

21 March 2019

Highways Maintenance

Joint report of Lorraine O'Donnell, Director of Transformation and Partnership, and Ian Thompson, Corporate Director of Regeneration and Local Services

Electoral division(s) affected:

Countywide

Purpose of the Report

- 1 To provide background information for Members of the Environment and Sustainable Communities Overview and Scrutiny Committee in relation to highways maintenance prior to a presentation by the Head of Technical Services.

Executive summary

- 2 Members will be provided with current data in relation to highways maintenance within the county together with relevant performance data.

Recommendations

- 3 It is recommended that:
 - the Environment and Sustainable Communities Overview and Scrutiny Committee note and comment on the information provided in the presentation; and
 - the Environment and Sustainable Communities Overview and Scrutiny Committee include in its future work programme for 2019/2020 a progress update on highways maintenance in the county.

Background

- 4 At the Environment and Sustainable Communities Overview and Scrutiny Committee held on 23 January 2018 the committee received a report providing an overview in relation to highways maintenance in the county. The report contained data in relation to the condition of the highway,

maintenance backlog and public satisfaction however the data available was dated 2016.

- 5 It was therefore agreed by Members at that meeting that the committee include in its work programme for 2018/19 a further highways maintenance report which would include current data and provide Members with an overview of bridge maintenance within the county and relevant performance data.
- 6 Arrangements have been made for John Reed, Head of Technical Services, to attend the meeting on 21 March 2019 to deliver a presentation.

Highways Maintenance

- 7 The Highways Act 1980 sets out the main duties of a local highway authority in respect of highways maintenance. In particular, Section 41 imposes a duty to maintain the adopted highway at public expense.
- 8 The Highways Act does not specify the level of maintenance although national Codes of Practice offer guidance in line with best practice. The purpose of highway maintenance is to maintain the highway network for the safe and convenient movement of people and goods.
- 9 The highway network is the council's largest and highest value asset. It is used every day by nearly all County Durham residents and businesses together with many visitors. The highway network is therefore fundamental to economic and social activity in County Durham.

Service Delivery Model

- 10 The current service delivery model for highway construction, maintenance and design is in-house plus top up which is alternatively known as a mixed economy model. This comprises of an in-house team of 267 staff in the Highway Services team supplemented by a competitively procured supply chain of external sub-contractors and mutual assistance from neighbouring councils through the North East Highways Alliance (NEHA). Approximately 36% of Highway Services work is delivered by in-house staff with 64% delivered through the supply chain.
- 11 In addition to highway maintenance, the Highway Services team delivers highway improvement and civil engineering works on behalf of the council.
- 12 The Strategic Highways team undertake the client, policy and asset management functions in relation to highway maintenance.

Inventory

13 The inventory is a database containing details of the individual assets that make up the highway network. It is vital to know what assets exist and where so they can be inspected, surveyed and maintained to appropriate service levels.

14 The inventory at 31 March 2018 is summarised in the table below:

Asset	Unit	Adopted	DCC Unadopted	Private Unadopted	Total
Carriageway					
A	Km	415	0	0	415
B	Km	406	0	0	406
C	Km	696	0	0	696
Unclassified	Km	2,280	18	117	2,415
Sub-Total		3,797	18	117	3,932
Drainage					
Gullies	Number	110,750	1,371	3,864	115,985
Structures					
Road bridges	Number	487	0	0	487
Footbridges	Number	51	455	0	506
Street lighting					
Columns/ Lanterns	Number	83,045	0	0	83,045
Lit Signs	Number	5,737	0	0	5,737
Traffic Management					
Traffic lights	Number	69	0	0	69
Pedestrian crossings	Number	73	0	0	73
Unlit signs	Number	63,296	808	2,277	66,381
PROW/ bridleway signs	Number	4,312	0	0	4,312

Highway Maintenance Plan

15 The Highway Maintenance Plan sets out service levels for safety inspections, service inspections, condition surveys, reactive maintenance and routine maintenance and is available at the following link:

<http://www.durham.gov.uk/article/2378/Road-maintenance>

16 The main types of highway maintenance are:

Type of Maintenance	Description
Reactive	Responding to inspections, complaints or emergencies
Routine	Regular consistent schedule, generally for patching, cleaning, grass cutting and landscape maintenance

Programmed	Flexibly planned schemes primarily of resurfacing, reconditioning and reconstruction
------------	--

Highway Safety Inspection Regime

- 17 The council is committed to ensuring that the adopted highway is maintained in a safe condition as far as reasonably practicable. All adopted roads and footpaths in County Durham are inspected by the team of Highway Inspectors at a frequency appropriate to their usage which varies between 2 weeks and 12 months. Defects are assessed against intervention criteria set out in the Highway Safety Inspection Manual and reactive repairs are undertaken to those defects which exceed the intervention criteria in accordance with the response times set out in the Highway Maintenance Plan.
- 18 The council's Highway Safety Inspection Manual and Highway Maintenance Plan are aligned with the National Code of Practice.
- 19 The council also rely on reports from the public to identify highway defects that may arise in between scheduled safety inspections. These should be reported to the Customer Services team by one of the following routes:
- website: <http://www.durham.gov.uk/reportit>;
 - email: help@durham.gov.uk; or
 - telephone: 03000 261000.

