HIGHWAY SERVICES POLICY

Transportation, Environment and Economy

Highways Service

Appendix B

A Comprehensive Risk-based Approach to Highway Service Delivery

Introduction

This document sets out the way in which the Highways Service is implementing the risk based approach to highway service delivery as promoted in the UK Roads Liaison Groups Code of Practice – Well Managed Highway Infrastructure (The Code) published in October 2016. This document summarises how the Service considers risk in delivering its Highway Services including setting levels of service, inspections, responses, resilience, priorities and programmes.

In March 2017, the IHE launched a guidance document on Highway Risk and Liability. This guide is intended to support and be considered as supplementary advice to the code of practice.

In the development of its comprehensive risk-based approach, the Service has assessed and is managing risk associated with the following areas:

- Developing its Levels of Service (Asset Management Objectives)
- Implementing its Asset Management System
- Communicating its Asset Management approach effectively
- Assessing progress towards meeting objectives (asset performance)
- Maintaining integrity of necessary data
- Delivering a safe and resilient network
- Delivering works activities and achieving value for money
- Pursuing continual improvement
- Achieving consistency and best practice

In developing and implementing a risk based approach it is important to recognise that the whole premise of an effective asset management framework is predicated on a robust assessment and management of risk. It should, therefore be matter of routine for the consideration of risk to be part of the daily management process for the competent Highway Management Team.

The pre-existing code – Well-maintained Highways – advocated a robust approach to risk management and many of the practices adopted have stood the test of time and withstood scrutiny in the courts. The new code refines this approach and updates it to take account of the current climate of financial constraints and changing landscape of litigation.

The need to adopt a risk based approach is fully aligned with the principles of asset management and was always implied within the ‘old code’. The major change with the new code is that this is now more explicit and no prescriptive or minimum standards have been set.

The Service has implemented a risk-based approach in developing and delivering levels of service in accordance with local needs, priorities and affordability. The application of this approach to safety inspections, defect repairs and recording and monitoring of information are perhaps the most critical with regards to highway liability risk management.

Levels of Service (Asset Management Objectives)

THE SERVICE have developed Levels of Service known as Asset Management Objectives (AMO). These AMO are derived from the three main Aims of Buckinghamshire County Council's Strategic Plan (2017-20) as per the table below. The AMO aim to provide a clear line of site between the Council's Strategic Aims and the Service's activities. The AMO are as follows:

AMO1: Maintain a safe network
AMO2: Manage highways effectively and efficiently
AMO3: Maximise network availability
AMO4: Optimise the use of and protect the availability of natural resources
AMO5: Improve accessibility for all

These levels of service are the bedrock of the asset management strategy in Buckinghamshire.

		AMO1	AMO2	AMO3	AMO4	AMO5
Safe-guarding Our Vulnerable	Support our most vulnerable adults to lead independent lives	✓				✓
Creating Opportunities and Building Self-reliance	Improve community safety and reduce crime and the fear of crime	✓				✓
	Continue to improve the health and wellbeing of our residents and address major health risks	✓				✓
	Support our voluntary community sector to develop our communities to help themselves	✓	✓			✓
	Empowering communities to deliver and prioritise their services including devolving assets and services to town and parish councils where it makes sense to do so	✓	✓	✓		
Ensure Buckinghamshire is Thriving and Attractive	Repair our highways (roads, footpaths, street lights, bridges and drainage) as effectively and as speedily as possible.	✓	✓	✓	✓	
	To work with the England Economic Heartland / Local Enterprise Partnership's and other partners to maximise investment in the County, to deliver, manage and maintain local services and strategic infrastructure including digital highways, in line with changing demands.	✓	✓	✓		
	Enable the right conditions and incentives to attract new and growing businesses to Buckinghamshire, driving economic growth.		✓	✓	✓	✓
	Enable the right conditions to attract people to live, learn and work in Buckinghamshire.	✓	✓	✓		✓
	To improve the connectivity and reliability of Buckinghamshire's transport network to stimulate economic growth and promote more sustainable travel.	✓	✓	✓		✓
	Promote and encourage sustainable approaches to the use of natural resources and waste, improving our natural environment, water management, biochemistry, recycling and animal welfare.		✓	✓	✓	

To ensure the delivery of the Service's objectives is successful, the Service operates a Performance Management Framework that measures indicators across all work activities.

The outputs from these indicators are compared with their targets to assess the degree to which asset management objectives are being met.

Indicator targets have been developed to help senior management to identify risks to service delivery and implement corrective actions.

The process of ensuring that the work activities are correctly implemented is monitored by Contract Management Reviews (CMR). The monthly CMR is mandatory with all services taking part. A sequence of robust challenges from the Service Finance, Senior Management Team, the Client and Operational Management Board take place over a period of 2 weeks.

