

# Transport Users Forum:

## Potholes and selection criteria for resurfacing roads



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## Background:

Directorate of Environment & Neighbourhood  
Services (DENS)

Director: Alison Bell

Transportation & Streetcare (T&Sc)

Head of Service: Mark Smith

Streetcare Services

Cleansing

Highways & Drainage (Operations)

Highways Maintenance (Engineering)

Commercial Manager



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# Statutory Duties

- As the highway authority we have a statutory duty under Section 41 of the Highways Act 1980 to maintain the highway.
- As the highway authority we have a statutory duty under Section 91 of the Highways Act 1980 to maintain bridges and structures
- As a Lead Local Flood Authority we have a statutory duty under the Flood & Water Management Act 2010 to reduce the risk of flooding
- Section 89(1) of the Environmental Protection Act 1990 places a duty on Reading Borough Council to ensure that their land (or land for which they are responsible) is, so far as is practicable, kept clear of litter and refuse.





# STREET CLEANING OPERATIONS



 Lynda Bowyer @ellbphoto... 19m  
Fantastic work this morning by @ReadingCouncil #Streetcare team and #BSANA #LoveYourStreet #RdgUK pic.twitter.com/RhCfBCGIKR



Details



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# Highway Drainage Operations



- The Gully Cleansing Service

The Gully Cleansing Service is provided to fulfil a statutory duty by ensuring that the highway is adequately drained.

The service provides cyclical gully cleansing of all roadside and footway gullies, response to blocked gullies and flooding reports from the Public, Neighbourhood Officers, Councillors and Gully Crews; and to undertake highway drainage repairs and minor improvement schemes. We aim to cleanse all roadside and footway gullies annually.

We have **17,762 gullies** in the Borough and they are cleansed in accordance with a scheduled programme based on the Council's Ward boundaries.

- Ditch Cleaning
- Emergency call out / blockages
- Minor drainage schemes
- Gully repairs
- Sewer repairs



# Highway Works Operations including Income Generation Works

- H&D has extensive experience in maintaining the public highway network in Reading, providing reliable and sustainable advice for highway management, maintenance, planning and implementation of works.
- Our experienced and highly trained Operatives have a proven track record of providing high quality services .
- With a dedicated team of 22 employees and a fleet of 10 LG Vehicles, 2 drainage tankers and a drainage CCTV digital camera survey equipment.
- We are uniquely equipped to extend our service expertise to private land owners , businesses , residents, Housing & Education providers



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# Highway Maintenance (Engineering) Team

## Bridge Maintenance

272 bridges and highway structures in Reading  
(78 of which are bridges over 1.5 m span)

Programme of inspections & Assessments

- 6 year Principal Inspections
- Bi-annual General Inspections
- Special annual inspections of high risk structures

Annual programme of maintenance works by term contractor.

## Winter Maintenance

## Road Resurfacing

- Road assessments
- Contract procurement

## Highway Maintenance

- General minor upgrade schemes
- Road marking
- Stabilisation of carriageways using Rigid Polyurethane Resin to fill underground voids
- Road collapses / caverns
- Drainage
- Flood alleviation / reduction schemes
- Site supervision of Developer schemes





# Flood Alleviation / reduction Schemes

Kingsley Close



- Harness Close



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# How are roads chosen for resurfacing in Reading



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# Road Assessments

Major Roads (A roads) and Classified Roads (B&C roads) have an annual SCANNER survey carried out by a specialist contractor (WDM) that produce a Road Condition Indicator (RCI). National standard developed to characterise the overall condition of the road carriageway.

Major Roads (A roads) and Classified Roads (B&C roads) also have an annual SCRIM surveys to assess skid resistance

Minor Roads (unclassified residential roads) receive an annual Visual Assessment



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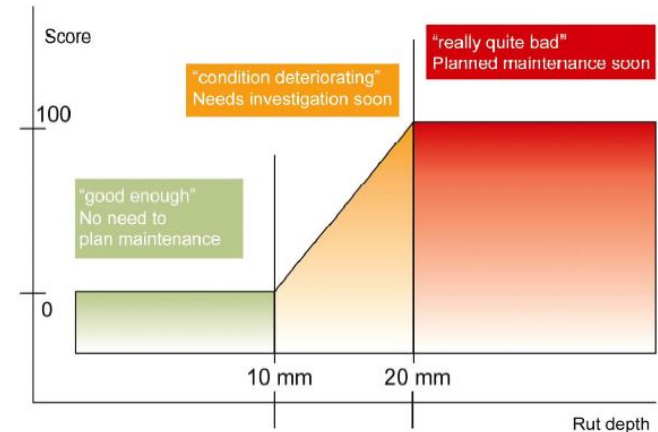
# SCANNER (Surface Condition Assessment for the National Network of Roads)

The road condition indicator (RCI) is calculated from some of the parameters measured by SCANNER including:

- (a) Ride quality, measured by 3m and 10m longitudinal profile variance, in the nearside wheel path.
- (b) Average rut depth in the nearside and offside wheel paths.
- (c) Average texture depth in the nearside wheel path.
- (d) Whole carriageway cracking intensity.