Condition Surveys

- 20 Condition surveys are primarily intended to identify deficiencies in the highway fabric which, if untreated, are likely to adversely affect its long term performance and serviceability.
- 21 Condition surveys help determine programmed maintenance subject to the TAMP and available budgets.
- 22 The types of survey undertaken and frequencies are as follows:

Asset	Survey	Frequency
A - Roads	Surface Condition Assessment for the National Network of Roads (SCANNER)	100% surveyed in one direction only annually
B - Roads		100% surveyed in one direction only annually
C – Roads		100% surveyed in one direction only annually

Unclassified Roads (Cat 3a, 3b, 4a bus routes only)		One direction surveyed annually
Unclassified Roads	Coarse Visual Inspection (CVI)	Minimum 25% annually
Footway Hierarchy 1, 1a, 2, 3, 4	Footway Network Survey (FNS)	Minimum 25% annually
Carriageway Hierarchy 2 & 3a	Skid Resistance – using Sideway-force Coefficient Routine Investigation Machine (SCRIM)	Annually
Carriageway Hierarchy 3b, 4a and 4b		Not routinely undertaken
All locations	Vehicle Restraint Systems	On a 2 year cycle if more than 10 years old or a 5 year cycle if less than 10 years old
All highway structures with a span > 1.5m	Structures – General Inspections	Every 2 years
All principal road network and other significant structures	Structures – Principal Inspections	Frequency varies between 6 and 12 years depending upon risk assessment
Any structure identified through the general inspection or from reports	Structures – Special Inspections	As required
All structures on rivers subject to fast changing environment or deep water	Underwater Inspections	Every 2 years or following severe flood conditions

Transport Asset Management Plan

23 The Transport Asset Management Plan (TAMP) sets out the council's long term plan for managing the highway asset by applying programmed capital maintenance subject to available budgets to maintain the condition of the highway. The TAMP applies asset management principles to ensure that the right maintenance treatment is selected at the right time to ensure a safe, serviceable and sustainable highway network. The TAMP is available at the following link:

<http://www.durham.gov.uk/article/2378/Road-maintenance>

24 The TAMP aims to minimise whole life costs but this is not always possible as budget constraints may result in not all the right treatments being undertaken at the right time particularly where there is an existing

maintenance backlog. In this case the budget is prioritised based on the following criteria:

- safety;
- return on investment; and
- network hierarchy.

25 The council was the first highway authority in the United Kingdom to achieve British Standard BS ISO 55001:2014 Asset Management in 2015 and this quality management system underpins the council's asset management approach. In 2018 the council were independently audited and the council continues to achieve this standard.

Condition

26 Condition is summarised as follows for the major asset groups:

Asset	Description	Performance					
		2015	2016	2017	2018	Good Condition Target	Fair Condition Target
Carriageway							
A – Roads	% where maintenance should be considered	4.9%	4.1%	2.6%	2.6%	0.0%	4.0%
B – Roads		7.5%	5.3%	4.7%	4.7%	0.0%	4.0%
C – Roads		5.0%	3.6%	3.7%	3.7%	0.0%	4.0%
Unclassified Roads	% where maintenance should be considered	19.0%	20.0%	20.0%	21.0%	0.0%	8.0%
All Roads	% where maintenance should be considered	13.6%	13.7%	13.5%	14.1%	0.0%	6.4%
Footways	% structurally unsound	26.4%	24.1%	22.8%	21.5%	0.0%	5.0%
Structures	Bridge Condition Index – Principal roads	88.3	83.8	80.0	80.7	100.0	95.0
	Bridge Condition Index – Non-	86.4	83.7	81.0	79.9	100.0	95.0

	Principal Roads						
	Other (using form of Bridge Condition Index)	66.0	66.0	66.0	66.0	100.0	85.0
Street Lighting	% columns > 40 years	17.7%	14.9%	15.3%	12.8%	0.0%	5.0%
	% lanterns > 20 years	45.9%	25.8%	18.3%	15.8%	0.0%	5.0%
	% lit signs where replacement should be considered	20.0%	17.9%	17.1%	17.1%	0.0%	5.0%

- 27 The good condition target represents where the maintenance backlog will be zero with no defects. This is an ideal theoretical target which is not realistic in practice.
- 28 The fair condition target represents a realistic target of acceptable condition subject to available funding.
- 29 The condition of the A, B, and C roads is good overall. The condition of unclassified roads remains constant, but the high percentage requiring treatment remains a key issue.
- 30 The condition of footways is showing a gradual improvement but still remains a key issue.

