the Automatic Pass) provides the key function of translating recorded pavement condition across the network to a prioritised

schedule of treatment lengths with a recommended treatment option and associated cost for each length.

This processing draws upon both the physical data for the network – condition data, network and inventory information – and also the engineering parameters and rules, for example defining the relationship between pavement condition and treatment.

The analysis process of the selection and prioritisation of treatments involve a number of separate key elements which are:

- defects
- rating of defects
- condition indices
- condition projection
- system intervention levels
- treatments
- treatment selection rules
- prioritisation of treatment lengths.

NETWORK INVENTORY

Highway inventory is the collection and recording of the highway asset in terms of the number and locations of the items to be maintained. The following are examples:

| | |
|------------------------|----------------------------------------------------|
| carriageway | – length, width and surface type |
| gullies | – type and location |
| signs | – sign type, height, mounting bracket and location |
| road markings | – type and location |
| street lights | – column material, height, lantern type |
| bridges and structures | – spans, widths, and construction |

A basic highway inventory is essential in order to allocate funds for the various activities, to calculate unit costs and to submit requisite information to Government each year on road lengths maintained, which is used for the calculation of Formula Spending Share and Revenue Support Grants. Moreover, there is a requirement under The New Roads and Street Works Act 1991 to maintain information on traffic sensitive streets, structures of special engineering difficulty and reinstatement categories – this is especially true under permit scheme operation.

All information needs to be linked to the geographic location of the applicable carriageway and in Middlesbrough.

In order to fully meet the requirements of Best Value as well as establishing a cost effective and appropriate maintenance regime, a detailed computerised highway inventory is a pre-requisite. This would provide the required base data necessary for the assessment, prioritisation, programming and subsequent service delivery of a cost effective highway maintenance service.

Middlesbrough employ a fully computerised highway inventory system

The following items are examples of data to be recorded, the definitive data asset registers is included in Middlesbrough Council's Transport Asset Management Plan (TAMP):

| | | | | |
|--------------------------|---------------------|-----------------|---------------|-----------|
| Carriageway | Surfacing type | Width | | |
| Cycle track | Surfacing type | Width | | |
| Footway | Surfacing type | Width | | |
| Gully | Presence of a gully | | | |
| Kerb | Material type | | | |
| Lay-by | Surfacing type | Width | | |
| Signs | Diagram number | Mounting method | | |
| Pedestrian crossing | Type | Markings | material type | |
| Road hump | Material type | | | |
| Lines hatched | Width | Diagram number | | |
| Lines longitudinal | Diagram number | | | |
| Regulatory markings | Diagram number | | | |
| Road studs | Type | Spacing | Colour | |
| Verge | Width | Surfacing type | | |
| Crossover | Surfacing type | Width | | |
| Inspection covers | Presence of cover | (carriageway) | | |
| Safety fence | Material type | Tension type | Profile | Post type |
| Traffic / central island | Surfacing type | Width | | |

FUNCTIONAL HIERARCHY

A network hierarchy is a means of classification whereby the maintenance network is categorised on the basis of the volume and composition of traffic using it whilst recognising the difference in traffic levels between urban and rural roads. The hierarchy should also take account of risk assessment and the role of the particular section of the carriageway, footway or cycleway in the network.

The hierarchy is the foundation of a coherent, consistent and auditable maintenance strategy and is fundamental in determining policy priorities. It is the link between maintenance policy and implementation and will assist in determining standards for design and new construction.

It is important that hierarchies are regularly reviewed to reflect changes in network characteristics and use so that maintenance policies, practices and standards reflect the actual current use of the network. Accordingly, the Council will review the hierarchies on an annual basis.

The aim of the road hierarchy is to:

- allow programmes of inspections to be set to enable statutory duties to be fulfilled
- allocate resources according to the importance of the road within the network
- set policies and standards according to the importance of the road within the network.

It is the intention to use the hierarchy as an indication of the standard of repair required to keep the road in reasonable condition having regard to its function and the volume of traffic using it.

The network hierarchy is sub-divided into three sections to cover carriageways, footways and cycleways, and the local hierarchies for Middlesbrough are as follows:

TABLE 1 - Carriageway Hierarchy

| <u>Category</u> | <u>Hierarchy Description</u> | <u>Type of Road General Description</u> | <u>Description</u> |
|-----------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Motorway | N/A | N/A |
| 2 | Strategic Route | Trunk and some Principal "A" roads between Primary Destinations. | Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited. |
| 3a | Main Distributor | Major Urban Network and Inter-Primary Links. Short – medium distance traffic | Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety. |
| 3b | Secondary Distributor | Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions | In rural areas these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. In built up areas these roads have 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons. |
| 4a | Link Road | Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions | In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two way traffic. In urban areas they are residential or industrial inter- |

| | | | |
|----|-------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | connecting roads with 30 mph speed limits, random pedestrian movements and uncontrolled parking. |
| 4b | Local Access Road | Roads serving limited numbers of properties carrying only access traffic | All other roads not included above. In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGV's. In urban areas they are often residential loop roads, back streets or cul-de-sacs. |

TABLE 2 - Footway Hierarchy

| <u>Category</u> | <u>Category Name</u> | <u>Description</u> |
|-----------------|--------------------------|--------------------------------------------------------------------------------------------------|
| 1(a) | 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 main pedestrian routes. |
| 2 | Secondary Walking Routes | Medium usage routes through local areas feeding into primary routes, local shopping centres etc. |
| 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 routes and cul-de-sacs. |

TABLE 3 – Cycleway Hierarchy

| <u>Category</u> | <u>Description</u> |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | Cycle lane forming part of the carriageway, commonly 1.5 metre strip adjacent to the nearside kerb. Cycle gaps at road closure point (no entries allowing cycle access). |
| B | Cycle track, a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated. |

| | |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C | Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of the highway authority, but may be maintained by an authority under other powers or duties. |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

NOTE: Carriageways, footways, remote footpaths, and cycle-routes which fit a particular category description can be moved to a higher or lower category, where the risk assessment has identified a greater or lesser maintenance and safety need.

Example: a quiet residential street that would otherwise be risk assessed as a Local Access Road and Footway with yearly highway safety inspections and programmed maintenance, may be raised to a Link Road and Secondary Walking Route if there was a school entrance at the end of the road and the road forms the access to it. The risk assessment may have identified an increase in road traffic and pedestrian movements, therefore requiring safety inspection and maintenance of a higher classed road and footway. These details are identified and stored within the Symology UKMPS software.

The carriageway hierarchy has been derived with reference to traffic flows but also taking into consideration risk assessment and the functionality of the particular section of carriageway in the network.

RESILIENT NETWORK AND MINIMUM WINTER NETWORK

A resilient network has been identified which will receive priority in regards to maintenance and other measures in order to minimise the risk to the town both in terms of economy and in access.

The routes that form part of the resilient network are seen as absolutely essential, and do not necessarily follow road classification or the highway hierarchy.

The resilient network sets out the following:

- Identifies the network routes that form the resilient network
- Identifies critical infrastructure
- Where possible, directs programmes of work on its highway assets to ensure the resilience is maintained or improved upon
- Takes a risk based approach on identifying the hierarchy category to ensure sufficient safety inspections are carried out on all its highway assets
- Leads cyclical maintenance teams to set gully cleansing, bridge drainage, and other environmental activities to ensure that they are adequate to keep drainage systems functioning to their maximum capacity.

In developing the resilient network we have considered and ensured that it provides:

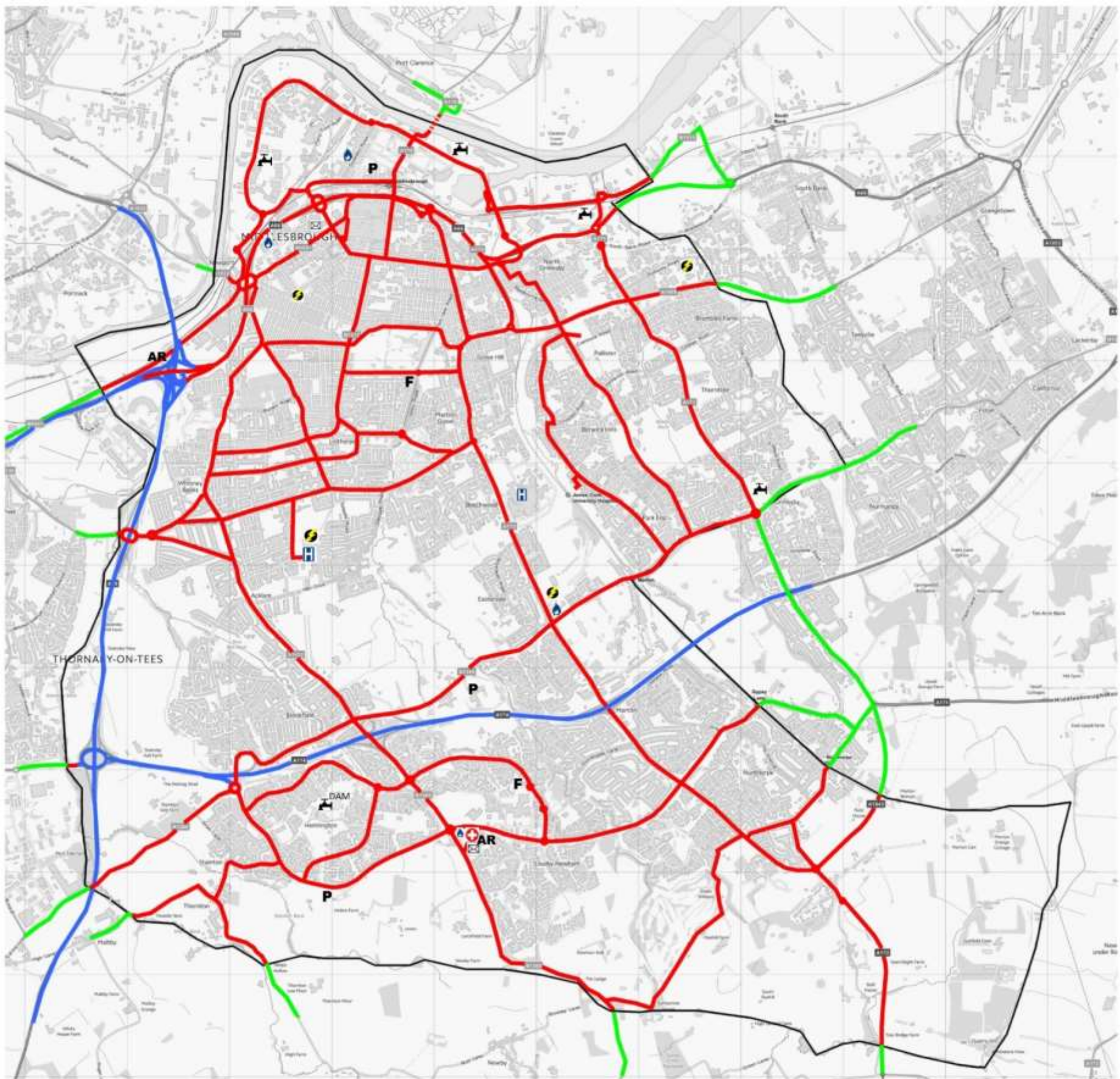
- connectivity between major communities;
- links to strategic highway network;
- connectivity across authority boundaries where appropriate;
- links to transport interchanges;
- maintains where possible access to emergency facilities including Fire and Rescue, Police, Ambulance Services and Hospitals;
- links to critical infrastructure such as ports, power stations, water treatment works etc.;
- principal public transport routes access to rail and bus stations and to bus garages and other depots; and
- other locally important facilities.

RESILIENT HIGHWAY

The degree to which normal services can be maintained is dependent on the nature, scale and duration of the incident. The aim is to continue to provide essential services as normal, and to provide other, non-essential services at the best standard achievable

Below is a plan showing the Councils resilient highway network. A list of streets making up the resilient network is in the process of being undertaken and will be available as a separate document Middlesbrough Resilient Network List of Streets. The list is will be reviewed biennially (every 2 years) to take into account any required changes due to new or altered infrastructure.

Resilient network map last reviewed: 24th June 2020.



- | | |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|  MBC RESILIENT NETWORK |  AMBULANCE STATION |
|  HE NETWORK |  HOSPITAL |
|  ADJOINING AUTHORITY |  FIRE BRIGADE STATION |
|  GAS PRESSURE STATION |  POLICE HEADQUARTERS |
|  ELECTRICITY DISTRIBUTION SITE |  ARMY RESERVE CENTRE |
|  RESERVOIR & WATER TREATMENT |  POST SORTING OFFICE |



RESILIENT HIGHWAY NETWORK

LIFECYCLE / DESIGNING FOR MAINTENANCE

MAINTENANCE CATEGORIES

As stated above, the types of activity that comprise the highway maintenance service are reactive, routine, programmed, regulatory, winter service and weather and other emergencies.

Within each type there are various categories that should be considered in relation to the core objectives of safety, serviceability and sustainability, and these are summarised as follows:

Reactive

all elements – sign and make safe for safety purposes

all elements – provide initial temporary repair for safety purposes

all elements – provide permanent repair for safety purposes

Routine

carriageways, footways and cycleways – minor works and patching

drainage systems – cleansing and repair

embankments and cuttings – stability

landscaped areas and trees – management

verges – grass cutting

fences and barriers – repair

traffic signs and bollards – cleansing and repair

road marking and studs – replacement

lighting installations – cleansing and repair

bridges and structures – cleansing and minor works

Programmed

carriageways – minor works, resurfacing or reconstruction

footways – minor works, resurfacing or reconstruction

cycle routes – minor works, resurfacing or reconstruction

Regulatory

maintenance of highway register and definitive map

co-ordination of road and street works (Traffic Manager responsibilities)

charging schemes and permits for highway occupation (Traffic Manager responsibility)

other regulatory functions – encroachment, illegal signs, parking licensing, etc

Winter Service

pre-treatment

post-treatment

clearance of ice and snow

Weather and other Emergencies

flooding

high winds

high temperatures

other emergencies.

Within these categories there are specific types of maintenance works, which are defined as follows:

Resurfacing and Reconstruction (R & R) – larger scale structural maintenance works where a specific need has been identified, works can be planned and the estimated cost of the necessary works separately quantified.

Basic Maintenance – comprises smaller scale maintenance works with the exception of surface dressing schemes. Included are basic structural and winter service together with safety and environmental maintenance works which are not subject to cost criteria.

Carriageway Surface Treatments – the sealing and restoration of the running surface of the carriageway. Treatments include surface dressing, thin slurry seal and re-texturing of existing surfaces.

ROAD/RAIL INCURSION

In-conjunction with Network Rail, all road/rail bridges have been given a risk rating. These are taken into consideration when carrying out inspections.

ABNORMAL LOADS

The management of abnormal loads is undertaken by the Transport and Infrastructure department. The dimensions of each load are checked and the proposed route assessed for suitability. Checks include bridge heights, weight restrictions, road works etc. Liaison may be required with Hauliers, Cleveland Police, Autolink, Network Rail and other Authorities

FACTORS TO CONSIDER FOR FUTURE MAINTENANCE

A design guide and specification has been produced in-cooperation with our neighbouring authorities. The Guide indicates the minimum standards that the Highway Authority requires of proposed schemes.

RISK-BASED APPROACH

PRINCIPLES AND CONSIDERATIONS

Risk management comprises two categories of risk, strategic and operational, as described in 2.4 above. Strategic risks are either corporate or departmental and therefore beyond the scope of this plan.

The various corporate risks under the risk management process can be found in the Risk Management Strategy, “A Sense of Proportion”.

Operational risks

Operational risks are risks which managers and staff will encounter on a day to day basis and may be:

- physical - defects related to network safety or health and safety movement of operatives and staff
- professional - such as the ratio of reactive / programmed maintenance
- financial - such as budgetary control and programme management
- legal - related to possible breaches of legislation
- contractual - associated with the failure of contractors to deliver services to the agreed cost and specification
- technological - relating to reliance on equipment such as gritters
- environmental - relating to noise, air pollution or by considerations which complement existing surroundings.

Insofar as safety inspections and surveys are concerned, only the physical risks are relevant. This occasionally means that intervention for category 1 defects may not always be aesthetically pleasing.

The risks that are applicable to highway safety inspections clearly appertain to the items for inspection as defined in 5.2 above together with the risks inherent to the operatives in undertaking the inspections.

Each item has to be assessed for defect and risk severity, feature and category of hierarchy together with the location risk and then prioritised accordingly. Guidance on this process is contained in the “Middlesbrough Council Highway Inspection Manual.”

The adoption of this manual, together with appropriate training of all inspectors will enable effective risk assessments to be undertaken on site.

DEVELOPING THE RISK BASED APPROACH

The risk-based approach to highway infrastructure maintenance is based on:

- an understanding of and alignment with the authority’s corporate objectives, legislative requirements, and corporate approach to risk and management of risk;

- an understanding of risk in a highways service and its application to all areas of operations, including people, infrastructure, data, finance and suppliers;
- an understanding of the potential risks and their likely significance to users, stakeholders, the authority and to the data and information held;
- an understanding of the inventory, function, criticality, sensitivity, characteristics and use of the various assets comprising the highway network;
- the establishment of hierarchies and levels of service with appropriate funding;
- the implementation of the agreed levels of service;
- the competency required in development and implementation of the risk based approach; and
- regular evidence-based reviews.

COMPETENCIES AND TRAINING

All highway inspectors are formally trained to IHE standards.

INSPECTIONS AND SURVEYS

The network hierarchies are reviewed on an annual basis, these are carried out using a risk based approach to defect identification and subsequent repair. The safety inspection manual is updated accordingly.

CATEGORIES OF INSPECTION AND SURVEYS

CATEGORY 1 DEFECTS

Category 1 defects are those defects which, following a risk assessment, are deemed to represent a danger or serious inconvenience to the public or which could result in significant damage to property.

These defects are to be made safe or repaired within 24 hours from the time that the authority first became aware of the defect. Some will require immediate attention as described below.

Whenever category 1 defects are encountered they shall, if reasonably practicable, be corrected, made safe or otherwise protected by the inspection personnel before being reported to the Environment Services Call Centre, at the earliest opportunity with a request for urgent or immediate action.

When a category 1 defect is identified within a larger area, only that part of the area which meets the criteria for category 1 defects shall be treated as a category 1 defect with the remainder being treated as a category 2 defect, except where this is impractical to do so.

Some category 1 defect repairs may be due to the activities of the utilities, which are governed by the requirements of NRSWA. If the reinstatement is still within its guarantee period and is outside its specified tolerances due to settlement, plucking out or other reasons, and within category 1 criteria, any costs incurred in making safe, and or repair, must be recovered from the undertaker and not charged to the highway authority. All costs must be charged in accordance with the Street Works (Recovery of Costs) (England) Regulations 2002. This is to be arranged by reporting all such defects to the Council's Utility Officer in the Transport and Design Services Department.

The general principles and defect descriptions may not be an exhaustive list in all instances and there may have to be additions to take account of local conditions. Although such additions will need the approval of the Senior Highway Inspector, individual circumstances, which have to be clearly justified, shall ultimately be subject to the approval of the relevant Service Managers.

Response times for remedial action are categorised in 5.2 above and for category 1 defects are:

Priority 1(A) - those that require a 2 hour response because of their immediate hazard

Priority 1(B) - those that require a 24 hour response because they represent an imminent hazard.

Some defects are potentially so dangerous that immediate action is required. These are defects which due to their nature and location represent a very serious risk to the public such as exposed electrical equipment, collapsed or missing covers or gratings in carriageways or footways, all of which must not be left unattended unless and until adequate barriers, warning signs or cones have been put out.

Items to be inspected for possible defects are defined in 5.2 above and the investigatory levels at which defect risks are to be assessed are specified in 5.8 below. When an investigatory level is reached, the risks appertaining to the requisite item have to be assessed for likely impact and probability from which a risk factor is calculated which will determine the likely course of action. Guidance on risk assessment incorporating impact, probability and risk factors together with resulting recommended remedial action for category 1 defects and priority 1 response is contained in the Risk Register in the "Middlesbrough Council Highway Inspection Manual."

The appropriate course of action as determined from the risk assessment must be undertaken within the time limits specified. As some types of defect may be the responsibility of other departments within the organisation or indeed other organisations, the Council must ensure that appropriate arrangements are in place to effect these repairs in accordance with the requirements.

CATEGORY 2 DEFECTS

All defects identified in safety inspections which are not categorised as Category 1 are automatically classified as Category 2. The commentary in 5.6 above is also clearly applicable to defects classed as Category 2.

Response times for remedial action are specified in 5.2 above, and for Category 2 defects are as follows:

Priority 2H - make safe or repair within 5 working days

Priority 2M - repair within 28 days

Priority 2L - repair during next available programme, schedule a more detailed inspection or review condition at next inspection.

The investigatory levels for all defects, whether Category 1 or Category 2, are shown in 5.8 below. It is solely the outcome of the risk assessment that defines the category. All other requirements arising out of the Safety Inspections are considered to be Service or Sustainability issues with no safety implications.

DEFECT INVESTIGATORY LEVELS

The investigatory levels for defects arising from safety inspections are shown in the following table

Table 4

| <u>Item</u> | <u>Defect</u> | <u>Investigatory Level</u> |
|---------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| carriageway | pothole/ spalling | With adjacent footway 20mm depth (75mm across in any horizontal direction) Remote with no adjacent footway 40mm depth (75mm across in any horizontal direction) |
| | depression | 50mm (area 2 sq metres) |
| | rutting | 20mm |
| | gap / crack | 20mm depth (20mm wide) |
| | sunken ironwork | 20mm difference in level |
| Utility works | Crowning, trips, depressions | as NRSWA Code of Practice |
| pedestrian crossing | trip/pothole | 15mm depth |
| footway (primary walking route) | trip / pothole / sunken cover | 15mm depth (75mm across in any horizontal direction) |
| | rocking slab / block | 15mm vertical movement |
| | open joint | 20mm depth (100mm x 50mm horizontally) |
| | tree root damage | 15mm trip |
| | sunken ironwork | 15mm level difference |

| | | |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| footway (others) | <p>trip / pothole / sunken cover</p> <p>rocking slab / block</p> <p>open joint</p> <p>tree root damage</p> <p>sunken ironwork</p> | <p>20mm depth (75mm across in any horizontal direction)</p> <p>20mm vertical movement</p> <p>20m depth (100mm x 50mm horizontally)</p> <p>20mm trip</p> <p>20mm level difference</p> |
| kerbs | <p>misaligned</p> <p>loose / rocking</p> <p>missing</p> | <p>50mm horizontally</p> <p>15mm vertically</p> <p>yes</p> |
| verges (in urban areas) | sunken area adjacent to and running parallel with c/way or f/way edge obstruction | depth 50mm |
| verges (in rural areas) | <p>sunken area adjacent to and running parallel with carriageway edge</p> <p>sunken area adjacent to and running parallel with footway edge obstruction</p> | <p>depth 150mm</p> <p>depth 100mm</p> |
| ironworks | <p>gaps within framework (other than designed by manufacturer)</p> <p>level differences within framework</p> <p>rocking covers</p> <p>cracked / broken covers</p> <p>worn / polished covers</p> <p>missing covers</p> | <p>20mm</p> <p>20mm</p> <p>20mm vertical movement</p> <p>yes</p> <p>yes</p> <p>yes</p> |
| flooding | <p>standing water likely to cause a hazard</p> <p>substantial running water across carriageway</p> <p>substantial running water across footway</p> <p>property inundation</p> | <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> |
| drainage | defective grips, filter drains, catch pits | yes |

| | | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| | blocked gully (silted above outlet) collapsed / blocked / settled items or systems | yes yes |
| road markings | faded or worn markings | Where a considered risk/hazard is seen to exist |
| road studs | missing hole left in c/way displaced item on c/way defective item | yes >20mm depth (75mm across in any horizontal direction) yes yes |
| signs/bollards/lights & traffic signs | damaged/misaligned item causing a hazard missing item causing a hazard lights/signals not operating correctly/malfunctioning signals pointing the wrong way signal lamp failure exposed wiring missing door to lamp column item missing Item obscured by whatever including trees, hedges, other signs etc Item illegible Signs slipped, or erected too low | yes yes yes yes yes yes yes yes yes yes <2.1m over footways <2.4m over cycleways <5.1m over carriageways |
| safety fencing and barriers | item damaged or misaligned causing a hazards unstable item or section | yes yes |
| Hedges and trees | unstable tree causing danger of collapse onto highways | yes |

| | | |
|-----------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| | overhanging tree leading to loss of height clearance over carriageway, footway or cycleway | <2.1m over footways <2.4m over cycleways <5.1m over carriageways |
| highway general | oil / debris / mud / stones and gravel likely to cause a hazard | yes |
| | street furniture missing / damaged likely to cause a hazard | yes |
| | illegal signs | yes |
| | obstructions in the highway | yes |
| | obstructed sight lines | yes |
| | ramps in carriageway to aid vehicular movement | yes |
| | f/way damage caused by vehicular access where no vehicle crossing | yes |
| | scaffolding likely to cause a hazard | yes |
| | skips likely to cause a hazard | yes |
| | unprotected building materials on the highway | yes |
| | abandoned vehicles likely to cause a hazard | yes |
| other dangers to the public | anything else considered dangerous | yes |

In regard to defects specified in the above table, particularly those covered under the “highway general” heading, many are the responsibility of individuals or organisations and not the highway authority. Unless urgent action is required, the Inspector’s course of action shall be to pass on the relevant information to the section or department which is responsible for overseeing that particular activity.

