

Big plans, bright future

## **Place Select Committee**

# Scrutiny Review of Highways Asset Management (including Potholes & Flooding)

November 2021

Place Select Committee Stockton-on-Tees Borough Council Municipal Buildings Church Road Stockton-on-Tees TS18 1LD

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### Select Committee – Membership

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### ACKNOWLEDGEMENTS

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### Foreword

On behalf of the Place Select Committee, we are pleased to present the final report and recommendations following our scrutiny review of Highways Asset Management (including Potholes & Flooding).

The aim of this review was to evaluate the opportunities for maintaining the Highways Infrastructure Asset as efficiently as possible, both now and in the future in the context of increasing demands, financial pressures and climate change.

The review has highlighted that the existing budget is not sufficient to manage the Highways Infrastructure Asset and, as a result, the Council is managing a deterioration of the asset. A single capital budget is allocated, however, the variable nature of this means that it can be difficult to plan for the long term

In the light of these challenges, we need to continually review and refine what is being done to maximise efficiencies. This includes bidding for additional funding at every opportunity and utilising new technologies and more sustainable materials.

Finally, we would like to extend our thanks to all the Stockton-on-Tees Borough Council Officers for their contributions during this review.



Councillor Chris Barlow Chair Place Select Committee



Councillor Mohammed Javed Vice Chair Place Select Committee



### **Original Brief**

### Which of our strategic corporate objectives does this topic address?

Making the Borough a place that is clean, vibrant and attractive means creating:

- Great places to live and visit.
- Clean and green spaces.

Making the Borough a place where people are healthy, safe and protected from harm

- People are supported and protected from harm.
- People live healthy lives.

Making the Borough a place with a thriving economy where everyone has opportunities to succeed

• A growing economy.

### What are the main issues and overall aim of this review?

Stockton-on-Tees Borough Council's (SBC) Highways Infrastructure Asset is the Council's most valuable asset and currently totals in excess of £1.7 billion. The 2020/21 Highway Infrastructure Asset Inventory includes:

- 883km (548m) Adopted highways
- Excess Of 400 SBC Structures
- 29,500 Street Lights
- 2,100 Illuminated Signs/Bollards
- 196km (122m) Public Right of Way
- 169 Traffic Signal Junctions/Crossings

The required steady state funding for the Highways Infrastructure Asset in 2020/21 was £9,551,000 and the actual funding received for the same period was £5,480,936. Therefore, this review will provide an overview of the responsibilities and challenges in managing the Highways Infrastructure Asset. This will include a focus on potholes and surface water flooding as areas of concern.

Potholes are present on roads across the Borough, the presence of which are of increasing concern to road users, vehicles, and pedestrians. This review will include ascertaining the extent of the problems caused by potholes and how this can be considered and mitigated against.

Surface water issues can be problematic at locations across the Borough. This review will seek to address this problem so that a longer-term solution to surface water issues can be found in the areas where it is most needed.

Overall, the review will evaluate the opportunities for maintaining the Highways Infrastructure Asset as efficiently as possible, both now and in the future. This will be set within the context of increasing demands, financial pressures, and climate change issues.

### The Committee will undertake the following key lines of enquiry:

- What are the most common problems reported to Community Services and Transport? (Definitions of potholes and surface water flooding and the Council's statutory duty to maintain and repair highway infrastructure assets.) How have these problems changed over time? (for example, number of reports, number of potholes repaired, time of repairs?)
- How is funding allocated for highways infrastructure asset management? How has this funding changed over previous years? What is the projected condition of the highway if the budget remains the same over the next five years?
- What is SBC's Highways Infrastructure Routine Safety Inspection regime?
- How do SBC communicate and consult with residents about highways infrastructure asset issues? How is this information utilised? What is this telling us? How is this information used?
- How has and how will climate change impact the condition of the Borough's highways infrastructure assets?
- How does SBC's highway infrastructure asset management practices compare with other Local Authorities?
- Could advances in technology, or new materials, be utilised to improve the quality of highways in the long term?
- What could be done if SBC were provided with additional funding to repair/maintain highway infrastructure assets? What are the opportunities for 'invest to save'?
- What are the highway infrastructure asset priorities moving forward and how can the Committee help to deliver on them through their recommendations?
- To consider the processes undertaken on new developments, particularly regarding adoption of new highway infrastructure assets, as publicly maintainable and the potential future maintenance implications of these assets.

Provide an initial view as to how this review could lead to efficiencies, improvements and/or transformation:

Maintenance of the Highways Infrastructure Asset will result in positive social and environmental outcomes across the Borough's public places. If opportunities or additional funding became available to tackle some of the highways infrastructure issues this could reduce Council spending in the long term.

This review also has the potential to positively impact on the public's perception of how Stockton Borough Council takes its responsibility for the upkeep of its highway infrastructure systems.



### **Executive Summary**

This report presents the outcomes of the Scrutiny Review of Highways Asset Management (including potholes and flooding).