Highway Structures Condition

- 31 The condition of the bridge stock is measured by the use of a Bridge Condition Indicator (BCI). This provides a measure of the physical condition of the highway bridge stock.
- 32 The annual condition is determined by improvement works carried out during the year together with the annual inspection of the stock undertaken that year which will determine its rate of deterioration.
- 33 The BCI scores range from 100 (best possible condition) to 0 (worst possible condition) and can be interpreted broadly as the “percentage service potential” of a structure. Thus, a value of 100 implies that the structure has retained 100% of its service potential; a value of 60 implies that the structure has lost 40% of its service potential; while a value of 0 implies that the structure is no longer serviceable.

- 34 Durham County Council uses the Bridge Condition Indicators developed by the County Surveyors Society and Highways England. The severity, extent and priority of defects on highway structures are recorded as part of the principal and general inspections which are used to produce Condition Indicators for individual structural elements on a bridge, for a bridge as a whole and finally for the overall inventory of highway bridges.
- 35 The following table explains the range of BCI scores in more detail:

BCI Range	Comments
<u>$90 \leq x \leq 100$</u>	Bridge stock is in a very good condition. Very few bridges may be in a moderate to severe condition.
<u>$80 \leq x < 90$</u>	Bridge stock is in a good condition. Some bridges may be in a severe condition. Potential for rapid decrease in condition if sufficient maintenance funding is not provided. Minor to moderate backlog of maintenance work.
<u>$65 \leq x < 80$</u>	Bridge stock is in a fair condition. A number of bridges may be in a severe condition. Maintenance work historically underfunded and there is a moderate to large backlog of maintenance work. Essential work dominates spending.
<u>$40 \leq x < 65$</u>	Bridge stock is in a poor condition. Many bridges may be in a severe condition. Maintenance work historically significantly underfunded and there is a large to very large backlog of maintenance work. A significant number of structures likely to be closed have temporary measures in place or other risk mitigation measures. Essential work dominates spending.
<u>$0 \leq x < 40$</u>	Bridge stock is in very poor condition. Many bridges may be unserviceable or close to it. Historical maintenance work grossly underfunded and a very large maintenance backlog. Only essential maintenance work performed. Many structures likely to be closed have temporary measures in place or other risk mitigation measures. All spend likely to be on essential maintenance.

- 36 The overall average condition of the bridge stock is good. However, further investment is required to maintain the bridge stock in a “steady state” condition.
- 37 Technical Services are preparing a structures maintenance bid for the next round of the Department for Transport’s Challenge Fund. Timescales are still awaited from Central Government, however, option reports and designs are being progressed in anticipation.

Maintenance Backlog

- 38 The maintenance backlog is the value of maintenance required to bring the highway asset up to good condition. Good condition represents where the maintenance backlog will be zero with no defects. This is an ideal theoretical target which is not realistic in practice and therefore nearly every highway authority has a significant maintenance backlog.
- 39 The maintenance backlog for the adopted highway over the past 5 years is summarised as follows:

Maintenance Backlog	31 March £Millions				
	2014	2015	2016	2017	2018
Carriageways					
Strengthen	19.6	16.0	13.0	9.1	5.7
Resurface	36.4	31.6	27.5	22.0	16.1
Surface Improvement	7.8	8.8	13.0	18.5	27.6
Edge Improvement	3.0	2.8	3.8	3.2	3.3
Sub-Total	66.8	59.2	57.3	52.8	52.7
Kerbing	20.2	18.4	18.5	18.5	18.5
Drainage	5.8	5.6	5.6	5.6	5.6
Road Markings	0.5	0.9	0.9	0.9	0.9
Footways					
Reconstruction	24.9	25.9	21.7	17.4	16.3
Overlay/Relay/Flagging	7.0	6.4	6.2	5.6	5.7
Repair/Relay	11.1	11.8	17.0	19.0	15.5
Surface Improvement	4.0	3.6	2.6	2.8	3.0
Sub-Total	47.0	47.7	47.5	44.8	40.5
Structures	9.9	22.4	36.0	42.0	40.6
Street Lighting					
Column Replacements	11.0	14.7	12.5	12.7	11.3
Luminaire Replacements	10.9	7.5	8.3	5.3	4.6
Lit sign Replacements	1.4	1.3	1.3	1.2	1.2
Sub-Total	23.3	23.5	22.1	19.2	17.1
Traffic Management	1.1	1.0	1.0	1.0	1.0
Street Furniture	2.4	2.4	2.8	2.8	2.8
Total	177.0	181.1	191.7	187.6	179.7