The RCI is calculated in three steps

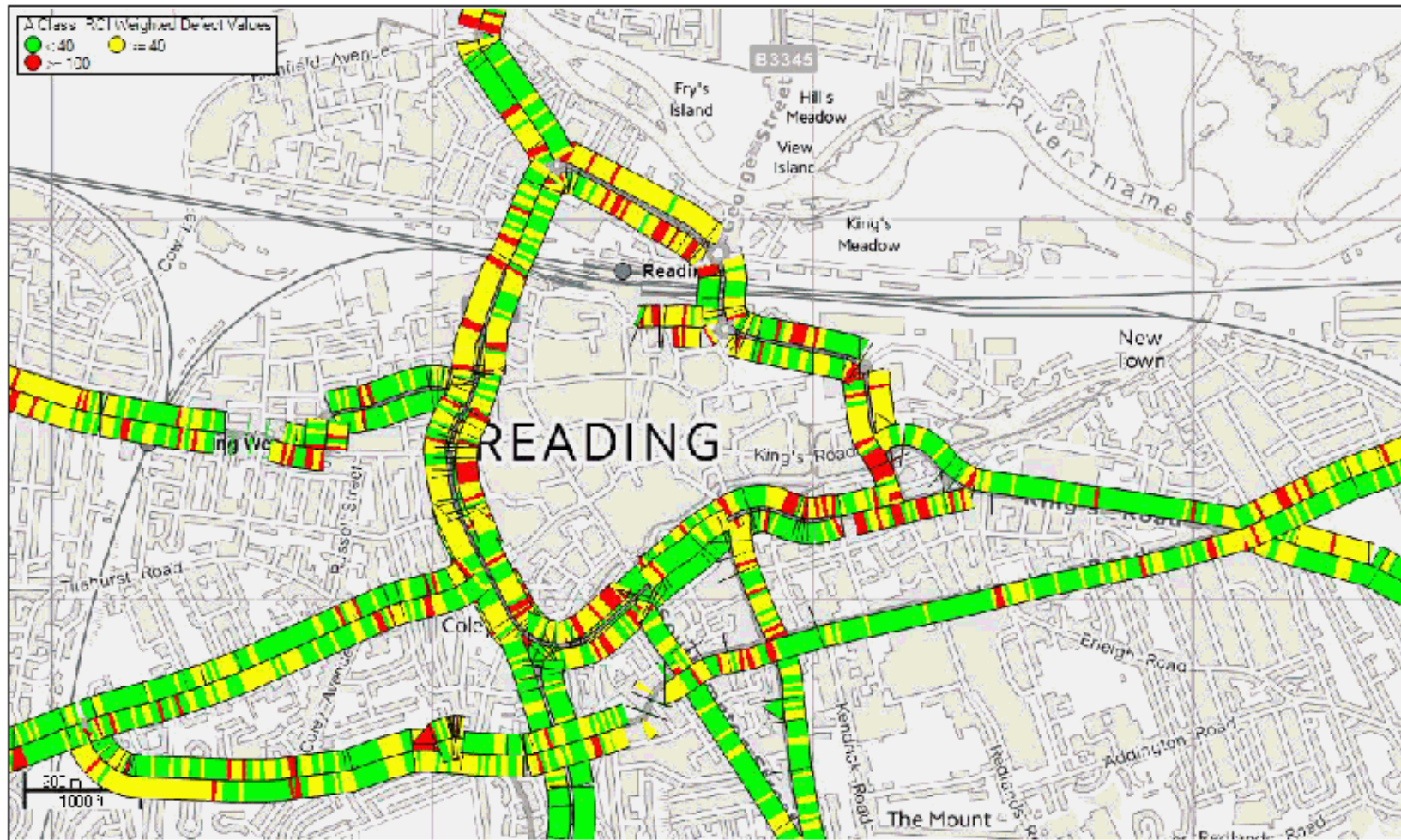
- (a) Score each 'measured parameter average value' over a 10 metre subsection length on a scale of 0 to 100.
- (b) Combine the scores to obtain a value for each 10 metre subsection length of the road.
- (c) Combine the value for each subsection to give an overall figure for the section, the route or the network.