The aim of the review was to evaluate the opportunities for maintaining the Highways Infrastructure Asset as efficiently as possible, both now and in the future. This was set within the context of increasing demands, financial pressures, and climate change issues.

The Select Committee's key findings were as follows:

- Management of the Highways Infrastructure Asset includes the repair and maintenance of highways, including potholes, as well as structures, streetlights, footpaths, illuminated signs/bollards, public rights of way, gullies and traffic signal junctions/crossings
- A single capital budget is allocated for the maintenance of the Highways Infrastructure Asset, which is also occasionally supplemented by ad-hoc additional funding streams, however, the variable nature of this means that it can be difficult to plan for the long term
- The existing budget is not sufficient to manage the Highways Infrastructure Asset at a steady state. Therefore, we are currently managing a deterioration of the asset, utilising the principals of asset management
- Moving forward over the coming years there are some significant structural schemes that will need to be undertaken as a priority
- The above points may result in future Residents' surveys increasingly demonstrating areas of dissatisfaction within highways infrastructure asset management
- There are a variety of processes available to manage and maintain the highway and repair potholes, which include patching and resurfacing
- Alternative processes have been examined as part of this review. For example, surface dressing, spray injection patching, and crack/pothole sealing
- The introduction of alternative processes and resources, such as rubber roads, will form an important part of the Council's environmental sustainability and carbon reduction strategy in the context of the current and projected effects of climate change and innovative environmentally friendly measures will continue to be explored and utilised where appropriate



- Surface water flooding is a particular issue in areas of the Borough with older style gullies, which often lack sufficient capacity to deal with intense periods of rainfall, which due to the impacts of climate change are expected to intensify and become more common. These older gullies are generally replaced as part of wider resurfacing schemes, however, it may be possible to accelerate their replacement via a programme based on evidence / priority
- The Council's Highway Operational and Asset Management teams are currently investigating 'invest to save' options. Currently being utilised on a trial basis is a product known as Roadmender. This equipment if used by suitably trained operatives has the potential to reduce the cost to repair potholes from circa £50 per pothole to approximately £30-£35 per pothole. There are other potential invest to save options that could be developed and considered over future months
- Some Committee Members have already started to communicate the pressures the Council are under in respect of managing the highways infrastructure asset to residents. Wider communication of this information may prove valuable to all local Ward Members to allow them to communicate this to residents, as and when issues are highlighted. Other methods of communication are used both during the planning of schemes and once a scheme is complete, with the level being commensurate with scale of the scheme. These scheme communication methods include press releases, webpages, scheme boards, residents' letters and post scheme satisfaction questionnaires
- The most common issues reported tend to focus on road/footpath condition, gullies and streetlights. Whilst there has been a general reduction in the number of issues reported there have been instances of short term increases due in the main to adverse weather events. With regards to how issues are reported, the use of the online 'Report It' system has shown a steady increase over the last five years with a corresponding decrease in the number of in person contacts
- The Highways Safety Inspection regime includes scheduled annual inspections and reactive inspections in response to the reporting of an issue. All inspections are based on a hierarchy of need, priority, and uses. This also assists with determining a timeline for repairs
- The Council collaborate with other Local Authorities, both regionally and nationally, on funding opportunities and to share best practice and policy development
- In terms of new developments and asset adoptions, the Council liaise with developers from the planning stage through to the construction stage. The 12-month adoption period commences after the final surface has been laid and a joint inspection has taken place and any issues or faults have been rectified



### Conclusion

There are challenging times ahead in terms of infrastructure asset management:

- Climate Change is becoming more and more prevalent
- The key focus for SBC is 'keeping the borough moving'.
- Communication with internal stakeholders and residents / businesses is imperative moving forward
- Major schemes (structures) will have major traffic impact but little visual benefit from a residential, travelling public perspective
- Public awareness is also important. This means getting the message 'out there' whilst trying to retain resident's satisfaction levels
- SBC will continually review / refine what is being done to ensure maximising efficiencies. The Council will also ensure bidding for additional funding at every opportunity
- The use of new technology and more sustainable materials also needs to be considered

Several high-profile structures needing maintenance over next few years. Drawing on the maintenance of Mandale Bridge as an example, this is a £2m scheme for which the public have only seen a small proportion of the works.

Climate change also means that there needs to be a focus on the decarbonisation of the transport network via various methods/treatments. Planning for and responding to extreme weather events also needs to be considered. There is an increased likelihood of extreme weather events and material choices need to reflect anticipated temperature increases. Therefore, there should be a greater use of new materials such low temp asphalts, recycled rubber, plastics etc. together with investigating invest to save opportunities.

### Recommendations

- 1. That options to utilise, alternative interventions, processes and resources, such as the use of recycled rubber materials, are considered and where appropriate are implemented both as part of delivering more maintenance interventions and contributing towards the Environmental Sustainability & Carbon Reduction Strategy.
- 2. That options to 'invest to save' are explored and costs and returns are calculated.
- 3. That options are included, where appropriate, to build on existing collaborative work or procure collaboratively with other Tees Valley authorities to advance innovation, adopt alternative processes and materials, improve efficiency, harmonise standards and maximise integration.



