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SURREY COUNTY COUNCIL

Making Surrey a better place

Capital Prioritisation Policy for Highway Assets; Roads, Footways, Structures, Drainage & Safety Barriers

January 2013 - Version 2

7

Capital Prioritisation Policy for Highway Assets
Roads, Footways, Structures, Drainage & Safety Barriers

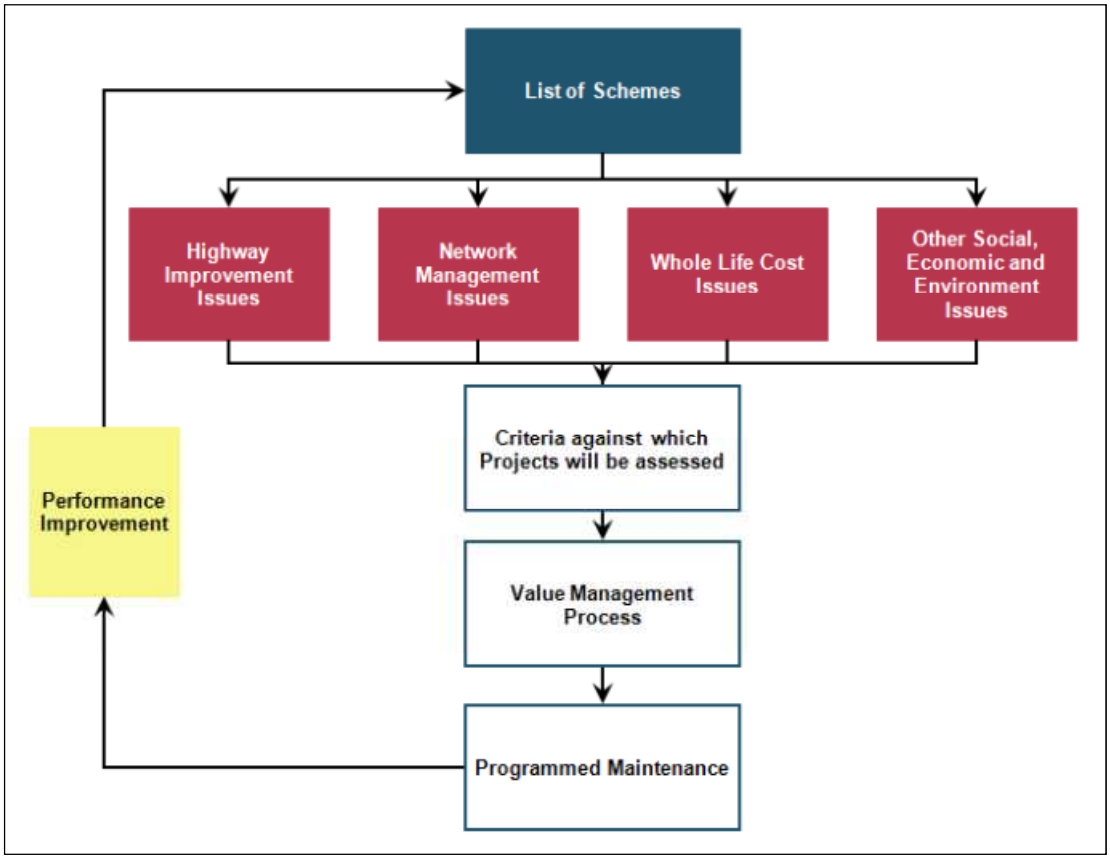
Surrey Roads have among the highest levels of road use in the UK and are used to provide access to jobs, schools, services and businesses. It is essential that we spend our Capital funds in the most cost effective way possible in the current economic climate so that the highway network can be used to help make Surrey's economy strong and effective and can help to fulfill the Council's purpose;

To ensure good quality public services for the residents of Surrey so they remain healthy, safe and confident about the future.