# SCANNER Survey A Roads

## Example - Central Reading

WIP



Scale: 1:11288



# SCRIM (Sideway force Coefficient Routine Investigation Machine)



# SCRIM Survey A Roads

## Example - Central Reading





# UKPMS - Road Condition Indicator Result 2015

130-01 - Condition of Principal Roads - D2SQL2 - READING\_PMS  
12 October 2015 - Graham S Page 1 of 1

## Run Details & Data Selected:

System: WDM PMS  
System Version: 4.8.0  
Run Identifier: 130-01  
Calculation Date: 12/October/2015  
Report Run Date: 12/October/2015  
Weighting Set ID: WSPriv0201  
Rule Set ID: RP10.01  
From Date: 01/April/2014  
To Date: 31/March/2016  
Combination Method: Sum  
Threshold Type: Bin  
Filter Criteria:  
UKPMS RCI Dot Classification = 3

## Surveyed Network

Selected Network Sections: 91  
Selected Network Length: 48.015km  
Possible Survey Lane Length: 73.683km  
Actual Survey Lane Length: 72.293km 98.1%  
Number of Subsections: 7299  
Rural Surveyed Network: 0.000km  
Urban Surveyed Network: 72.293km  
Undefined Surveyed Network: 0.000km  
Total Surveyed Network: 72.293km 150.6%

## BVPI Results

GREEN: Generally good condition (<40) 39.989km 55.3%  
AMBER: Plan investigation soon (>=40) 27.222km 37.7%  
RED: Plan maintenance soon (>=100) 5.082km 7.0%

130-01 7%



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# Major Roads Assessment

## POTENTIAL RESURFACING SITES - VISUAL ASSESSMENT

Road .....

Date of Inspection .....

Weather Condition .....

Carriageway (Please Circle):    Bitumen    Concrete    Block Paving  
    Barrelled    Cross Fall

REF	DEFECT	SCORE	COMMENTS
A	CRACKING		
B	POTHoles		
C	SURFACE DETERIORATION		
D	SETTLEMENT/SUBSIDENCE		
E	RUTTING		
F	EDGE DETERIORATION		
G	JOINT DEFECTIVENESS/TRANSVERSE DEFECTIVE SEAL		
H	SIGN OF POSSIBLE BINDER FAILURE		
I	PERCENTAGE RED OR YELLOW FROM SCANNER		
	<b>TOTAL SCORE</b>		(OUT OF 45)

Tested for tar using PAK marker (Please circle)                    YES                    NO

Did PAK spray turn yellow? (TAR present) (Please circle)    YES                    NO

Recommended resurfacing (Please circle):    40mm                    100mm                    Micro

Inspected by .....



# Assessment Criteria

REF	DEFECT	DEFINITION	CONDITION	SCORE
A	Cracking	Cracking/coarse crazing occurring in any part of the surface course, including reinstatements.	Cracking < 20%	1
			Cracking < 30%	2
			Cracking 50%	3
			Cracking < 65%	4
			Cracking > 80%	5
C	Bitumen Surface Deterioration	Loss of material Isolated "spot" defects such as vertical projections or "trips" exceeding 13mm. Areas of ponding and depressions	Good surface texture	1
			25% loss of bitumen	2
			50% loss of bitumen	3
			75% loss of bitumen	4
			100% loss of bitumen	5
C	Block Deterioration	Missing blocks, or cracked or un-cracked blocks associated with gradual depressions or vertical projections greater than 13mm.	No settlement	1
			25% settlement	2
			50% settlement	3
			75% settlement	4
			Extensive Settlement	5
C	Concrete Deterioration	Settlement, subsidence and differences in level. Scaling or fretting leaving the coarse aggregate proud of the matrix or causing loss of coarse aggregate. Trips and potholes.	Good surface texture	1
			25% loss of bitumen	2
			50% loss of bitumen	3
			75% loss of bitumen	4
			100% loss of bitumen	5
C	Paving Slab Deterioration	Flags which are cracked or un-cracked and have depressions, local settlement, subsidence or vertical projections greater than 13mm.	Cracking/Settlement < 20%	1
			Cracking/Settlement < 30%	2
			Cracking/Settlement 50%	3
			Cracking/Settlement < 65%	4
			Cracking/Settlement > 80%	5
D	Settlement	Settlement or subsidence	No settlement	1
			25% settlement	2
			50% settlement	3
			75% settlement	4
			Extensive Settlement	5





# Major Roads Selection

Due to the limited and reduced funding available it is necessary to prioritise the schemes based on nationally accepted technical assessment processes as well as visual engineering assessments.