- 40 As can be seen from the above, the maintenance backlog in relation to carriageways, footways and street lighting has reduced since 2014.
- 41 However, the maintenance backlog for structures has risen. This is due mainly to improved condition data more accurately reflecting the condition of bridges.
- 42 The council's maintenance backlog is broadly in line with other councils on average taking into account the size of the highway network.

Public Satisfaction

43 The council participates in the National Highways & Transportation (NHT) Public Satisfaction Survey which is undertaken by IPSOS/MORI.

44 The results are summarised as follows:

Key Benchmark Indicator (KBI)	% Public Satisfied (Year)					
	2010	2011	2012	2014	2016	2018
Overall						
<i>KBI 01 - Overall (local)</i>						
Durham County Council	55.9	54.6	58.4	57.0	58.0	57.0
North East	57.8	55.5	57.9	57.5	57.0	56.0
National Average	56.2	55.4	55.9	55.3	55.0	53.0
<i>KBI 02 - Overall (national)</i>						
Durham County Council	55.8	54.4	58.3	57.0	58.0	57.0
North East	57.7	55.4	57.8	57.4	57.0	56.0
National Average	56.2	55.4	55.9	55.3	55.0	53.0
Highway Maintenance						
<i>KBI 23 - Condition of highways</i>						
Durham County Council	37.5	33.8	37.7	38.2	45.0	38.0
North East	40.3	32.6	38.4	37.5	41.0	33.0
National Average	38.6	34.7	36.6	34.4	38.0	31.0
<i>KBI 24 - Highway maintenance</i>						
Durham County Council	48.3	46.2	47.8	49.4	55.0	53.0
North East	50.7	47.0	49.1	49.4	53.0	51.0
National Average	50.2	49.3	49.0	49.4	53.0	51.0
<i>KBI 25 - Street lighting</i>						
Durham County Council	70.6	70.6	72.9	69.7	65.0	62.0
North East	72.6	70.8	71.1	70.3	68.0	67.0
National Average	68.8	68.2	67.4	66.9	66.0	65.0
<i>KBI 26 - Highway enforcement/obstructions</i>						
Durham County Council	47.9	49.3	49.8	47.7	50.0	51.0
North East	51.0	50.3	51.0	48.5	50.0	50.0
National Average	50.5	52.2	50.4	48.2	49.0	49.0

45 The results above show that the council is above the national and North East average for all but one of the above indicators.

46 Street lighting satisfaction has declined and this is believed to be due to the Street Lighting Energy Reduction Project. A lot of residents object to the removals which are proving to be controversial and a small proportion of residents object to the new LED lights which reduce light spillage which used to light up their properties.

Budget

47 The budget for programmed capital maintenance is summarised as follows:

Funding Stream	Year Ending 31 March £'000s								
	2013	2014	2015	2016	2017	2018	2019	2020	2021*
Department for Transport Funding									
Local Transport Plan	10,679	10,132	9,780	11,886	10,896	10,567	9,564	9,564	9,564
Detrunked Highway	0	0	0	0	0	0	0	0	0
Incentive Fund	0	0	0	0	666	1,016	2,008	1,992	1,992
Section 31	0	1,836	1,007	0	0	0	0	0	0
Severe Weather	0	0	1,242	1,100	0	0	0	0	0
Potholes Fund	0	0	2,197	0	784	2,543	1,945	931	931
Productivity Fund	0	0	0	0	0	1,830	0	0	0
Highway Maintenance Fund	0	0	0	0	0	0	5,269	0	0
Sub-Total	10,679	11,968	14,226	12,986	12,346	15,956	18,786	12,487	12,487
Durham County Council Funding									
Highway Maintenance	3,012	2,912	5,404	4,811	6,911	9,054	7,786	8,186	6,786
Total	13,691	14,880	19,630	17,797	19,257	25,010	26,572	20,673	19,273

48 Despite unprecedented reductions in government funding since 2010, the council has protected and continued to prioritise investment in programmed capital maintenance. Indeed funding has steadily risen; the council's contribution to programmed capital maintenance in 2010/11 was £0.7 million however this has increased to £8.1 million in 2019/20.