Processes encompassed by the CMR are financial reporting, activity outputs, risk management, early warning notices (EWN), compensation events (CE) and the Performance Management Framework (PMF).

The objective of the CMR is to validate and challenge the performance of the contract and to provide complete visibility as to its status. The review process provides transparency as to the contract's ability to meet its agreed objectives. The CMR challenges are conducted by senior representatives of the management team and include team leaders. All risks associated with the performance of the service are reviewed and discussed.

The CMR process ensures that a risk based approach is embedded in the Service's operations as it monitors all work activities against their ability to contribute towards the asset management objectives. Risks are reported and escalated through a governance process, ultimately up to the Operations Management Board as required.

Asset Management System

The Service undertook a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the risks and opportunities pertaining to the Service's ability to deliver its five objectives through its Asset Management System. This analysis is fundamental to the risked based approach as it allows a health check of the organisation to understand their ability to manage risks and opportunities.

An Action Plan resulting from the SWOT analysis will take advantage of the organisation's internal strengths and external opportunities, developing actions to resolve the impediments arising from its weaknesses and external threats. The SWOT Action Plan will be guided by the Asset Management Board and be subjected to the Contract Management Review. The AM Board will monitor implementation of the SWOT actions and in so doing will support the continual improvement process to develop its asset management processes and activities to better deliver its objectives.

Arising from the SWOT analysis the following high level actions were considered necessary, to be developed into a SWOT action plan.

1. Improve focus on technology and the utilisation of technology to improve environmental standing and improve the capability of the organisation;
2. Resolve lack of staff resilience by recruiting high quality staff to help address weaknesses.
3. Consolidate service provision to focus on the delivery that we have promised;
4. Improve the relationships within TEE and with BCC Corporate Teams to help influence development of the contract;
5. Develop connection between BCC and the Service's communication teams to improve effective communication;
6. Ensure shareholders are proper strategic partners to the Council;
7. Develop the Service's approach to support member management through appropriate communication;
8. Key staff to develop strategic thinking within the organisation;
9. Develop committed long term, four year budgets;
10. Remove blockages from technology to enable full utilisation of systems;
11. Make the most of England Economic Heartlands and LEPs with help from Strategic Partners.

The results of this action plan will ensure that the Service can manage risks associated with delivering its objectives through its asset management system.

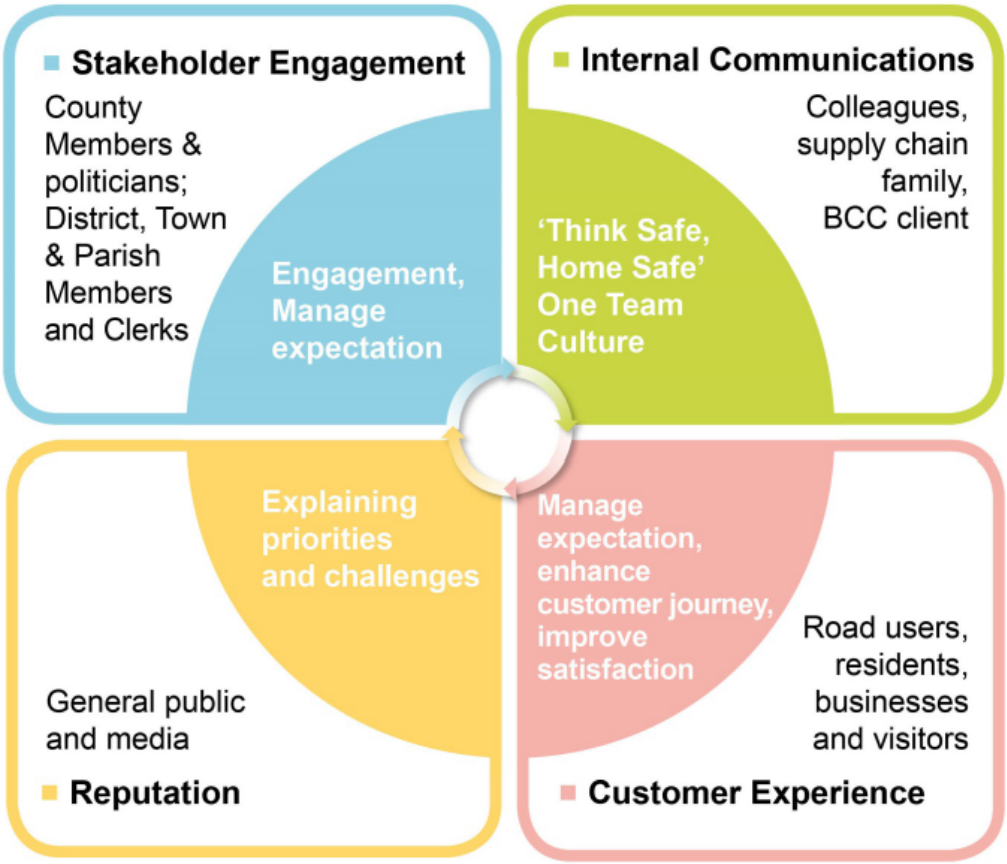
Communication

The Service manages risks to implementation by ensuring that its asset management system is communicated to key stakeholders. The Service sets this approach out in their Customer and Communication Strategy.