The provisional programme for Major Roads surface treatment (class A, B&C roads and roads with high volumes of commercial traffic) has been prioritised after assessment of carriageways using information from:

- SCANNER surveys which checks the structural integrity and residual life of existing carriageways;
- SCRIM (sideways-force coefficient routine investigation machine) surveys to check skidding resistance.
- VISUAL/ENGINEERING ASSESSMENT by Highways Engineering Team.

Based on the above assessments the roads/sections of roads are taken to Traffic Management Sub Committee and recommended for treatment in forthcoming financial year. These are shown in priority order and will be progressed until the budget allocation is spent.

Tenders for this work is invited shortly and the documents will include reserve schemes, in the event that returned tender prices prove to be more favourable than current estimates suggest, thus enabling us to undertake further scheme(s) within the available budget. In the event of unforeseen carriageway deterioration outside of the scope of normal maintenance work, the programme of works would be reviewed and if necessary a reallocation of funding within the budgets would be made to undertake higher priority carriageway schemes.



# Engineering Final Assessment Sheet

Road	Section	Score	Rank	weighted Score	Weighted rank	Dev work?	Utility work?	Included?										
Burghfield Road	Underwood Road to Borough Boundary	23	1	27	1			YES	Issues with Network Rail embankment									
Craven Road	Full length	19	4	27	1			YES										
Lower Henley Road	Full length	18	6	26	3			YES										
Northumberland Avenue	Cressingham Road to Blagdon Road	21	1	25	4			NO	Concrete has failed - will be dealt with seperately									
Bath Road Castle Hill	Field Road to Castle Hill Roundabout	20	3	24	5			YES										
Great Knollys Street	Full length	14	27	24	5			YES										
Caversham Road	Great Knollys Street junction (nthbound only)	19	4	23	7	YES	YES	YES	Do whole junction if utility work complete?									
Basingstoke Road	Imperial Way to J11	18	6	22	8			NO	Micro???									
Hemdean Road	Chester Street to Oakley Road	15	21	21	9			YES										
Henley Road	Donkin Hill to Lower Henley Road	18	6	20	10			YES	Joints only									
Kiln Road	Full length	18	6	20	10			NO	Not high priority for major, suggest micro									
Forbury Road	A329 to Station Road	18	6	20	10	YES		YES										
Bath Road	Burghfield Road to mini garage	18	6	20	10			YES										
Gosbrook Road	Prospect Street to George Street	16	16	20	10			YES										
Bath Road	East of Liebenrood Road (north side)	16	16	20	10			YES										
Basingstoke Road	Rose Kiln Lane to Buckland Road	17	12	19	16			YES										
Caversham Park Road	Full length	17	12	19	16			NO	Half this year half next? Otherwise not justified cost wise									
Upper Redlands Road	Elmhurst Road to Eastern Avenue	17	12	19	16			NO	Scanner boosts score but visually not as bad compared to sin									
Norcot Road	Oxford Road to.....Westbound only	17	12	19	16			YES										
Chapel Hill	Lower Elmstone Drive to Westwood Glen	15	21	19	16			YES										
Peppard Road	Surley Row to Derby Road southbound	16	16	18	21			YES	Assessed as northbound as visibly worse									
Caversham Road	Abattoirs Road to Vastern Road	16	16	18	21			NO	Less urgent than Great Knollys junction. Combine?									
Dee Road	Full length	16	16	18	21			YES	Some v bad areas Not on scanner or would be higher									
Lower Elmstone Drive	Chapel Hill to Pierces Hill	14	27	18	21			YES	Worst bits already patched, shows deterioration									
A33	Imperial Way roundabout	14	27	18	21				FURTHER INVESTIGATION OF SCRIM									
Caversham Road	Railway to bottom of Chatham Slip (sthbou	15	21	17	26			YES	Low without Great Knollys junction. Combined with GKS jur									
Western Elms Avenue	Full length	15	21	17	26													
Whiteknights Road	Eastern Avenue to Green Road	15	21	17	26													
Watlington Street	Queens Road to Kings Road	15	21	17	26			YES										
A33	Rose Kiln Lane roundabout approaches (SCR	13	31	17	26				FURTHER INVESTIGATION OF SCRIM									
Kings Road	A329 to London Street	14	27	16	31													
Peppard Road	Prospect Street to Newlands Road	13	31	15	32													
Crown St	London St junction	13	31	15	32													
A33 / Bennet Road	Roundabout	13	31	15	32													
IDR	Oracle Roundabout on slip	13	31	15	32													
The Meadway	New Lane Hill to St Michaels Road	12	36	14	36		YES											