49 The DfT provides the majority of the funding for programmed capital maintenance. This funding is not ring-fenced but the council has always allocated it fully to highway maintenance and every opportunity is taken to secure additional funding.

Investment Levels

50 The TAMP measures the current and projected condition of the asset for a given level of investment in programmed capital maintenance.

51 The council have modelled the following investment levels as stated in the policy:

Investment Level – Programmed Capital Maintenance	1 April 2017 Prices (£ millions)		
	One Off Capital Cost	Annual Average Capital Cost	Annual Average Capital Cost (Once Backlog Cleared)
Projected Budget	N/A	£17.8	N/A
Steady State Condition	N/A	£21.7	N/A
Eliminate highway maintenance backlog over 1 year then maintain at steady state condition	£179.7	N/A	£21.5
Eliminate highway maintenance backlog over 30 years then maintain at steady state condition	N/A	£32.1	£21.5

- 52 The projected budget is an indicative annualised figure of the expected budget and the actual budget may be greater or less depending upon DfT and council funding.
- 53 The steady state condition investment level is where the budget is set to keep the current condition constant after allowing for annual average deterioration. The steady state condition investment level is calculated using nationally accredited lifecycle planning models which are based on current condition projected forward for average annual deterioration over a period of 30 years.

Department for Transport's Incentive Fund

- 54 The council has achieved the maximum Band 3 efficiency rating under the DfT's Incentive Fund which was introduced in 2016. Durham was one of only two highway authorities to achieve this maximum efficiency rating out of 119 participating highway authorities in England in 2016 and has maintained the maximum Band 3 efficiency rating in 2019. This rating will help ensure the council maximises funding from the DfT's Incentive Fund going forward.
- 55 The council was praised by Andrew Jones MP, Parliamentary Under Secretary of State for Transport, at a speech to the Road Surface Transport Association Conference on 7 April 2016:

"I would particularly like to mention what we now know are the two top performing Highway Authorities in the country; Durham and Lincolnshire. They scored highly against all 22 criteria and they will receive the maximum possible funding. I would urge the other Authorities to look

closely at how Durham and Lincolnshire are running such an efficient operation.”

“Places like Durham and Lincolnshire are showing what’s possible. By following their lead, we’ll have a better road network that better meets the needs of the nation”.

North East Highway Alliance

56 The council has led the development and implementation of the North East Highways Alliance which was formally established in September 2013. This is a forum for collaborative working for all 12 North East councils. The North East Highways Alliance has delivered a number of initiatives that are helping all councils involved, including Durham, maximise efficiencies in highways through sharing resources, collaborative procurement and knowledge sharing.

57 This partnership working together with ongoing collaborative working of the in-house Highway Services team with the supply chain of competitively procured external sub-contractors has led to the council being one of the first in the UK to be awarded British Standard BS11000 – Collaborative Business Relationships.

Plastic Roads

58 The council has been working in partnership with Rainton Construction and MacRebur on trialling plastic roads.

59 The following trials are underway with more planned:

Scheme	Surfacing Treatment	Surfacing Metres 2	Tonnes of Plastic Waste	Equivalent Plastic Bags (Millions)	Binder Plastic Content %
A689 Sedgfield	Hot Rolled Asphalt	12,744	6.5	1.6	6%
Murton	AC 10 DSC	3,413	1.1	0.3	6%
A68 Toft Hill	Hot Rolled Asphalt	6,320	3.7	0.9	6%

60 The council continues to review opportunities for further improvement and innovation including the use of new materials. These were the first trials in the North East and the largest undertaken nationally at the time.

61 Using plastic in roads reduces the amount of bitumen required in the binder. The benefits of this are:

- provide an outlet for single use plastic that would otherwise be sent to landfill or incinerated; and

- reduces the amount of bitumen required which reduces fossil fuels and carbon emissions.

Conclusion

- 62 The report provides a comprehensive update on how highway maintenance is managed and delivered in County Durham.
- 63 This includes the key policies, inventory, condition, maintenance, backlog, funding and performance.
- 64 The report also explains how the council is trialling plastic roads and the benefits of this.

Background papers

- Highway Maintenance Plan
- Transport Asset Management Plan – Annual Update, Cabinet Report dated 12 September 2018

Other useful documents

- None

Contact: John Reed

Tel: 03000 267 454

Appendix 1: Implications

Legal Implications

None.

Finance

None.

Consultation

None.

Equality and Diversity / Public Sector Equality Duty

None.

Human Rights

None.

Crime and Disorder

None.

Staffing

None.

Accommodation

None.

Risk

None.

Procurement

None.