The Customer and Communication Strategy outlines how the Service will:

- use Stakeholder engagement to educate on its approach to highway asset management and to gather feedback on services and amend accordingly;
- use internal communication to ensure that all employees understand their role in upholding the reputation of the organisation and that they represent, feel valued, motivated and empowered;
- ensure that the customer experience is enhanced by developing projects to improve the customer journey;
- manage the expectation of our customers whilst upholding the reputation of the Service, the provider and Buckinghamshire County Council.

In communicating its Objectives, the Service considers the key audiences who will be receiving and reacting to the messages and information provided. The Communications Model illustrated below highlights how the Service is set up to align with key audiences and deliver communications.



This approach enables the Service to target their communications to ensure that the appropriate messages reach the desired audience. While prioritising the information that is

disseminated to managing communication quantities effectively, thus mitigating risks to implementation.

User Demands

The Service manages risks associated with user demands on the network through the development and adoption of a carriageway maintenance hierarchy. The County's approach prescribes levels of risk to reflect the usage and strategic importance of each section of the network. Following the recommendations of The Code, the entire network is categorised as outlined in the table below. The hierarchy dictates the safety and condition survey regimes and influences the prioritisation of works programmes allowing the Service to efficiently maintain a safe and resilient network and manage the risks associated with meeting user demands.

Hierarchy Category	Hierarchy Name	Broad Hierarchy Description
Carriageways:		
2	Strategic Route	The most heavily trafficked A Roads
3a	Main Distributor	The remaining heavily trafficked A Roads
3b	Secondary Distributor	Lightly trafficked A Roads, all B Roads, heavily trafficked C Roads and all traffic-sensitive Streets.
4a	Local Inter-connecting (Link) Road	Remaining C Roads and non-traffic-sensitive bus routes.
4b	Local Access Road	Roads providing local access.
Footways:		
1	Primary Walking Route	Main shopping areas and busy urban areas
2	Secondary Walking Route	Medium use through local areas/shopping centres
3	Linked Footway	Local access through urban areas/busy rural footways
4	Local Access Footway	Low usage estate roads and cul-de-sacs
Cycleways:		
1	Cycle Lane	Part of the carriageway adjacent to the kerb
2	Cycle Track	A route for cyclists not contiguous with the public footway or carriageway
3	Shared Cycleway/Footway	Either segregated by a white line/other feature or unsegregated

The allocation of roads within the hierarchy is regularly reviewed and revised to reflect local factors and influence to ensure an effective risk based approach is maintained. This includes identifying those assets which are critical to the operation of the network. The allocation of Hierarchy is carried out using a route-based approach. Whilst the broad definitions provide a guide to the categorisation of roads, each road is considered on its merits and a judgement is made to best represent its importance.

The highway network is constantly changing and the hierarchy assignments will undergo a continuous review and updating process. The network will be reviewed through the following means:

- New and Adopted Streets;
- Changes in use or traffic flows;
- Applications for change to the hierarchy categories.

New and adopted streets are assigned a hierarchy category consistent with adjacent streets in accordance to a route-based approach. Changes in use or traffic flows will prompt a review of the road and associated route's hierarchy. Local Area Technicians and Local Members may apply to change the hierarchy of a section of the carriageway. This is dealt with in the same way as for newly adopted streets. This ensures that the risk-based approach is consistently applied for the adoption of new assets.

Asset Performance

The Service considers the risks in establishing the long-term investment needed to maintain an acceptable level of highway asset performance, necessary to support its objectives, and to maintain a resilient network that meets the demands of its users.

The Service utilises Lifecycle Planning principles to identify the long-term investment requirements for the five major asset groups. The Lifecycle Plans are used to inform the allocation of budgets through the Business Planning and Medium Term Financial Planning processes and to assist in making the case for investment where required. Lifecycle plans are regularly updated and reviewed against performance achieved to improve predictions and reliability.

The outputs from the Lifecycle Plans are used to inform key stakeholders including elected members through the Medium Term Financial Plan which allocates funding across all corporately owned assets including Schools and Public Buildings. Works programmes for asset protection and renewal are developed to deliver the required performance for the Capital invested while optimising treatments quantities and so minimising their carbon footprint.