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# Minor Road Assessment

For category 3 roads (residential and other distributor roads) there is generally condition information (SCANNER) and no skid (SCRIM) data available therefore priorities have to be established as a result of visual condition surveys to determine deterioration.

All unclassified residential road receive an annual safety inspection by the area Neighbourhood Officer (NO), when an assessment of the road surface condition is carried out the Council's Minor Road Assessment pro-forma. The assessment process consists of scoring the carriageway condition against various criteria including the number of potholes, rutting, the amount of patching, bitumen deterioration and cracking.

Those roads with the highest scores are then subjected to a further engineering assessment and those which, again, score highly through this process as well as being considered appropriate, are recommended for inclusion in the next Financial Year's minor roads surfacing programme, subject to budget availability.

Based on the above assessments the roads/sections of roads are taken to Traffic Management Sub Committee and recommended for treatment in forthcoming financial year. These are shown in priority order and will be progressed until the budget allocation is spent.

Tenders for this work is invited shortly and the documents will include reserve schemes, in the event that returned tender prices prove to be more favourable than current estimates suggest, thus enabling us to undertake further scheme(s) within the available budget. In the event of unforeseen carriageway deterioration outside of the scope of normal maintenance work, the programme of works would be reviewed and if necessary a reallocation of funding within the budgets would be made to undertake higher priority carriageway schemes.



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# Minor Rd & Footway Assessment Sheet

## ROAD CONDITION SURVEY SHEET - VISUAL ASSESSMENT

Road .....

Date of Inspection .....

Weather Condition .....

Carriageway (Please Circle):    **Bitumen**    **Concrete**    **Block Paving**  
    **Barrelled**    **Cross Fall**



REF	DEFECT	SCORE	COMMENTS
A	CRACKING		
B	POTHoles		
C	SURFACE DETERIORATION		
D	SETTLEMENT/SUBSIDENCE		
E	RUTTING		
F	EDGE DETERIORATION		
G	JOINT DEFECTIVENESS/TRANSVERSE DEFECTIVE SEAL		
	<b>TOTAL SCORE</b>		

Footway (Please Circle): **Bitumen**    **Concrete**    **Block Paving**    **Slabs**



REF	DEFECT	SCORE	COMMENTS
A	CRACKING		
B	POTHoles		
C	SURFACE DETERIORATION		
D	SETTLEMENT/SUBSIDENCE		
	<b>TOTAL SCORE</b>		

Inspected by .....

Passed to ..... Date .....



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# Potholes



- **Inspections**

- All of the public highways within the Borough's administrative area are inspected on a cyclical basis, the frequency of which depends on the hierarchical status of each road.
- Town Centre inspected weekly (highest footfall area)
- 'A' Classified Roads inspected monthly
- 'B' & 'C' Classified Roads inspected quarterly (every 3 months)
- Unclassified Roads (residential) annually / inspected once a year

- **Pothole Repairs:**

- A carriageway pothole defect is “actionable” and warrants a repair when it reaches a depth of 50mm and over an approx. area of 300 mm x 300 mm.
- A footway defect is “actionable” and warrants a repair when it reaches a depth of 20mm (vertical face) and over an approx. area of 300 mm x 300 mm

The timescale category for repairs is determined by the HMMS (Highway Maintenance Management System) as follows:

Emergency (response time within 1 hour)

1 Day Repair

7 Day Repair

28 Day Repair

The Neighbourhood Officer will select the appropriate timescale category, taking into consideration factors such as road classification/type, location of defect, size of defect and likelihood of further rapid deterioration.