- 4. That a communications plan is devised and agreed to ensure that all elected Members are made aware of the current Highway Infrastructure asset management processes and current pressures experienced by the Service.
- 5. That a proactive programme of gully replacement is considered and implemented based on priority, need and available resource.
- 6. That, recognising that correspondence has been sent to local MPs urging them to lobby Central Government for additional funding, their response and any further actions are kept under review.
- 7. That, in order to raise awareness of funding issues, the final scrutiny report is shared with the Tees Valley Combined Authority Transport Advisory Group.



### 1.0 Introduction

1.1 This report presents the outcomes of the Scrutiny Review of Highways Asset Management (including potholes and flooding).

1.2 The aim of the review was to evaluate the opportunities for maintaining the Highways Infrastructure Asset as efficiently as possible, both now and in the future. This was set within the context of increasing demands, financial pressures, and climate change issues.

- 1.3 The Committee examined the following key lines of enquiry:
- What are the most common problems reported to Community Services and Transport? (Definitions of potholes and surface water flooding and the Council's statutory duty to maintain and repair highway infrastructure assets.) How have these problems changed over time? (for example, number of reports, number of potholes repaired, time of repairs?)
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- How has and how will climate change impact the condition of the Borough's highways infrastructure assets?
- How does SBC's highway infrastructure asset management practices compare with other Local Authorities?
- Could advances in technology, or new materials, be utilised to improve the quality of highways in the long term?
- What could be done if SBC were provided with additional funding to repair/maintain highway infrastructure assets? What are the opportunities for 'invest to save'?
- What are the highway infrastructure asset priorities moving forward and how can the Committee help to deliver on them through their recommendations?
- To consider the processes undertaken on new developments, particularly regarding adoption of new highway infrastructure assets, as publicly maintainable and the potential future maintenance implications of these assets.



### 2.0 Evidence

### **Background**

2.1 The 2020/21 Highway Infrastructure Asset Inventory includes:

883km (548m) Adopted highways - 215km (134miles) A, B and C class highways. 668km (415miles) unclassified highways.



Excess Of 400 SBC Structures - 73 Road bridges, 125 Foot bridges, 123 Culverts (>0.9m), 54 Retaining walls (>1.5m), 7 Underpasses and Subways, 29 Others (including Boardwalks).







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29,500 Street Lights.



169 Traffic Signal Junctions/Crossings.



2,100 Illuminated Signs/Bollards.





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196km (122m) Public Right of Way.



43,000 Highway Gullies.





### **Statutory Duties**

2.2 The Highways Act 1980, Section 41 places a statutory duty on Local Authorities to maintain the highway at public expense. With over 500 miles of roads/footpaths to maintain as well as all other assets associated with the roads (such as streetlights, bridges, traffic lights, signs) it is not possible to maintain everything at the same time.

2.3 Therefore, the Highways Act 1980, Section 58 provides the Local Authority with a defence against claims brought against the Authority for damages as a result of non-maintenance of the highway as long as the Council can demonstrate that what they did would be reasonably expected of the Authority.

2.4 This means that Stockton-on-Tees Borough Council (SBC) can demonstrate that they have the necessary policies, procedures and resources in place to show a consistently applied approach across the highway assets and that they did what they said they would do (i.e. if SBC agreed to repair something in 10 working days of the inspection – did this actually happen).



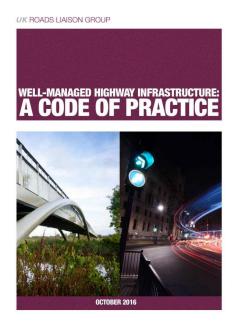
- 2.5 Other statutory duties are outlined below:
- The Traffic Management Act 2004 places a duty on Local Authorities to make sure traffic moves freely on the local road network
- The New Roads and Street Works Act 1991 is a legislative framework for street works
- The Flood Water Management Act 2010 covers the management of the risk concerning flooding and coastal erosion
- The Land Drainage Act 1991 requires that a watercourse be maintained by its owner

### What is a Pothole or Trip Hazard?

2.6 There is no national standard definition of what constitutes a pothole or trip hazard and historically potholes (trip hazards) were only recognised and became 'actionable/repairable' when a predefined set of criteria, usually based on depth or width were met.

2.7 Following recommendations by UK Road Liaison Group in 2016, there has been a move away from a prescriptive set of definitions of a pothole or a trip towards a risk-based approach in maintaining the highway infrastructure. This approach still uses trigger points (that SBC call investigatory levels) based on the characteristics of depth and width, with the speed of repair based on the risk it poses to the safety of the user and their vehicles as well as the risk to the integrity of the road/ footpaths/asset/structure.