The Lifecycle Plans are used to predict long term future performance of highway infrastructure assets for different levels of investment. Different treatment strategies are tested and the plans determine the level of investment required to achieve the desired performance in accordance with the Council's Strategic Objectives at the minimum cost over the lifecycle.

By comparing predicted performance against desired targets across all asset groups, decisions will be made on how to distribute investment between the assets to best achieve the Council's Strategic Objectives for the budget available.

The Service will combine the results of the Lifecycle Planning with the asset prioritisation processes to endeavour to maintain the highway network against increased future demands. Consideration will be given to local developments and nationally significant projects such as High Speed 2, the Western Rail Link to Heathrow, the East West Rail Link and the M4 Smart Motorway.

This long-term approach to managing asset performance ensures that the Service can manage risk by identifying the funding requirements needed to maintain an acceptable level of service while considering other external factors.

Data

The right systems and well maintained, audited data are key to effective reporting and monitoring of asset performance. the Service utilises and maintains sustainable IT systems necessary to deliver the Asset Management Strategy. the Service continually reviews the adequacy of these systems and the data held within them to manage risks arising from incomplete or innaccurate data. Data is held centrally in the Asset Management Information System (AMIS) or, where required, on separate sytems with links and processes to ensure that any shared data is maintained in each system. Access and editorial rights to the data are controlled centrally through strict login and password protocols to maintain the integrity of data held.

The data held in the AMIS includes:

- Customer Contact data and correspondence
- Street Gazetteer and Network information
- Asset data and parameters
- Inspection records
- Condition information
- Works Ordering and completion
- Maintenance histories

Asset data is managed in accordance with this Asset Data Management Plan (ADMP). The ADMP is a data catalogue of the information held and is used to identify future inventory collection priorities required to support the asset management strategy. It records the controls and processes for updating and maintaining the data held. The ADMP ensures that the Service has sufficient inventory and condition information to be able to make informed decisions required to assess performance of the asset and manage risks to service delivery.

Safety

Inspections and Defect Repairs

Safety inspections of individual network sections are carried out to manage risks facing users arising from hazardous defects. This inspection regime, in accordance with the Carriageway Maintenance Hierarchy adopted by the Service, considers:

- road category;
- traffic use, characteristics and trends;
- characteristics of adjoining network elements;
- wider policy or operational considerations.

Although the road category within the hierarchy, in combination with traffic use, is the main determinant of inspection frequency, site specific factors may merit a decision to temporarily or permanently increase or reduce the frequency in a specific location (for example to mitigate the risk of unusually high defect levels or accident rates).

Carriageway Hierarchy Classification	Frequency of Safety Inspection
2	Monthly
3a	Monthly
3b	Monthly
4a	Quarterly
4b	Annually

The above frequencies of safety inspections are similar to those historically used by the Service and have been sufficient in mitigating the risk of defects causing hazards to the travelling public. During safety inspections, all observed defects that provide a risk to users are recorded and the level of response determined on the basis of a risk assessment.

The Highways Inspection Policy defines defects in three categories:

- Emergency - those that require prompt attention because they represent an immediate hazard;
- Category 1 - those that require priority attention because they represent a potential risk to road users or to the integrity of the highway asset;
- Category 2 - all other defects.

Category 2 defects are then further subdivided to enable the inspector to make an appropriate assessment of risk.

Emergency defects will be corrected or made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute displaying warning notices, coning-off or fencing-off to protect the public from the defect or other suitable action. If the inspection team cannot make safe the defect at the time of inspection, then they will instigate the relevant emergency call procedures to ensure appropriate resources are mobilised to make the defect safe. These procedures aim to ensure initial attendance to the defect within 2 hours of the defect being identified.

Category 1 defects may also be corrected or made safe at the time of the inspection, if reasonably practicable. If it is not possible to correct or make safe the defect at the time of inspection, then an appropriate repair will be carried out within 2 working days of the identification of the defect.

Category 2 defects are those which are deemed not to represent an immediate hazard and which can be repaired within longer timescales.

Category 2 defects are categorised according to priority: High (Cat 2H), Medium (Cat 2M) and Low (Cat 2L), with response times defined within the table below. Guidance on appropriate classification of defects is provided in the Safety Inspection Guidance Manual (SIGM). The manual provides examples of defects which may be encountered on the network and potential categorisation. However, on-site assessment will always need to take account of particular circumstances.

The inspector will also take into account the likelihood of further deterioration before the next scheduled inspection, and where this is a considered a high probability, a higher defect classification may be determined.