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# Pothole Improvement Plan

- Reading Borough Council received £60,000 share from the £50 Million Pothole Action Fund, made available for this Financial Year, as announced by the Department for Transport. By way of comparison, the Council received a Pothole Funding allocation of approximately £164,000 in 2014. As in previous years, we proposed a further Pothole Repair Plan, following the successful completion of the two previous Pothole Repair Plans. This will enable potholes of a lesser depth than the Council's normal investigatory criteria to be repaired.
- The Council's standard investigatory depth for carriageway defects is 50mm. The Pothole Repair Plan will enable the Council to repair defects of a minimum depth of 30mm.
- The Department for Transport expects this Council to achieve 1,132 pothole repairs based on the £60,000 share from the Pothole Action Fund. This is based on an average cost for a pothole repair of £53.00. We expect this target to be the minimum number of pothole repairs carried out within this Council's share of the fund.
- Clearly we are not able to address all roads in the Borough with the share of this funding and therefore we will need to prioritise/target those roads in greatest need. This will be achieved by, firstly, considering those roads which are not included in this Financial Year's highway maintenance major carriageway resurfacing / minor roads surfacing programmes.

Further assessment criteria to then be considered:

- Those roads with the highest scores/results from the unclassified road condition assessments
- Those roads which have generated a high number of complaints from the public, Councillor enquiries, MP enquiries.
- Local knowledge of roads known to have a high proportion of potholes which are either unlikely to deteriorate sufficiently to reach the Council's 50mm depth investigatory criteria
- The Pothole Repair Plan will operate concurrently with the statutory highway inspection regime, as was the case with the previous Pothole Repair Plans.
- The delivery of this Pothole Repair Plan will be carried out using existing Highway Operative resources



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# The Future / Way Forward

## Asset Management & Term Contracts

'Highways Asset Management (HAM)' approach to Transportation and Streetcare (Highways)

The HAM approach is a Department for Transport (DfT) requirement and aims to maximise efficiency and target appropriate maintenance treatment types and frequencies based on accurate asset condition data and its projected service life rather than on historical knowledge and experience

RBC must be able to demonstrate a commitment to and the use of the HAM methodology in order to not be disadvantaged by future DfT funding requirements and awards.

As well as maximising the Integrated Transport Block capital award, adopting HAM can drive out inefficiencies from the existing Highways budget of up to circa 5% annum (based on the experience of other Local Highway Authorities), however this will take up to 5 years to achieve from 16/17. The following are areas where savings can be achieved:

Reduced administration costs by the use of electronic rather than paper based systems.

Reduced third party claims resulting from highways defects.

The use of 'stitch in time' targeted treatments such as slurry sealing and surface treatments and revised working methods reducing expensive maintenance solutions, repair times and extending the useful life of the carriageway.

Having accurate inventory information which is made available to officers in the field avoiding downtime

The Highway Maintenance Manual will be the 'bible' for all highway practitioners in Reading. All aspects of the maintenance and management of the highway asset will be collated into one document and used as a reference guide.



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# The WDM Asset Management System

This software package was purchased using a government grant in 2012 and is the basis on which the HAM approach works. The WDM license costs are currently £10,000 pa and the Asset Management System is broken into separate modules, of which RBC has the following:

**Routine Maintenance System (RMS)** - which is a Mobile Inspection and survey data capture system.

**UK Pavement Management System (UKPMS)** - Survey data, inventory, life cycle planning and treatment selection system.

**Works Initiation and Reporting (WIM)** - which is an electronic ordering and financial management system.

WDM also offer other functionality and Highways and Network Management are considering whether the Streetlighting and StreetWorks co-ordination and noticing modules would fit with our HAM aspirations, as well as allowing self- service to residents for fault reporting and license applications. The system is being used in this way by a number of other Local Authorities such as Devon. Effectively the customer clicks on a web link and is taken direct to the WDM system rather than a Council hosted page and makes their fault report without needing to contact the Council directly. The system has the potential to satisfy Highways 'digital' agenda, improve efficiency, reduce administration costs and improve customer experience.

Neighbourhood Officers have undergone training and are trialling the RMS module for mobile inspections using tablets in the field with a view to becoming totally electronic for highway safety inspections by the end of the current financial year.

The UKPMS is being populated which will use highway asset condition and inventory data to assess asset life and allow asset replacement profiling, treatment selection type and budget predictions based on whole life costs.

**Works Instruction Module (WIM)** - The WIM takes orders raised by inspectors using the RMS, applies costs to the order using a schedule of rates and issues orders to crews either on paper or, if the trucks are equipped with tablets, electronically. Our aspiration is to use the WDM system to collect defect data, issue a works order and transmit it to the crew electronically, the ultimate goal being to reduce administration costs and duplication, speed up repair times and to better plan repair types and routes to improve efficiency and reduce costs.



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