2.8 SBC investigatory levels are currently 40mm for roads and 20mm for footpaths.





### Risk Matrix

2.9 To determine the speed of a repair, the Council assess the likelihood and consequences of a risk to safety/integrity occurring. The result of this assessment assigns the priority which for Stockton is:

- Cat 1 = 24 hours (some at 2 hours)
- $\blacktriangleright$  Cat 2H = 10 working days
- $\succ$  Cat 2M = 28 days
- Cat 2L = review/monitor at next inspection or add to next maintenance programme

### **Repair and Maintenance Processes**

### **Traditional Processes**

2.10 Once a repair priority is set, the Council then have to carry out that repair and in most instances for a pothole this will involve localised patching (two men in a vehicle).

Patching - cut out defect, remove waste, hand lay new material, level off.

> Typical cost £50 - £80 per square metre



2.11 When there is a lot of 2L defects, the Council may consider the area for larger scale machine patching.

Resurface - machine-based process to remove old material and relay new.

Typical cost £15 -£20 per square metre (based on large areas, typically in excess of 1000m2)





### **Alternative Processes**

### Micro Asphalt

2.12 This is best suited to low traffic areas where a road or footpath is not really structurally unsound but may be suffering from a number of areas of shallow surface deterioration. As it is cold applied material it does take a bit longer to settle and stabilise, therefore communication with residents is crucial. On average, this is about 40% cheaper than traditional resurfacing if machine applied, but if it is hand laid then the cost does go up. This process could typically extend surface life by five to ten years.



### Surface Dressing

2.13 Surface dressing is suited to any situation although, due to the process, significant quantities of loose material can be present on site for a number of weeks after surfacing and it does require regular mechanical sweeping to remove loose chippings. Most sites will need some pre-patching works to guarantee a level surface and ensure future ride quality. On average, this process is about 50% cheaper than traditional resurfacing and can typically extend the life of surfaces by 8-10 years.



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### Retexturing

2.14 This process is only suitable for structurally sound road surfaces to improve the skid resistance of the road where polishing of the surface is the only problem. This can be done several times before the road has to be resurfaced.



### **Geotextile Reinforcement**

2.15 This process is used to reinforce a road surface to either protect it from a fragile or moving lower surface where reconstruction is not an option.





### **Grouted Macadam**

2.16 This process requires some of the existing surface to be planed out and then an open textured surface laid which is then infilled with liquid cement grout that sets to give a slightly harder surface. This has been trialled on concrete roads. This process tends to be more expensive than traditional surfacing.



### Spray Injection Patching

2.17 This process is suitable for shallow surface deterioration where a good look is not necessarily the most pressing outcome i.e. as preparation for surface dressing.





### Crack / Pothole Sealing

2.18 Warm liquid material is applied to cracks or potholes then covered with small stone particles to provide skid resistance.



2.19 Alternative materials and processes have been used across the Borough in the following areas:

- Surface Dressing –Hilton Area (From A1044 Low Lane to NYCC Boundary) 2018
- Micro Asphalt –Middridge Grove, Billingham and Thistle Road/Heather Close, Roseworth–2015
- Retexturing Princeton Drive / East Drive Roundabout 2019
- Crack/Pothole Sealing Church Road & Portrack Lane 2021

### **Defect Reporting**

2.20 There are three main avenues through which defects are reported:

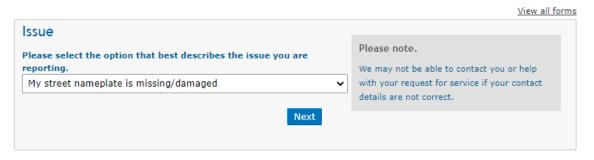
- Elected Members -via 'Report It' or direct contact with officers
- Public -via 'Report It' function on website
- Members of Parliament -via Information Governance

2.21 *Report It* is part of the Council's corporate move to improve its digital platform through which stakeholders can contact SBC about issues in the Borough. *Report It* provides SBC with a seamless interaction from the Council's website direct to the operatives on site thereby ensuring a timely response can be provided to all reports and as such should be viewed as the preferred option for reporting faults.



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Report Damaged Roads, Paths, Potholes, Road Signs, Footpaths, Cycle Paths and Street Furniture



2.22 Hot topics reported include:

### Potholes

- •Surface water ponding / drainage
- •Day burning street-lights
- •Street-lights not working
- •Roadworks & traffic delays
- •Footpath condition



### **Common Defect Reports 1**

	2016	2017	2018	2019	2020
Road	1155	798	1454	948	798
Footpath (Paved)	574	436	363	382	227
Footpath (Tarmac)	355	340	320	280	202
Street Furniture	709	497	602	598	510
Gullies (Cleansing)	437	312	374	306	248
Flooding	82	61	55	72	37
Street Lights	4020	1987	2268	1764	1801
Lit Signs/ Bollards	30	25	50	1816	293
Total	7262	4385	5405	6321	4396

2.23 Footpaths (paved) - show a steady reduction in numbers, possibly as a result of recent focus on footpath schemes to replace flagged footpaths with bituminous materials.