Despite the reductions in overall council funding in recent years, Surrey has maintained its highways maintenance budgets at historic levels and increased it recently to meet additional costs from severe weather. However current funding is not at a level to properly address the £600m maintenance backlog for our whole highways asset (£400m for roads and £200m for bridges, footways, drainage and safety barriers).

It is necessary that whatever funds are available are spent on the right schemes at the right time and that schemes are prioritised using value management to maximise risk reduction and minimise whole life costs.

The Code of Practice for Highway Maintenance Management, "Well Maintained Highways" uses the Figure below to describe the Value Management Process.



The areas that we will use to value manage our programmes have been developed from best practice methods found in "Well Maintained Highways", Well Maintained Structures and through discussions within National Forums and with other Local Highway Authorities,

- **Highway Maintenance/Improvement Issues** – we will analyse condition data available for each asset to identify those schemes in need of maintenance and improvement.

- **Network Hierarchy** - we will ensure that greater priority is given to roads and key assets on roads that have the greatest usage or need by utilising the recently updated Surrey Priority Network.

- **Risk** – we will give a higher priority to schemes that pose a risk to public safety.

- **Value for Money** – we will use the right treatments at the right time in order to produce cost effective solutions and programmes of work.

- **Network Management** - we will ensure works are programmed to minimise disruption to users and maximise benefits to the community by combining schemes for different assets together.

Each asset has its own set of prioritisation criteria and weighting sets based on the principles above which take into account the unique attributes and requirements of each asset. These criteria will be reviewed and approved annually by the Cabinet Member for Highways, Transport and Flooding recovery so that they can take account of changing requirements and priorities.

ANNEX 3

Prioritisation Glossary

BCI	**Bridge Condition Index**
	This is the industry standard measurement of bridge condition derived from inspections carried out by trained bridge inspectors, in accordance with the Management of Highway Structures Code of Practice 2006, and The Inspection Manual for Highway Structures 2007. General Inspections are carried out every 2 years, principal inspections every 6 years and at risk structures are inspected at a frequency determined based on the level of risk.
BMS	**Bridge Management System**
	A System use to store, manipulate, manage and retrieve data and information related to Bridges.
CIPFA	**Chartered Institute of Public Finance and Accountancy**
	The CIPFA code of Transport and Infrastructure Assets provides details of how Local Authorities should value their Highway Assets in order to provide information required by HM Treasury for Whole of Government Accounting.
CVI	**Course Visual Survey**
	This is the industry standard survey used to measure road condition on the unclassified road network. The data is derived from a visual inspection carried out by trained inspectors.
-	**Embankment**
	A bank formed above the natural ground level that creates the approach to a bridge. The purpose of an approach embankment is to raise the road level to align with the bridge deck level.
-	**Engineers Visual Assessment**
	Engineers from Asset Planning Group make a visual assessment of a site and score the site based on a list of defined criteria.
-	**Parapet**
	A wall/rail/fence that runs along the outside edges of the bridge deck, or retaining wall, parallel to the direction of traffic flow. The purpose of the parapet is to prevent users from accidentally falling off the bridge.
FDC	**Flow Duration Curve**
	Graph that shows the proportion of time during which discharges of water equal or exceed a specified measure
FNS	**Footway Network Survey**
	An industry standard survey used to measure footway (pavement) condition. Data is collected by trained survey technicians.
HSI	**Highway Safety Inspector**
	Inspections of the highway are carried out at specified intervals based on the road hierarchy to identify safety defects and order works that fit into the inspection matrix.
LoBEG	**London Bridges Engineering Group**
-	**Lifecycle Planning**
	By considering an asset over its whole lifecycle, it is possible to select the optimum point to intervene with the optimum treatment. Surrey County Council is using tools newly developed by the Highway Industry to carry out this work on key highway assets to better inform future programmes of work.
-	**Major Maintenance**
	Significant structural work to an asset. For roads or pavements this generally involves removing one or more layers of the existing surface and replacing them, for bridges, safety barriers or drainage assets this could involve replacing all or significant parts of the structure.
-	**Planned Maintenance**
	Programmes of work that make permanent long term improvements to highway assets. This type of work is more cost effective than reactive maintenance as it allows time for the most appropriate and cost effective treatments to be identified and allows for co-ordination

