

12 February 2021

Highways Maintenance

**Joint Report of Paul Darby, Interim Corporate Director of Resources
and Alan Patrickson, Corporate Director Neighbourhoods and
Climate Change**

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 asset management service delivery.

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 2020/21 a progress update on highways maintenance in the county.

Background

- 4 At the Environment and Sustainable Communities Overview and Scrutiny Committee held on the 21st March 2019, the committee received a report providing an overview in relation to highways in the county. The report contained data in relation to the condition of highway assets, maintenance backlog and public satisfaction. However, the data available was dated 2018.

- 5 It was therefore agreed by Members at that meeting that the committee include in its work programme for 2020/21 a further highways assets management report which would include current data and provide Members with an overview footway maintenance within the county and relevant performance data.
- 6 Arrangements have been made for Paul Watson, Interim Strategic Highways Manager, to attend the meeting on 12th February 2021 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 joint procurement exercises through the North East Highways Alliance (NEHA). Approximately 50% of Highway Services work is delivered by in-house staff with 50% 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 2019 is summarised in the table below:

Asset	Unit	Adopted	DCC Unadopted	Private Unadopted	Total
Carriageway					
A	Km	414	0	0	414
B	Km	403	0	0	403
C	Km	693	0	0	693
Unclassified	Km	2,283	18	117	2,418
Sub-Total		3,793	18	117	3,928
Drainage					
Gullies	Number	110,633	1,371	3,864	115,868
Structures					
Road bridges	Number	487	0	0	487
Footbridges	Number	51	455	0	506
Street lighting					
Columns/ Lanterns	Number	82,423	0	0	82,423
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

23 Despite the country being in the middle of a national pandemic due to COVID 19, we were still able to comply with national guidelines in respect of social distancing and continue with inspections and experienced minimal delay.

Transport Asset Management Plan

24 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>

25 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.

26 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. Annual independent external audits provide assurances that asset management principles continue to underpin all areas of service delivery.

Condition

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

Asset	Description	Performance					
		2016	2017	2018	2019	Good Condition Target	Fair Condition Target
Carriageway							
A – Roads	% where maintenance should be considered	4.1%	2.6 %	2.6%	3.0%	0.0%	4.0%
B – Roads		5.3%	4.7%	4.7%	3.3%	0.0%	4.0%
C – Roads		3.6%	3.7%	3.7%	2.3%	0.0%	4.0%
Unclassified Roads	% where maintenance should be considered	20.0%	20.0%	21.0%	21.3%	0.0%	8.0%
All Roads	% where maintenance should be considered	13.7%	13.5%	14.1%	11.7%	0.0%	6.4%
Footways	% structurally unsound	24.1%	22.8%	21.5%	20.9%	0.0%	5.0%

Structures	Bridge Condition Index – Principal roads	88.3	80.0	80.7	80.7*	100.0	95.0
	Bridge Condition Index – Non-Principal Roads	83.7	81.0	79.9	79.9*	100.0	95.0
	Other (using form of Bridge Condition Index)	66.0	66.0	66.0	66.0*	100.0	85.0
Street Lighting	% columns > 40 years	14.9%	15.3%	13.3%	13.9%	0.0%	5.0%
	% lanterns > 20 years	25.8%	18.3%	15.8%	15.3%	0.0%	5.0%
	% lit signs where replacement should be considered	17.9%	17.1%	17.1%	18.8%	0.0%	5.0%

- 28 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.
- 29 The fair condition target represents a realistic target of acceptable condition subject to available funding.
- 30 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.
- 31 The condition of footways is showing a gradual improvement but still remains a key issue.

Highway Structures Condition

- 32 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.

- 33 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.
- 34 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.
- 35 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.
- 36 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.

- 37 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.
- 38 Technical Services prepared a structures maintenance bid the Department for Transport’s Challenge Fund and were awarded £5million for the repair of New Elvet Bridge. This scheme commenced In the Summer of 2020 and is scheduled to be completed September 2021.

Footway Condition

- 39 The Council carries out a variety of maintenance schemes throughout the year to deliver a safe, serviceable and sustainable network. These include:
- (i) Minor patching works
 - (ii) Footpath surface treatments
 - (iii) Resurfacing works
 - (iv) Full reconstruction.
- 40 Cyclic safety inspections are carried out to specific frequencies that are determined by a number of local factors including traffic volume and composition, use with particular reference to the vulnerable, importance of the route to access local facilities, accident history and traffic sensitivity
- 41 Safety inspections are undertaken by a team of 16 Highways Inspectors who complete over 11,000 cyclic planned inspections each year throughout the County. The frequency is identified in the Highway Safety Inspection Manual after taking into account the factors detailed above.

Category	Name	Description	Frequency
1a	Prestige Walking Zone	Very busy areas of towns and cities with high public space and streetscene contribution	2 weekly
1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.	1 month
2	Secondary Walking Routes	Medium use routes through local areas feeding into primary routes, local shopping centres.	3 months
3	Link Footways	Linking local access footways through urban areas and busy rural footways.	6 months
4	Local Access Footways	Footways associated with low use, short estate roads to the main routes and cul-de-sacs.	1 year

- 42 The Highway Inspector will then apply a risk-based approach to initiating a repair of the identified defect based on their local knowledge, the number and composition of road users and the risk of injury. The defect is then identified for repair within agreed response times as detailed in the Highway Safety Inspection Manual.
- 43 Since 2017/18 to December 2020 the Council has repaired over 67,000 defects at a cost of over £3.6million.
- 44 Footpath inspections assist in the development of future capital footpath works alongside the Footway Network Surveys, reported CRNs, third party highway claims and member queries.
- 45 An annual programme of footway capital works is identified and approved to provide a longer lasting, relatively maintenance free, safe and sustainable surface for pedestrians.
- 46 In the last 5 years there has been over £26 million invested in the footway capital programme.