Category	Response Time	Description
Emergency	2 Hour	Attend within 2 hours and subsequently make safe or permanently repair. If repair is temporary, then raise additional Cat2M defect for permanent repair within 28 working days.
1	2 Day	Attend within 2 working days and make safe or permanently repair. If repair is temporary, then raise additional Cat2M defect for permanent repair within 28 working days.
2 – High	5 Days	Attend within 5 working days and make safe or permanently repair. If repair is temporary, then raise additional Cat2M defect for permanent repair within 28 working days.
2 – Medium	28 Days	No temporary repair necessary. Attend and permanently repair within 28 working days.
2 – Low	N/A	Consider repair within future programmes of planned maintenance works.

The response times for repairing Cat 1 and 2-High defects have been changed from 24hrs to 2 and 5 days respectively for two reasons:

1. Longer response times were adopted to increase the time available for planning defect repairs to improve scheduling efficiency
2. The revised response times were benchmarked against other neighbouring authorities and with other Ringway Jacobs contracts for consistency of response.

These revised response times were tested with stakeholders during a stakeholder conference workshop; stakeholders were happy to apply these revised response times in an exercise that tested appropriate response times for repairing a range of typical defects.

The benefit of this risk-based approach has enabled an improvement in the service delivery with increases in the volume of defect repairs completed. This improvement came after the implementation of a risk-based approach was fully adopted with the introduction of the new Safety Inspection Policy in April 2017.

The Service will continue to monitor the frequency of third party claims received, together with their repudiation rates and a review will be undertaken on the anniversary of the new Safety Inspection Policy being adopted.

Highway Skidding

The Service manages risks to road users through the management of skidding resistance on the network in accordance with the Department for Transport's Skid Resistance Standard to the Design Manual for Roads and Bridges (DMRB) in 2015. The standard (HD28/15) describes how the provision of appropriate levels of skid resistance for trunk roads will be managed. the Service has adopted the principles of this guidance for its busiest roads based upon the Hierarchy.

The Service conducts "Griptester" surveys on all Hierarchy: 2, 3A and 3B roads, as these categories are considered to provide the highest risk of skidding to road users owing to their speed and volume of traffic. The results are converted to equivalent Characteristic SCRIM Coefficient CSC values. The Standard recommends that the network is assessed for skidding risk by assigning Site Categories with appropriate Investigatory Levels (ILs). The Standard describes how the CSC values are compared with the ILs to identify lengths of road where low skid resistance could create a risk of skidding in the wet.

To ensure risks are mitigated, sites where the CSC is below the IL, the Service applies local standards to compare CSC values with the previous 3 years' wet skid crashes in accordance with the criteria below:

- CSC is 20 units or more below the Investigatory Level (IL);
- CSC is 10 to 20 units below the IL and there has been 1 crash in wet weather;
- CSC is 0 to 10 units below the IL and there have been 2 or more crashes the wet weather.

These criteria have been chosen to focus on the highest, evidenced risk to road users arising from skidding in the wet. These criteria have been used by the Service for a number of years and have been very effective in helping risks to be managed and there have been no significant challenges.

Engineers are then required to investigate whether measures to reduce exposure to the road user from skidding are required. Before recommending a surface treatment, Engineers will consider whether some other form of action is practical to mitigate the skidding risk. Such actions could include improving visibility, road markings and signing (including interactive signs), installation of additional gullies, grips or ditches, or correction of adverse crossfall. Slippery road signs should be erected once the need for an action has been confirmed and be maintained until the action has been completed.

This process for managing skidding is very effective at mitigating risks to the road user resulting from skidding.

Severe Weather

To ensure that the highway network remains available throughout the year the Service manages risks to the road user arising from winter and severe weather events. the Service defines its Resilient Network into two distinct sets of routes: Primary and Secondary Routes.

Primary Routes are the key routes through the county and consist of around 1400km of the county's A and B road network. These routes are treated on a precautionary basis when there is an indication that ice may form on the roads based upon weather forecasts. Precautionary salting helps to prevent the formation of ice on the carriageway surface and so mitigates the risks posed to road users by severe weather.

At times if salt stocks are low these routes are reduced to Emergency Routes; a shortened network that will connect only the most vital of services and receptors

Secondary Routes are considered to be the reduced network that will enable the county to continue to function in times of very severe weather. Secondary routes may be treated before a forecast severe weather event or in the event of prolonged severe weather when the primary routes have been cleared and treated. They include the following highway network: Classified roads which are not included in the primary salting network, unclassified roads serving communities of 200 dwellings or more and unclassified roads with a gradient of 10% or less. We may also salt cycle ways and footways in main shopping areas and other key pedestrian and cycle facilities. In general, the secondary salting network will be treated after the formation of ice or fall of snow in accordance with the Operational Plan.