	of works on different highway assets.
-	**Preventative Maintenance**
	Preventative Maintenance treatments are used in a similar way as varnish is used to preserve and prolong the life of a window frame. Unlike Major Maintenance they generally don't involve removing and replacing, but instead are applied on top of what is existing to preserve where the underlying structure is still intact. On roads treatments such as surface dressing are used to reinstate skid resistance and seal against the ingress of water to the lower layers of the road structure. Although it may not seem like an obviously sensible use of resources to treat a road that is still in fairly good condition when other worse roads are left untreated, spending money on preventative maintenance improves the resilience of the highway network and prolongs the life of highway assets in a cost efficient way, leading to an overall long term improvement.
-	**Project Horizon/Operation Horizon**
	A project to seek solutions to enable increased volume of schemes to tackle Surrey County Council's historic 17% of roads requiring maintenance backlog. In 2013 Project Horizon will move into its 5 year operational phase to deliver the identified schemes using the identified solutions. At this point it will become Operation Horizon.
RCI	**Road Condition Indicator**
	This is the industry standard measure of road condition used. It is derived from machine surveys carried out on the Principal Road Network (A, B & C roads).
-	**Reactive Maintenance**
	Maintenance that is carried out due to an imminent safety risk. This could include pothole repair on roads, pavements (footways) or cycleways, replacement of regulatory white lines, replacement of broken or missing ironwork, repair of bent or out of shape rails, barriers, road signs or traffic signals, and trees or vegetation with an obvious danger of falling. Although the intent is to make permanent first time fixes this is not always possible and temporary fixes are sometimes required with a permanent fix to follow. Reactive Maintenance costs more in the long term than Planned Maintenance.
RRRAP	**Road Restraint Risk Assessment Process**
	Tool to estimate risk at a particular site based on accident records in order to enable the correct vehicle restraint (safety barrier) for the situation to be identified.
SCRIM	**Sideway-force Coefficient Routine Investigation Machine**
	Vehicle that measures the Skid Resistance of the road surface.
-	**Scour**
	Erosion of earth around a bridge, generally affecting the foundations of structures built in watercourses.
SPN	**Surrey Priority Network**
	The network by which Surrey manages and maintains the public highway within the county. The SPN defines hierarchies for all elements of the highway network including roads, pavements and cycleways. It reflects the needs, priorities and actual use of each element of the network and is used to identify needs based provision of services and identify appropriate levels of service.
-	**Wetspot**
	"Wetspot" is a term used by the lead local flood authority (Surrey County Council) to describe the location of a flood incident that has been reported.

ANNEX 3

Roads Prioritisation Value Management Scoring

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1. Highway Maintenance/Improvement Issues

Condition	Score
Road Condition Index (RCI) [A,B,C Network]	Max 200
Coarse Visual Inspection (CVI) [Unclassified Network]	Max 200
Engineers Visual Assessment	Max 278

2. Network Hierarchy

Hierarchy of road	**Score**
SPN1	100
SPN2	100
SPN3	50
SPN4a	25
SPN4b	10

3. Risk

Prioritise potential risk to public and take account of varying rates of deterioration between HSI visits

Risk	**Score**
SCRIM	100
Skid Accidents	40
Claims history	100
Number of reactive gang visits to repair pothole defects	Max 100*

4. Value for Money

Budget will ideally be split at a ratio of 30/70 for preventative maintenance schemes and needs based schemes in order to achieve a cost effective balance of preserving roads that have not yet fully deteriorated and fixing those that have.

Value for money cost savings are achieved under project horizon for programme efficiency and volume discounting requiring some deviation from priority order.