Maintenance Backlog

- 47 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.
- 48 The maintenance backlog for the adopted highway over the past 5 years is summarised as follows:

Maintenance Backlog	31 March £Millions				
	2015	2016	2017	2018	2019
Carriageways					
Strengthen	16.0	13.0	9.1	5.7	5.5
Resurface	31.6	27.5	22.0	16.1	12.1
Surface Improvement	8.8	13.0	18.5	27.6	31.4
Edge Improvement	2.8	3.8	3.2	3.3	2.6
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	25.0	21.7	17.4	16.3	15.8
Overlay/Relay/Flagging	6.4	6.2	5.6	5.7	5.2

Repair/Relay	11.8	17.0	19.0	15.5	20.1
Surface Improvement	3.6	2.6	2.8	3.0	4.0
Sub-Total	47.7	47.5	44.8	40.5	35.1
Structures	22.4	36.0	42.0	40.6	40.6
Street Lighting					
Column Replacements	14.7	12.5	12.7	11.3	11.6
Luminaire Replacements	7.5	8.3	5.3	4.6	4.3
Lit sign Replacements	1.3	1.3	1.3	1.2	1.3
Sub-Total	23.5	22.1	19.2	17.1	17.2
Traffic Management	1.0	1.0	1.0	1.0	1.0
Street Furniture	2.4	2.8	2.8	2.8	2.1
Total	181.1	191.7	187.6	179.7	172.6

- 49 As can be seen from the above, the maintenance backlog in relation to carriageways, footways and street lighting has reduced since 2015.
- 50 However, the maintenance backlog for structures has risen. This is due mainly to improved condition data more accurately reflecting the condition of bridges.
- 51 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

- 52 The council participates in the National Highways & Transportation (NHT) Public Satisfaction Survey which is undertaken by IPSOS/MORI.
- 53 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
KBI 25 - Street lighting						
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
KBI 26 - Highway enforcement/obstructions						
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

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

55 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

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

Funding Stream	Year Ending 31 March £'000s								
	2014	2015	2016	2017	2018	2019	2020	2021	2022*
Local Transport Plan	10,132	9,780	11,886	10,896	10,567	9,564	9,564	9,564	9,564
Challenge Fund	0	0	0	0	0	0	0	4,000	0
Detruncked Highway	0	0	0	0	0	0	0	0	0
Incentive Fund	0	0	0	666	1,016	2,008	1,992	1,992	1,992
Section 31	1,836	1,007	0	0	0	0	0	0	0
Severe Weather	0	1,242	1,100	0	0	0	0	0	0
Potholes Fund	0	2,197	0	784	1,580	1,297	662	8,448	6,498*
Productivity Fund	0	0	0	0	1,830	0	0	0	0

Highway Maintenance Fund	0	0	0	0	0	5,269	0	0	0
Sub-Total	11,968	14,226	12,986	12,346	14,993	18,138	12,218	24,004	18,054
Durham County Council Funding									
Highway Maintenance	2,912	5,404	4,811	6,911	9,054	7,786	8,864	10,431	7,300
Total	14,880	19,630	17,797	19,257	24,047	25,924	21,082	34,435	25,354

*Projected DfT contribution not yet verified.

- 57 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 £10.43 million in 2020/21.
- 58 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

- 59 The TAMP measures the current and projected condition of the asset for a given level of investment in programmed capital maintenance.
- 60 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	£21.8	N/A
Eliminate highway maintenance backlog over 1 year then maintain at steady state condition	£172.6	N/A	£21.5
Eliminate highway maintenance backlog over 30 years then maintain at steady state condition	N/A	£29.2	£21.5

- 61 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.
- 62 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

63 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.

64 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

65 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 collaborative procurement and knowledge sharing.

66 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 and Rubber Crumb Surfacing

- 67 The Council has continued working with Rainton Construction in ensuring that plastic and rubber crumb is used in surfacing schemes throughout the county.
- 68 The Council continues to review opportunities for further improvement and innovation including the use of new materials.
- 69 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.
- 70 Using plastic and rubber crumb in roads reduces the amount of bitumen required in the binder. The benefits of this are:
- provide an outlet for single use plastic and rubber that would otherwise be sent to landfill or incinerated; and
 - reduces the amount of bitumen required which reduces fossil fuels and carbon emissions and thus contributing to arresting climate change.

Conclusion

- 71 The report provides a comprehensive update on how highway maintenance is managed and delivered in County Durham.
- 72 This includes the key policies, inventory, condition, maintenance, backlog, funding and performance.
- 73 The report also explains the detailed spend and rationale behind the monitoring of condition, repair and maintenance for footways.

Background papers

- Highway Maintenance Plan
- Transport Asset Management Plan – Annual Update, Cabinet Report dated 16 December 2020

Other useful documents

- None

Contact: Paul Watson

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Appendix 1: Implications

Legal Implications

Durham County Council, as the local Highway Authority, has a statutory duty under the Highways Act 1980 to maintain the adopted highway at public expense.

Finance

As detailed in the report.

Consultation

None.

Equality and Diversity / Public Sector Equality Duty

None.

Climate Change

Resurfacing schemes use plastic and rubber crumb from tyres in their manufacture. This reduces the amount of bitumen needed to bind surfaces, thus reducing fossil fuels and carbon emissions and contributes to the Council's efforts to arrest climate change.

Human Rights

None.

Crime and Disorder

None.

Staffing

Highway maintenance is delivered by the Council's in-house Highway Services team supported by a supply chain of competitively procured external sub-contractors.

Accommodation

None.

Risk

None.

Procurement

External sub-contractors are procured through a competitive tendering process which is reviewed on a regular basis to ensure value for money is achieved.