2.24 Flooding – varies depending on the weather and is based on a person's perception of flooding.

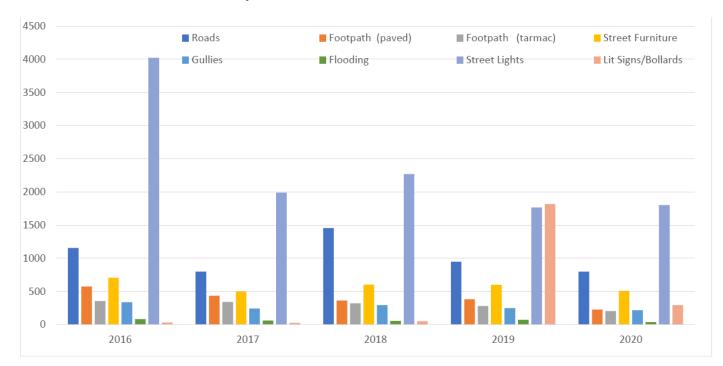
2.25 Gullies – once again, numbers dropped slightly, but these are things that need to be monitored as a blocked/silted gully can be the cause of standing water on a road or footpath.

2.26 Focussing on the highlighted figures:

- Street Lights 2016 LED replacement programme was becoming established and since then numbers have stayed relatively static.
- Roads 2018 ties in with the 'Beast from the East' when the roads were under snow and ice continuously for 4-6 weeks and this caused significant accelerated deterioration of the road network.
- Lit signs/bollards 2019 coincided with the introduction of the 'Report it' system and this allowed the direct online reporting of signs and bollards for the first time. Therefore, the increase is for two reasons:
  - I. Highlighted a period of under investment which SBC are addressing with a targeted de-illumination and replacement programme over the next few years.
  - II. Problem with the system which resulted in the same asset being reported on numerous occasions



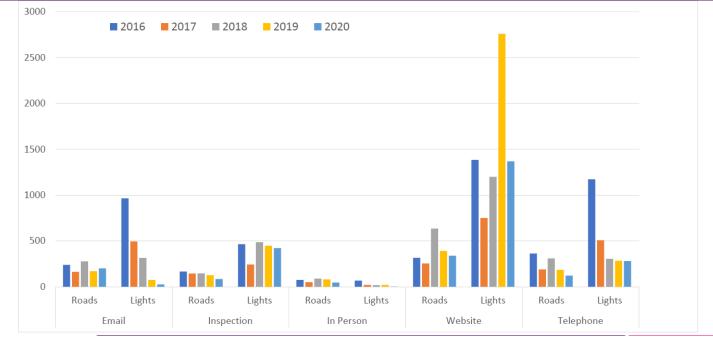
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### **Common Defect Reports 2**

### **Roads and Lights by Reporting Medium 1**

# Roads and Lights by Reporting Medium (1)





	2016		2017		2018		2019		2020	
	Roads	Lights	Roads	Lights	Roads	Lights	Roads	Lights	Roads	Lights
Email	239	965	162	494	277	317	170	70	199	25
Inspection	165	463	144	242	146	485	126	447	84	420
In Person	74	67	49	19	88	17	79	17	46	3
Website	315	1383	255	750	634	1199	389	2758	338	1367
Telephone	362	1172	188	507	309	303	184	284	131	279
Total	1155	4050	<b>79</b> 8	2012	1454	2318	<b>94</b> 8	3580	<b>79</b> 8	2094

### Road and Lights Reporting Medium 2

2.27 Reporting of issues with roads has remained fairly constant via email, inspection, in person visits and website, but telephone contacts are starting to show a downward trend.

2.28 Streetlights has shown marked decrease in reports via email and telephone whilst website (ignoring the 2019 spike) has remained steady.

2.29 Between 1 April 2020 and 30 March 2021, 94.6% of reported street lighting faults were rectified within 10-day limit.

2.30 Between 1 April 2019 and 31 March 2020, 98.1% of 2H defects rectified within 10-day limit and 95.9% of 2M defects rectified within the 28-day limit.

### How is Capital Funding Allocated?

2.31 Capital Funding is allocated from Central Government, via Tees Valley Combined Authority. This allocation is based on road length (2019 data), the number of Structures (over 1.5m span as of 1<sup>st</sup> April 2014), and the number of Street Lighting Columns (as of 1<sup>st</sup> April 2014).

2.32 The overall national funding pot is split 82.4% roads, 15.4% bridges and 2.2% streetlights then allocated to each authority based on the above three datasets.

2.33 The Structures and Street Lighting data is being refreshed by the Department for Transport (DfT) for 2022 and this will have a marginal impact on SBC. The data refresh will result in an addition of three extra structures and a net gain of 1000 streetlights.

2.34 A consultation is ongoing for a refreshed funding scenario for Mayoral Combined Authorities (MCA), known as the City Region Sustainable Transport Settlement (CRSTS).