Innovative solutions for may require some schemes to be deferred e.g. moving all concrete road surfacing to a single year of Operation Horizon will enable a specialist supplier to be identified and works programmed in the most efficient manner.

5. Network Management

No score is currently proposed and the value will be determined during the work's programming phase on scheme by scheme basis.

ANNEX 3

Differences Between Existing and New Roads Prioritisation

The original 2008 headings were: Public & Member Criteria; Engineering Criteria; Type of Road and Usage. These have been changed to the 5 headings shown in the Draft Prioritisation Policy which have been developed taking account of industry best practice.

1. Highway Maintenance/Improvement Issues

The 3 condition ratings scores remain unchanged from the 2008 criteria.

2. Network Hierarchy

Bus Route & HGV have been removed as they are included in the assessment of SPN and a multiplier is included in the visual condition rating score for roads subject to higher Heavy Goods Vehicle (HGV) usage.

The scoring has changed to reflect the new hierarchy. The rational for keeping SPN1&2 points the same reflects the equal importance of SPN 2 to strategic routes for local commerce. 4b has been kept as a low score as it may be more beneficial to maintain these through local devolved budgets.

3. Risk

SCRIM; Skid accidents; Claims history all remain unchanged from the original 2008 prioritisation. Member priority and Public view have been removed as the Maintenance Priority Task Group concluded that these inputs can be met locally through devolved budgets.

HSI inspector rating has not been applied in practice due to inconsistent data. It is proposed that this be removed completely as there are already two separate condition scores.

4. Value for Money

Change is considered a big risk to suppliers in achieving discounts when securing advanced bulk orders. Confirming year 1 and 2 programmes shows client commitment to removing change risk and should be guaranteed only where demonstrable cashable saving are realised through schemes position on programme.

5. Network Management

This is a new criterion and while it will does not currently receive a score the value will be gained from better programming of works. When a better understanding of the lifecycle of each asset is understood, better planning of works can take place.

ANNEX 3

Footway Prioritisation Value Management Scoring

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1. Highway Maintenance/Improvement Issues

Condition	Score
Footway Network Survey (FNS)	Max 200
Engineers Visual Assessment	Max 200

2. Network Hierarchy

Hierarchy of footway	Score
Footway Cat 1	100
Footway Cat 2	50
Footway Cat 3	25
Footway Cat 4	10

3. Risk

1. Prioritise potential risk to public and take account of varying rates of deterioration between HSI visits

Risk	Score
Claims history	100
Footway construction defects recorded 1-5	10
Footway construction defects recorded 6-20	25
Footway construction defects recorded 21-50	50
Footway construction defects recorded 51-100	100

4. Value for Money

Budget will ideally be split at a ratio of 40/60 for preventative maintenance schemes and needs based schemes in order to achieve a cost effective balance of preserving Footways that have not yet fully deteriorated and fixing those that have.

Value for money cost savings may be achieved under Operation Horizon during a later phase of the five year programme which could require some deviation from priority order.

5. Network Management

No score is currently proposed and the value will be determined during the work's programming phase on scheme by scheme basis.

Footway Scoring Criteria Changes

The original 2009 criteria outlined in Annexe 2 of the Transport Select Committee report have now been changed to the 5 headings shown in the Prioritisation Policy which have been developed taking account of industry best practice.

1. Highway Maintenance/Improvement Issues

Visual Assessment points will be calibrated to achieve Max 200 in line with values similar to carriageway criteria.

Footway Network Survey (FNS) data will be available for the entire county from July 2014. It is proposed that the generation of schemes align with the carriageway process by using this data. The likely FNS score is unknown so the outcome Maximum cannot be determined however this report suggests the option to include immediately it is available be provided for, in the approved process.

2. Network Hierarchy

Previously usage with community facilities such as schools, shops etc were scored separately. These facilities are already taken account of when determining network hierarchy so it is proposed they be removed.