Decisions on whether to grit are made daily based on local forecasts and on road temperatures rather than air temperatures. Salting is likely to take place whenever road temperatures are forecast to fall below +1ºC and ice is expected to form.

In the course of a prolonged cold spell when all precautionary and secondary routes are clear of ice a decision may be made to salt other roads. This depends on salt stocks and does not include residential cul-de-sacs and private roads.

Salting routes are decided upon using the multi criteria analysis including consideration of geometry, route uses, community links and traffic flows. This multi criteria analysis ensures that the risk based approach is will embedded in decision making.

Trained and experienced inspectors carry out these assessments and the routes are decided before the winter season.

Continuity

As part of the Service's risked-based approach a series of Business Continuity Plans set out the response to emergency situations that may impact key receptors across the highway network. The business Continuity Plans tie into Buckinghamshire County Councils (BCC) Emergency Plan which considers all services delivered by BCC. The Business Continuity Plans will be used in any situation that requires immediate response on the highway infrastructure network. By following the guidance set out in the Business Continuity Plans any situation will be responded to with appropriate resources to minimise any impact.

The aim of the BCC Emergency Plan is to provide an effective and coordinated Council response to an emergency affecting the community, in support of the combined multi-agency response, in order to manage the immediate effects of the emergency, mitigate the impact of the emergency – especially on the vulnerable - and hasten the return to normality through the recovery process.

The BCC Emergency Plan ensures that the Council is able to continue to provide its identified Mission Critical Activities in the event of a disruption to normal service delivery and be able to rapidly restore all activities as quickly as possible within an identified time frame, in line with UK best practice, the Council BCM Policy and Council BCM Programme.

An Emergency response will be triggered in the event of any of the following criteria being met:

- A warning is received of an event (e.g. anticipated flooding / severe weather) that may occur and that will require the coordination of a multi-Service response.
- Declaration of a Major Incident in Buckinghamshire.
- An emergency occurs that impacts the Community and which requires the coordination of a multi-Service County Council response.
- An emergency occurs in the Community or in a neighbouring County / Borough / Unitary Authority area that requires multi-agency, and possibly multi-service, coordination from BCC.
- Council Services are facing a disruption to the delivery of their Services requiring a coordinated multi-Service response (Business Continuity Management).
- The Council receives a request for support from Professional Partners / other Category 1or 2 responders.

This approach is vital to the Service's risk based approach as it ensures that any emergency is dealt with and each asset's business continuity plan ensures risks associated with maintaining a resilient network are managed.

Works Activities

All work activities are prioritised using multi criteria analysis which ensures risks associated with delivering Levels of Service and achieving value for money are managed. Multi-criteria analysis is essential as it considers the hierarchy of the road amongst other factors such as flooding and maintenance history ensuring that risk is appropriately balanced with performance and cost. Each of the five key asset groups has a prioritisation methodology which explains how capital maintenance schemes are prioritised to ensure risks to maintaining Levels of Service and asset performance are managed.

Carriageways

Capital Maintenance Programme (CMP) schemes on the Strategic Network are prioritised using multi-criteria analysis that considers each scheme's contribution to achieving asset management objectives. The prioritisation criteria are used to develop a Value for Money ranking for each scheme. Therefore, the contribution each scheme or collections of schemes make in achieving those objectives and addressing performance gaps determines their priorities. The Asset Management Objectives (AMO) are:

AMO1)	Maintain a Safe Network
AMO2)	Manage Highways Effectively and Efficiently
AMO3)	Maximise Network Availability
AMO4)	Optimise the use of and Protect the Availability of Natural Resources
AMO5)	Improve Accessibility for All

These objectives are best met through a balanced strategy including preventative and replacement treatments. The criteria are used to create scheme priorities by assigning points depending on the schemes fulfilment of the criteria. The following criteria are used:

- Condition
- Hierarchy
- Occurrence of Potholes
- Occurrence of Complaints
- Occurrence of Insurance Claims
- Conservation Areas
- Flooding Areas
- Skidding Data

In addition to the prioritisation criteria above, a value for money assessment taking account of the cost of the allocated treatment and the anticipated life of the treatment is made.

A Value for Money (VfM) score prioritises those schemes that best address the criteria with a treatment that lasts the longest for the lowest cost. This is the definition of value for money used to prioritise schemes on the Service's strategic network.

For Local Roads that do not have a strategic role (Hierarchy 4b Local Access Roads), the County Council follows its "Think Councillor" approach. Members attend an annual meeting to consider the future programme in their Division. Members have each created a prioritised list of local schemes for their Division in consultation with their Local Area Technicians (LATs) and based on advice and information from the Asset Team

In order to maintain reasonable equitability for local roads, expenditure in each division will be monitored over the period of the rolling programme and compared to the road length and relative condition. Schemes will be added and removed in each division to maintain equitability over time.