In addition there are other works undertaken by third parties, which are clearly their responsibility. It is the responsibility of the Inspector, wherever practicable, to ensure that the third parties are aware of any problem and undertake all necessary remedial action to resolve the problem. If the third party is known and unwilling or unable to rectify the problem, any costs incurred in remedial action shall be recharged to them accordingly

This also applies to private forecourts open to public access. Highway Inspection records should indicate anything considered to be a hazard in such locations and actions taken noted. Records should refer to letters sent, responses received and checks on actions taken. In the event that the land owner fails to take appropriate action or the land is unregistered, Inspectors are required to consider powers available to them under the Highways Act 1980.

REPORTING BY THE PUBLIC

The Council have a reporting system, Firmstep. This allows the public to report defects/incidents direct through the website and contact centre.

CARRIAGEWAYS

R & R

A 4 year rolling programme will be maintained with an Annual Review taking place during February and March each year. The Annual Review will provide opportunities for local priorities to be amended. In addition new schemes will be added to the programme for the new years' thus maintaining a full 4 year programme.

All sites identified for treatment will be ranked, and the various treatments are as specified in the Highway Maintenance Specification.

When determining final programmes and priorities consultations will take place to ensure that complimenting treatments for road safety/traffic calming are included at the same time.

Any consequential works in connection with the following should be included in the scheme classification: patching, footways and cycleways, drainage, road studs and markings, surface course, safety fences, kerbing works, haunching, base course and cold milling.

However there is an option to evaluate the cost of preparatory works with in surface dressing schemes to enable other options to be assessed.

Surface Treatments

Surface treatments are non-structural treatments of less than 15mm thickness, the various treatments are specified in the Highway Maintenance Specification

Basic Maintenance

Basic maintenance comprises routine reactive maintenance and smaller scale maintenance works. Surface dressing schemes are not included. All work, regardless of value, capable of being integrated into a scheme and planned, should be submitted for inclusion in the R & R programme.

These works comprise all patching and minor repairs including haunching carried out on both flexible and concrete carriageways, and are determined through safety or service inspections, local knowledge or reports from the public.

The objective is to repair defective areas of carriageway to maintain a satisfactory running surface and to prevent damage to the highway fabric by ingress of water and frost and highway safety is ensured by implementing continual programmes of work. Types of defects

to be recorded and investigatory levels are discussed in chapter 5, and the Highway Inspection manual.

FOOTWAYS & VERGES

R & R

Proposed treatments may include the provision of dropped kerbs in suitable locations and textured paving adjacent to crossing points at marginal cost during the course of works. Similarly, if the opportunity exists to facilitate vehicle crossovers at a reduced cost during planned works, occupiers will be notified of such opportunity.

It will also be important in determining priorities for footway maintenance to ensure that opportunities are taken to aid social inclusion, particularly improving accessibility for older and disabled people and also the use of prams and pushchairs.

There is a statutory duty on service providers under the Equality Act 2012 to take reasonable steps to remove or alter physical features to improve access for disabled people, or provide an alternative method of making services available.

Although ensuring the safety of footways for users will be a priority, in some cases the presence of roadside trees may complicate the provision of footway surface regularity. In such situations appropriate technical advice should be sought from the council's arboriculture officer.

In addition all proposals will be considered in respect to how it provides added value to the Council's Key Aims for Regeneration. The council will aim for a 4 year rolling programme will be maintained with an Annual Review taking place during February and March each year. The Annual Review will provide opportunities for local priorities to be amended. In addition new schemes will be added to the programme for the new years' thus maintaining a full 5 year programme.

Basic maintenance

Basic maintenance comprises minor reactive works on existing footways alongside roads or independent footpaths, and includes associated consequential works to existing kerbs and verges. Needs are assessed through the regular highway inspection regime, local knowledge and reports from the public. Highway safety is maintained by undertaking continual programmes of patching and minor repairs and to prevent damage to the footway by ingress of water and ice.

CYCLE ROUTES

R & R

Network integrity is a particularly important consideration where cycle routes are segregated for part of their length, but intermittently rejoin the carriageway. In these circumstances a reasonably consistent standard of maintenance will be provided and attention paid to carriageway edge condition in the unsegregated sections.

Where carriageway cycle lanes are established during planned works particular attention will be required to: -

- Ensure drainage gullies, valve covers, inspection chambers etc. do not pose hazards to cyclists.
- That the road surface is in good repair.
- Consideration of safety at junctions.
- Measures to prevent unauthorized vehicle access, but to still allow maintenance access.

Basic maintenance

Definitions, policies, objectives, programmes and investigatory levels are the same as for footways in 6.4 above

DRAINAGE SYSTEMS

Drainage system maintenance comprises:

- maintenance and replacement of existing carriageway drainage systems
- replacement and realignment of kerbs for drainage purposes
- maintenance and replacement of culverts up to a diameter of 1.2 metres or structures with a span of up to 0.75 metres (culverts and structures exceeding these measurements are outside the scope of this Maintenance Plan)
- all drainage works not included in reconstruction, overlay, resurfacing or surface dressing
- maintenance to pumps and sumps is carried out by specialist contractors.

The objectives of drainage system maintenance are to maintain the structural integrity of existing drainage systems to prevent accumulations of water on the carriageway and to prevent the ingress of water into the pavement structure, and to maintain the highway in a safe condition for road users and pedestrians.

Where a drainage system exists, it should be capable of removing water from the carriageway as it reaches a gully or grip. Where this is not the case and cleaning or jetting does not affect an improvement, the necessary remedial action should be taken as soon as possible

Drainage cleaning / cleansing comprises:

The testing, rodding and jetting of the highway drainage system. This includes drains, gullies, piped ditches, grips, carriageway drainage on structures and drainage of subways. The cleaning of drainage installed outside the highway boundary under licence or easement should be included.

The cleaning of gullies and catchpits or manholes which are the responsibility of the highway authority. As a guide this is all surface water drainage the sole purpose of which is to remove water from the highway; however this is not always the case. If in addition the drainage system carries roof water or water from private properties, that system is the responsibility

of other authorities. In these cases, the highway authority is responsible for the gully and gully connections only.

The maintenance of ditches and grips through the removal of silt, vegetation growth and damage to allow free passage of water from the highway. The maintenance should be confined to those ditches which are the responsibility of the highway authority (in the main, ditches are the responsibility of the adjoining landowner). However S100 of the Highway Act 1980 empowers authorities to keep open ditches on land adjoining the highway.

The objectives of drainage cleaning / cleansing are to prevent water penetrating the foundations of carriageways and footways, to remove detritus from gullies or catch-pits to ensure the rapid removal of water from the road surface, to maintain free flow conditions in all open channels and grips and to maintain self-cleansing flows in the drainage pipes, catch-pits and outfalls.

Areas at risk of flooding should be identified and recorded. Inspection of these sites will form part of the safety inspection regime. Priority should be given to inspecting and cleansing sections of system, which pose a high risk of flooding or disruption to the network. Supplementary checks should be undertaken during periods of heavy rainfall as resources allow.

As a consequence of limited resources and historically poor drainage system records it is not possible to undertake a programme of inspection for the entire highway drainage system. However, whenever any maintenance works are undertaken, a record of any findings of unrecorded infrastructure will be made and reported to the drainage asset manager for asset management purposes. Further investigation of incomplete drainage records should be undertaken at the earliest opportunity to enable accurate records of the system must to be compiled and added to the inventory.

EMBANKMENTS & CUTTINGS

Maintenance of embankments and cuttings covers the repair of earth slips and the provision of any necessary associated drainage and new retaining systems. Anchors, walls, soil stabilisation and similar works will be included.

The objective is to maintain cuttings and embankments in a safe condition and to provide or maintain associated drainage systems to ensure stability.

In higher risk locations, or where ground conditions are difficult, specialist geotechnical advice will be obtained.

LANDSCAPE AREAS & TREES



The probability of landscaping and tree failure is low - works will be undertaken where required. It may be necessary to cut back vegetation in order for inspections or surveys to take place and in order to maintain site visibility lines at junctions, access points and bends.

Condition standards and frequency of grass cutting on rural roads will be determined locally from risk assessment.

Swathes, bends and junctions are cut twice a year, commencing usually in mid to late April or early May.

Grass is cut to 1 swathe width from the edge of carriageway (approximately 1.0 metre).

The Highway Authority will undertake systematic maintenance of its tree stock including:

- Proactive Tree Maintenance Programmes.
- Reactive Tree Maintenance works including 24hr Emergency Call Out Works.

Prioritisation of all scheduled tree maintenance works including essential tree pruning, felling, stump grinding/chemical treatments, replacement tree planting/establishment and reinstatement works.

FENCES & BARRIERS

They will be cleaned and painted when necessary and where safety fencing is provided with chevron markings, these should be dealt with in accordance with the cleaning regime for traffic signs.

Safety fences will be maintained in a sufficiently sound structural condition to serve their function and not be dangerous to road users or pedestrians.

TRAFFIC SIGNS & BOLLARDS

The following standards are recommended for the condition of illuminated and non-illuminated signs and bollards:

- cleaning when required and at least annually;
- brackets bolts and fittings should be tightened and adjusted at the time of service inspection;
- painting of supports and frames when required but not exceeding 10 years interval.

The following additional standards are recommended for the condition of

- illuminated signs and bollards:
- optical inspection and cleaning together with the inspection of sign supports every 2 years;



- lamp changing at regular intervals to coincide with service inspections and cleaning. It may be necessary to clean bollards and signs in heavily trafficked areas much more frequently than annually



ROAD MARKINGS & STUDS

Markings on Strategic and Main Distributor roads and sites of high safety risk or with a relevant accident record will be replaced where they are no longer adequate for their intended purpose and built into the 4 year highway maintenance programme. This is generally accepted to be when more than 30% of their area becomes worn away.

Standards of other routes are based on assessment of the relative risks and programmed for renewal where necessary.

All mandatory road markings existing before resurfacing or surface dressing will either be masked during treatment or replaced as soon as reasonably practicable after completion of the works.

If it is not possible to restore immediately in permanent materials, temporary markings should be used at sites where their absence is likely to give rise to dangerous conditions. Stop and Give Way marks should ideally be replaced permanently within 7 days, other mandatory lines within 14 days and other markings and road studs within 28 days of completion of work. During resurfacing 'No Road Markings' boards should be displayed until all markings have been replaced.

TRAFFIC SIGNALS AND CONTROLLED CROSSINGS

The maintenance of traffic signals and controlled crossings is undertaken as part of a separate contract. The contract for the maintenance of Traffic Signals, Pelican, Puffin, Toucan Pedestrian Crossings, Variable Message signs, Route Monitoring and Assessment Equipment specifies frequencies of inspection and maintenance: -

Maintenance/equipment check – Annual and or opportunity

Electrical Safety Test – Annual

Bulk lamp change – Bi-Annual

Conditional/Operational assessment –Annual

NETWORK RESILIENCE

CLIMATE CHANGE AND ADAPTATION

Middlesbrough Council has been endorsed as a One Planet Living Council. One Planet Living is a holistic framework designed to encourage sustainable living

COLLABORATION

Benchmarking is a fundamental element in the delivery of Best Value as it enables comparisons to be drawn in respect of the performance of local authorities. It is a stimulus to continuous improvement and provides the means for achieving the “compare” element of the 4Cs of Best Value reviews.

The two main types of benchmark that need to be addressed in terms of achieving Best Value are:

- data benchmarking which involves the use of inputs and/or outputs for comparing performance, very often cost or measurement related
- process benchmarking which is a means of comparing and measuring processes, sequences or activities involved in service delivery with those of other organisations to identify how existing methods can be improved.

The participation of an authority in a benchmarking network (or club), which is both suitable and appropriate for its needs, is a recommended component in enabling performance to be properly measured and compared. It will also assist in promoting targets that stretch the organisation, but are both achievable and meaningful, and can demonstrate continuous improvement.

COMMUNICATIONS

As the main purpose of highway infrastructure maintenance is to maintain the highway network for the safe and convenient movement of people and goods, engagement with the community to discover their views and priorities and to take account of them in the decision making process is clearly fundamental.

Although statutory consultations on Best Value and comprehensive consultations on the Local Transport Plan have been undertaken, few specific consultations on highway maintenance have so far been carried out other than those introduced through the ‘Voiceover’ Panel Questionnaire.

Middlesbrough Council take part in the NHT Public Satisfaction Survey which collects public perspectives on, and satisfaction with, Highway and Transport Services in Local Authority areas.

It is a unique, standardised, collaboration between Highway Authorities across the UK enabling comparison, knowledge sharing, and the potential to improve efficiencies by the sharing of good practice. The National Highways & Transport (NHT) Survey is also referenced in the DfT's Incentive Fund Self-assessment process.

The Questionnaire is carefully structured to initially determine the importance the public place on the Highway & Transport services provided by their council and then to discover their satisfaction with those services.

The main Service Areas covered are:

- Pavements & Pedestrian Facilities
- Condition of Roads & Pavements

- Highway Maintenance
- Cycling and Cycling Facilities
- Public Transport and Buses
- Roadworks
- Managing Traffic
- Road Safety
- Rights of Way
- Taxis& Minicabs and Community Transport

The survey also includes sections regarding:

- Provision of Information
- Contact with the Council
- Using your Car
- Use of Transport and Access to Services

LEARNING FROM EVENTS

The Severe Weather and Civil Emergencies Plans are regularly rehearsed and refined as necessary. This is carried out by the Cleveland Emergency Planning Unit.

PERFORMANCE MANAGEMENT

PERFORMANCE MANAGEMENT

A fundamental requirement of delivering Best Value is to implement effective systems for programming and prioritising highway maintenance activities. Ideally sufficient funding would be available to effect a wide range of maintenance options, but even with limited budgets some options are still likely to be available above and beyond statutory and safety obligations.

Systems for highway maintenance need to support the wider framework of corporate and departmental policies and their relative allocation of priorities. These can be summarised as follows:

Strategic Level, Including such matters as: -

- corporate priorities and objectives
- Local Transport Plan objectives and targets
- Best Value Performance Indicators and targets
- Public Service Agreement targets
- maintenance, network management and other local transport services

Maintenance Level, including such matters as:-

- core network objectives
- maintenance service activity
- maintenance service priority
- review against transport and strategic level priorities.

The establishment of priorities is an iterative process working through the strategic and maintenance levels and continuously reviewing to achieve Best Value.

It should be stated however that all plans and guidance are developed to achieve the Objectives in the Strategic Plan 2020-23.

FINANCIAL MANAGEMENT, PRIORITIES AND PROGRAMMING SERVICE DELIVERY ARRANGEMENTS

The principles of the current partnering arrangements for the delivery of the highway services in Middlesbrough were approved by the Council as a means of delivering quality.

All future highway service delivery arrangements are reviewed so that they better reflect on outcomes focused services, based upon the principals of Best Value and sustainability.

The key principles of the overall strategy will be:

- trusting long term relationships
- responsive and effective service delivery managed locally

PROCUREMENT STRATEGY

In Middlesbrough, the principles of “Rethinking Construction” have been adopted in the innovative partnered works contracts that have been awarded for highway maintenance service delivery. These have been awarded with sustainability as a primary requirement.

CLIENT MANAGEMENT

The main roles of the client are:

- to advise the Council in respect of all matters concerning highway maintenance
- to represent the Council on highway maintenance issues
- to manage appropriate Council budgets and programmes
- to manage all highway maintenance contracts to effect service delivery.

PARTNERED WORKS CONTRACTS

The Council is not operating any partnering contracts at the present time.

The Tees Valley Authorities have combined to deliver Gershon savings through competitive tendering for use by the 5 Authorities using the NEPO portal and frameworks. Other issues such as Traffic Signal maintenance, and Lab Services are dealt with under a separate arrangement with Middlesbrough Council acting as the Lead Authority.

Environmental Services manage the following

- Highway Safety Inspections
- Basic Maintenance, patching and repairs
- Programmed Carriageway Resurfacing/ Repairs
- Programmed Footway Resurfacing/ Repairs
- Street Furniture Maintenance

- New Traffic Signs
- Maintenance of Traffic Signs
- Gully Emptying
- Grass Cutting
- Flood Damage Repair Works
- Flood Strategy/ Policy
- Surface Water Drainage Maintenance
- Winter Service
- Winter Service (Contingency)
- Emergency Sweeping
- Horticultural Maintenance
- Road Lighting (Works)
- Road Lighting (Energy)
- Public Rights of Way Maintenance
- Bridges & Structures Maintenance
- Highway Asset Management
- Traffic Signal and Telemetry Installation and Maintenance

Transport and Infrastructure manage the maintenance of the following:

- Traffic Regulation Orders
- Parking Services
- Design Services
- Traffic Management
- New Developments/ infrastructure

Through specialist NEPO Procured Delivery Framework Agreements and portal we have in place to deliver the following services:

- Highway Condition Surveys
- Planning/Resurfacing/Reconstruction
- Specialist surface treatments.
- Road Lining and Marking of Classified Road
- Bridges & Structures

FINANCIAL MANAGEMENT

FINANCING OF HIGHWAY MAINTENANCE SOURCES OF FUNDING

Available funding is determined on an annual basis through the Local Transport Plan Settlement and Formula Spending Share as approved by Members. It comprises both revenue and capital sources of funding allocated into basic maintenance and Resurfacing and Reconstruction (R & R) and defined as follows:

- Basic Maintenance comprises smaller scale highway maintenance works. This category includes basic maintenance and winter service together with safety and environmental

maintenance works which are not subject to cost criteria. Basic Maintenance works are funded from the revenue allocation.

- Resurfacing and Reconstruction (R & R) comprises larger scale structural maintenance works in respect of reconstruction, overlay or resurfacing of both carriageways and footways where a specific need has been identified, works can be planned and the estimated cost of the necessary works separately quantified.
- For the purposes of monitoring expenditure and performance, R & R also includes surface treatments as a separate category. Surface treatments are non-structural treatments including surface dressings, slurry sealing, high friction surfacing, resin bonded surfacing, other bituminous bonded surfacing and re-texturing. Sites where preparatory work such as patching and haunching are carried out they should be classified as R & R schemes.
- R & R schemes will be financed from either revenue or capital funds depending on the availability of funding.

Each financial year, allocations are made on a historical budget setting with an inflation allowance. There is no provision for network growth.

FINANCIAL PROCEDURES

The financial procedures adopted by the Council are set out in the 'Middlesbrough Financial Regulations' document.

The 'Financial Procedure Rules' sets out the requirements of the Council with regard to financial management and control in respect of those matters for which designated officers have delegated responsibility.

The Procedures are intended to give Officers guidance on the following matters:

- financial responsibilities
- allocation of revenue funds for highway maintenance and virement of funds
- placing orders for works
- maintenance expenditure (revenue)
- management and support services
- rechargeable works – reinstatements, vehicular crossings and accident damage
- advance payment code
- private street works
- S38 adoptions of estate roads – inspection fee
- collection of inspection fee from developers under S106 and S278 and other such agreements
- temporary road closures
- on street car parking
- locally determined funds
- minor integrated transport schemes
- potential bad debts
- charges for licences and permissions
- claims made against the County Council/Agency Districts
- highways records and land charges
- New Roads and Street Works Act 1991

BUDGETING PRINCIPLES

Accounting principles for highway maintenance should be in accordance with current CIPFA requirements.

The CIPFA 2000 document provides the following relevant advice in respect of highway maintenance:

- expenditure that should be capitalised includes acquisition, construction, enhancement or replacement of roads, buildings or other structures
- in this context enhancement means carrying out works which are intended to lengthen substantially the useful life of the asset, increase substantially the open market value of the asset or increase substantially the extent to which the asset can or will be used for the purposes of or in conjunction with the functions of the authority.
- under this definition improvement works and structural repairs should be capitalised, whereas expenditure to ensure that the fixed asset maintains its previously assessed standard of performance should be recognised in the revenue account as it is incurred. Unless expenditure meets these criteria to be capitalised, it should be treated as revenue.

FINANCIAL CONTROL

Environmental Services and/or Financial Services to ensure each general maintenance function and each individual job of highway improvement or maintenance should be carried out to a required specification and agreed timescale and within the approved budget allocation unless otherwise agreed with the Director of Environment.

Moreover, under the terms of the corporate financial management arrangements the following criteria should be fulfilled:

- accountancy practices as described above to be followed
- highway expenditure to be monitored on a monthly basis and any possible overspends identified and reported to the relevant Head of Service at the next Budget Clinic.
- quarterly progress reports to be provided to the relevant Head of Service; incorporating actual, plus committed expenditure compared with estimated expenditure, adoption of further regulations or procedures as determined by the relevant Head of Service and/or the Strategic Director of Finance, Governance and Support to ensure adherence to Council's policies.

PRIORITIES AND PROGRAMMING

A 4 year plan, based on areas is developed, the current plan being 2018-2022. This plan is reviewed on an annual basis and includes all aspects of highway infrastructure.

SUSTAINABILITY

SUSTAINABILITY AND HIGHWAY INFRASTRUCTURE MAINTENANCE

The UK sustainable development strategy is described in Securing the Future (DEFRA 2005) which includes priority areas for shared action as :-

- sustainable consumption and production
- climate change and energy
- natural resource protection and environmental enhancement
- sustainable communities

A procedure has been developed for sustainable development in highway maintenance. The sustainability core objective of highway maintenance is further defined in economic, social and environmental components:-

- minimising costs over time (whole life costs)
- maximising community value
- maximising environmental contribution

In the context of Best Value, it is important to set standards at levels which are sustainable and appropriate for the circumstances. Specifications should therefore be 'fit for purpose', being carefully considered and not set too high.

Notwithstanding the above, technical specifications and guidance are paramount in ensuring quality. Consistency in application will assist in supporting continuous improvement and providing a consistent and reliable base for benchmarking.

Sustainability issues must be considered when procuring highway maintenance works following National and EU directives.

MATERIALS, PRODUCTS AND TREATMENTS

Consideration shall be given to the preservation of the heritage of the locality by the selection of materials, products and treatments that reduce clutter, coordinate design and to preserve local character.

QUALITY MANAGEMENT AND SECTOR SCHEMES

All highway maintenance operations should be subject to a quality assurance regime through quality management systems. However, compliance with quality management systems does not necessarily guarantee quality materials, treatments or processes.

In order to address the issue of quality, the Highways Agency, CSS and TAG have developed a number of National Highway Sector Schemes (NHSS) which are intended to

improve the consistency of the products certified under existing schemes and ensure that they satisfy all current purchaser requirements.