3. Risk

HSI inspector condition rating has not been applied in practice due to inconsistent data. It is proposed that this be removed in line with carriageway criteria for consistency. High volumes of defects recorded during HSI inspection are a good indication of deterioration rate and in line with carriageway criteria it is proposed to interrogate the defect data collection system in the same way. This will identify defects including potholes, surface heave caused by tree roots and other areas of footway failure.

4. Value for Money

Change is considered a big risk to suppliers in achieving discounts when securing advanced bulk orders. It is the intention of Operation Horizon that the Footway programme will be incorporated into Operation Horizon at a later stage.

5. Network Management

This is a new criterion and while it will does not currently receive a score the value will be gained from better programming of works. When a better understanding of the lifecycle of each asset is understood, better planning of works can take place.

ANNEX 3

Structures Prioritisation Value Management Scoring

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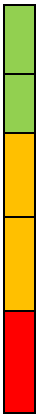
1. Highway Maintenance/Improvement Issues

The Bridge Condition Index is determined from a detailed Inspection, in accordance with the Management of Highway Structures Code of Practice 2006, and The Inspection Manual for Highway Structures 2007.

Structures with a Bridge Condition Index of an element less than 65 would have high priority reactive maintenance carried out Structures with a Bridge Condition Index of an element less than 65 would have high priority reactive maintenance carried out. When a structural assessment identifies that all or part of a structure is considered to be, or is about to become, structurally inadequate or unsafe it would be prioritised for major maintenance.



BCI Range	Average Stock Condition	Critical Stock Condition
100 → 90 Very Good	Bridge stock is in a **very good** condition.	Represents **very low risk** to public safety.
90 → 80 Good	Bridge stock is in a **good** condition.	Represents a **low risk** to public safety.
80 → 65 Fair	Bridge stock is in a **fair** condition.	Some structures may represent a **moderate risk** to public safety.
65 → 40 Poor	Bridge stock is in a **poor/substandard** condition.	Some structures may represent a **significant risk** to public safety.
40 → 0 Very Poor	Bridge stock is in a **very poor/substandard** condition.	Some structures may represent a **high risk** to public safety.

Condition	**Score**
Red - Very Poor – BCI score less than 40. High risk to public safety, immediate reactive maintenance followed by priority scoring on re-scored BCI	Immediate reactive maintenance
Amber – Fair/ Poor – BCI score between 40 and 80. Moderate risk	250
Good – BCI score above 80. All elements satisfactory, low risk	50

Assessment of load carrying capacity must be carried out with a maximum spacing between assessments of 20 years.

Bridges:

Assessment result	**Score**
3T or less	100
7.5T	60
Above 7.5, but less than 38T	50
40T/38T	20

Other Structures:

Assessment of fit for purpose	**Score**
Low risk	60
Medium risk	100
High risk – immediate reactive maintenance to be carried out	Immediate reactive

	maintenance.

2. Network Hierarchy

The network hierarchy reflects the impact of disruption caused by lane or road closures for construction work.

Hierarchy of road	Score
SPN 1	100
SPN2	100
SPN3	50
SPN4a	25
SPN4b	10
High community need, eg only means of access	100

3. Risk

This section includes project risk, due to programming issues and the interests of third parties.

Risk	Score
Parapets not to current standards	50
Carriageway height clearance not to current standards	50
Structure on Close Monitoring List for more than 12 months	100
Weight restriction in place	100
Width restriction in place	80
Height restriction in place	80
Embankment failure	100
Scour	100
Foundation movement	100
Ecologically sensitive area – restrictions on when work can be carried out	25
Abnormal load route	50
Road over rail incursion site	100
Traffic management has been in place as an interim measure for more than 12 months	100
Bridge is owned by third party	25
Statutory undertakers plant requires diversion or supporting	25
Work requires FDC from the Environment Agency	25
Scheme requires land purchase	25
Scheme requires planning permission	25
Scheme contributes to other strategies or programmes	100

4. Value for Money

There is a national requirement to submit the value of bridge stock using the CIPFA Structures Toolkit. The project will be completed in 2013.