Footways
In the last five years, the majority of schemes have been prioritised in conjunction with Local Members. The prioritisation of capital maintenance footway schemes in Buckinghamshire now mirrors the carriageway approach. Busier footways are prioritised using condition and other data whilst the local footways are Members' choices with advice and information provided to aid prioritisation.

Busier footways will be prioritised based on:

- Condition
- Hierarchy
- Occurrence of Potholes
- Occurrence of Complaints
- Occurrence of Insurance Claims
- Opportunities for Collaboration
- Scale and Value for Money
- Opportunities to improve access for the mobility impaired

In a similar manner to local carriageway schemes, and to maintain reasonable equitability, Local Footways expenditure in each division will be monitored over the period of the rolling programme and compared to the road length and relative condition. Schemes will be added and removed in each division to maintain equitability over time.

The categorisation of footways within the hierarchy is being reviewed and Members and Local Area Technicians will be consulted on the hierarchy over the winter of 2017.

Structures
Highway Structures in Buckinghamshire receive regular condition inspections. The inspections record the condition of each structure and are used to identify potential works and treatments for those structures in the worst condition. The impact of these works on the improvement of condition is compared to the cost of the work to give a consideration to value for money. The schemes that offer good value money are then taken forward for further consideration.

Schemes are then prioritised according to the considerations seen in the bullet points below. The schemes which address most of these considerations, or are deemed to have the largest impact, gain the highest priority. A programme is developed and costed for the highest priority schemes in accordance with the available capital budget. Schemes are prioritised based on;

- Safety
- Hierarchy
- Heritage
- Presence of Utilities
- Maintenance History
- Long Term Condition
- Potential impact of closure
- Flooding
- Environmental impact
- Impact on Stakeholder
- Accessibility
- Innovations and Modernisation

Street Lighting
TFB tests a proportion of its street lights each year to assess their condition. Each column is then placed into the following condition bands:

- Red – Columns that have been cut down
- High Amber – Columns with Advanced Corrosion at their base
- Low Amber – Columns with Slight Corrosion at their Base
- Green – Columns that are in Good Condition

Column replacements are prioritised on a worst first basis, i.e. the 'Red' and 'High Amber' Condition Bands. These columns are subject to the highest political and safety pressures. A proportion of the capital budget is also allocated to other activities such as updating lanterns to modern LED and replacing underground cabling and electrical feeder pillars, to further manage risks of maintaining the level of service for lighting.

Intelligent Transport Systems (ITS)
ITS assets are primarily traffic signal sites, but allowance is also made for other related assets such as car park signing, rising bollards etc.

Prioritisation of schemes involves a multi-criteria analysis with ITS sites being allocated points based upon meeting certain criteria. The delivery of schemes is often linked to external factors such as local development or strategic improvements. The delivery year for schemes therefore includes consideration of these factors and opportunities for collaborative working. The criteria considered are:

- Condition
- Hierarchy
- Age
- Fault History
- Power supply
- Other Stakeholders

Programming and Budgeting
Each prioritised scheme is visited on site and assessed to review treatment type and extent of the scheme. Any changes due to this assessment are analysed and the scheme checked that it still provides good value for money. Schemes are then designed and target prices prepared.

Schemes are placed into their indicative delivery year based on the MTFP budget in priority order and to deliver the work output approved in the MTFP. Finally, the Cabinet Member is consulted on the recommended programme prior to approval each year. Annual programmes are developed and approved through the annual business plan process.

The MTFP process allocates budget to each asset. The prioritisation processes described determine which schemes are delivered for the available budget and is generally applicable regardless of the budget allocated.

The prioritisation methodologies draw in factors that allow for a comprehensive risk based approach to be taken when creating works programmes for the major assets. Similar principles are applied when work activities are prioritised for other assets groups.

Drainage
The Service is undertaking a 3-year cyclic programme of attending and cleaning the whole of the drainage asset to gain a complete picture of the state of the asset. On completion of that 3 -year programme the Service will gain a true and full assessment of the state of the asset. Additional cleaning can be targeted towards known hotspots within the 3-year programme.

The Drainage Strategy promotes gully emptying frequency on a needs basis, whilst understanding what the issues are that lead to the known hotspots. The Strategy supports moving towards resolving known hotspots at source rather than simply increasing frequency of cleaning.

Improvement

For a risk-based approach to be effective the adopting organisation needs to be continually improving. It is therefore pertinent that the Service continues to implement its risk based approach through changing political, economic, social, technological, environmental and legal circumstances. As such the Service seeks to improve through a variety of methods.