The Highways Agency, Adept and TAG have set up the Highway Authorities Product Approval Scheme (HAPAS) which provides a means for manufacturers and suppliers to obtain approval to the use of their proprietary products within agreed performance criteria.

All service delivery procurement will encompass the requirement to include best value, quality assurance and equal opportunity to the required standard. Where possible the use of 'Framework Agreements' which comply fully with the above conditions shall be utilised in the interest of best value and to deliver Gershon savings.

Procurement of materials and treatments utilise, where available, NHSS that are administered by United Kingdom Accreditation Service (UKAS).

Proprietary products are procured by the use of the Highway Authorities Product Approval Scheme (HAPAS).

ENVIRONMENTAL MANAGEMENT

Maximisation of the environmental contribution made to highway maintenance is a fundamental requirement of highway service delivery contracts. Service deliverers should include in their Environmental Management Systems procedures to address the following environmental issues:-

- Noise and Vibration
- Dust, Emissions and Odours
- Flora and Fauna
- Ground conditions
- Water courses
- Material Use
- Waste
- Local Community
- Landscape
- Archaeology

NOISE REDUCTION

Road traffic noise is a major environmental consideration. Whenever major maintenance schemes involving renewal or resurfacing are planned, consideration is given to a lower noise option. The design and construction of highway maintenance including the contractor's depot activities are subject to noise appraisal to ensure mitigation.

MATERIALS UTILISATION

Highway maintenance consumes significant quantities of materials. Increased scope for innovation is apparent.

The authority, its partners and agents, seek to maximise the following:-

- Use of recycled materials.
- Use of local materials to minimise construction costs.

- Sustainable purchasing considerations, minimising use of primary aggregates.
- Economies of scale by collaborative purchasing.

WASTE MANAGEMENT AND RECYCLING

The landfill tax was first introduced in October 1996 to encourage more sustainable disposal of waste. Minimisation of disposal to landfill from highway maintenance schemes clearly supports the Council's objectives. To accomplish this the following practices shall be considered where practicable:-

- Retain, recycle or re-use materials on site.
- Maximise the value of the re-used material.
- Purchase recycled products wherever possible.
- WEEE Directive – safe disposal of electrical waste.

AIR QUALITY AND POLLUTION CONTROL

Avoidance of air, water and ground pollution should comply with statutory requirements. The environmental inconvenience to the community shall be considered for all highway maintenance activities.

Temporary and permanent storage areas shall be subject to environmental appraisal to ensure that pollution is prevented.

NATURE CONSERVATION AND BIODIVERSITY

A balance requires achieving between safety, amenity, nature conservation and value for money.

PLANTS AND INJURIOUS WEEDS

The Wildlife and Countryside Act 1981 makes it an offence to plant, or otherwise cause to grow any plant in the wild at a place out with its native range. The Noxious Weeds Act 1959 places a responsibility on the authorities to take action to inhibit the growth and spread of injurious weeds growing within the highway.

Prescribed weeds are:

- Ragwort;
- Broad Leaved Dock;
- Curled Dock;
- Creeping Thistle; and
- Spear Thistle.

ENVIRONMENTAL INTRUSION

The Council do take opportunities to simplify signs and other street furniture and to remove redundant items when planning highway infrastructure maintenance activities.

FACTORS TO CONSIDER FOR SUSTAINABILITY

The range of issues relevant to the concept of environmental sustainability include:

- noise reduction
- materials utilisation
- waste management and recycling
- pollution control
- nature conservation and biodiversity
- environmental intrusion.

Noise reduction is a major environmental consideration and a specific issue. Accordingly, whenever running surfaces are to be renewed or resurfaced during highway maintenance activities, the option of a lower noise surface should be evaluated, and in cases where there would be a significant benefit to the local community they should be carefully considered.

Materials utilisation is an important consideration for highway maintenance as substantial quantities of materials are required given the scope of annual activity.

Policies on materials purchasing and utilisation which may have cost implications need to be balanced against the environmental benefits likely to be achieved. However, wherever practicable, the use of the following should be maximised:

- products made from recycled materials to develop and support local markets
- local materials to minimise transport costs, support the local economy, and to maintain local character.

Waste management and recycling strategies should apply to all highway maintenance activities. Wherever practicable, these should seek to:

- retain and re-use materials on site in order to avoid environmental implications of transport and disposal
- maximise the value of the re-used material rather than utilise for low grade fill
- make use of “recycle in place” processes in appropriate circumstances
- ensure that any material that cannot be re-used or recycled is disposed of too licensed sites in accordance with statutory requirements. This will include silt and other solids arising from gully emptying and cleansing of oil interceptors.
- Electrical components sourced from WEEE Directive compliant companies

Pollution control needs to take account of statutory requirements and advice from the Environment Agency and the Councils’ Environmental Health Departments as appropriate. Reference can also be made to the “Prevention of Pollution Guidelines” published by the Environment Agency.

Pollution can take the form of noise, air or water and should be mitigated wherever practicable. Where appropriate, this could include:

- phasing works to avoid sensitive periods and potentially difficult weather conditions

- siting of storage areas should take account of the possibility of pollution particularly those with the potential to pollute water courses or groundwater
- diesel storage areas should have procedures for dealing with spills.

Nature conservation and biodiversity management requires specialist advice. Highway verges and soft landscaping need to achieve a balance between safety, amenity, nature conservation and value for money and this could be performed through biodiversity action plans and landscape management plans.

Certain named species and habitats are protected under UK and EC legislation and all highway maintenance works must comply with these requirements. Where designated protected sites are within or adjacent to the highway boundary, advice should be sought from English Nature.

In the management of highway verges, consideration could be given to the following:

- balancing the need to preserve road safety with the need to preserve the natural habitat
- requirements in the vicinity of a Site of Special Scientific Interest (SSSI) or a Grade 1 County Site of Biological Importance (SBI)
- establishing roadside nature reserves where suitable sites exist
- areas of verge with specific planting that can be regarded as conservation areas where no routine cutting is to be carried out
- the timing of cutting operations that take account of the flowering and seeding of wild flower plant species
- management of trees in urban areas that take account of landscaping and environmental considerations.

Environmental intrusion is an issue that should be considered at all times. It reflects the environmental awareness of the service which should be taken into account as part of the planning conditions or operational requirements. Circumstances which can lead to environmental intrusion include:

- location, design, maintenance and operation of storage areas and depots or compounds.
- poorly managed materials and temporary chipping storage areas that can become illegal waste dumps
- excessive and redundant signing clutter
- perceived light pollution in respect of illuminated signs or street lighting.

PROCUREMENT

Middlesbrough Council's Corporate Procurement Strategy provides a high level overview of how the Council will undertake procurement and also provides a work plan of actions that will be carried out over the period of the strategy. The Strategy is refreshed on an annual basis.

2.0 HIGHWAYS



INTRODUCTION TO HIGHWAYS

INTRODUCTION

This section covers specific issues and themes regarding highways themselves, and includes the following asset types:

- carriageways;
- footways;
- public rights of way;
- cycle routes;
- highway drainage systems;
- embankments and cuttings;
- landscaped areas and trees;
- fences and barriers;
- traffic signs and bollards; and
- road markings and studs.

LEGAL FRAMEWORK – HIGHWAYS

INTRODUCTION

The highest priority for any highway maintenance activity is the compliance with statutory duties and safety obligations. Statutory duties are defined under various enactments with particular emphasis in the Highways Act 1980.

In the main, the statutory obligations in regard to highway maintenance cover safety implications of risks to highway users.

Statutory duty to maintain is therefore covered under the risk management regime. The minimum level of highway maintenance funding must be sufficient to meet the statutory requirements.

The establishment of priorities has to take account of the relative priorities of the core network objectives of:

- safety
- serviceability
- sustainability.

As discussed above, safety objectives relating to fulfilling minimum statutory duties is the highest priority and must be met. All remaining objectives can be programmed and prioritised with account being taken of:

- safety implications
- risk assessments
- corporate and departmental policies
- maintenance policies
- views of highway users and the public
- size of maintenance budget.

BALANCING PRIORITIES BY TYPE

The broad priorities for the respective types of highway maintenance will generally be determined by outcome of safety and service inspections and structural condition surveys assessed through the risk management regime, the Authority's policies and the views of the consumer.

As part of the budget making cycle, it is important to establish priorities and programmes for each of the maintenance types as follows:

- reactive maintenance – attending to Category 1 defects and other urgent safety matters arising from inspections or user information
- routine maintenance – providing defined standards of serviceability
- programmed maintenance – providing coordinated sustainable schemes and projects based upon best value and whole life costing considerations.
- regulation – regulating occupation, interference or obstruction of the network
- winter service – providing defined standards of salting and clearance of ice and snow

- weather and other emergencies – planning for emergency response.

Priorities and programmes in respect of regulation, winter service and weather and other emergencies are largely determined by the level of specified service and therefore should not need any special consideration. However, the levels of service should take account of possible budgetary implications and consistency where interfacing with neighbouring service providers.

With regard to reactive, routine and programmed maintenance, a structured approach to programming and priorities is required. The budget setting cycle should take account of the relative priorities of these types, having regard to historical conditions, and seek to increase the proportion of programmed to reactive maintenance. This should lead to a corresponding decrease in reactive maintenance in the longer term. The consideration of programming and priorities should take account of the following:

reactive maintenance essentially comprises the rectification of Category 1 defects. Other urgent safety matters in accordance with the specified standards of response, and the priorities for action and response will be determined exclusively by risk assessment. This could include such options as signing, temporary repair or first time permanent repair.

routine maintenance provides defined standards of network serviceability maximising availability, reliability, integrity and quality. Although programmes are linked to the defined standards, priorities will be largely determined from service inspections, condition surveys, and user requests, combining both routine maintenance activities and other street related activities into a coordinated programme.

programmed maintenance seeks to deliver a sustainable outcome with added community value and provides value for money through minimising whole life costs. The ability to target maintenance so as to be able to repudiate 3rd party claims and reduce liabilities should be considered as a means of 'Invest to Save'

Priorities and programmes should be developed for carriageways, footways and cycleways in respect of the structure, the surface and the edge conditions. Priorities will be determined from structural condition surveys incorporating both machine based surveys and visual inspection surveys, taking into account skid and slip resistance. Where extensive traffic management measures are necessary for major maintenance schemes on higher category roads, consideration should be given to rescheduling other routine maintenance activities to take advantage of these measures and, if appropriate, taken into account in the planning and contract management process.

BALANCING PRIORITIES BY CATEGORY

Within each type of maintenance activity, the various categories need to be prioritised. For prioritisation, account should be taken of the Council's policies and standards, structural surveys and visual inspections, user complaints and consumer consultation as appropriate.

The categories within the various maintenance activity types are as follows:

Reactive

- all elements – permanent repair of Category 1 defects identified by safety inspections and prioritised by risk assessment all elements
- sign and make safe items that cannot be repaired immediately but otherwise would cause danger determined by risk assessment all elements
- initial temporary repair for safety purposes determined by risk assessment.

Routine

- carriageways, footways and cycleways – minor works and patching arising from safety and service inspections and determined through risk assessments
- drainage systems and iron works – cleansing and repair determined by service standards and largely safety and service inspections
- embankments and cuttings – stabilisation repairs identified mainly by service inspections
- landscaped areas – grass cutting defined by service standards
- trees and hedges – management of overhanging or overgrown, diseased or unstable items or those causing obstruction identified mainly through service inspections or user complaints
- scavenging and sweeping – removal of debris or spillages through safety inspections or user reports
- fences and safety barriers – minor repairs identified through service inspections road markings and studs – replacement identified largely through safety inspections and service inspections in accordance with service standards
- signs and bollards – cleansing, repair and replacement determined through service standards, safety and service inspections and user reports
- network integrity – operational efficiency determined through service inspections.

Programmed

- carriageways, footways and cycleways – Resurfacing and Reconstruction (R & R) or surface treatment defined by service standards and prioritised by machine based or visual inspection surveys.

Regulatory

- licenses and permits – defined by service standards
- management of utilities and other regulatory functions – defined by legislation.

Winter Service

- pre treatment – salt storage, ice prediction system, forecasting service, grit bins and precautionary salting determined by service standards.
- post treatment and snow clearance – determined largely by service standards with input from user reports.

Weather and other Emergencies

- flooding, drought, high winds and high temperatures – remedial and safety measures largely determined by service standards with problems identified through the National Severe Weather Warning Service, highway inspections and user reports.
- other emergencies – dealt with through the Cleveland Emergency Planning Unit or the Council's Emergency Plan(s) and led corporately.

HIGHWAY SPECIFIC LEGAL CONSIDERATIONS

The Highways Act 1980 sets out the main duties of Highway Authorities in England. In particular, Section 41 imposes a duty to maintain highways maintainable at public expense.

WINTER SERVICE

The statutory basis for Winter Service in England and Wales is addressed through Section 41 (1A) of the Highways Act on the 31st October 2003, by Section 111 of the Railways and Safety Transport Act 2003.

ASSET MANAGEMENT INFORMATION – HIGHWAYS

PRINCIPLES AND CONSIDERATIONS

Symology by Insight is the Council's highway asset management system, this is essential to deliver an effective and efficient approach to asset management

ASSET CONDITION AND INVESTIGATORY LEVELS – HIGHWAYS

This section deals with asset condition requirements for each element of the network and its contribution to safety, serviceability and sustainability.

Standards are to be defined for the condition of each element of the network, developed through risk assessment, and factors necessary to meet the requirements for safety, serviceability and sustainability.

Where standards are not met targets will be set for attaining them and sustaining them in the long term. In some cases these standards will relate to statutory indicators, but others are locally determined. Locally determined standards take account of the views of users and the local community, and have regard to the advice of the Code.

Standards will be formally adopted and published as part of a Transport Asset Management Plan (TAMP). They will also be consistently applied and reviewed at intervals in the light of changing circumstances.

CO-ORDINATION OF STANDARDS

In setting standards for all aspects of highway maintenance services, authorities should have regard to the standards of adjoining authorities and those applying to the strategic network. It will be important to deliver consistency, wherever practicable, particularly in respect of Winter Service.

TYPES OF STANDARD OR INVESTIGATORY LEVEL

Each element of the network have different standards of condition, a minimum one to satisfy requirements for safety, and higher ones, designed to meet local requirements for serviceability or sustainability, as part of the asset management strategy adopted by the authority. These different higher standards are known as '**investigatory levels**'. Failure to reach the defined standard in most cases could give rise to a range of responses each of which needs to be further investigated, prior to action being taken. There are certain circumstances, primarily for safety reasons, where a higher priority response is necessary.

ASSET CONDITION AND INVESTIGATORY LEVELS – HIGHWAYS

INTRODUCTION

CONDITION SURVEYS

Condition surveys are undertaken to ascertain information on the nature and severity of carriageway deterioration in order to determine the most appropriate maintenance treatment and hereby ensuring value for money. The frequency of the surveys are shown in 3.2

The survey methods available in Middlesbrough include: -

SCANNER (Surface Condition Assessment of the National Network of Roads)

Previously described as TRACS – Type Surveys (TTS). Scanner surveys are automated high speed vehicular surface condition surveys which collect the following data: -

3-Dimensional Spatial Co-ordinates

Road Geometry

Survey Speed

Longitudinal Profile

Wheelpath Rutting

Texture Profile

Cracking (both in the wheel paths and for the whole carriageway)

COARSE VISUAL INSPECTION (CVI)

Visual survey carried out from a slow moving vehicle or on foot to collect basic defects in accordance with UKPMS requirements on the highway network. CVI surveys are carried out on all roads within the network excluding unsurfaced roads. The survey is also used to target carriageway schemes submitted for the 5 year programme.

GROUND PENETRATING RADAR SURVEYS (GPRS)

SCRIM

The Sideway-force Coefficient Routine Investigation Machine (SCRIM) is used to monitor the in service skid resistance of parts of the hierarchy. Refer to Skid Resistance policy.

GRIPTESTER

The griptester is used to measure the in service skid resistance of parts of the hierarchy.

Refer to Skid Resistance policy.

PRINCIPLES AND CONSIDERATIONS

Each element of the network could have different condition requirements, a minimum one to satisfy the need for safety, and higher ones, designed to meet local requirements for serviceability or sustainability

CONDITION OF CARRIAGEWAYS

The condition of the carriageway fabric can contribute to the core objectives as follows:

| | |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Safety</u> | Nature, extent and location of surface defects; Nature and extent of edge defects; Nature and extent of surface skidding resistance. |
| <u>Serviceability</u> | Nature and extent of surface defects; Ride quality of the surface. |
| <u>Sustainability</u> | Surface noise attenuation characteristics; Nature and extent of surface defects; Nature and extent of carriageway deflection. |

The definition of investigatory levels to meet requirements for serviceability will be a matter for local determination, in consultation with users. These may be codified within UKPMS. In this way, the use of UKPMS represents an effective means of delivering and implementing predetermined standards within finance available.

Maintenance of carriageways is undertaken under the three headings of:

- Resurfacing and Reconstruction (R & R)
- Surface treatments
- Basic maintenance

CONDITION OF FOOTWAYS

The condition of footways can contribute to the core objectives as follows:

| | |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | Nature, extent and location of surface defects; Nature and extent of kerb and edging defects. |
| Serviceability | Nature and extent of surface defects; Extent of encroachment and weed growth; The slipperiness of the surface; The quality of the surface; Integrity of the network. |
| Sustainability | Convenience and ease of use; Nature extent and location of surface defects; Extent of damage by over-running and parking. |

The definition of investigatory levels to meet requirements for serviceability will be a matter for local determination, preferably in consultation with users, and are based on the standards, details and definitions held within the Rules and Parameters (RP) of the UKPMS.

Data can be managed to produce priority listings and indicative generic footway treatments. These generic treatments are predefined within the PMS and are triggered by the level of defects recorded within a section.

Maintenance of footways and footpaths is carried out under the two headings of:

- R & R
- Basic maintenance

CONDITION OF CYCLE ROUTES

The condition of cycle routes can contribute to the core objectives as follows:

| | |
|----------------|--------------------------------------------------------------------------------------------------|
| Safety | Nature, extent and location of surface defects; Nature and extent of kerb and edging defects. |
| Serviceability | Nature and extent of surface defects; Extent of encroachment and weed growth; |

The slipperiness of the surface;

The quality of the surface;

Integrity of the network.

Sustainability

Convenience and integrity of the network;

Nature extent and location of surface defects;

Extent of damage by over-running and parking.

There is presently no statutory indicator specifically identifying the condition of cycle routes, but guidance on investigatory levels for cycle routes is provided in TRL 535 and the Footway and Cycle Route Design Construction and Maintenance Guide AG26.

The definition of investigatory levels to meet requirements for serviceability will be a matter for local determination, preferably in consultation with users, and are based on the standards, details and definitions held within the Rules and Parameters (RP) of the UKPMS.

Maintenance of cycleways and cycletracks is carried out under the two headings of:

- R & R
- Basic maintenance

CONDITION OF PUBLIC RIGHTS OF WAY

The condition of PROW can contribute to the core objectives and to the broader quality of life objectives associated with leisure and recreation. The requirements for PROW are determined in Middlesbrough's Rights of Way Improvement Plan (ROWIP).

CONDITION OF HIGHWAY DRAINAGE SYSTEMS

In general inspection of drainage has proved problematic for a variety of reasons, including inaccurate records of drainage locations, uncertainty of ownership and lack of resources. In order to mitigate some of these problems, the council adopts a risk based approach to identifying the condition of the drainage network.

The condition of highway drainage systems can contribute to the core objectives as follows:

| | |
|----------------|-----------------------------------------------------------------------------------------------|
| Safety | Accumulation of water on carriageways, footways and cycle routes. |
| Serviceability | Accumulation of water on carriageways, footways and cycle routes. |
| Sustainability | Polluted effluent from clearing of highway drainage should not be directed into watercourses; |

Authorities have a duty to prevent nuisance to adjoining landowners by flooding and should also work with others in the wider community to minimise the future risk of flooding;

Inadequate drainage of the highway structure will reduce effective life and increase maintenance liability.

There are no statutory or local indicators identifying the condition of highway drainage systems. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system. The impact of drainage system failure will be greater on high speed roads, or in areas susceptible to flooding, and specified condition standards should reflect this. In such circumstances, the condition of drainage systems should require them to be free of obstructions at all times, with an appropriate inspection and cleansing regime to deliver this.

Highway drainage elements fall into five main categories:

- gullies, grips and ditches, which may be obstructed by the growth of vegetation or damaged by traffic. In most cases the responsibility for maintenance of ditches will rest with the adjoining landowner;
- culverts under roads which may be affected by blockage, subsidence or structural damage;
- other piped drainage which may be affected by blockage or subsidence;
- sustainable drainage systems, which may require special maintenance attention for maximum effectiveness;
- surface boxes and ironwork for both drainage and non-drainage applications, which may be affected by subsidence or obstructed access.

Under these headings there are two distinct categories of drainage system maintenance and drainage cleaning / cleansing:

- Drainage System Maintenance and
- Drainage Cleaning/ Cleansing

CONDITION OF PRIVATELY OWNED INFRASTRUCTURE

Responsibility for defective infrastructure, e.g. ironwork, cabinets and poles, where this is part of the apparatus installed by a utility company lies with the company. Defects identified during inspection or from users are formally notified to the utility, with a follow up procedure to ensure that dangerous defects are remedied within a specified timescale.

CONDITION OF EMBANKMENTS AND CUTTINGS

Significant embankments, cuttings and retaining structures are being defined and an inspection regime identified based upon the geological characteristics and the potential risk of slippages or rockslides. Service inspection arrangements will be based on specialist geotechnical advice, but should usually be programmed wherever possible to follow periods of heavy rain, severe frost or prolonged dry weather. A risk based approach will be adopted to identify any issues critical to network performance, after which an enhanced service inspection regime should be adopted.

The condition of embankments and cuttings can contribute to the core objectives as follows:

| | |
|----------------|--------------------------------------------------------------------|
| Safety | Risk of loose material falling to injure users or damage facility. |
| Serviceability | Risk of damage or service interruption. |

| | |
|----------------|---------------------------------------------------------------------------------------------------------------|
| Sustainability | Damage or loss of habitat; Interruption or pollution of watercourse; Extent of damage and reduced life. |
|----------------|---------------------------------------------------------------------------------------------------------------|

There are no statutory or local indicators identifying the condition of embankments or cuttings. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system.

The impact of embankment or cutting failure will generally be high in all situations, but particularly so on important high speed links, or where dwellings could be affected. In such circumstances, the condition of embankments and cuttings will require a robust regime of inspection, and possibly continuous condition monitoring.

CONDITION OF LANDSCAPED AREAS AND TREES

TREES

Highway trees contribute to amenity and nature conservation and in urban areas can enhance the space between buildings, reinforcing the area's character and appeal. Most trees should ideally have an arboricultural inspection every five years but this period may be reduced on the advice of an arboriculturalist. Default intervals is for arboricultural inspections at least every five years.

LANDSCAPED AREAS

The condition of landscaped areas has major implications for all of the core objectives. The maintenance regime will therefore take particularly careful consideration to ensure that the necessary balance continues to be achieved.

The requirements for safety: vegetation either on verges, other parts of the soft estate or on private land, should not restrict visibility at junctions, access points and bends. Sight lines and minimum stopping distances should be kept clear and signs, lights, and marker posts should not be obstructed. It may also be necessary for vegetation to be cut back in order to enable inspections or surveys. Areas of highway grass that incorporate access to ducts, drainage systems etc. may need to be cut about once in three years in order to maintain accessibility to these systems.

VERGES

This policy helps preserve biodiversity in rural verges, by providing different habitats. Areas of verge beyond the "one metre swathe" are generally left to grow provided that safety or access is not compromised. They are then cut back every third year to prevent woody growth from becoming established, which would make the verge inaccessible, and increase the risk of roadside fires. This work must be carried out in the autumn to allow wild flowers to seed before the cutting takes place.

In urban areas grass cutting practice needs to involve a different balance of highway safety, serviceability and sustainability. Usually, the first urban cut of the season will commence in March, with another 12 cuts taking place by the end of October. Mowing is carried out over the full verge width.