The web based version of the Bridge Management System (Bridgestation) will enable lifecycle planning to indicate if intervention maintenance will reduce costs over the life a structure.

5. Network Management

No score is currently proposed and the value will be determined during the work's programming phase on scheme by scheme basis.

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Structures Scoring Criteria Changes

There have been no changes to previous prioritisation criteria.

ANNEX 3

Drainage Prioritisation Value Management Scoring

S = Single: one time score per Wetspot
C = Cumulative: multiple scores allowed per wetspot

Estimated Max score = 200

1. Highways Maintenance/Improvement Issues

N/A for Wetspots – Drainage Assets often unknown

2. Network Hierarchy

Hierarchy of Road	Points	Score Type
SPN 1	40	S
SPN 2	20	S
SPN 3	10	S
SPN 4a	5	S
SPN 4b	5	S

3. Risk (Applies to all wetspots)

Safety*	Points	Score Type
Confirmed injury due to/exacerbated by wetspot	150	S
Confirmed accident due to/exacerbated by wetspot	30	S
High Risk of Accident	15	S

Property flood	Points	Score Type
Internal Property Flood	35	C
Recurring Internal Property Flood	50	C
Single External Property Flood	5	S
Multiple External Property Floods	10	S
Involvement of vulnerable person(s) with internal property flood	30	S

Social & Economic impact	Points	Score Type
Affects Access to/Functionality of Critical Services or Infrastructure	60	S
Major Economic or Social Impact (State Reason)	40	S
Causes major congestion and/or restricts access to schools	20	S
Complete flooding of footways	10	S

Miscellaneous	Points	Score Type
Foul Sewage Surcharge	30	S
Report of Safety Issue from Emergency Services	30	S
Flooding persists for a significant time after rainfall has stopped (Y/N)	30/1	S
Claims/Excessive cost on callouts	20	S
Exceptionally Frequent Flooding (To be agreed at annual meetings)	Total score X 1.5	Multiplier

* Safety scores allocated during the desktop exercise used to produce the wetspot list will be validated by site safety assessments on each site by drainage engineers. They will use an agreed checklist to ensure that subjectivity is not a factor in the scoring system to ensure consistency of scores across the county. If an engineer carrying out a site safety assessment identifies that a site poses a significant and immediate safety risk they will seek approval from the Drainage Asset Team Leader to allocate additional points to "boost" the scheme to the current years' programme.

4. Value for Money

The budget will be split at a ratio of 4:1 for prioritised needs based schemes and more minor schemes that could prevent more significant work being required later on. Typically they minor schemes would have a total value of less than £25,000.

Value for money cost savings may be achieved under Operation Horizon during the later phases of the five year programme which could require some deviation from priority order.

5. Network Management

No score is currently proposed and the value will be determined during the works' programming phase on scheme by scheme basis.

Differences between Existing and New Drainage Prioritisation

2. Network Hierarchy

SPN incorporates safety, economic and traffic use factors, so the scores are significant. SPN1 was set at 20% of the approx maximum score from Risk, and the other SPN categories scaled down accordingly.

3. Risk

Given the low number of wetspots with confirmed accidents, and the importance of issues with a threat to life, the “Confirmed injury due to/exacerbated by wetspot” score is set high enough to ensure that these wetspots sit at the top of the list or thereabouts. The “Risk” element of schemes with no accident history or specific perceived risk, will be reflected in the SPN score.

Due to the importance of acknowledging safety concerns from emergency services, an official report on safety risk from one of these agencies will be acknowledged via a score in the miscellaneous section.

Internal property flood scores will be cumulative, so multiple property scores can be applied to a single wetspot where multiple properties are affected. This will better represent the extent of flooding problems, whilst still factoring in vulnerable people where appropriate.