2.35 CRSTS will move MCAs away from a traditional funding scenario of multiple DfT streams of funding allocated on annual basis to a single source of funding over a five-year settlement which will give surety of funding over the settlement period. MCAs will still be able to bid for additional funding should the opportunity become



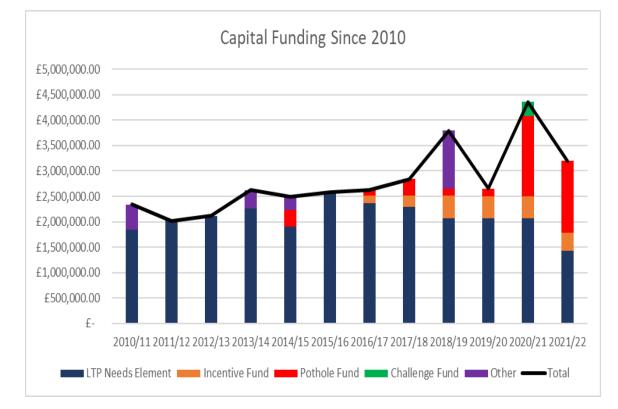
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available, such as the challenge fund and the levelling up fund. Tees Valley Combined Authority (TVCA) have been compiling a prospectus of funding scenarios based on a low scenario of the current level of funding over the next five years and a high scenario based on an additional £17.5m over the next five years divided between the five Local Authorities, based on the same data used by the DfT (mentioned above).

2.36 In advance of the notification of annual capital funding, SBC formulate a draft forward programme of work for each asset based on:

- Condition surveys
- Inspections
- Stakeholder reports
- 3<sup>rd</sup> Party claims
- Accident data
- External influences

2.37 Once formally notified of the budget, SBC refine the programme and apportion a budget based on priorities.



### How has capital funding changed?

2.38 For asset engineers, the amount of funding is not necessarily the main issue to deal with, although it is generally accepted that larger funding allocations can always be utilised. What is of more concern is the uncertainty of funding levels over



the longer term. With budgets issued on an annual basis, it is hoped that the City Region Sustainable Transport Settlement (if it comes into force) will go some way to address this issue.

### Asset Valuation: Total Cost to Replace all Assets

Asset Type	Gross Replacement Cost (£)
Carriageways	£1,060,288,000
Footways / Cycleways	£167,896,000
Structures	£425,583,000
Street Lights	£51,524,000
Street Furniture	£15,761,000
Traffic Signals	£11,907,000
Total	£1,732,959,000

# Accumulated Depreciation: Cost to Bring All Assets from Existing to New Condition

Asset Type	Accumulated Depreciation Cost (£)
Carriageway	£80,635,000
Footways / Cycleways	£30,119,000
Structures	£166,119,000
Street Lights	£27,644,000
Street Furniture	£7,871,000
Traffic Signals	£5,090,000
Total	£317,478,000

### Maintain 'Steady State' Condition versus Actual Budget

Asset Type	Required Steady State Funding (£)	Funding 2020/21 (£)	Funding 2021/22 (£)
Carriageway	£3,200,000	£1,864,086	£1,576,996
Footway	£562,000	£500,000	£460,000
Structures	£4,150,000	£1,944,005	£1,393,792
Street Lights	£1,156,000	£585,050	£384,548
Traffic Signals	£483,000	£587,755	£364,807
Total	£9,551,000	£5,480,936	£4,176,143



### **Projected Condition – Existing Budget**

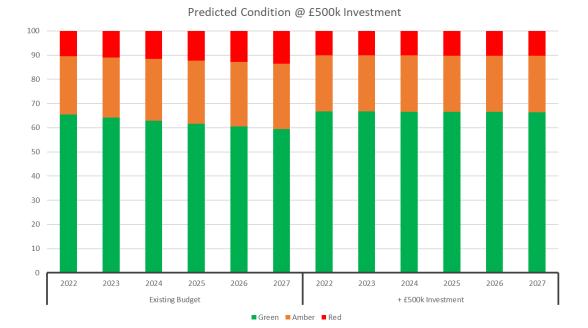
	A - Roads			B – Roads		C – Roads			Unc Roads			
	%age @ 2022	%age @ 2027	Equiv Km Change									
Red	0.52	2.87	↑ 2.2	1.61	4.47	10.4	1.39	4.76	13.6	10.47	13.58	120.8
Amber	19.22	30.90	10.9	21.95	26.57	10.6	22.82	28.56	↑6.2	24.08	27.02	19.6
Green	80.26	66.23	↓13.1	76.44	68.96	↓1.0	75.79	66.68	↓9.8	65.45	59.40	↓40.4

2.39 SBC has: 93.5Km A Roads, 13.8Km B Roads, 108.1Km C Roads and 667.7Km Unclassified Roads.

2.40 With existing budgets SBC will see a steady decline in the condition of each class of road.

- Green = Areas of roads that don't require any maintenance intervention
- Amber = Areas of road that are showing signs of deterioration and planning of maintenance should commence for some time over the next few years. Where possible, schemes in red areas should be extended to cover some amber roads to prevent them becoming red
- Red = Areas of road where maintenance should be considered and implemented