Urban verges are cut more frequently than rural verges. The aim is to keep grass shorter than 50mm, in order to avoid the more costly process of collecting cuttings. Adjoining footways must however be swept.

However on Strategic roads the landscaping may be included in a special regime to enhance the approaches into town centres.

Other verge maintenance covers routine operations that may be required to keep the highway verge, central reservations and cutting and embankment slopes in a safe and tidy condition.

The objective is to preserve the width of the carriageway, footway or cycleway, and the policy is to undertake the minimum amount of works necessary commensurate with the objective.

Needs are based on historical data, complaints and the observations of the Area Care Manager, and works will only be carried out after a site inspection.

The main activity under this heading is siding (the edge maintenance of carriageways, footways and cycleways) which may be necessary to prevent encroachment of grass and vegetation resulting in the reduction of effective width.

As a guide, siding can be considered under the following circumstances:

rural roads – only minimum of siding to be carried out on carriageways e.g. prior to surface dressing or renewal of edge markings

urban roads – siding of carriageway not normally required

footways – siding carried out to maintain width of footway

cycleways – siding carried out to maintain width of cycleway.

The condition of landscaped areas and trees can contribute to the core objectives as follows:

| | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | Obstruction to user visibility and legibility of traffic signs; Falling branches from trees; Leaf fall from trees causing slippery surface; Root growth affecting surface regularity. |
| Serviceability | Potential for service interruption; Quality of user experience. |

| | |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainability | Landscape conservation; Mitigation of climate change effects; Support for habitat and biodiversity; Problems of root growth for surface, structure and highway drainage. |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

There are no statutory indicators identifying the condition of landscaped areas and trees. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system. The probability of landscaping and tree failure will generally be low but is likely to increase as a result of climate change.

CONDITION OF FENCES AND BARRIERS

Steel and wire rope safety fences and pedestrian guard rails should be inspected at regular intervals determined through risk assessment in respect of mounting height, surface protective treatment and structural condition, to ensure that they remain fit for purpose. Where appropriate accredited persons will undertake these inspections.

The condition of fences and barriers can contribute to the core objectives as follows:

| | |
|----------------|--------------------------------------------------------------------------|
| Safety | Integrity and location of safety fencing for vehicles and pedestrians. |
| Serviceability | Risk of livestock disrupting traffic. Control of pedestrian movements |
| Sustainability | Appearance and condition of fencing. |

There are no statutory or local indicators identifying the condition of fences and barriers. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the fence or barrier. This assessment must be carried out by a properly trained inspector.

All high risk situations require a robust inspection regime with a commensurate high standard of condition. Safety fences will be maintained in a sufficiently sound structural condition to serve their function and not be dangerous to road users or pedestrians.

All fences and barriers, whether for safety purposes or general use, are potentially important features and their overall appearance is an environmental consideration. They should be cleaned and painted when necessary and where safety fencing is provided with chevron markings, these should be dealt with in accordance with the cleaning regime for traffic signs.



CONDITION OF TRAFFIC SIGNS AND BOLLARDS

The primary objective is to keep all traffic signs legible, visible and effective as far as possible at all times in relation to the road use and traffic speeds. The condition of non-illuminated road signs should be inspected in daylight, and also at night for degradation of colour, retro-reflectivity, deteriorating fittings, legibility distance, and average surface luminance, after cleaning. The frequency is to be determined by risk assessment but will also be a feature of Safety Inspections.

Guidance on aspects to be inspected and on defect criteria is given in TD 24/97.

For pedestrian crossings, scouting for illumination should be undertaken in conjunction with street lighting night-time inspections, unless otherwise indicated by risk assessment. Optical cleaning and lamp changing is undertaken bi-annually.

The condition of signs and bollards can contribute to the core objectives as follows:

| | |
|----------------|--------------------------------------------------------------------------------|
| Safety | Identification of risk to users; Separation of potential traffic conflicts. |
| Serviceability | Contributes to ease of use; Contributes to network integrity. |
| Sustainability | Support of sustainable transport mode; Contribution to local economy; |

There are no statutory or local indicators identifying the condition of traffic signs and bollards. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system.

The condition of traffic signals, pedestrian and cycle crossings can contribute to the core objectives as follows:

| | |
|----------------|-------------------------------------------------------------------------------------------------|
| Safety | Separation of potential traffic conflicts; Key safety contributor for vulnerable road users. |
| Serviceability | Contributes to ease of use and efficiency; Contributes to network integrity. |
| Sustainability | Support of sustainable transport modes; Support for local economy. |



There are no statutory indicators identifying the condition of traffic signals, pedestrian and cycle crossings. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system

The primary objective is to keep traffic signals, pedestrian and cycle crossings legible, visible and effective, as far as possible at all times, in relation to the road use and traffic speeds. The following standards are applicable for signal control facilities:

- defects in operation should be treated as Category 1.
- for urgent faults emergency action should be taken within specified times; damage repairs within 24 hours; less urgent faults to be repaired within one week, or in agreement with Transport and Infrastructure.
- warning signs should be erected if signals are likely to be out of action in excess of one hour, other than power supply failures.
- at certain critical junctions, temporary traffic management measures should be considered if signals are likely to be out of action in excess of one day
- failed lamps should be replaced within 24 hours.
- signal lenses, regulatory signs and VMS signs should be cleaned once per year
- flashing zebra crossing beacons should be replaced within 24 hours.
- school crossing patrol flashing lights should be repaired within 24 hours during term time.

CONDITION OF ROAD MARKINGS AND STUDS

Inspections in respect of wear, spread, colour, skid resistance and retro reflectivity shall be undertaken for paint markings and for thermoplastic markings, at frequencies determined by risk assessment, Deficiencies in mandatory markings will be considered as a highway safety issue.

The condition of road markings and studs can contribute to the core objectives as follows:

| | |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | Route delineation in darkness and poor weather; Potential for damage and injury if loose. |
| Serviceability | Ease of use in darkness and bad weather; |
| Sustainability | Support of sustainable transport modes; Edge delineation to reduce edge damage; Movement of wheel tracking to reduce localised damage. |

There are no statutory or local indicators identifying the condition road markings and studs. Local standards are to be developed based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system. Guidance on the inspection of Road Markings and Studs is provided in CSS Guidance Note LATD 26/06.

The impact of failure will be greater for mandatory markings than others. Many road markings are used to give effect to regulatory provisions and it is important that their legal status is not affected by undue wear or damage. A high proportion of road markings are essential for road safety or fundamental to the implementation of integrated transport policy, for example traffic calming schemes, bus priority measures and the delineation of cycle routes. If such markings are not kept in good order, the measures may lose effectiveness and the success of transport integration compromised.

White line markings on Strategic and Main Distributor roads and sites of high safety risk or with a relevant accident record, should be renewed when they are no longer adequate for their intended purpose. This is generally accepted to be when more than approximately 30% of their area becomes worn away. Standards for other routes should be based on assessment of the relative risks.

REGULATORY FUNCTIONS

Regulatory functions can contribute to the core objectives as follows:-

| | |
|----------------|------------------------------------------------------------------------------------|
| Safety | minimising and signing of obstruction |
| Serviceability | minimising congestion and disruption |
| Sustainability | inconvenience to disabled people heavy vehicle parking causes structural damage |

Standards in respect of regulatory functions are governed largely by statute and can be the responsibility of other organisations or administered by other sections or departments within the authority. In such cases effective co-ordination and liaison is essential

Highways Act 1980

As the Highway Authority the Council has a duty, under the Highways Act 1980, to maintain the highway network to safe and serviceable standards ensuring that the public can use and enjoy the highway without obstruction.

New Roads and Street Works Act 1991

The New Roads and Street Works Act 1991 (NRSWA) is the legislation that enables utility companies to place and maintain apparatus in or on the public highway. Objectives of the legislation are that Highway Authorities and Utilities should cooperate with each other to ensure that disruption to all road users is minimised as far as possible, the integrity of the highway structure is maintained and that the safety of those using the highway is not compromised.

Traffic Management Act 2004

The purpose of the Act is to 'keep traffic moving' by minimising congestion and disruption on the highway network. In this respect there is a statutory duty, as local highway authority, to 'Manage the road network with a view to achieving, as far as may be reasonably practicable having regard to other obligations, policies and objectives, the following objective: -

- securing the expeditions movement of traffic on the authority's roads network.
- facilitating the expeditions movement of traffic on roads networks for which another authority is the traffic authority.

The Council has appointed the Highways Services Manager as Traffic Manager under the regulations and as the first part of the enactment phase.

It is intended to enhance and extend current systems already in place to meet the forthcoming challenges of the new legislation in further phases.

Further regulatory and enforcement duties are placed upon the Council by the following Acts:-

- Railways and Transport Safety Act, 2003
- The Local Government Act 2003
- Road Traffic Regulation Act 1984
- Traffic Signs and General Directions 1994
- Floods and Water Management Act 2010
- Road Traffic Act 1988
- Road Traffic Reduction Act 1997
- Transport Act 2000
- Wildlife and Countryside Act 1981
- Environmental Protection Act 1990
- Rights of Way Act 1990
- Countryside and Rights of Way Act 2000
- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1992
- Construction (Design & Management) Regulations 1994
- Disability Discrimination Act 1995
- Criminal Justice and Public Order Act 1994
- Human Rights Act 1998
- Local Government Act 2000

INSPECTION, ASSESSMENT AND RECORDING – HIGHWAYS

INTRODUCTION

INSPECTION CATEGORIES

The establishment of an effective inspection regime incorporating inspection frequencies, items to be recorded and nature of response supported by an assessment procedure based on risk probability is the key element in addressing the fundamental objectives of the highway maintenance strategy:

- network safety
- network serviceability
- network sustainability.

The regime will be applied systematically and consistently, and a standardised comprehensive recording system will be adopted so that the risk assessment procedure will be clear and transparent. Inspections and surveys will be undertaken under the following categories:

Safety inspections

Regular comprehensive inspections of all highway elements in addition to routine scouting of street lighting and illuminated signs and less frequent specialised inspections of Bridges, Structures and inspections for electrical safety – network safety

Service inspections

Detailed inspections appropriate to the requirements of particular highway elements for network serviceability together with inspections for regulatory purposes for network availability and reliability and less frequent inspections for network integrity – network sustainability

Condition surveys

Surveys to identify deficiencies in the highway fabric, which are likely to affect Network Value – network serviceability and sustainability.

The recording system for inspections and surveys will facilitate analysis such that a holistic view may be taken of maintenance condition and trends related to network characteristics and use.

The system will also provide for recording service requests and complaints or other information from users or other third parties and will include what action or non-action is to be taken. It is proposed that the inspection, assessment and recording system will be monitored for the first twelve months and then reviewed to take into account any lessons learnt.

SAFETY INSPECTIONS

Safety inspections are designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. These defects are subdivided into two categories:

Category 1 – Category 1 defects are those defects which, following a risk assessment, are deemed to represent a danger or serious inconvenience to the public or which could result in significant damage to property.

Category 2 - All defects identified in safety inspections which are not categorised as Category 1 are automatically classified as Category 2. The commentary in 5.6 is also clearly applicable to defects classed as Category 2.

Safety inspections may identify Serviceability issues which are forwarded for further investigation and prioritisation. The identification of Serviceability issues raised by Highway Inspectors carrying out safety inspections does not suggest that intervention of any kind is required or necessary within any given timescale.

Any necessary intervention will be determined by other criteria outside of the safety inspection regime and Highway Inspectors will ensure that all locations are kept safe at all times.

A safety inspection regime comprises the following elements:

- frequency of inspection/ inspections and road hierarchy check at the start of each inspection
- items for inspection
- degree of deficiency
- nature of response.

Safety inspections are to be undertaken at the frequencies detailed hereunder to reflect the relative importance of the feature and the category of road, and shall normally be carried out by trained personnel on foot or from a slow moving vehicle.

The method for carrying out the inspections will be the subject of a risk assessment with the final decision dependent upon the outcome of the assessment. Teams of two operatives will be used where a risk assessment has shown this to be necessary.

Additional safety inspections of specific defects may be required in response to reports or complaints from emergency services, other organisations or the public following major incidents or extreme weather conditions.

All safety inspection records shall include details of the weather conditions, surface conditions and any unusual features of the method of inspection. The inspection will include 'nil' returns where appropriate and shall contain a review of the hierarchy at the time of the inspection.

Inspection procedures are recorded in the Middlesbrough Council's Highway Safety Inspection Manual 2018, Part 3.

RESPONSE TIMES

The degree of observed deficiency and the nature of response are discussed below under risk assessments and category 1 and 2 defects. However, the categories of response time relating to the specified categories of defect and level of hierarchy are prioritised as follows:

- Priority 1(A) - those that require a 2 hour response because of their immediate hazard
- Priority 1(B) those that require a 24 hour response because they represent an imminent hazard.
- Priority 2H make safe or repair within 5 working days
- Priority 2M repair within 28 days
- Priority 2L repair during next available programme, schedule a more detailed inspection or review condition at next inspection.

All other requirements arising out of the Safety Inspections are considered to be Service or Sustainability issues with no safety implications.

DEFECT RISK ASSESSMENT

Frequencies of Inspection

The Code of Practice states that authorities should adopt a risk-based approach and a risk management regime for all aspects of highway maintenance. As a starting point as shown in Table 5. Taking account of this regime, local requirements and parameters for Middlesbrough, a modified frequency regime has been developed, shown in column 5.

Particular attention has been paid to linking carriageway and footway inspections to similar frequencies wherever possible in order that inspections of carriageways and footways can be undertaken together thereby creating economies and improving efficiency.

Frequencies for safety inspections are based on the network hierarchy categories defined in 3.4 and are as follows:

Table 5 – Frequencies for safety inspections

| Feature | Description | Category | C.O.P. Frequency | M.C. Frequency |
|-----------|-------------------------|----------|------------------|----------------|
| Roads | Strategic Route | 2 | 1 month | 1 month |
| | Main Distributor | 3 (a) | 1 month | 1 month |
| | Secondary Distributor | 3 (b) | 1 month | 1 month |
| | Link Road | 4 (a) | 3 months | 3 months |
| | Local Access | 4 (b) | 12 months | 12 months |
| Footways | Prestige Area | 1(a) | 1 month | 1 month |
| | Primary Walking Route | 1 | 1 month | 1 month |
| | Secondary Walking Route | 2 | 3 months | 3 months |
| | Link Footway | 3 | 6 months | 6 months |
| | Local Access Footway | 4 | 12 months | 12 months |
| Cycleways | Part of Carriageway | A | As for roads | As for roads |
| | Remote from Carriageway | B | 6 months | 6 months |
| | Cycle trails | C | 12 months | 12 months |

Whilst we endeavour to reach 95% of inspections within the allocated period this is not always possible, due to unforeseen circumstances

The frequencies of inspection tabulated above are consistent within the various categories of the base hierarchy as described in 3.4 above. However, taking into account risk assessments, it is clear that specific local criteria apply in certain circumstances which, because of their very nature and importance, should result in an increase in the inspection frequency in those locations.

The factors which we have taken into account in determining whether special criteria apply include:

- Category within the network hierarchy
- Traffic use, characteristics and trends
- Incident and inspection history
- Characteristics of adjoining network elements
- Local knowledge / expertise
- special environmental considerations
- Winter service route and resilient network
- vulnerable users or with special needs – old people's homes etc
- accident statistics following an increase in notified third party insurance claims

All alternatives to the tabulated safety inspection frequencies must be documented within the appropriate systems; this includes updating the Symology Insight data base for the specific section of highway requiring the change of inspection frequency. Once Symology Insight is updated with the new frequency, a new inspection due date will be automatically generated for the highway safety inspection officer, when the inspection is due. However, in addition to the above, the relevant highway safety inspection officer is notified via email that the change has been implemented. The highway team claims handlers are also notified of the date when such changes to specific frequencies are implemented, to ensure any ongoing or future claims are dealt with accurately.

REVIEW OF THIRD PARTY INSURANCE CLAIMS

The results and outcomes of third party claims, and post court briefings will be used as part of the ongoing review process to determine if an increase in frequency of inspection is required at a particular locality or individual section of highway, in line with good practice recommendations. The outcome of the reviews will be documented and acted upon as necessary.

The Council has a process in place to manage thirds party claims. Refer to the Third Party Claims – Environment – Highways – Area Care Process Guide document for further information.

ITEMS FOR INSPECTION

The list of highway inventory to be observed in a Safety Inspection for possible defects is as follows:

Table 6 Items for Inspection

| Item | Defect |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Carriageway and Cycleway | pot hole/spalling, ridge, hump, depression/sunken cover or gap/crack |
| Footway | trip/pot hole/sunken cover, rocking slab/block or open joint |
| Kerb | misaligned, loose / rocking or missing |
| Verge | sunken area adjacent to and running parallel with the carriageway / footway edge or obstruction |
| Iron Work | Gaps within framework, level differences within framework, rocking / cracked / broken / worn / polished or missing covers |
| Flooding – where conditions allow | standing water, water discharging onto or flowing across the running surface, significant flooding of property |
| Drainage | substantial standing water adjacent to edge of c/way, blocked gully/kerb outlet or collapsed/ blocked/settled items or systems |
| Road Markings | Faded or worn markings |
| Road Studs / Eyes | Missing, void left in c'way, displaced items on c'way or defective studs / eyes. |
| Signs / Bollards / Lights / Traffic signals | damaged/misaligned items causing a hazard, missing items causing a hazard, lights/signals not operating correctly/malfunctioning, signals pointing the wrong way, signal lamp failure, exposed wiring, missing doors to lamp columns and electrical enclosures, items missing or items obscured/dirty/faded |
| Safety Fencing / Barriers | damaged/misaligned items projecting into c/way or f/way or structurally unstable items likely to cause danger |
| Hedges and trees | overhanging trees and vegetation or unstable trees and branches. Damage associated to tree roots. |
| Highway General | oil/debris/mud/stones/gravel likely to cause a hazard, illegal signs, obstructions on the highway, obstructed sight lines, ramps in c/way to aid vehicular movement, |

| | |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | f/way damage caused by vehicular access where no vehicle crossing, scaffolding or skips likely to cause a hazard, unprotected building materials on the highway or abandoned vehicles likely to cause a hazard |
| Anything Dangerous | anything considered dangerous on the highway which could affect either highway users or the general public |

SAFETY INSPECTION OF HIGHWAY TREES

Middlesbrough Council's Tree Policy sets out the criteria for the inspection regime, which the Council will adopt in respect of those trees for which it has a legal responsibility. The policy also explains how the Council will deal with complaints in respect of those trees, details the legislation on which the policy criteria is based and sets out how disputes in terms of complaint resolution will be dealt with.

SKIDDING RESISTANCE SURVEYS

Middlesbrough Council's Skidding Resistance Procedure details the procedures undertaken by the Council to adhere to the Council's Skid Resistance Policy

This document is a supplementary document to the Skidding Resistance Policy and has been produced to provide a step by step approach to identifying skid deficient sites and sets out a process for deciding on their subsequent treatment, and how this will be prioritised, taking into account budget and programme considerations.

SERVICE INSPECTIONS – GENERAL

The particulars of the items to be inspected are as follows:

Carriageways

- central island
- central reservation
- carriageway
- hard shoulder
- crossover (central reserve)
- lay-by
- cycleways (forming part of carriageway)

Footways and cycleways

- footway
- paved footpath
- cycleways
- kerbs
- edgings
- channels
- verge

Ironwork

- manholes
- catchpit
- gullies
- kerb outlet
- utilities covers and frames

Drainage

- culvert
- highway ditch
- filter drain
- grip
- gully
- piped grip / kerb offlet

Road Markings

- stop lines
- give way lines
- other road markings

Road studs

- non-reflective road studs (zebras and pelicans)
- depressible reflective road studs (Halifax cat's eyes or similar)
- non-depressible reflective road studs

Signs / bollards / lights

- signs
- bollards
- illuminated signs
- pedestrian crossing lights
- lighting columns
- wall mounted street lighting
- all other lighting units

Traffic signals

- traffic signals
- traffic signal installation
- traffic signal furniture

Safety fencing / barriers

- fences and barriers
- pedestrian guardrails
- safety fencing
- boundary walls and fences

Street furniture

- all items of furniture not covered elsewhere

Hedges and trees

- hedges
- trees and shrubs
- other vegetation

Scavenging

- the full extent of the highway.

SERVICE INSPECTIONS FOR CARRIAGEWAYS, FOOTWAYS AND CYCLE ROUTES

For carriageways, footways, cycle routes, etc, the safety inspection will identify serviceability issues which will be referred for further consideration. This ensures that the network is fully observed in terms of serviceability in line with the current defined hierarchy. For frequencies see clauses 3.2 and 5.2. These inspections when generated from other sources also support safety inspections in that they provide a further opportunity for identifying safety defects.

Service inspections also include inspections for regulatory purposes including NRSWA which relate to network availability and reliability as well as other inspections for network integrity.

Potentially dangerous defects identified during service inspections are to be assessed as being either Category 1 or Category 2 and rectified in accordance with the requirements of 5.6 and 5.7 below. It is likely, however, that the majority of defects identified by service inspections will be of the Category 2 type and repairs effected through either programmed repairs or absorbed into Resurfacing and Reconstruction (R & R) schemes.

The method for carrying out the inspections will need to be the subject of a risk assessment with the final decision dependent upon the outcome of the assessment. Teams of two operatives will be used where the risk assessment has shown this to be necessary, and where appropriate the inspections are to be carried out under traffic management.

Service inspections are focused on ensuring the network meets the needs of the users and comprises of more detailed specific inspections of the particular highway elements.

The various elements undertaken under the service inspection regimes are:

- Carriageways, Footways and Cycle Routes.

The service inspection for this element can be in conjunction with safety inspections and can be incorporated as part of other visual inspections.

SERVICE INSPECTION OF HIGHWAY DRAINAGE SYSTEMS

Ironworks – This may necessitate repairs to, and the occasional replacement of, all types of gratings, covers, frames and boxes that are the direct responsibility of the highway authority. It may be necessary on occasions to repair or replace items that are the responsibility of other parties if there is a hazard to road users or pedestrians, to make such defects safe and to recover the costs incurred from the other parties.

The majority of covers, gratings and frames are situated in carriageways and footways but those in verges, particularly those verges that are regularly traversed by pedestrians or horses, should not be ignored and the appropriate risk assessed. It may often be difficult to decide whether a cracked or broken item is in real danger of collapse. If in doubt, it should be replaced, irrespective of its position.

Procedures have been agreed through HAUC and standard documentation exists to deal with reports or findings of utility apparatus which is considered to be dangerous. The procedure entails the Highway Authority notifying the details and location of the defective apparatus, a means for the utility to acknowledge receipt (or refute responsibility if not their apparatus) within an agreed timescale, and the means for the utility to confirm actions taken to make safe the apparatus to the satisfaction of the Highway Authority.

Failure of this procedure in any way by the utility company will result in the Highway Authority acting in default and making safe the location on a rechargeable basis.

Defects in covers and gratings may pose particular danger to pedal and motor cycle users. It should be remembered that their occupancy on a carriageway will not always be limited to the nearside edge.

Highway Drainage – Standing water reduces safety if allowed to accumulate on trafficked surfaces of the highway. The effects of this are readily observable and the correct action should be taken, especially on high speed roads. In winter months a salt bund may be considered to be appropriate where watershed onto a highway cannot be prevented. This can be used as an interim intervention measure to create a saline solution to reduce the risk of ice forming on the carriageway.

SERVICE INSPECTION OF EMBANKMENTS AND CUTTINGS

The impact of embankment or cutting failure will generally be high in all situations, but particularly so on important high speed links, or where dwellings could be affected. In such circumstances, the condition of embankments and cuttings will require a robust regime of inspection, and possibly continuous condition monitoring.

Maintenance of embankments and cuttings covers the repair of earth slips and the provision of any necessary associated drainage and new retaining systems. Anchors, walls, soil stabilisation and similar works will be included.