The Social Impact and Miscellaneous sections have been streamlined, as many factors are now reflected in other categories.

Major economic impacts and frequency are now included, with duration now set as a single value.

ANNEX 3

Safety Barrier Prioritisation Value Management Scoring

7

1. Highway Maintenance/Improvement Issues

Condition	Score
Red - Very Poor - Unlikely to perform as designed/known accident site	Priority 1 programme
High Amber - Poor - Might perform as intended	Priority 2 programme
Low Amber – Isolated minor defects – sufficient integrity and likely to perform as intended	Priority 3 programme
Good - All elements satisfactory, expected to perform	None

2. Network Hierarchy

Hierarchy of road	Score
SPN 1	3
SPN2	3
SPN3	2
SPN4a	1
SPN4b	1
High speed roads (70 mph)	Score x 1.5

3. Risk

Prioritise risk to public - E.g. Railway protection prioritised over country bend NB (if barrier is protecting from more than one hazard then the most aggressive is taken into account)

Risk	Score
Bridge or retaining wall above 3m without parapet protection	7
Bridge – Rail	7
Bridge – Motorway	5
Known Accident Location (*New Safety Barrier Scheme)	5
Central Reservation	4
Structure	4
Bridge – Road/River/Canal/Subway	3
Slipway road	2
Parallel Carriageway (not central reservation)	2
Junction Box/Electrics	1
Hazard other	1
Verge	1
Embankment	1
Bridge – Stream	1
Road Sign/post	1
Private Property/Access	1

4. Value for Money

Current budgets are not sufficient to deliver any new infrastructure. New schemes identified through the prioritisation scoring will be held on a separate prioritisation list.

Value for money cost savings may be achieved under Operation Horizon during a later phase of the five year programme which could require some deviation from priority order.

5. Network Management

No score is currently proposed and the value will be determined during the works programming phase on scheme by scheme basis.

ANNEX 3

Differences between Existing and New Safety Barrier Prioritisation

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1. Highway Maintenance/Improvement Issues

Safety barrier in red condition are to be treated ahead of safety barrier in amber condition. Red schemes will be programmed first in descending order (max score 31.5), followed by amber schemes programmed second in descending order.

Asset Priority Index = Network Hierarchy x Risk + Value for Money

2. Network Hierarchy

The likelihood of the risk occurring is indicated by the SPN of the road. SPN takes into account road priority, traffic flow and speed and these factors will therefore be included by factoring the score using SPN.

3. Risk

The most important factor taken into consideration by the updated Safety Barrier prioritisation is the safety of road users and those who may be impacted upon by errant vehicles - both motorists and those being protected such as railway or motorway users. For this reason the risk factor score is based on the type of accident that is being protected against. The hierarchy of risk is taken from the Roads Boards “Provision of Road Restraint Systems for Local Authorities” and the Road Restraint Risk Assessment Process part of standard TD 19/06.

4. De-cluttering of the Highway

Whilst it is recognised that the safety barriers provide an additional protection historically a number of safety barriers have been erected that under current assessment would not meet with the criteria for new infrastructure (priority risk factor of 12 plus).

In prioritising the safety barrier there are many disparate factors that need to be consider in choosing to renew or omit a safety barrier. Generally lower frequency at which vehicles leave the carriageway will make provision of a safety barrier less likely than in the high speed/high flow scenarios on dual carriageways. This lower frequency of occurrence means that risk is less of a direct factor in determining provision and a more balanced appraisal is appropriate. An additional consideration is whether the asset has a sufficient high priority when measured against other competing funding pressures to justify expenditure.

Given the maintenance backlog and the need to maintain those barriers with the highest priority risk factor existing safety barriers that have a low priority risk factor of less than 3 will continue to remain in situ, until they come to the end of their serviceable life and then subject to a risk reduction review will either be replaced with a new safety barrier, alternative solution or removed all together.