### **Projected Condition – Budget Increase**



28

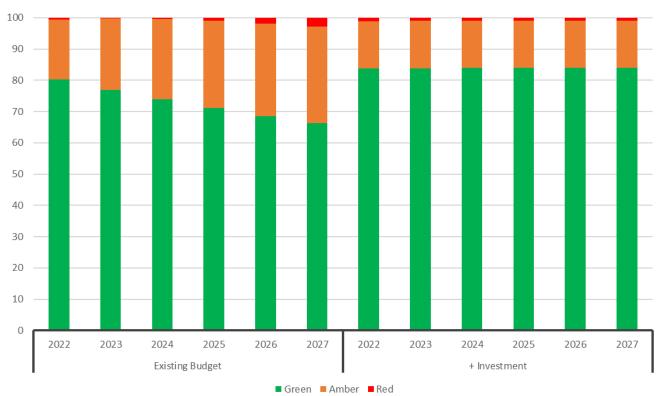


2.41 With a notional investment of £500k targeted at unclassified roads and by using a mix of appropriate surfacing techniques applied in the right locations, SBC could see a marginal improvement in the condition of the unclassified network but more importantly SBC should be able to stabilise the condition at its current level.

2.42 There is a need to caution that the modelling does not necessarily reflect the exceptionally high levels of inflation on building materials and costs, which are expected to continue over the next few years and this inflation may negate any increase in funding.

2.43 Appropriate techniques would include traditional resurfacing, surface dressing (rural locations only), and micro asphalt (low traffic suburban areas).

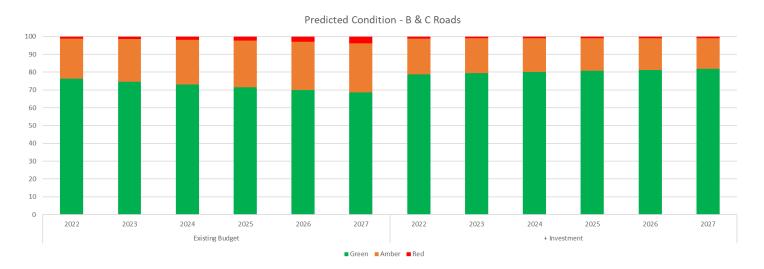
2.44 If the investment level were to double to £1m and SBC kept £500k in unclassified roads and split the remaining £500k between the A, B and C Roads, then once again by targeting a mix of surfacing techniques at the right locations, the Council could potentially look to stabilise the condition of the network as shown in the next two graphs. In the first graph, a comparison is made between the predicted condition of the A Road network for existing budget vs investment (+£290k pa).



### Predicted Condition – A Roads



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### **Highway Safety Inspection Regime**

2.45 Every section of publicly maintained 'adopted' road or footpath is subjected to a routine scheduled safety inspection at least once per year. The actual schedule for inspections is based on a hierarchy, which is assigned based on its needs, priorities and uses and takes into account factors such as volume, type and speed of traffic, and other geographical influences (such as schools, shopping parades, hospitals, etc).

2.46 However, once a report is received, the reactive process kicks in, which is based on the routine system and both have the same purpose which is to identify the fault location, determine if it is actionable and then determine the timeline for repair.

2.47 The Council also consider what their neighbouring Authorities are doing and, where possible, ensure that they are doing similar things especially at boundary points.

2.48 The regime is also one step in allowing SBC to form its Section 58 defence, as defined by the Highways Act 1980. It is expected that there will always be some imperfections, and a previous court judgement has stated that a local highway Authority cannot be reasonably expected to maintain a road to the standard of a bowling green.



Hierarchy	Category	Typical Description
1	Motorway	Limited Access – Motorway Regulations Apply.
2	Strategic Route	Trunk and some Principal A class roads between primary destinations including the TVCA Key Route Network.
За	Main Distributor	Major Urban Network and Inter-Primary Links. Short – medium distance traffic.
За	Secondary Distributor	B and C class roads and some unclassified urban routes carrying bus, HGV and local traffic with frontage access and frequent junctions.
4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions.
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic.
5	Minor Road	Little used roads serving very limited number of properties.

#### Road Hierarchy

2.49 The majority of gullies are cleaned once per annum, with known 'problem areas' cleansed either twice or four times per year. Before extreme weather events, further pre-emptive cleanses of gullies and trash screens are carried out. In addition, a new database is being introduced which will give a more accurate view of numbers cleansed over the year.

### Highway Asset Communication – Pre-Scheme

2.50 Communications are carried out in advance of any pre-planned, SBC controlled, roadworks scheme. The scale of communication is proportionate to the scale of the scheme.

2.51 For smaller schemes, there is a shorter duration and minimal disruption. Local Ward Members are contacted by email. Residents letters are sent to all those in the immediate area. Advance notice boards are also displayed.