The objective is to maintain cuttings and embankments in a safe condition and to provide or maintain associated drainage systems to ensure stability.

In higher risk locations, or where ground conditions are difficult, specialist geotechnical advice will be obtained.

SERVICE INSPECTION OF LANDSCAPED AREAS AND TREES

Hedges and Trees – This applies to hedges and trees that are the responsibility of the highway authority together with hedges and trees that are the responsibility of others but which affect users of the highway or compromise the integrity of the highway structure.

Inspections can reveal signs of potential danger, such as thinning foliage and unseasonable loss of leaves, dying back of a substantial amount of branches, signs of fungi and bacterial disease. Normal healthy growth of hedges and trees can also give rise to hazardous conditions to road users by causing obstruction to visibility and movement.

All Highway trees will be inspected regularly at suitable intervals to assess their health and condition (see Circular ROADS NO. 52/75). Inspections will be undertaken by suitably qualified persons, e.g. an arborist, and will include a hazard/risk assessment of trees in their location.

Inspections will identify essential tree maintenance works required to ensure trees do not cause a nuisance or danger to the highway.

All Highway Inspectors should report and /or seek expert advice in relation to any potential tree related defects or hazards identified during routine inspections.

The Highway Authority will maintain adequate records relating to its tree stock.

All arboricultural operations will be undertaken competently by suitably qualified operatives in accord with the relevant Health & Safety legislation and industry best practices.

Currently resources prevent inspections of every tree adjoining the highway within the Borough. Inspectors will receive training to assist them in assessing the condition of trees to identify trees posing a hazard as part of the safety inspection regime.

SERVICE INSPECTION OF FENCES AND BARRIERS

SERVICE INSPECTION OF TRAFFIC SIGNS AND BOLLARDS

Signs / Bollards / Lights – Many signs are required to be lit and their legal status is affected if the illumination has faded. Other signs may be left in a dangerous condition after road traffic accidents which may affect other traffic or road users and require attention. Exposed electrical wiring may also pose a problem and must be protected as soon as possible.

Requirements for street lighting relate to safety defects resulting from programmed inspections together with additional inspections which may be required in response to the Emergency Services, the public or resulting from extreme weather conditions.

Particular attention should be paid to damaged or defective lighting equipment since this may constitute an immediate or imminent hazard, especially where vehicular impact has occurred, or where the electrical condition is at fault or exposed. Multiple outages and

outages at sensitive locations caused by any event should be considered for high priority action.

Lights and signs must also be checked for obscuration by overgrown trees, hedges etc. Regulatory signs obscured in this way represent a category 1 defect.

Traffic Signals – Modern signal equipment is expected to operate correctly without regular routine adjustments. The requirement of this section is in the event of failure which might otherwise render installations ineffective to bring back the installation on stream in line with the current standards.

SERVICE INSPECTION OF ROAD MARKINGS AND STUDS

Road Markings - To be effective, road markings should not be reduced or obscured by natural erosion and abrasion by chemical spill or by binder fattening particularly following surface dressing.

SERVICE INSPECTIONS FOR NETWORK INTEGRITY

Although each element of each component within each category of network hierarchy might be well maintained within the framework of an overall asset management strategy, the network might still not deliver best value, as the asset might not be performing to optimum efficiency. Operational efficiency is primarily a network management consideration but aspects of it are closely related to the maintenance function.

Such network deficiencies are unlikely to be noted as part of safety, or condition inspections, but are nevertheless relevant to network efficiency. It is therefore suggested that authorities undertake service inspections of network integrity at intervals determined by risk assessment, or by default three to five years, and that the outcome of such surveys be taken account of in planning of network maintenance and improvements. Consideration must also be given to the Traffic Network Management Plan when planning network maintenance and improvements.

Scavenging – This applies to the removal of any objects found within the highway boundary that causes an obstruction or hazard to highway users. Where the litter / debris does not constitute a hazard to highway users it should be treated by the Local Authority under the Environmental Protection Act 1990. Spillages likely to cause a hazard and clearances following road traffic accidents under existing service level agreements shall be dealt with by the Emergency Services with the inspector giving assistance where appropriate.

CONDITION SURVEYS – GENERAL

The most significant financial investments in highway maintenance is in repairing, reconditioning and reconstructing carriageways, and to a lesser degree, footways and cycle routes. Condition surveys identify the current condition of the network and from this condition, both long-term and short-term maintenance funding decisions can be made. Repeatable condition surveys allow trend analysis to be used to confirm the original decisions or allow for changes as a result of the changing network condition, and inform lifecycle planning.

INSPECTIONS FOR REGULATORY PURPOSES

A significant element of highway maintenance comprises regulation and enforcement of activities on or affecting the highway. These includes responsibilities under the New Roads and Street Works Act 1991 (NRSWA).

Other regulatory activities include:

- ensuring 'expeditious movement of traffic';
- management of the Highway Register or equivalent;
- management of the Definitive Map for PROW;
- dealing with encroachment on the highway;
- dealing with obstruction on highways or PROW;
- dealing with illegal and unauthorised signs;
- issuing permits or permissions for utilities, skips, hoardings, temporary closures and other authorised occupation of the highway;
- construction of vehicle crossings;
- dealing with illegal parking on verges and footways; and
- adoption of new highways.

These tasks are carried out by the Transport and Infrastructure department.

PROGRAMMING AND PRIORITIES – HIGHWAYS

BALANCING PRIORITIES BY TYPE

The broad priorities for the respective types of highway maintenance are determined by the outcome of safety and service inspections and condition surveys, assessed against local risks and policies specified by the authority. In general it is important to establish priorities and programmes for each of the following:

- emergency / reactive;
- planned maintenance
- programmed maintenance
- routine maintenance
- regulatory functions
- Winter Service

PRIORITIES FOR EMERGENCY / REACTIVE MAINTENANCE

The degree of deficiency and the level of risk to users of the network also define the category into which the defect is placed which in turn indicates the level of response required.

- Category 1 Defect
 - Those defects or deficiencies that require prompt attention because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration.
 - Priority 1(A) - those that require a 2 hour response because of their immediate hazard
 - Priority 1(B) - those that require a 24 hour response because they represent an imminent hazard.

- Category 2 Defect
 - All other defects
 - Priority 2H - make safe or repair within 5 working days
 - Priority 2M - repair within 28 days
 - Priority 2L - repair during next available programme, schedule a more detailed inspection or review condition at next inspection.

It is essential that all defects, observed during a safety inspection, which require urgent attention (Category 1) because of the high risk to users of the network or the wider community, are recorded.

In addition other defects (Category 2) that do not require urgent attention but may have a detrimental effect on the network and thus on highway safety and serviceability, should be recorded for future works programming.

PRIORITIES FOR PLANNED MAINTENANCE

Planned maintenance involves attending to the rectification of defects and other less urgent matters that do not require immediate action and where further planning may lead to the opportunity for permanent repairs.

PRIORITIES FOR PROGRAMMED MAINTENANCE

Surveys are carried out on all carriageways, footways and footpaths over a 4 year cycle. These are then ranked and placed into the 4 year plan.

PRIORITIES FOR ROUTINE MAINTENANCE

Routine maintenance is based on the hierarchy, as Table 1 but taking into account any known hotspots e;g flooding areas.

REGULATORY FUNCTIONS

The Council carry out regulatory functions as indicated below, this list is not exhaustive:

- maintenance of Highway Register and Definitive Map;
- co-ordination of road and street works
- charging schemes and permits for highway occupation
- other regulatory functions – encroachment, illegal signs, parking.

WINTER SERVICE



INTRODUCTION

A local authority's winter service plan facilitates safe and free movement around key parts of the highway network in winter conditions. It deals with regular, frequent and reasonably predictable occurrences like low temperatures, ice and snow, as well as with exceptional events. It is a key aspect of highway maintenance and is specifically designed to: enable economic and community activity to function as normally as possible through the winter to keep important parts of the highway network free from the dangers of ice and snow, so far as reasonably practicable.

WINTER SERVICE POLICY

It is the Council's intention to meet the requirements of the Highways Act 1980, Section 41A, and Section 111 of the Railways and Transport Act 2003. This places the responsibility of clearance of snow on the Highway Authority. It is the Council's policy to ensure that main thoroughfares are kept clear in order that free passage of transport is maintained and also to ensure that there is as little disruption as possible with the movement of people from home to work. This must be measured against the resources available and to ensure a reasonable response. The road hierarchy has been categorised in terms of Priority 1, Priority 2 and Other Routes

CO-ORDINATION AND COLLABORATION

The duty officer will liaise with the press officer who will be responsible for all communications with the media.

Regular e-mail contact between duty officers across the Tees Valley is recommended to share information regarding actions in our respective Councils.

During escalated conditions, this frequency increases informally and close liaison is maintained. The council has an inventory of plant and resources available to supplement normal winter maintenance activities available, and will call upon other agencies (Fire, HA etc) as appropriate to further assist where possible.

WINTER SERVICE PLANNING

All roads within the Borough have been classified by priority to form a hierarchy of 3 distinct groups:

- Priority 1 routes will be pre-salted at any time in response to forecasts.
- Priority 2 routes will only be salted during the normal working day when icy conditions persist.
- Other routes will only be salted in the most exceptional circumstances and this generally will occur in the aftermath of heavy prolonged snow when Priority 1 & 2 routes are clear.

WINTER SERVICE DELIVERY

The Council's response to frost and snow warnings is pre-planned as outlined within the winter maintenance plan. On receipt of an adverse weather forecast the operational plans will be activated and put into operation by the duty officers concerned.

For operational planning purposes two Winter Maintenance periods are defined as follows:

- High - The months of November, December, January, February and March when severe conditions might reasonably be expected.
- Low - The months of October and April when severe conditions may occur.

REVIEW

The Council is required to monitor its performance on Winter Maintenance as part of its overall Highway Maintenance function.

3.0 STRUCTURES



INTRODUCTION

Part C of Well-managed Highway Infrastructures has been drawn up specifically for highway structures associated with the adopted road network which meet the dimensional criteria defined below. In addition, the general principles apply to structures associated with all other highways that are used by the public, e.g. segregated footpaths and cycle routes, and the Public Right of Way network. The types of highway structure covered by the Code are those within the boundaries of the highway or which otherwise materially affect it and include:

- bridges including footbridges, cycle route bridges, bridleway bridges, accommodation bridges, occupation bridges, subways, underpasses and culverts;
- retaining walls;
- sign/signal gantries;
- cantilever road signs; and
- tunnels.

The following definitions are aligned with the Code of Practice on the Highways Network Asset definitions. Authorities may include similar structures outside the dimensions listed for the purposes of management of highway structures at an operational level.

- bridge – a structure with a span of 1.5m or more spanning and providing passage over an obstacle, e.g. watercourse, railway, road, valley. This category also covers subways, footbridges and underpasses;
- cantilever road sign – a structure with a single support that projects over the highway in order to carry a traffic sign;
- cellar or vault – an underground room or chamber with a maximum plan dimension of 1.5m or more;
- culvert – a drainage structure with a span of 1.5m or more passing beneath a highway embankment that has a proportion of the embankment, rather than a bridge deck, between its uppermost point and the road running courses. Culverts are normally rectangular or circular in cross section;
- retaining wall – a wall associated with the highway where the dominant function is to act as a retaining structure, and with a minimum retained height of 1.35m;
- road tunnel – a tunnel with an enclosed length of 150 metres or more through which a road passes; and
- sign/signal gantry – a structure spanning the highway, the primary function of which is to support traffic signs and signalling equipment.

Bridge Managers should be aware that BD 2 (Technical Approval of Highway Structures) applies to all highway structures with a clear span or internal diameter greater than 0.9m and to retaining walls of height greater than 1.5m.

THE ROLE OF HIGHWAY STRUCTURES

Bridges and other highway structures are fundamental to the transport infrastructure because they form essential links in the highway network. It is not therefore in the public interest to allow highway structures to deteriorate in a way that compromises the functionality of the highway network, be it through restrictions or closures caused by unsafe structures or the disruption of traffic through poor planning of maintenance work.

LEGAL FRAMEWORK

ENVIRONMENTAL REQUIREMENTS

Environmental standards

Maintenance work on highway structures, including inspection, should be undertaken giving due consideration to the environment. There are significant areas of legislation that must be complied with.

The EC directive 97/11/EC [46] requires an environmental assessment to be carried out prior to development consent being granted for certain types of major projects. Annexes to these directives determine whether the assessment is mandatory (Annex I) or discretionary (Annex II). Section 105A of the Highways Act 1980 [11] was amended in 1988 to include these requirements for highway schemes.

With the exception of large bridge replacement schemes, most maintenance for highway structures is likely to be too small to fall within the Annex I criteria. However, the Directive applies to all work that encroaches within 100m of an environmentally sensitive site as defined in the directives.

An environmental scoping report may not be necessary for minor maintenance schemes and inspections, but it should be prepared in all other maintenance schemes and inspections. The report should be submitted to the planning department of the local authority for a screening opinion on any further action needed.

Where appropriate, an Environmental Management Plan for each scheme and inspection which significantly affects the area round the structure. The Plan should identify the likely environmental impacts. Work specifications should be developed to address these issues and minimise the impacts.

Particular consideration needs to be given to protected species of flora and fauna, bats, otters, water voles, great crested newts, etc. The bridge manager may be familiar with these species but expert advice is required to identify particular environmental issues at a particular site. Licences are required to be issued by DEFRA in England under the Conservation (Natural Habitats, &c) Regulations 1994 [47] for work affecting protected species.

SUSTAINABILITY REQUIREMENTS

Sustainability standards

The UK Government, like others in the international community, has recognised the need for sustainable development. The Government has subsequently committed to achieving the targets agreed at the world summit on sustainable development. In addition the Department of Trade and Industry (DTI) has published a Sustainable Construction Brief [48], based on the above definition that is based upon achieving the following key themes:

- Design for minimum waste.
- Lean construction (to minimise waste).
- Minimise energy in construction and use.
- Do not pollute.
- Preserve and enhance biodiversity.
- Conserve water resources.
- Respect people and local environment.
- Set targets (i.e. monitor and report, in order to benchmark performance).

Middlesbrough Council's policy is based upon the ethos of 'One Planet Living'. It embraces the national Climate Change Act 2008, which empowered the government to set national targets for the year 2050 for the reduction of greenhouse gas emissions and to encourage energy users to meet the objectives of the act, such as reducing such emissions or removing greenhouse gas from the atmosphere.

CONSERVATION REQUIREMENTS

Conservation Requirements

The Planning (Listed Building and Conservation Areas) Act 1990 [52] requires each local authority to compile a list of buildings of special interest, either historic or architectural. Listed building consent is required to demolish such a structure, or to alter or extend it in a manner affecting its architectural or historic interest. The Act also provides for the protection of

conservation areas that have special historical interest. The status can influence the processes required for structure maintenance in such an area.

As the requirements for the conservation of historic structures are specified in a number of disparate documents and there was a need to bring them together in a bridge-orientated publication. This has been carried out, and anyone proposing to carry out works on historic structures are required to follow the guidance provided in the following publications; Conservation of Bridges [55], and BD89 The Conservation of Highway Structures [56].

When working within Middlesbrough, particular attention is drawn to the special requirements associated with the Transporter Bridge Structure.

BRIDGES & STRUCTURES HIERARCHY

The hierarchy of the Council's Structures considers many issues including the following factors;

- Road hierarchy and usage (Principal, Non-principal Classified, Unclassified, and Abnormal Load route);
- Structure type and age (e.g. bridges, retaining walls, subways, etc.).
- Classification of work type when considering future use of a structure (see 3.5 below).

The hierarchy is the foundation of a coherent, consistent and auditable maintenance strategy and is fundamental in determining policy priorities. It is the link between maintenance policy and implementation and will assist in determining standards for design and new construction.

It is important that hierarchies are regularly reviewed to reflect changes in network characteristics and use so that maintenance policies, practices and standards reflect the actual current use of the network. Accordingly, the Council reviews the hierarchies on an annual basis, as it did in the past due to the effects of austerity measures taken within the Council.

To enable us to attach an Inspection and Maintenance regime, commensurate with the importance of the structure, we have developed the following hierarchy for Bridges and other Structures. These are as follows;

- Historic; Having 'Listed Structure' status.
- Cat 1; Any structure carrying or crossing the Tees Valley Combined Authorities key route network, Principal or Strategic route network. Recorded abnormal route, impacting on Network Rail property or watercourses.
- Cat 2; Carrying or crossing Unclassified Roads, or structures within public realm
- Cat 3; Minor bridges and structures off highway
- Cat 4; Other none loadbearing culverts, pits, pipes or structures

MANAGEMENT OF ASSET INFORMATION

Bridges & Structures Inventory

A basic Structures inventory is essential in order to allocate funds for the various activities, to calculate unit costs and to submit requisite information to Government each year. Our Asset Management System incorporates our Bridge Management System (BMS) to enable storage, manipulation, management and retrieval of Data and Information and to support Engineering Processes, Asset Management Planning, Resource Accounting and Maintenance Planning and Management. The BMS enables us to achieve this effectively and efficiently, it aligns with recognised requirements such as the Condition Indicator and is compatible with other systems for data sharing/transfer (e.g. Asset Valuation) and reflects the size and nature of this authority's highway structures stock.

All information is linked to the geographic location of the Structure Asset. It carries details of all inspection records, the defects attended to, and is the basis for forward planning of longer term essential maintenance planning and bids for necessary resources.

In order to fully meet the requirements of Best Value as well as establishing a cost effective and appropriate maintenance regime, a detailed computerised Structures inventory is a pre-requisite. The system relies upon detailed, cyclic repeat inspections of varying detail being regularly carried out. It is this that holds the data necessary for the assessment, prioritisation, programming and subsequent service delivery of a cost effective highway maintenance service.

PERFORMANCE MEASUREMENT FOR HIGHWAY STRUCTURES ASSET CONDITION AND INVESTIGATORY LEVELS – STRUCTURES

INTRODUCTION

All maintenance work should preferably be designed to current standards, although there may be situations where lesser standards are acceptable

RISK MANAGEMENT PRINCIPLES FOR HIGHWAY STRUCTURES

Risk management principles can be used to help the decision making process for the management of highways structures. With limited budgets the principles of risk management to identify and prioritise the allocation of resources in the most appropriate location can be used.

INTERACTION WITH OTHER OWNERS AND THIRD PARTIES

Border agreements

Section 3 of the Highways Act 1980 [11] states that when a bridge straddles a boundary between highway authority areas an agreement has to be entered into between the two authorities whereby one of the authorities becomes the highway authority for the whole bridge and its approaches.

Structures owned by other bodies

Highways are frequently supported by or go under structures owned by parties other than the highway authority for that highway. Typically, local highways go under and over trunk roads.

A clear definition of responsibilities in respect of the structure and related elements should be prepared for all such situations.

Structures over or adjacent to operational rail lines

When required to undertake inspections or maintenance work on structures over or adjacent to operational railways, the bridge manager or Engineer representing the highway authority is required to adhere to Network Rail, procedures for outside parties.

Early notice is necessary to enable the Outside Parties Manager of Network Rail to book track possessions and attendance to facilitate safe access to undertake the work.

Structures over or adjacent to canals or navigable waterways

Inspections or maintenance work on structures over or adjacent to canals or navigable waterways should be carried out in such a way as to ensure the safety of waterway users and the integrity of the waterway. British Waterways or the relevant navigation authority may require the bridge manager or Engineer acting on behalf of the highway authority to adhere to their procedures.

There is also a requirement to liaise with either the LLFA or the EA in order to obtain any necessary consents.

Structures over or adjacent to watercourses or flood defences

If highway structure works are required in, over, under or near a watercourse or flood defences, it is essential to contact the Environment Agency (EA) or Lead Local Flood Authority (LLFA) in order to obtain the necessary consents.

Consents are the means of meeting requirements that the works do not endanger life or property by increasing the risk of flooding or cause harm to the water environment.

INSPECTION, ASSESSMENT – STRUCTURES

INSPECTION REGIME

Inspection, testing and monitoring form the basis of Good Management Practice and are used to:

- Provide data on the current condition, performance and environment of a structure, e.g. severity and extent of defects, material strength and loading. The data enables the bridge manager to assess if a highway structure is currently safe for use and fit for purpose, and provides sufficient data for actions to be planned where structures do not meet these requirements.

- Inform analyses, assessments and processes, e.g. change in condition, cause of deterioration, rate of deterioration, maintenance requirements, effectiveness of maintenance and structural capacity. The outputs inform management planning and enable cost effective plans, which deliver the agreed Levels of Service, to be developed.
- Compile, verify and maintain inventory data, e.g. structure type, dimensions and location, for all the highway structures the authority is responsible for, and details of which we retain in our Structures Asset Management System.
- An inspection regime has been implemented for all highway structures to check they are safe for use and fit for purpose. The inspection regime is supplemented by testing and monitoring where required.

The inspection regime covers Acceptance, Routine Surveillance, General, Principal, Special and Safety Inspections as recommended in the guidance. It also aligns with, and supports, the Good Management Practice identified in the Code of Practice.

Procedures are in place whereby the inspector has a clearly defined requirement to inform the Council's client engineer, at the earliest possible opportunity, of any defects that may represent an immediate risk to public safety.

The inspection, testing and monitoring techniques should be sufficient to:

- Identify condition, defects and signs of deterioration that are significant to highway structure safety and management.
- Identify any significant changes in condition, loading or environment that have occurred since the last observation.
- Assess or provide information for the assessment of stability and serviceability.
- Determine or assist the determination of the cause, extent and rate of deterioration.
- Provide information that can be used to support highway structures management, this includes the identification of needs and associated maintenance works.

The inspection, testing and monitoring regime should seek to meet the criteria described in the most cost effective manner.

Inspection Regime

The inspection regime is managed within our Asset Management System and it aims to identify appropriate inspections to be carried out so as to enable any defects which may cause an unacceptable safety or serviceability risk or a serious maintenance requirement to be detected in good time in order to safeguard the public and the structure and implement remedial actions.

All inspections are required to result in a report, in a format commensurate with the inspection type, which gives a clear and accurate description of the structure's condition. The different types of inspection are described below and are followed by guidance on the inspection requirements;

Acceptance Inspection

An Acceptance Inspection should be undertaken for new structures about one month before the issue of the completion documentation or opening to traffic. A Principal Inspection should be used for this purpose. The inspection should identify and record any defects, developing problems and work outstanding under the contract and secure agreement on any works to be completed before handover. This should act as the benchmark for the inspection carried out at the end of the Defects Correction Period and for subsequent inspections.

A construction contract should include a Defects Correction Period (also referred to as the Period of Maintenance or Defects Liability Period) during which the contractor is responsible for making good defects that appear. The period usually commences upon practical completion of the works and runs for a specified time frame, typically 12 to 24 months. The length of the Defects Correction Period should be specified in the contract.

An inspection should be undertaken prior to the end of the Defects Correction Period to identify all defects before the expiry of the contractual obligations. The timing of the inspection should be sufficient to allow agreement of the work to be undertaken by the contractor and, if necessary, enforcement of contractual obligations. The inspection may be a General or Principal Inspection depending upon the type and form of the structure and the length of time since handover or the last inspection.

Authorities may also wish to use the above, or a similar, procedure for accepting major maintenance work.

Routine Surveillance

All structures should be subjected to Routine Surveillance as part of regular Highway Safety Inspections carried out by highway maintenance staff. Routine Surveillance is normally undertaken from a slow moving vehicle. Inspectors should immediately report to the bridge manager any obvious defects that are apparent from the vehicle which need urgent attention, such as damage to the superstructure and bridge supports of over-bridges, damage to parapets, flood damage, insecure expansion joint plates, etc. The bridge manager should be satisfied that the frequency of Highway Safety Inspections is suitable for the Routine Surveillance of highway structures and, if unsuitable, decide how to deal with the need for additional surveillance.

All highway structure management and maintenance staff should be encouraged to be vigilant at all times when moving around the network and to report anything that might need urgent attention. The general public should also be informed of the need to report any highway structure defects they feel may pose a risk to public safety. This is normally best achieved by providing appropriate contact details (e-mail and/or telephone) on the authority's website.