As Asset Management practice and the availability of guidance is constantly developing, the Service identifies performance gaps and aligns itself with best practice. An improvement plan has been developed to deliver, improve and refine the strategy and this will continue to be regularly monitored.

The improvement plan is focussed on advancing the Service's maturity as assessed by the Local Highway Maintenance Capital Funding Self-Assessment Questionnaire for the Incentive Fund and ultimately to achieve ISO 55001 certification. the Service is also a member of the National Highways and Transportation's (NHT) Cost, Quality and Customer (CQC) Efficiency Network.

A monthly Asset Owners' Forum (AOF) chaired by the Highway Infrastructure Asset Manager is held to align best practice across the five major asset groups. This Forum will be a platform for knowledge sharing within the organisation and to offer support to ensure effective asset management to ensure best practice is maintained in the implementation of a risked-based asset management strategy.

The monthly Asset Management Board (AMB) engages senior decision makers with Highway Infrastructure Asset Management. The AMB reviews progress reports on the implementation of asset management in the Service and offers guidance to ensure that the Service continues to align with BCC's Corporate Objectives.

The Service relies on its Performance Management Framework which includes management indicators that measure progress against the organisation's objectives in delivering its services. These indicators track a number of key indicators which help to assess the success or otherwise of implementing the Service's risk-based approach to deciding on levels of service. These indicators support the Service in continually reviewing the impact of these decisions to make any necessary changes to levels of service, whilst remaining mindful of constraints on budgets.

The Highway Infrastructure Asset Manager will continue to engage with an external Asset Management Discipline Group within the Midlands Highway Alliance. This group reviews emerging guidance from bodies such as HMEP etc. and identifies developing technologies and innovations ensuring that they are captured and adopted where appropriate.

The Service liaises with industry experts to review the improvement plan and ensure that wider developments, opportunities and lessons learned are captured and exploited.

These methods of ensuring continual improvement are vital to ensuring that the risk based approach is appropriately applied in accordance to the latest best practices.

Consistency

Risks are mitigated most effectively when managed consistently alongside neighbouring authorities as it allows the user to enjoy a dependable experience when using the highway network. To ensure that a consistent risk based approach is taken the Service regularly engages with other local authorities to discuss best practice. the Service are a member of the Midlands Highway Alliance (MHA) where case studies are shared on how local authorities have adopted a risk based approach. This engagement and sharing of case studies enables consistency with other authorities and best practice.

The MHA was formed in July 2007 and has been used as the model for other regional alliances being set up across the country; it is a unique self-funding partnership promoting excellence in the delivery of highway services. MHA's common aim is to work together to improve performance, share best practice and make efficiency savings in the delivery of highway services.

The alliance has five objectives:

- To establish and develop collaborative framework(s) to deliver medium size (highway) schemes
- To establish, implement and develop a continuous improvement model for highway term contracts to achieve convergence to best practices
- To establish and develop other collaborations for highway activities, such as the procurement of commodities and professional services, as agreed by the MHA members
- To embed partnering principles and construction best practice in all its work and throughout the supply chains
- To promote and publicise the work of the MHA

Through membership of the MHA and through the MHA's five objectives the Service can apply a risk based approach with other members of the alliance to ensure a consistent experience for the user. The collaborative approach across the alliance also helps to provide a strong defence in the event of third party claims made against the authority.

In addition to the MHA, the Service liaises with its neighbouring authorities to assess levels of service across its boundaries in a further effort to achieve consistency. These collective reviews of levels of service, through each authority's risk-based approach, helps to improve not only the understanding of risk, but on setting, reviewing and improving levels of service.

Summary

This document sets out how the Service is meeting the requirements of the new code by assessing risks associated with delivering and maintaining its objectives and levels of service.

Risks to successful delivery have been assessed across a wide range of activities relating to the whole asset management system operated by the Service.

Risks have been assessed in terms of:

- Developing its Levels of Service (Asset Management Objectives)
- Implementing its Asset Management System
- Communicating its Asset Management approach effectively
- Assessing progress towards meeting objectives (asset performance)
- Maintaining integrity of necessary data
- Delivering a safe and resilient network
- Delivering works activities and achieving value for money
- Pursuing continual improvement
- Achieving consistency and best practice

This comprehensive approach to risk evaluation demonstrates the risk-based approach the Service is pursuing in meeting the requirements of the new code – Well-managed Highway Infrastructure

As such, the Service undertakes a risk-based approach to deliver its highway services including setting levels of service, inspections, responses, resilience, priorities and programmes. It can be seen that the Service's approach is comprehensive and wide reaching.

The Service will continue to review its risk-based approach against emerging guidance, by monitoring outcomes and auctioning findings, benchmarking with other authorities, consulting industry experts and through its governance procedures.