It is recommended that the bridge manager makes formal contact with the highway maintenance staff and, if necessary, explains the important features to observe or defects to report on highway structures during Routine Surveillance and the information that should be recorded if a defect is observed, e.g. structure location and defect description. The bridge manager's contact details, or the contact details of an appropriate member of their team, should be provided to the highway maintenance staff.

General inspection

It is recommended that all highway structures should be subject to a regular General Inspection not more than two years following the previous General or Principal Inspection. It is anticipated that the Council will undertake the General inspections on Historic, Cat 1 and Cat 2 Bridges and Structures.

General Inspections comprise a visual inspection of all readily accessible parts of the structure and, where relevant to the behaviour or stability of the structure, adjacent earthworks or waterways that can be inspected without the need for special access or traffic management arrangements. Riverbanks, for example, in the vicinity of a bridge should be examined for evidence of scour or flood damage. Any deposits of debris or blockages to the waterway, which could lead to scour of bridge supports or flooding should be reported for urgent removal.

Principal inspection

It is generally recommended that all highway structures should be subject to a regular Principal Inspection not more than six years following the previous Principal Inspection. It is proposed however that we follow the guiding principles of 'Interim Advice Note 171/12, whereby we undertake a risk assessment to define an alternative Principal Inspection intervals. It is proposed that a specialist Structural Consultant will be procured to undertake the Principal inspections on Historic and Cat 1 Bridges and Structures, and include the necessary risk assessment to continually determine future inspection cycles.

Principal Inspections comprise a close examination, within touching distance, of all accessible parts of a structure, including, where relevant, underwater parts and adjacent earthworks and waterways, utilising suitable access and/or traffic management works as necessary. Closed circuit television may be used for areas of difficult or dangerous access, e.g. obscured parts of a structure, confined spaces and underwater inspections.

A Principal Inspection may include a modest programme of tests, e.g. hammer tapping to detect loose concrete cover or half-cell and chloride measurements to enable risk of reinforcement corrosion to be assessed, when considered necessary.

A Principal Inspection should be of sufficient scope and quality to determine:

- The condition of all parts of the structure.
- The extent of any significant change or deterioration since the last Principal Inspection.
- Any information relevant to the stability of the structure.

A Principal Inspection should establish:

- The scope and urgency of any remedial or other actions required before the next inspection.
- The need for a Special Inspection and/or additional investigations.
- The accuracy of the main information on the structure held in the inventory.

Special inspection

There are occasions when a more specific inspection, concentrating on the condition of particular parts of the structure, is required. This is known as a Special Inspection. The need

for a Special Inspection can arise due to specific circumstances or following certain events, for example:

- When a particular problem is detected during an earlier inspection of the structure or of similar structures.
- On particular structural forms or types, e.g. cast iron structures, post tensioned structures, structures strengthened with bonded plates.
- On structures that have loading or other forms of restrictions on use, e.g., restriction of traffic on bridges.
- When the necessary frequency or access arrangements for a particular part of the structure are beyond those available for General or Principal Inspections.
- On bridges that have to carry an abnormally heavy load - inspections may be done before, during and after the passage of the load.
- Following a bridge strike.
- Following a flood or high river flow to check for scour or other damage.
- To check specific concerns, possibly based on new information, e.g. concerns over the quality of previously used batches of rebar or concrete.
- Where a post tensioned bridge has a regime of Special Inspections implemented as a result of an earlier investigation or a Special Inspection is required in accordance with BA 50 Post-tensioned Concrete Bridges, Planning, organisation and methods for carrying out Special Inspections.

Our policy for defining when it is appropriate to carry out a Special Inspection is based upon an engineer's or specialist consultant risk assessment of the event having taken place, and the likelihood of a significant risk existing. Further guidance on Special Inspections is provided in BA 63 Inspection of Highway Structures [4] and BD 63 Inspection of Highway Structures [5].

Safety inspection

A Safety Inspection may be undertaken following Routine Surveillance or after information has been received which indicates the structure is damaged and may be unsafe. The Safety Inspection should determine the extent of the damage and whether immediate safety precautions or other action should be taken. It is anticipated that the Council's Highway Inspectors or maintenance Engineers will undertake the Safety inspections on Historic, Cat 1, Cat 2 and Cat 3 Bridges and Structures. A Special Inspection may then follow to monitor the condition and effectiveness of interim measures and to determine what repair or other actions should be undertaken in the longer-term.

Variation of inspection frequencies

Inspection frequencies are generally interpreted as a two and six year General and Principal Inspection regime. This regime is suitable for most highway structures but in some circumstances it may be necessary to decrease the intervals while in others it may be acceptable to increase the intervals.

In order to vary inspection frequencies, a risk assessment should be carried out and be specific to a structure or group of similar structures. An assessment method should be developed that seeks to quantify:

- The likelihood of rapid deterioration or other incidents.
- The consequence of unchecked deterioration/incidents.

Depending upon the outcome of the risk assessment, frequencies may be altered, but any decision made must be fully documented within the structure asset management records.

COMPETENCE AND TRAINING

In the absence of Middlesbrough Council employing a professionally qualified Structural Engineer, Engineering Consultancy services shall be procured through use of local Standing Order provisions or regional Framework arrangements for the carrying out of all Principal and General Inspections of major structures.

This requirement in any event will extend to structures over, under or adjacent to Rail track property, rivers and watercourses, major spans or those carrying abnormal loads, and any situations including pre-stressed modules or mechanical operation.

Inspection services procured in this way shall be required to provide the client with the following information;

- Location and Function of the structure, including a plan.
- Details of the structure, supported by photographs, plans etc.
- Maintenance history.
- Details of the inspection carried out
- Inspection Findings, including defect photographs, sketches etc
- Conclusion and recommendations.

ASSESSMENT OF STRUCTURES

Requirement for formal Technical Approval

All structural design and assessment should be subject to a formal Technical Approval procedure such as those used by the Highways Agency [BD 2; Technical Approval of Highway Structures,] or Network Rail [GC/RT5101 Technical Approval Requirements for Changes to the Infrastructure,] or the latest amendment. Organisations or individuals acting as design engineers on behalf of the authority shall ensure that they incorporate the requirements of the Technical Approval Authority (TAA), on their behalf.

The TAA shall be the basis on which structural design or assessment is to be carried out. It will confirm the scope of the structural design or assessment, together with the standards to be used and the form of analysis. It will also consider whether the main components of the proposed work are satisfactory in relation to future maintenance. It shall include a formal certification process at the end of design or assessment and completion of construction.

Design Standards

A range of documents which are applicable to design and maintenance refer to relevant British Standards and Eurocodes.

The Eurocodes are a series of European Standards developed by the European Committee for Standardisation, to provide a common approach for the design of buildings and other civil engineering works and construction products.

Ten Eurocodes have been developed and published. They are organised in 58 parts and each part is supplemented by a National Annex.

- EN 1990 Eurocode: Basis of structural design
- EN 1991 Eurocode 1: Actions on structures
- EN 1992 Eurocode 2: Design of concrete structures
- EN 1993 Eurocode 3: Design of steel structures
- EN 1994 Eurocode 4: Design of composite structures
- EN 1995 Eurocode 5: Design of timber structures
- EN 1996 Eurocode 6: Design of masonry structures
- EN 1997 Eurocode 7: Geotechnical design
- EN 1998 Eurocode 8: Design for earthquake resistance
- EN 1999 Eurocode 9: Design of aluminium structures

As with other European standards, the Eurocodes will be used in public procurement specifications and to assess products for the CE marking.

STRUCTURAL REVIEW AND ASSESSMENT REGIME

Maintenance Works

All maintenance work should preferably be designed to current standards, although there may be situations where lesser standards are acceptable, e.g. repair of part of an element, repair of accident damage. Each case should be considered on its merits. Where lesser standards are accepted, the designer should check that the load carrying capacity of the structure at both serviceability and ultimate limit states and the durability of the repaired area are not less than that of the rest of the structure. Lesser standards may be unavoidable, e.g. maintenance of a listed bridge or scheduled monument. In this situation it is recommended that a safety audit or risk assessment is carried out. This documentation should be kept with the asset management records for the structure in question.

Where unacceptable risks or hazards are identified, the bridge manager or assigned professional engineer should look for alternative mitigation measures. It is important that the implications for future maintenance are a prime consideration in the design and implementation of all maintenance schemes.

ASSESSMENTS FOR ABNORMAL LOADS

The movement of abnormal loads on highways needs to be carefully managed so that large and heavy vehicles only use those parts of the road network that can safely accommodate them. In this context an abnormal load is considered to be a vehicle that is outside the classification of normal permitted traffic by virtue of its gross weight, length, width or axle configuration according to current road vehicle regulations.

The movement of abnormal loads should be managed in such a way as to ensure that the load effects induced by the abnormal loads do not exceed the load bearing capacity of structures on the route.

Where an initial assessment shows that the load effects induced by an abnormal load marginally exceed the capacity of a bridge on the route, it may be possible for the abnormal load to safely cross the bridge provided the speed of the vehicle is restricted and other normal traffic is kept clear of the bridge when the abnormal load crosses it. The decision to allow this to happen under a properly controlled situation is to be made by a suitably qualified Engineer, and not the Abnormal Loads Officer.

A classification system has been established with respect to appropriate ranges of weights, widths and lengths to aid the basic decision making process as to whether a movement notification can be accepted, or if there is an inadequacy along the route of which the haulier should be advised. Any movement not complying with the pre-defined classification must be referred to a suitably qualified Engineer before authorisation can be granted.

Abnormal Loads routes



PROGRAMMING AND PRIORITIES – STRUCTURES

Maintenance planning should adequately support the safe operation of highway structures. Performance levels should be identified at which a structure or component is considered to be sub-standard and which, if left unmanaged, may result in the structure becoming unsafe. Identifying minimum safety and performance levels assists the prioritisation of needs and development of maintenance plans.

CLASSIFICATION OF WORK TYPES

Maintenance Work Types

This is an important feature of maintenance planning is the appropriate classification of all items of maintenance work. Classification provides a beneficial tool for analysing the identified maintenance needs and removing appropriate work types from the Value Management and Value Engineering phases, such as cyclic and reactive maintenance.

Regular Maintenance

- Inspections – covers all inspection types, i.e. Safety, General, Principal and Special, see Section 4.1 (Inspection, Testing and Monitoring). Inspections include confined space inspections, boat inspections, underwater inspections and special follow-up investigations identified from the inspections.
- Structural Reviews and Assessments – structural reviews should ascertain the adequacy of structures to carry the specified loads when there are significant changes to usage, loading, condition or the assessment standards. A review should identify structures which need a structural assessment. An assessment quantifies the load bearing capacity of the structure in accordance with the appropriate current standards. Section 7 (Assessment of Structures) provides guidance on a regime for structural reviews and a procedure for structural assessments.
- Routine Maintenance – minor work carried out on a regular or cyclic basis that helps to maintain the condition and functionality of the structure and reduce the need for other, normally more expensive, maintenance works. Examples of routine maintenance common to highway structures include cleaning out expansion joints and drainage systems, greasing of metal bearings, removal of vegetation and removal of blockages in watercourses including removal of silt. Energy costs are also associated with routine maintenance.
- Management of Substandard Structures – normally constitutes implementing interim measures to protect users of substandard structures and may include monitoring. Guidance is given in BA79 The Management of Sub-Standard Highway Structures [1].

Programmed Maintenance

- Preventative Maintenance – work carried out to maintain the condition of the structure by protecting it from deterioration or slowing down the rate of deterioration. Preventative maintenance is justified on economic grounds because it provides minimum whole life cost maintenance. Examples of timely intervention or preventative maintenance include re-pointing, re-painting, minor defect repairs,

saline impregnation, cathodic protection, joint seal renewal and re-waterproofing. (Re-surfacing is not included because it is considered to be a road maintenance activity).

- Component Renewal – renewal of components that have a finite service life, e.g. bearings and expansion joints.
- Upgrading - work that brings an existing structure up to the appropriate current standard, e.g. strengthening, upgrading parapets, waterproofing. The work may have resulted from a change to standards or a change in requirements for the structure, e.g. enhanced network Levels of Service.
- Widening and Headroom Improvements – increasing the width or headroom of the existing structure. These improvements are generally considered to be network issues unless arising due to structural maintenance requirements.
- Replacement – a structure/component is replaced when it reaches the end of its useable life, excluding cyclic Component Renewal item (2b) above. The replacement structure/component restores the full design performance of the structure/component it replaces (if the performance is enhanced it is classified as an upgrade – item (2c) above).

Reactive Maintenance

- Emergency – work that must be dealt with immediately due to the high risk the situation poses to public safety, e.g. caused by accidents such as bridge strikes.
- Essential Maintenance – major structural repair work and especially that undertaken when part or all of a structure is considered to be, or about to become, structurally inadequate or unsafe. Examples of essential maintenance include major concrete, masonry and steelwork repairs, and scour repairs.

IDENTIFICATION OF NEEDS

It will be necessary to identify and document all maintenance required on highway structures and the associated cost estimates. The documented maintenance needs and costs are referred to as the structures workbank. The structures workbank forms the basis of the subsequent Value Management and Value Engineering processes.

4.0 LIGHTING



INTRODUCTION

Objectives of the plan

The Highway Infrastructure Maintenance Plan covers specific issues and themes regarding lighting, and includes the following asset types:

- lighting columns;
- lighting units attached to walls/wooden poles;
- heritage columns;
- illuminated bollards;
- illuminated traffic signs;
- columns and foundations;
- brackets;
- luminaires;
- control equipment, cables; and
- control gear, switching, internal wiring cabling (within ownership).

The purpose of this plan is to state the requirements for the provision, installation and maintenance of all types of external public lighting that is or will be the responsibility of Middlesbrough Council as the Highway Authority. The plan enables roads and footpaths to be used safely by providing, improving and maintaining effective and efficient street lighting that contribute to improved environmental standards and community safety. The procedures

and practices in this plan contribute to the level of service for public lighting, which incorporates:

- (a) Providing and maintaining good quality energy efficient lighting
- (b) Optimising maintenance frequencies
- (c) Maintaining minimum outages

Also incorporated into this plan are guidance notes regarding certain Telematics that will be maintained by the council throughout the highway network. These include such items as Traffic control signals, Variable message signing, Electronic management control systems, CCTV and display units.

The plan is set out in detail, and explains the following:

- Overview and strategy
- Main aims and key drivers
- Lighting Standards
- General Requirements
- Maintenance Requirements
- Assessment of Public Lighting Schemes
- Performance Indicators

Public lighting is a part of our sustainable transport policy, helping to increase and ensure the safe use of highways during darkness. The provision and maintenance of good quality public lighting gives highway users more confidence and improves the sense of personal safety and security.

Road types and usage vary in nature, similarly the light levels, type, design and maintenance of lighting systems may also vary according to the hierarchy and use.

On Principal, Classified and Main Distributor roads, where traffic speed and flows are important, vehicles dominate and public lighting systems are designed for this purpose.

On Residential and other Minor category roads, cycleways and Precincts, where pedestrians and cyclists are dominant, the lighting system is designed appropriately, taking into account numbers, crime risk and the potential for vehicle conflict.

This Plan adopts the recommendations of the Code of Practice, Management of Electronic Traffic Equipment, 2011.

Following the recommendations and guidance provided, Middlesbrough Council require that all public lighting provided on the highway shall be designed and installed in accordance with BS 5489-1:2003 – Code of Practice for the design of road lighting and BSEN 13201-2013.

In order to effectively manage and maintain road lighting, signing and other telematics, all installations shall have unique identifying reference numbers that aids whole of life asset management of the installations. (Signal installations and controllers not yet implemented are included in the current implementation plan awaiting resource allocation)

LEGAL FRAMEWORK – LIGHTING

There is no statutory requirement on local authorities in the United Kingdom to provide public lighting.

The Highways Act 1980 empowers a Highway Authority to provide lighting for any highway or proposed highway for which they are, or will be, the Highway Authority.

All public lighting systems installed and maintained should fully comply with the latest revisions of the relevant Legislation and Regulations:

LIGHTING SPECIFIC LEGAL CONSIDERATIONS

Provision of Lighting

The reduction of night-time accidents and the subsequent increase in the night-time safety of road users is a major benefit to be gained by the provision of public lighting. Research has shown that street lighting can reduce night-time road accidents by 30%. The potential reduction in night-time accidents can be used as a means of assessing the value of public lighting as a road safety action, as contained in the Department of Transport Departmental Standard TA49/07 'Approval of New and Replacement lighting on Trunk Roads and Trunk Road Motorways'.

Road safety is not the only benefit from the provision of public lighting. Studies on crime levels show that the provision of good public lighting can reduce levels in the fear of crime.

The Crime and Disorder Act 1998 places an obligation on Local Authorities to develop and implement safer community strategies. The provision of good public lighting is part of such a strategy that is practised by Middlesbrough Council.

The continued improvement of street lighting is considered as one essential element in local strategies under the above act, to be considered alongside other physical and social improvements.

Section 17 of the Crime and Disorder Act 1998 requires all local authorities, including joint authorities and police authorities, to consider crime and disorder while exercising their duties.

In determining whether or not lighting should be provided at a particular location or length of highway, unless consultation and demand determine otherwise, then generally the following categories should apply:

| | | |
|---------------|----------------------------|----------------------------------------------------|
| <u>E2</u> , | Roads in Rural Countryside | Generally not lit, except for road safety purposes |
| <u>E3, E4</u> | Roads in Urban Areas | Generally lit |

E1, Roads in Conservation Areas:

| | |
|-------|---------------------|
| Urban | Generally lit |
| Rural | Assessment required |

The power of a Lighting Authority under Section 161 of the Public Health Act (Parish, Town, District Councils) shall not be exercised for purposes of lighting any highway for which they are not the Highway Authority except with the consent of the Highway Authority (which may be given either generally or in respect of any particular highway or length of highway and either without conditions or subject to such conditions as the Highway Authority think fit).

The legislation, therefore, allows the Council as Highway Authority to provide lighting on any highway, and allows Parish Councils to provide lighting with the prior consent of the Council. All such lighting can be adopted by the Council for energy and maintenance purposes.

To ensure that the Council meets its requirements under the terms of the Highways Act, 1980, and its obligations resulting from the Crime and Disorder Act, 1998, the following procedure has been adopted;

Where the Council is acting in its capacity as Highway Authority, each request for the provision of lighting and the adoption of potential lighting, including those to be funded by others, is to be considered on its merits based upon the following general guidelines. The adoption of lighting requires the Council to take responsibility for the installation, including maintenance costs and energy charges, and is therefore considered by:

- (a) Adopting new roadway lighting installations provided on highways built to adoptable standards and which are to be maintained at public expense, including those covered by Section 38 and 278 Agreements under the Highways Act, 1980.

Or

- (b) Provided or funded from the Revenue Maintenance or Capital Street Lighting Budget, the installation of new lighting on adopted highways and adopt street lighting on both adopted and un-adopted highways where one or more of the following criteria apply:-
- i) there is a high night-time accident record;
 - ii) significant night-time use by the travelling public, pedestrian or vehicular, and no reasonable alternative lit route;
 - iii) there are recorded incidents of crime and disorder supported by the Police and the Community;
 - iv) the provision of the lighting is identified in the Action Plan formulated under the Crime and Disorder Act, 1998, or the Councils' forward improvement plan.

LIGHT SOURCES

The type of light source, its colour and colour appearance can have a significant effect on the night scene. The attributes of the various light sources available for public lighting are:-

LED – Light Emitting Diode

- Full spectrum white light
- Good colour rendering

SON – high pressure sodium

- Golden yellow colour
- Average colour rendering

CDM-T – ceramic discharge metal halide

- Warm white colour
- Excellent colour rendering

PL – compact fluorescent

- Full spectrum white light
- Good colour rendering

CPO – ceramic discharge

- Full spectrum white light
- Good colour rendering

Induction – fluorescent

- Full spectrum white light
- Good colour rendering

Luminaires

Luminaires used for road lighting shall generally have the lamp control gear mounted within.

BS EN 60598-1:2015 is the reference standard for all types of electrical luminaires. When used in conjunction with standards in the BS EN 60598 part 2 series, it specifies the essential safety and performance requirements for the design, construction and testing of a vast range of luminaires. LED light source luminaires shall be designed in accordance with IEC/PAS 62722, all designs must ensure minimum environmental pollution of the night sky and the upward light from the luminaries shall be kept to a minimum.

All luminaries shall be manufactured from vandal resistant materials and to prevent the ingress of dust and moisture new luminaries shall have an international protection rating of not less than IP65.

All luminaries shall first be approved by the Councils representative before being fitted in any new installation.

CONDITION AND INVESTIGATORY LEVELS**MONITORING FOR INOPERATIVE LIGHTING**

All lighting is required to be inspected at the frequency listed under the section dealing with Performance Indicators. The inspection is to detect and record lighting faults which are visually obviously.

The preparation of the work instruction for fault rectification is the responsibility of the maintenance contractor who also executes the inspections. This method minimises the outage times of failed lighting. Priority of repairs is firstly those faults which present the most danger to the public, such as sections of lights being inoperative.

RESPONSE TIMES

- non-emergency faults involving the replacement of components of apparatus; 4 full days from receiving request
- non-emergency faults involving the replacement of a complete unit of apparatus, including those made safe as emergency faults; Cannot be specified due to stock ordering requirements & delivery.
- non-emergency faults requiring the replacement of mandatory traffic signs and illuminated traffic bollards, including those made safe as emergency faults; Cannot be specified due to stock ordering requirements & delivery
- non-emergency faults involving the repair or replacement of any of the DNO's / IDNO's equipment; dno 35 days or less
- non-emergency faults requiring the removal from apparatus of any offensive and/or racist graffiti; same day as reported.
- non-emergency faults requiring the removal of all other graffiti and/or any unauthorised attachments from apparatus; No specified time
- non-emergency faults involving rectification of non-operating Belisha beacons and flashing school warning signs; Belisha beacons & amber flashers not working is considered an emergency 2hr, but if parts need ordering it is subject to delivery.
- emergency faults, including the removal of unauthorised attachments that pose a safety hazard; 2 hours
- installation of a complete unit of apparatus; and subject to ordering and delivery
- following completion of task return of completed paperwork subject to ordering and delivery

If the incident was a result of vehicle impact then details of the vehicle(s) should be recorded to institute procedures for the recovery of costs, with photograph where possible.

DEFECT RISK ASSESSMENT

Column Testing and Column Replacement

A risk assessment strategy for the management of the structural safety of lighting columns has been developed and is being implemented. The data collected on the column attributes and the environment in which it operates is used in a statistical calculation to allocate an action age to each column and also to allocate a priority for the consequences of a column failure. The action age is the recommended age of the column when some action should be taken to establish the structural integrity of the column and on columns of 8m in height and above they shall be subject to a structural test where a load is applied to the column and resultant deflection measured and analysed. Column replacement programmes shall be compiled using the difference between the actual column age and its action age and taking into consideration the consequences of failure to prioritise selection of columns for replacement.

INSPECTION, ASSESSMENT AND RECORDING – LIGHTING

ELECTRICAL INSPECTION AND TESTING

The Electricity at Work Regulations state that 'as may be necessary to prevent danger, all systems shall be maintained so as to prevent, so far as is reasonably practical, such danger'. To provide the basis for determining installations meet the safety standards, testing and inspection should be carried out in accordance with Chapter 73 of BS7671: Requirements for Electrical Installations. The frequency of the testing should be once every six years and coincide with a cyclic maintenance visit, which is every two years, or following maintenance works, RTC damage etc.

LIGHTING COLUMNS AND ILLUMINATED TRAFFIC SIGN POSTS

Lighting of Pedestrian Crossings

Pedestrian crossing equipment employed should include internally illuminated black/white section poles supporting the yellow globe with a 50 watt tungsten halogen lamp or LED array and flasher unit.

The crossing should ideally be located centrally between the lighting columns adjacent to the crossing. Where night time use is high then supplementary illumination using directional white light should be considered over the full carpet of the crossing.

Middlesbrough Council has preferred installation proposals for the illumination of informal crossings on main roads.

Lighting of Traffic Calming Features

Traffic calming is designed to reduce the speed and type of traffic using a highway. Physical barriers are placed in the highway reducing carriageway width or adding speed humps or cushions.

Section 5 of the Highway (Road Hump) Regulations 1996 stated that: 'Subject to Regulation 7 (which precludes roads with a speed limit of 20 mph or less) no road hump shall be constructed in any highway unless in that highway there is lighting for that road hump which is:

- a system of street lighting furnished by at least three lamps lit by electricity and placed so that not more than 38 metres separate any of the lamps from the next one to it, or
- a system of street lighting complying with the British Standard for Road Lighting published by the British Standards Institution under number BS5489 or with a standard or Code of Practice of a national standards body or equivalent body of any member state of the European Community; or
- lighting specially provided for the road hump.

The Regulations do not specify the level or standard of lighting required but a system of lighting designed to BS5489 for the classification of the road is required to cover approaches to and the position of all traffic calming features.

Lighting of Pedestrian Subways

Subways are provided as a safe route for pedestrians and cyclists to cross traffic routes. This provision should be maintained in a safe and usable condition at all times.

Lighting should be designed and installed in accordance with BS5489 part 9, Section 10, Code of Practice for Lighting for Urban Centres and Public Amenity Areas and in addition, the lighting of the exits and entrance approaches should be adequately lit to reduce transitions in lighting levels.

Highly vandal resistant fittings should be used in such subways, this is to include cable conduits and control/ switching equipment.

Obtrusive Lighting

Obtrusive light is light which falls outside the area to be illuminated which can cause discomfort, annoyance and distraction or reduces the ability to see. Obtrusive light is referred to as light pollution which can be divided into three main categories:

- Sky glow
- Glare
- Light trespass

The obtrusive light should be restricted by:

- The control of the type of light source
- Restricting the level of light emitted at high angles between 70 and 90 degrees (using anti-glare shields if necessary)
- The use of full horizontal cut off (flat glass) luminaires where appropriate

Attention is drawn to the ILE Guidance Notes for the Reduction of Light Pollution which includes the recommendation that for road lighting installations, light near to and above the horizontal should be minimised. The use of full horizontal cut off luminaires installed at 0° uplift will minimise visual intrusion within the landscape as well as upward light. In urban situations luminaires fitted with shallow bowls provide good control of light near to and above the horizontal.

Bus Stop/ Shelter Lighting

As part of Middlesbrough Councils efforts to increase night time public safety a bespoke fitting has been designed for use at bus stops and informal crossings where necessary and practical. Use of these bespoke installations at new bus stop / shelter sites shall be decided by the Councils Street Lighting engineer.

Sign Lighting

Sign lighting is to be installed as recommended by the 'Traffic signs regulations and general directions', 2002. Consideration is to be given to the use of new compliant energy saving technology where practical.

Use of unlit traffic signs or unlit / retro-reflective bollards, will require individual authorisation from the DfT.

Steel Lighting Columns and Brackets

Unless by prior agreement columns shall be manufactured from tubular or sheet steel, as specified on the scheme / works order, and shall conform to the following;

- a) The column and bracket manufacturer shall be registered with and accredited under the Quality Assurance Scheme ISO9002 for the manufacture, supply and verification of lighting columns. A copy of the accreditation document shall be supplied to the Engineer on request.

All columns and brackets shall be manufactured, supplied and installed in accordance with the requirements of BS5649, latest revision. Columns shall be manufactured in accordance with the requirements of BD 26/04, and the design of all columns shall include for the mounting of a sign plate 5kg x 0.3m² x 1.8 shape coefficient mounted 2.5 metres above ground and 300mm eccentricity.

Unless otherwise detailed on the scheme / works order, columns and brackets shall be designed to be capable of accepting lanterns with the following weights and windage of lanterns:

Table 7 – Bracket Strength

| Mounting Height metres | Lantern Weight kg | Windage Area sq metres |
|----------------------------------|--------------------------|-------------------------------|
| 5 post top | 5 | 0.15 |
| 6 post top | 5 | 0.15 |
| 8 post top | 10 | 0.19 |
| 10 post top | 15 | 0.19 |
| 12 post top | 20 | 0.27 |
| 5m with 0.5m projection bracket | 5 | 0.10 |
| 6m with 0.75m projection bracket | 5 | 0.10 |
| 8m with 1.0m projection bracket | 10 | 0.16 |
| 10m with 1.5m projection bracket | 15 | 0.22 |
| 12m with 2.0m projection bracket | 20 | 0.27 |

- b) All columns shall have a root for planting to a depth shown by the middle range listed in Clause 5 of Part 2 of BS 5649 as follows:

Table 8: Column Planting Depth

| Column length | Planting depth |
|----------------------|-----------------------|
| 5 metre columns | 800mm planting depth |
| 6 metre columns | 1000mm planting depth |
| 8 metre columns | 1200mm planting depth |

| | |
|------------------|-----------------------|
| 10 metre columns | 1500mm planting depth |
| 12 metre columns | 1700mm planting depth |

- c) i) All columns shall have a cable entry slot 75mm x 150mm with the top of the slot 350mm below ground level.
- ii) Columns manufactured in tubular steel shall have shaft and base sections manufactured from continuous lengths of new steel tube and shall not contain any welded or stepped sections.
- iii) The base section of columns shall have a minimum wall thickness of 5mm and have base compartment openings of a minimum
- a) 500 x 100mm for 5 and 6 metre columns
- b) 600 x 115mm for 8, 10 and 12 metre columns

The height above ground of the base sections shall be 1250mm.

- d) Unless specified otherwise on the scheme / works order all columns shall be designed for the following conditions:-
- (i) Mean hourly wind speed V_{ref} of 25m/s.
- (ii) Site altitude of 250 metres.
- (iii) Terrain category III for 5 and 6 metre columns.
Terrain category III for 8, 10 and 12 metre columns.
- (iv) Topography factor f , shall be 1.0.
- (v) The Partial Safety Factor on loads shall be Class B, wind load 1.2 and dead load 1.2.
- (vi) The maximum horizontal deflection of the lantern connection shall be Class 3, 0.1 (h+w).
- e) Tubular steel columns shall, where specified, be provided with detachable web type steel brackets and shall have a welded web gusset between the spigot and pipe arm and shall have a welded steel spigot cap. For 8 metre columns, and above, the fixing of the bracket to the column shall be over a reduced diameter spigot to maintain the smooth parallel line between the column and bracket arm. The bracket arm shall be held in position by stainless steel screws allowing fixing in any one of four 90° positions relative to the door opening.
- A means of preventing undesired rotational movement of the bracket, once fixed in position, to the column shaft shall be incorporated in the column design.
- f) Bracket arms shall, unless specified otherwise, provide an incline of lantern of 5° when fitted to spigots of:
- (a) 42mm OD x 110mm long for 5 and 6 metre columns
- (b) 42mm OD x 127mm long for 8, 10 and 12 metre columns.

- g) The method of joining the base section and the shaft shall be by a swage joint with an internal centralising washer. All welding procedures shall be in accordance with the requirements of BS EN288 and all welders approved to the requirements of BS EN287 with welding carried out in accordance with BS 5135.
- h) The same pattern of door lock shall be used throughout all columns. Keys shall be supplied for 10% of all columns supplied. The door fixing bolt shall have a tapered end to facilitate self-centring when closing.

An internal full length, equivalent to the door size, base board, substantially non-hygroscopic, shall be fitted in each compartment for mounting control gear. Base board fixing studs or bolts shall not protrude beyond the front face of the base board. The base board shall be firmly bolted in position. On delivery, the column door shall come assembled on the column.

- i) All columns shall be fitted with M8 x 30mm brass earth studs, threaded the whole length, with two plain washers and two nuts within the base compartment and that are easily accessible. Column doors shall be provided with an internal lug to enable earthing of the column door with an M8 brass earth stud.
- j) There shall be no sharp edges within columns or bracket arms to damage electrical cables during installation or service. An anti-chafe ring shall be fitted where cable routes change direction from horizontal to vertical within the bracket.

LIGHT MEASUREMENT

Selection of Lighting Levels

The following details provide an aid to the selection of the desired level of lighting in the provision of new or the refurbishment/replacement of existing lighting installations on an adopted highway. However, the actual level of lighting shall be determined by the methods shown in the European Standard EN 13201: 1998, Part 1, Selection of Lighting Classes.

In all of the following consideration may need to be given to increased lighting levels to supplement CCTV and other local requirements.

The Institution of Lighting Engineers Guidance Notes for the Reduction of Light Pollution provides a recognised means of zoning areas for environmental purposes when assessing lighting requirements.

Areas applicable to Middlesbrough are

Zone E2 - Areas of Low District Brightness (Rural Location outside Zone E1)

Villages and settlements within a Zone E2 area would generally be provided with lighting in accordance with the relevant standard applicable to the type and use of the highway. Consideration should also be given to the lighting of footpaths and cycle tracks with high night time use. Further details on the lighting of cycle tracks are available in the Institution of Lighting Engineers Technical Report No 23, Lighting of Cycle Tracks, 1998. However, where a cycle track or footpath is remote from a highway or properties and an existing alternative lit route exists, regard should be given to whether it is safe to attract people on

to isolated areas by the provision of lighting. Lighting should be CEN Luminous Intensity Class G4/5 if possible otherwise Class G2/3.

On roads between villages and settlements in Zone E2 areas lighting should only be provided where there is a known night time safety problem which cannot be controlled by other methods. New lighting installations should be provided to the minimum level recommended by the Standard and be CEN Luminous Intensity Class G6.

Roundabouts are areas of high traffic conflict and are therefore generally provided with a system of lighting. Rural roundabouts in Zone E2 areas should be provided with a system of lighting to the minimum level recommended by the Standard and be CEN Luminous Intensity Class G6.

It may be possible to provide adequate lighting for the safety of the motorist in such locations by means of a single centrally mounted lighting column instead of a proliferation of lighting columns around the perimeter of the roundabout. The height of the column should be kept to the minimum but adequate to ensure that the whole of the carriageway around the island is correctly illuminated.

Complex junctions in Zone E2 areas should only be lit when it can be shown that there is a significant night time traffic flow and no alternative remedial safety actions are effective. New lighting should be provided to the minimum level recommended by the Standard and should be limited to the minimum area necessary for road safety. Careful consideration should be given to the height and number of columns and to the wattage of the lamp used. New lighting should be CEN Luminous Intensity Class G6.

Care should be taken where there is a cycle track or footpath adjacent to a lit roundabout, lit complex junction or lit rural road to ensure that any conflict points where cyclists, pedestrians and motorists meet or cross are adequately illuminated.

Areas of special environmental interest in Zone E2 areas should have an individual assessment carried out to determine the benefits or otherwise of providing a system of street lighting.

Zone E3 - Areas of Medium District Brightness (Urban Location)

Within an urban location all highways would be lit in accordance with the relevant standard applicable to the type and category of the highway.

- | | |
|-----|------------------------|
| (a) | Primary Routes |
| (b) | District Distributors |
| (c) | Local Distributors |
| (d) | Access Roads |
| (e) | Shared Access Roads |
| (f) | Secondary Access Roads |

Category a), b) and c) roads will mainly be classified as traffic routes and should be lit accordingly. Glare should be restricted to CEN Luminous Intensity Class G2/3 but Class G4 used if possible.

Category d), e) and f) roads will generally be considered as residential and lit accordingly. Glare should be restricted to CEN Luminous Intensity Class G2/3.

Consideration should also be given to the lighting of footpaths and cycle tracks with high night time use. However, where a cycle track or footpath is remote from an adjacent highway or properties and an existing alternative lit route exists, regard should be given to whether it is safe to attract people on to isolated areas by the provision of lighting. Glare should be restricted to CEN Luminous Intensity Class G2/3.

Areas of special environmental interest in an urban area would normally be lit. However, an individual assessment should be carried out to determine the benefits or otherwise of providing a system of street lighting at such locations and to assess any environmental restrictions on the type and level of lighting to be provided.

Zone E4 - Areas of High District Brightness (Urban Centres with high night time usage)

Within urban centres the type and level of lighting provided will need to be designed to suit a number of conflicting needs and use. Many roads in such areas carry high volumes of traffic, particularly at peak hours, indicating a need for them to be treated as traffic routes and lit accordingly. However, after the rush hour period many revert to pedestrian routes carrying high volumes of people enjoying the facilities of the town/city centre. Care should be given to providing a flexible lighting scheme, which provides adequate illumination for the motorist but also provides an interesting and attractive ambience for people to enjoy themselves. Consideration should be given to dimming or switching to reduce or vary lighting levels, or to the use of different height lighting columns to suit the alternative uses.

Zone E4 areas are generally bright and lively, however, care should still be given to controlling glare which should be restricted to CEN Luminous Intensity G2/3.

Consideration is also to be given to the effect of lighting on adjacent areas used by other means of transport such as:

- Airports
- Railways
- Harbours
- Adjacent unlit traffic routes

Energy Conservation

The UK Government set a target of reducing greenhouse gases (carbon emissions). The Climate Change Act, passed in 2008, commits the UK to reducing emissions by at least 80% in 2050 from 1990 levels.

Middlesbrough Council has two strategies for reducing the amount of energy we use; making buildings and equipment more efficient, and making sure Council employees know how to minimise their energy consumption. This ethos is required to be extended through our service delivery arrangements to everyone contributing towards lighting, signing and signalling throughout Middlesbrough.

Energy efficient equipment should be used at every opportunity and investigations and monitoring of technological developments undertaken.

The advent of electronic ballasts with reduced energy consumption, near unity power factor, and ability to be used in a lamp dimming mode should be specified when appropriate.

The use of lower wattage white light sources such as CPO and LED should be considered as research is being conducted to show that lower levels of lighting can be provided using white light to achieve the same visual appearance.

COMPETENCE

Regulation 16 of the Electricity at Work Regulations 1989 requires that no person shall be engaged in any work activity where technical knowledge or experience is necessary to prevent danger or, where appropriate, injury, unless he possesses such knowledge or experience or is under such degree of supervision as may be appropriate having regard to the nature of the work.

All operatives should be appropriately trained and instructed to ensure they understand the safety procedures, which are relevant to their work.

Cable Records

The location of underground cable networks should be recorded to facilitate repairs, testing, extensions and for providing information to any organisation excavating in the highway in compliance with the New Roads and Street Works Act.

The computer based Oracle database of the lighting and signs inventory is linked to Arc Info Geographical Information System (GIS) which has the location of illuminated Signs and street lights plotted. The database and GIS system should be kept up to date by actioning all additions and alterations to the network.

RECORDING OF INFORMATION

An inventory of all highway electrical equipment is maintained on an Oracle database. The details of the location, condition, wattage, lamp type, burning hours, lanterns, supply, column type, height and year of installation, together with service arrangements are recorded.

The database is used to produce cyclic maintenance schedules, electrical testing schedules, structural inspection and testing information and returns to the Regional Electricity Company for energy charging. Data relating to column risk management is also held on the data base which is used to produce column condition indicators.

PROGRAMMING AND PRIORITIES – LIGHTING

Cyclical maintenance programmes are determined taking account of all variables including lighting system, light source, luminaire sealing, age and type of equipment and other requirements such as electrical testing. Whilst it is desirable to carry out as many of these tasks as possible on a single visit, the tasks required and the competency of the workforce may limit the range of work that can be completed at one time

PRINCIPLES

Lighting & Illuminated Signs:

- a) The following details indicate the targets and indicators determined in terms of Best Value.
- b) The public and other interested parties are asked to contact a dedicated telephone number to report any concerns regarding public lighting. This number is operational during normal working hours and a call centre system operates at other times. Callers are asked to assist by reporting the identification number, providing a location address and describing the nature of the concern.
- c) The maintenance contractor (Service Deliverer) operates communication facilities and organisational arrangements to enable the Engineer or Police to report emergencies at any time.

Examples of incidents warranting emergency attendance include:

- (i) public lighting equipment involved in accident damage;
- (ii) failure of a large section of lighting
- (iii) failure of lighting at a critical location
- (iv) doors off
- (v) incidences presenting an immediate danger
- (vi) underground cable damage

- d) Table 9: Public Lighting Maintenance and Installation Targets

| Activity | Frequency | Time for Completion |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Cyclic Maintenance All Roads | 3 years | As agreed programme |
| Lamp Replacement (Bulk lamp change in rural areas, replace on failure elsewhere) SOX, SON, PL | 6 years | At cyclic maintenance |
| Night Inspection | 14 days | Within one day |
| Activity | Frequency | Time for Completion |
| Fault Repairs Minor faults (faults which can be repaired at the first visit) | As they occur and are ordered by Engineer | Within 5 working days of receipt of notification by Engineer. Contractor – 3 working days from receipt of notification |
| Painting | As ordered by Engineer | Within agreed programme |
| Private Cable faults | As ordered by Engineer | As agreed programme |
| Accident damage, | As ordered by | As agreed programme |

| | | |
|-------------|----------|--|
| Knock-downs | Engineer | |
|-------------|----------|--|

To maintain the integrity of the electrical installations, in addition to the visual inspections during cyclic maintenance visits, the units are tested every six years in accordance with the Electricity at Work Regulations.

The specification requires all lighting units to be the subject of a night time inspection every two weeks, when the lights are expected to be fully operational to identify faults. The faults are to be investigated by the Contractor within three working days of being notified at which time minor faults should be rectified.

Faults received are input into a fault database and the order to repair sent electronically at the end of each working day to the contractor for attention within three days.

All external correspondence should be answered, or where not possible, acknowledged within five working days of receipt.

Faults which cannot be rectified at the first visit are classed as major faults and are then the subject of individual orders and instructions prepared and passed to the contractor for attention.

e) Performance & Best Value Indicators

The average time taken to repair street light faults;

- 1) which are in the total control of the authority
- 2) in the control of the regional electricity company.
- 3) Volume of energy being consumed

MANAGEMENT OF MAINTENANCE

Maintenance Requirements

Maintenance policies must provide cost effective solutions in keeping the network in safe working order. The guidance given in the Code of Practice for Highway Lighting Management 'Well Lit Highways' produced by the UK Lighting Board November 2004 (updated 2013), has been adopted by Middlesbrough Council and should be adhered to in its entirety. A summary of these recommendations to be followed are:

- 1) The authority's policy in relation to the provision of its public lighting service should be clearly stated and should cover all the organisation and services involved in delivering the service.
- 2) All personnel engaged in public lighting operations should be trained in accordance with national guidelines such as those produced by the Institution of Lighting Engineers and issued with the appropriate certification.
- 3) No operatives should be placed at risk due to lack of skills on the part of themselves or others dealing with electrical equipment.

- 4) Each authority should establish and maintain up to date and accurate inventory of all highway electrical equipment (including authority cable networks) as part of its asset management system.
- 5) Authority cable networks should be recorded on Ordnance Survey based plans or alternatively on a Geographic Information System.
- 6) An asset management system should be used to control and record all cyclical and reactive maintenance activities.
- 7) Cyclical maintenance intervals for lighting installations should be determined to ensure the installations correct operation and light output, minimise failures and maximise life.
- 8) Lamp replacement policies should be carefully evaluated taking account of local technical and geographic considerations, to maintain light output whilst limiting the number of lamp failures to an acceptable level.
- 9) Each authority should establish and operate a system for monitoring the operational status of its equipment.
- 10) Each authority should establish and operate a system for the reporting of faults by the public. The system should allow for the reporting of emergencies 24 hours per day each day.
- 11) Each authority should establish and enforce specific response times for each maintenance task.
- 12) Each authority should determine the frequency of electrical inspection and testing and carry out such works at a frequency of not less than once every 6 years.
- 13) The condition of all enclosures, including the general structural condition of lighting columns, illuminated traffic sign posts, feeder pillars etc should be recorded on the operative report at each maintenance visit.
- 14) New steel lighting columns should, as a minimum, be hot dipped galvanised and consideration should be given to the application of further protective coating by the lighting column manufacturer at the time of manufacture.
- 15) A programme for the maintenance and reapplication of protective coatings for *in situ* lighting column or illuminated traffic sign post should be determined and implemented taking account of the location, existing protective system and any other environmental factors including atmospheric conditions.
- 16) A risk assessment strategy for the management of the structural safety of lighting columns and illuminated traffic sign posts should be developed and implemented and where necessary structural testing of lighting columns and illuminated traffic sign posts should be carried out.
- 17) Each authority should negotiate a formal service level agreement with the Distribution Network Operator (DNO).

- 18) Each authority should ensure that their procedures, and those of any contractor, do not prevent the DNO from meeting agreed performance standards.
- 19) Each authority should consider the use of competitive tendering for highway electrical maintenance as part of its Best Value policy.
- 20) Each authority should seek competitively tendered supplies of electricity for its highway electrical equipment.
- 21) To meet set national targets to reduce carbon emissions introduced by the CRC Energy Efficiency Scheme (3.1), Authorities should consider a number of options. These options include switching off lighting as well as investigating other ways of energy reduction that may be achieved through the use of remote monitoring and dimming using a Central Management System (CMS). The latter option may not necessarily require the complete replacement of existing equipment as the modification of current equipment may be possible.
- 22) In an effort to reduce carbon emissions, non- illuminated retro-reflective signs and bollards are being used more frequently. The Traffic Signs Regulations and General Directions (TSRGD) - Schedule 17 - specifies the format of traffic signs and when they should be lit. Special authorisation is required from the DfT for the use of retro-reflective signs and bollards but although authorisation may be granted to use a certain product, the decision to use it at each location should be made by an assessment of accident data also taking into account other relevant variables such as , road alignment, pedestrian and vehicular activity etc.
- 23) Authorities should be aware that the DfT considers there to be too many traffic signs and other extraneous street furniture and the Communities Secretary and Transport Secretary have concerns that the country's urban spaces are being damaged by street clutter (3.8). The DfT is reviewing its traffic signs policy and the new Policy is to be released when the DfT project; Traffic Signs Policy Review – Reducing traffic Sign Clutter is completed (late 2010).
- 24) For Information;

At its annual general meeting on 22nd September 2010 the Institution Lighting Engineers (ILE) changed its name to the Institution of Lighting Professionals (ILP). From this date onwards all references contained within this guidance referring to the ILE should be taken as meaning the ILP. Additionally from this date letters designating membership of the ILP are as follows AMILP, MILP and FILP. Additional information regarding this can be found via the following website.
- 25) European Directive 2005/32/EC for Energy using Products has been transported into UK law under Statutory Instrument (SI 2007 No:2037). This together with the Eco-Design Directive (2009/125/EC) has established a frame work for the setting of eco-design requirements for Energy related Products (ErP). These Directives and laws set out performance targets for various lamp types used to illuminate the highway. Some lamp types and types of control gear will be phased out altogether. It is essential that local authorities consider and review the lamp and gear types currently

used within their public lighting operations to ensure the continuity of the service. Further information and timescales can be obtained from the following website.

- 26) Authorities should be aware that guidance has been issued by the ILP regarding the use of passively safe lighting columns and sign posts. TR30 Passive Safety: *Guidance on the implementation of Passively Safe Lighting Columns and Signposts* is aimed at street lighting designers as an aid to identify locations requiring passively safe apparatus and provide a risk assessment approach to each location. It also includes guidance on then selecting the appropriate apparatus in accordance with BS EN12767 and BS EN 40. Further information can be obtained from the following website.
- 27) Authorities should seek to minimise the impact of obtrusive light. Areas which may be impacted include: dark rural landscapes, neighbouring properties, and; consideration should also be given to legal and planning requirements relating to sites designated for their nature conservation interests, legally protected or controlled species.
- 28) When introducing or replacing road lighting schemes consideration should be given to eliminating or minimising the amount of obtrusive light. Obtrusive light for purpose of this Complementary Guidance is defined as: 'artificial light that, due to quantitative, directional or spectral attributes, significantly increases outdoor light levels or shines (spills) where it is not needed, impairing activities, causing annoyance to people, compromising an existing dark landscape, and/or impacting natural systems (e.g. plants, animals, insects).

Actions aimed at eliminating or minimising obtrusive light could therefore include:

- avoiding over-lighting;
- using luminaires that restrict light emitted above the horizontal;
- considering whether there is actually a need for road lighting, especially blue/ultraviolet-rich lighting, near or on Sites of Special Scientific Interest (SSSIs) or other sensitive locations (both terrestrial and aquatic); or areas specifically committed to protecting the quality of the night sky, for example, National Parks and Areas of Outstanding Natural Beauty (AONB);
- considering switching road lights off during the hours of darkness;
- dimming of road lighting schemes during periods of lower traffic usage; and / or
- turning road lights on later in the evening and switching them off earlier in the morning, (trimming), by the use of, more commonly, PECUs with alternative settings to the conventional ones used for low pressure sodium (SOX) lamps.

Whilst addressing the negative impacts of obtrusive light, having well directed light at the appropriate level can help to reduce carbon emissions and energy consumption but also costs of operating a road lighting service.

Further advice on the control of obtrusive lighting may be found in the relevant CIE and ILP guidance.

Middlesbrough Council has given its commitment towards supporting the content and recommendations of its Transport Asset Management Plan. In doing so it is also embracing

the recommendations included in the Code of Practice, Management of Electronic Traffic Equipment, 2011.

Cyclic Maintenance

Cyclic or routine maintenance operations are to be carried out as a preventative maintenance operation which is also to identify any work necessary to keep the installation safe, both structurally and electrically. This maintenance consists of the following:

- (i) Lantern cleaning
- (ii) Photo-cell cleaning
- (iii) Visual inspection and minor repairs to electrical equipment
- (iv) Full electrical inspection and test when specified
- (v) Mechanical maintenance
- (vi) Structural inspection
- (vii) Inventory data verification

Levels of Maintenance – Traffic Signals

Traffic signals are subjected to the following service inspections;

- a) Detailed visual inspection;
Annually
- b) Service;
Annually
- c) Electrical Inspection & Testing;
Annually or following maintenance works, RTC damage etc

In addition, some traffic signals are remotely monitored which enables faults to be identified.

Defects that are identified during inspections, via remote monitoring or following reports from the public, are prioritised for rectification based on risk within the following response times where reasonably practicable

Defect Category Definition Service Level;

Urgent those defects which are likely to be an immediate danger to the public and/or cause excessive disruption to traffic

Attendance within 2 hours

All other defects as required

Routine Maintenance;

Routine maintenance is concerned with providing works to a regular and consistent schedule aimed at maintaining the day-to-day serviceability of the network:

Traffic Signals Inspect & Cleaning;

12 Monthly

Lamp replacement to Traffic Signals;

Where the asset is life expired (or serious malfunction of LED display)

DESIGN FOR MAINTENENCE

Corrosion Protection for Steel Columns and Brackets

Unless otherwise specified on the scheme / works order, all columns and bracket arms shall, before leaving the factory, be protected with a minimum as follows:

- i) Hot dipped galvanised in accordance with BS EN 150 1461, latest revision.
- ii) If specified to receive a further paint finish, the galvanised surface shall then be degreased and left with a smooth finish to prepare for painting.
- iii) The paint system is not pre-determined, but must achieve as a minimum;
- iv) A 2 pack epoxy resin protective coating, to the approval of the Engineer, shall be painted over the base section of the column for a distance equal to the planting depth plus 150mm.

When instructed by the Client, the Service Provider will be required to undertake painting of installations utilising a suitable paint system that will give a seven year protection against the visible signs of corrosion. The Service Provider shall satisfy himself as to the suitability of the paint system in meeting the performance requirements.

Should the performance of the paint system fail to meet the required durability, the costs of any remedial work to the paint system will be at the Service Provider's expense, and shall be rectified by the Service Provider within 30 days of notification of failure.

- v) A line on the circumference of the base section shall denote ground level.

The minimum dry film thickness shall be:

Root - 60µm (internal) 210µm (external to 250mm)

External - 135µm (from 250mm)

Column roots shall be treated with G1 root protection which shall be checked to eradicate any damage, prior to installation. Any additional painting requirements are to be specified by the Client authority to the Service Provider.

Switching

¼ watt Electronic photo cells should be used to switch public lighting on and off unless otherwise agreed, at a maximum level set to 35 lux on and 18 lux off. To minimise theft and vandalism consideration should be given to the type of photocell used i.e. NEMA or flush minicell.

Raise and Lower Columns

Where specified on the scheme / works order, Raise and Lower columns shall be installed at such locations where vehicular access is severely limited, for example, remote footpaths or where the presence of a maintenance vehicle may impede the free flow of traffic. Refuge Island beacon posts may fall within this latter category.

RECYCLING AND WASTE DISPOSAL

The Council along with our partners operate a strict recycling programme for lamps, battery's, steel/metal and concrete waste.

COMMUTED SUMS

The Council may include in any agreement the requirement for a commuted sum to be paid. This would be calculated to cover the additional costs and burden placed upon the Highway Authority for the upkeep of the new installations necessary to facilitate the development taking place.

TRAFFIC SIGN AND BOLLARD MAINTENANCE

Cleaning of sign faces is carried out in accordance with risk assessment and policy. Optical inspection and cleaning of illuminated traffic sign luminaires is carried out in conjunction with the group replacement of lamps, or more frequently if necessary, to ensure the conspicuity of the sign.

External cleaning of traffic bollards is carried out in accordance with the risk assessment and policy. In areas of heavy traffic, and especially in winter, additional cleaning may be required.

LAMP REPLACEMENT

Bulk lamp replacement is in operation, and lamps are changed during a cyclic maintenance visit every six years. Individual scouted or reported outages are replaced on failure. The evaluation of this policy is ongoing wherein fault levels are recorded and compared.

COMPATIBILITY OF COMPONENTS

The Council ensures that all components are compatible so that lighting levels are not reduced or enhanced.

SERVICE AGREEMENTS

INTRODUCTION

1. All parties involved in delivering the service should seek ways to improve the service to meet the customers' needs. New equipment, processes and strategies should have identifiable tangible benefits, but cost should not be the only consideration.
2. Authorities should seek to future proof systems and processes as far as is practicable.
3. Where possible, authorities should aim to increase the use of recycling and reuse of equipment within their maintenance regime
4. Authorities should consider the use of low energy (e.g. ELV) equipment as the norm, especially for new or renovated sites.
5. If authorities own assets containing other technologies that are not covered by this Code, they should ensure that a guidance document is in place to be used by their staff.
6. Where authorities elect to adopt policies, procedures or standards different from those suggested by the code, it is essential for these to be identified, together with the reasoning for such differences, and approved as appropriate by the authority.
7. Once an authority has established procedures for dealing with its maintenance requirements, the procedures should be reviewed on a regular basis to ensure that they are still fit for purpose and in accordance with any updated regulations or guidance.
8. Authorities should undertake a full review of current practices, followed by an assessment of the differences between current practice and the recommendations set out by the Code. Once the gaps are identified, clear plans should be established on how they are to be addressed.
- 9 The authority should develop an Implementation Plan, in accordance with the recommendations of this Code, for the management of their maintenance.

The development of this plan should be treated as a formal project, with agreed milestones, resources and budgets in order to ensure that the optimum outcome is achieved.
10. Authorities should ensure that suitably trained staff are in place to undertake the management of maintenance of electronic traffic equipment.
11. Detailed asset management systems should be put in place.
12. Performance indicators should be used to measure authority and contractor effectiveness in delivering the service and to provide a baseline from which improvements can be measured. The measures to be introduced will be subject to further consultation that will enable benchmarking also to take place.

13. Authorities should provide financial plans for maintenance that detail their priorities as well as clear direction on how the maintenance operations will be managed in the short, medium and long term.
14. Authorities should ensure that adequate systems are in place to process and manage faults.
15. Authorities should establish effective systems for the transfer of faults from UTC and RMS to an appropriate FMS, with instructions to the maintenance contractor providing enough detail to allow the effective repair of the fault.
16. Designers should take account of the whole life cycle of the asset, including installation, maintenance and decommissioning, during the design stage.
17. Annually authorities should report actual performance in complying with their service policy statement, including National and Local Performance Indicators as appropriate.
18. Authorities should satisfy themselves that maintenance contractors have satisfactory procedures in place to provide an effective maintenance service as required by the contract.
19. Preventative maintenance should be treated as the key tool to successful implementation of the asset management plan, forestalling poor performance and failure of the installation.

SERVICE AGREEMENT

Electricity Company Service Levels

The service depends on an electricity supply provided by the Regional Electricity Company, Northern Electric and the agreed Code of Practice regarding the connection and repair of public lighting and includes for the following timescales.

Emergency work, to remove immediate danger to public or property.
Response time 100% in 2 hours.

High Priority Fault Repair, urgent work not requiring attendance out of normal hours.
Response time 100% in 1 day.

Fault Repair – Single Unit, repair to a single lamp service fault where attendance is not required under emergency circumstances or out of hours or within 1 day.
Response time 70% in 10 days 100% in 30 days.

Fault Repair – Multiple Units, repair to a fault affecting supply to more than one lamp (section faults) where attendance is not required under emergency circumstances or out of hours or within 1 day.
Response time 70% in 5 days 100% in 30 days.

New or transferred connections in a batch not exceeding 20 units.
Response time 80% in 20 days 100% in 35 days.

New or transferred connections in a batch between 20 and 50 units.

Response time 80% in 20 days 100% in 35 days.

New or transferred connections in a batch of more than 50 units.

Response time 80% in 20 days 100% in 35 days.

Service Delivery;

The installation and maintenance of public lighting is encompassed in a Partnering Service Delivery Agreement. The present Partnership Agreement is designed to deliver Best Value services and standards to our customers over a period of six years, with an option to extend for an additional six years.

Supply of Electricity from Public Lighting Equipment

The provision of temporary supplies from public lighting equipment presents problems for the safety and security of both the public lighting equipment and the temporary installation and such connections will only be permitted where no satisfactory alternative, including portable generators, can be found.

The Body seeking supplies of this nature must obtain the consent of the Highway Authority and make appropriate arrangements with the Regional Electricity Company for the payment of the energy used.

The installation must be installed in accordance with the requirements of the Electricity at Work Regulations and BS7671: Requirements for Electrical Installations and final connections into the public lighting equipment must be executed by the Highway Authority. Under no circumstances are unauthorised persons allowed to access public lighting equipment.

Private Off-Highway Lighting

Private exterior lighting situated off the highway when not optically controlled or wrongly aimed can be a source of danger due to glare to users of the highway.

Light pollution of the night sky should be minimised and lighting of buildings should preferably be with down lighters and where floodlighting must be used then they shall be optically controlled and aimed such that there is no spillage of light from the building being lit.

In the case of security and sports stadia, the lighting of these should be to the illuminance levels recommended in the appropriate Design Guides. Light spillage should be restricted to prevent discomfort and annoyance to occupiers of adjacent buildings and dwellings.

Car park areas should be lit to the appropriate standards set out in BS5489: Part 9 and the luminaries incorporate such light control to produce downward light within the confines of the car park.

Advertising signs should be lit using the guidelines published in the second edition of the Institution of Lighting Professionals (IL) Technical Report No TR5 'Brightness of Illuminated Advertisements'.

PROCEDURES FOR NEW INSTALLATIONS

Adoption of New Lighting Installations

All proposed developments within Section 38 and 106 of the Highways Act should be provided with a public lighting system, including illuminated signs, traffic signals etc, as part of the Agreement.

The requirements for each development shall be agreed with the Highway Authority and conform to the Specification for Street Lighting, signs and Traffic Signal Installations on Residential and Industrial Estates which can be accessed on the Council's web site.

The Council may include in any agreement the requirement for a commuted sum to be paid. This would be calculated to cover the additional costs and burden placed upon the Highway Authority for the upkeep of the new installations necessary to facilitate the development taking place.

a) Design and Installation

- (i) Street lighting for residential areas shall be, unless otherwise agree, designed in accordance with British Standard Code of Practice for Road Lighting BS5489: - 2013 to meet the requirements for the appropriate S lighting class with 6 metre mounting height columns.
- (ii) Street lighting for Industrial Estates shall be, unless otherwise agree, designed in accordance with British Standard Code of Practice for Road Lighting BS5489:1:2013 to meet the requirements for the appropriate street lighting class generally on 8/10 metre mounting height columns.
- (iii) The installation shall comply with BS7671, 2008, Regulations for Electrical Installations (IEE Wiring Regulations).
- (iv) Every lighting unit and underground cable on completion and before being energised shall be inspected and tested to verify that the requirements of the IEE Wiring Regulations have been met. The inspection and test results shall be submitted to the Director of Environment at the time of requesting an adoption inspection of the lighting system.

b) Adoption

On satisfactory completion of the agreed scheme, the Council will accept responsibility for the energy charges and will carry out cyclic maintenance on those units serving the roads and footpaths included in the Section 38 Agreement. All repairs shall remain the Developer's responsibility until the roads are adopted. The Council must be contacted to provide developers with unique installation reference numbers that are to be applied prior to maintenance taking place.

As-built drawings of column and cable positions are to be provided, together with Test Certificates.

SEASONAL DECORATIONS

- a) Seasonal Decorations on or above the highway;
- (i) The erection of seasonal decorations on or above the highway shall only be carried out with the prior written approval of the Highway Authority.
 - (ii) All works associated with the provision of seasonal decorations shall be carried out in accordance with the requirements of the County Surveyors' Society, (CSS) Code of Practice for the Installation and Operation and Removal of Seasonal Decorations.
 - (iii) Seasonal decorations may be attached to existing Lighting Equipment with prior consent from the Council's Lighting Engineer, but it is preferred that such decoration be attached to or supported from buildings adjacent to the highway.
 - (iv) Seasonal decorations shall be deemed to include decorations erected for:
 - Christmas and other religious celebrations
 - Festivals and other celebrations
 - Flower Decoration including attached and hanging baskets
 - Flags and banners
 - Advertisements
 - (v) Generally no decoration or its support shall project over the road or within 0.5m of the kerb face at a height less than 5.8m above the road surface. At least 2.5m headroom must be provided over any area for pedestrians.
- b) Seasonal Decorations Supported from Adjacent Buildings or Free Standing in the Highway
- (i) All seasonal decorations mounted above, or free standing in the highway shall:
 - Be approved in writing by the Highway Authority or its agent prior to the erection of the fixtures for a period not exceeding 35 days unless planning permission has been granted for a longer period.
 - Be the sole responsibility of the body installing the decorations and shall be insured with the Highways Authority being indemnified for a minimum of £3.0 million for any one incident.
 - Be removed immediately upon request of the Highway Authority or its agent or be removed by the Highway Authority or its agent at the owner's expense if there is concern about the safety of the public or the system.
 - Be manufactured with supports and mounting points capable of supporting the decorative fixtures, in accordance with CP10RSD.

The electrical requirements for protection against electric shock of CP10RSD shall be adhered to wherein ground mounted installations must be supplied as a maximum by a SELV 25 volt AC power supply protected by a Residual Current Circuit Device, RCD, situated at the source of supply. Equipment mounted above ground to 2.5 metres in height can be supplied at a maximum of 110 volts via a centre tapped transformer (55-0-55)

incorporating a suitably rated RCD. Equipment mounted above 2.5 metres can be supplied at 230 volts again incorporating a 30maRCD.

(ii) All Seasonal Decorations shall be erected in compliance with the following statutes and regulations:

- Health and Safety at Work Act, 1974
- Electricity at Work Regulations, 1989
- BS 7671: 2008, Requirements for Electrical Installation, IEE Wiring Regulations, 17th Edition

(iii) No Seasonal Decorations shall conflict with any adjacent traffic signal systems.

c) Seasonal Decorations Attached to Lighting Equipment;

(i) In general, street lighting columns are not designed for the significant additional loads imposed by the attachment of seasonal decoration. Therefore the size and number of seasonal decorations that can be attached to a lighting column is limited. However, the erection of such decorations and fittings will be permitted provided the following additional conditions are met:

(ii) New or replacement lighting systems

- In locations where it is expected that seasonal decorations will be required, the lighting columns shall be manufactured and installed to support the additional loads imposed by weight and wind and a certificate of compliance lodged with the Highway Authority. The additional cost of such columns will be rechargeable to the organisation wishing to install the seasonal decorations.

(iii) Existing lighting systems

- The system of street lighting to be used to support the Seasonal Decorations shall be inspected annually. A competent Structural Engineer shall be commissioned to provide a report to the Highway Authority or its agent prior to the erection of the decorative lighting confirming that the columns are structurally safe and can support the proposed seasonal decorations.
- Seasonal decorations must not hinder the normal operation or maintenance of the highway or the Lighting Equipment.
- No banners, flags or catenary wire(s) shall be erected between two or more items of Lighting Equipment unless the Lighting Equipment has been designed and manufactured specifically for that purpose or a Structural Engineers report has been submitted as above.
- Power supplies to such decorative fittings shall not be obtained from an adjacent building.
- Where remote power supplies are used to provide energy for the seasonal decorations, the decorations and any supply wiring shall be labelled with the location of the isolation point at regular and appropriate positions along the length of the wire.

Other Fixtures and Attachments to Street Lighting Columns (Permanent or Temporary)

- (i) Existing Lighting Equipment due to its design, construction or structural condition may not be structurally adequate to support the additional weight and wind loads imposed by the erection of a sign or other attachment such as hanging baskets and banners. A Structural Engineer may be engaged to establish the structural integrity of the columns and the cost of such investigation and testing will be recharged to those installing the attachments.
- (ii) Lighting columns should not be used as an additional support of a sign requiring a second or additional post unless the lighting column has been specifically designed for this purpose. Experience has shown that the use of lighting columns in this manner can cause premature failure.
- (iii) Street lighting columns shall not be used as supports for advertising signs of any kind, except where recognised organisations (ie Automobile Association or Royal Automobile Club) have been granted permission by the Highway Authority. When fixed such signs should not obscure the unit's maintenance number, hinder maintenance or affect the light output of the equipment.
- (iv) No person shall remove or cause obstruction to a lighting access door or column identification number.
- (v) Only personnel authorised by the Lighting Engineer shall enter the base compartment and access equipment housed therein.

PROCEDURES FOR REPAIRS

When a fault on a DNO / IDNO electricity service has been identified the relevant DNO / IDNO is notified as soon as possible.

The DNO / IDNO will respond to the notification within than the timescales set out in the Electricity (Connection Standards of Performance) Regulations 2015 and the Quality of Service Guaranteed Standards.

ELECTRICITY SETTLEMENT INVENTORY

The asset management system in which street lighting is held identifies the relevant DNO/IDNO

TRADING ARRANGEMENTS

Energy Purchase:

Electrical energy for public lighting, which is generally unmetered, is currently purchased through a competitive tendering process. The price per unit (KWhr) is negotiated by the North East Purchasing Organisation (NEPO) of which Middlesbrough Council is a member,

in conjunction with energy suppliers. NEPO consists of Local Authorities with the North East comprising the Tyne and Wear conurbation, Tees Valley area, Northumberland, Durham and Hambleton in Yorkshire.

5.0 Appendix 1

LEGISLATION

- The Highways Act 1980
- The New Roads and Street Works Act 1991
- Road Traffic Regulations Act 1984, and the Traffic Signs and General Directions 1994
- Road Traffic Act 1988
- Road Traffic Reduction Act 1997
- The Local Authorities (Transport Charges) Regulations 1998
- The Transport Act 2000
- Traffic Management Act 2004
- Floods and Water Management Act 2010
- Railways and Transport Safety Act 2003
- National Parks and Access to the Countryside Act 1949
- Countryside Act 1981
- Wildlife and Countryside Act 1981
- The Environmental Protection Act 1990
- The Weeds Act 1959
- Ragwort Control Act 2003
- Rights of way Act 1990
- Countryside and Rights of Way Act 2000
- European Water Framework Directive 2000
- The Clean Neighbourhoods and Environment Act 2005
- The Environmental Assessment of Plans and Programmes Regulations 2004
- The Health and Safety at Work Act 1974
- Construction (Design and Management) Regulations 1994

There is also further legislation, not specifically related to highways, street and traffic functions, but dealing with wider community issues that may affect the service we provide: -

- Crime and Disorder Act 1998 (Section 17)
- Equality Act 2010
- Criminal Justice and Public Order Act 1994
- Human Rights Act 1998
- Freedom of Information Act 2000
- Local Government Act 2000
- Civil Contingencies Act 2004
- Bridge Condition Indicators Volume 2: Guidance Note on Bridge Inspection Reporting, County Surveyors Society, 2002.
- Addendum to CSS Bridge Condition Indicators Volume 2, County Surveyors Society, 2004.
- BA 50 Post-tensioned Concrete Bridges, Planning, organisation and methods for carrying out Special Inspections, DMRB 3.1.3, TSO.
- BA 63 Inspection of highway structures, DMRB 3.1.5, TSO.
- BD 63 Inspection of highway structures, DMRB 3.1.4, TSO.
- BD 21 The Assessment of Highway Bridges and Structures, DMRB 3.4.3, TSO.

- Manual of Contract Documents for Highway Works (MCDHW), TSO.
- Guidance Document for Performance Measurement of Highway Structures – Part B1: Condition Performance Indicator, Version 1.3, February 2005, Draft Working Report.
- Guide to testing and monitoring the durability of concrete structures, Concrete Bridge Development Group Technical Guide 2, Concrete Society, 2002.
- Non-destructive testing of timber, TRADA Technology Reference WIS 4-23, 2004.
- BS EN 12504 Series Testing of concrete in structures, BSI.
- Steel Bridge Group: Guidance Notes on Best Practice in Steel Bridge Construction, J E Evans and D C Iles, Steel Construction Institute, 2002.
- BA 86 Advice Notes on the Non-Destructive Testing of Highway Structures, DMRB 3.1.7, TSO.
- BA 44 Assessment of Concrete Highway Bridges and Structures, DMRB 3.4.15, TSO.
- BA 56 The Assessment of Steel Highway Bridges and Structures, DMRB 3.4.12, TSO.
- The assessment of filler beam bridge decks without transverse reinforcement, Low, A M C C & Ricketts, N J, TRL Research Report Special RR 383 Transport Research Laboratory, 1993, ISBN 0952186004.
- BA 54 Load testing for bridge assessment, DMRB 3.4.8, TSO.
- Guidelines on the Supplementary Load Testing of Bridges, National Steering Committee for the Load Testing of Bridges, The Institution of Civil Engineers, London, 1998.
- BA 74 Assessment of Scour at Highway Bridges. DMRB 3.4.21 TSO.
- The Inspection Manual for Highway Structures (Volumes 1 and 2) 2007.
- Supply of Goods and Services Act, 1982
- The Local Government (Contracts) Act, 1997
- The Management of Health and Safety at Work Regulations 1999
- Electricity at Work Regulations 1989
- Traffic Signs Regulations and General Directions 2015
- Road Humps Regulations 1999
- BS 7671: Regulations for Electrical Installations 2008
- BS 5489: Parts 1 – 2 ‘Code of Practice for Road Lighting’
- BS 13201: 2003, Road Lighting, Calculation of Performance’
- BS EN 60529: ‘Specification for Clarification of Degrees of Protection provided by Enclosures’ 2012
- BS EN 60598 – 2-3: Luminaires for Road and Street Lighting
- BS5649: ‘Lighting Columns’
- BS EN40: Lighting Columns
- Department of Environment, Transport and the Regions Departmental Standard BS26/99 – ‘Design of Lighting Columns’
- European Directive 2005/32/EC for Energy using Products
- Eco-Design Directive (2009/125/EC)
- TR30 Passive Safety: Guidance on the implementation of Passively Safe Lighting Columns and Signposts
- County Surveyors’ Society, (CSS) Code of Practice for the Installation and Operation and Removal of Seasonal Decorations.
- Design Manual for Roads & Bridges, TD 50/04 The Geometric Layout of Signal Controlled Junctions and Signalised Roundabouts
- Management of Electronic Control Equipment, CoP, 2011.