2.52 For larger schemes with a medium / long term duration, where there is the potential for serious disruption. Communication is issued in the following ways:

- Webpages
- Press releases (including Stockton News) and social media posts
- Scheme leaflets
- Scheme boards



• Officer visits (including to Ward Surgeries as required)

2.53 The following images serve as examples of the various communication methods:

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Stockton-on-Tees BOROUGH COUNCIL	
W	orking with
Dear Resident	
2021/2022 Highway Maint	tenance Carriageway Resurfacing Works
OnDate between	.Times we will be resurfacing the road at umbers
This means that during this time there will be	Traffic management in place.
The Traffic management the works and this is to ensure work can be comple	ted safely.
During this time you will still have access to your $\ensuremath{restrictions}$ .	property but the work may mean that, at times, there may be short
To make sure we can work as quickly and as s from the affected road byTime	afely as possible, please make sure you remove any vehicles
The work should take $\ldots$ $\mathbf{x}\mathbf{x}$ days to complete.	
If you have any questions or concerns about this $\underline{w}$	ork please contact us:
<u>Stockton Borough Council:</u> Steven Dodds - Principal Engineer	01842 526768 or 07909 888131
<u>Tarmac:</u> Tony Burns – Site Supervisor	0191 4924008 or 07753 813202
Kind regards	
Steve Dodds	



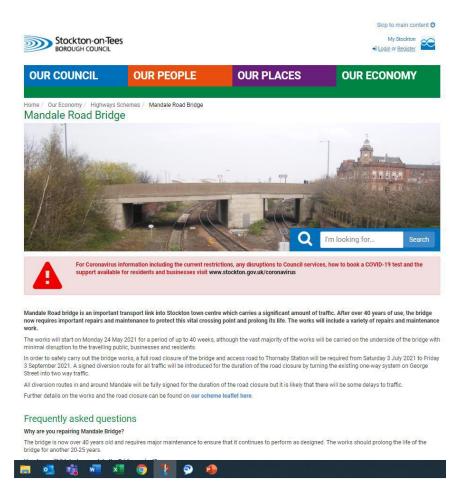
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### **Highway Asset Communication – Post Scheme**

2.54 Following a scheme, resident satisfaction questionnaires are delivered to properties directly affected by the scheme. The questions are based on before, during and after the scheme. These questionnaires are used for both footpath and road resurfacing schemes.



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#### Please tell us how strongly you agree or disagree with the following statements about the recent road works on your street:

### Notice/Timing of Works

No view

	was kept informed about wh ould start and how long the	
5	trongly agree	
A	gree	
N	either	
D	isagree	
St	trongly disagree	
N	o view	
	was given information abou lenty of time.	t the scheme in
51	trongly agree	
A	gree	
N	leither	
D	isagree	
St	trongly disagree	
N	lo view	
	he work was completed pro fficiently.	mptly and
5	trongly agree	
A	gree	
N	leither	
D	isagree	
51	trongly disagree	

### On Site Arrangements

#### The arrangements to guide motorists/ pedestrians safely along the street during the works were satisfactory (e.g. signs, cones, barriers).

Strongly agree	
Agree	
Neither	
Disagree	
Strongly disagree	
No view	
I knew whom to contact if I had a query or concern about the works.	
Strongly agree	
Agree	
Neither	
Disagree	
Strongly disagree	
No view	
The site was left clean and tidy at the end each day and at the end of the works.	of
Strongly agree	
Agree	
Neither	

Disagree

No view

Strongly disagree

### Disruption

Strongly agree	
Agree	
Neither	
Disagree	
Strongly disagree	
No view	
Quality/Workmanship	
The works that have been carried have made an improvement to the environment.	

#### Strongly agree Agree Neither Disagree Strongly disagree No view The finished work is of a satisfactory quality. Strongly agree Agree Neither Disagree Strongly disagree No view

### Employee Attitude

The site staff were polite and	courteous.
Strongly agree	
Agree	
Neither	
Disagree	
Strongly disagree	
No view	
Overall how satisfied or dissa with the road works on your s	
Very satisfied	
Fairly satisfied	
Neither	
Fairly dissatisfied	
Very dissatisfied	
No view	
If you have any other comment works scheme, please give the	
What is your postcode:	
If you would like a response to have raised please give your na below.	

Thank you for taking the time to complete this questionnaire.



### Roadworks – Coordination and Communication

2.55 The Permit Scheme, launched in April 2020, coordinates all roadworks in the Borough to ensure disruption on the network is minimised. This scheme allows conditions to be attached to a permit application.

2.56 The coordination of works is essential, and other Local Authorities have adopted similar communication methods to SBC. For example, in the case of the Trunk Road (A19/A66), there was an application process to 'book' network space.

### Stakeholder Satisfaction

### National Highways and Transportation Survey (2019)

2.57 This survey was conducted by Ipsos MORI on behalf of SBC. 3,300 postal surveys were sent to randomly selected addresses in July 2019 with a focus specifically on highway and transport services within the Borough.

### Post scheme questionnaires (2019)

2.58 Postal survey of residents carried out on completion of a road resurfacing or footpath scheme.

Road resurfacing satisfaction –94%. Footpath scheme satisfaction –90%

### National Highways and Transportation Survey

2.59 Snapshot of results 2019:

39% satisfied with condition of roads (NHT average 36%) –ranked 39 of 111 52% satisfied with footpaths (NHT average 55%) –ranked 83 of 111 67% satisfied with street lighting (NHT Average 64%) –ranked 34 of 111

### Post Scheme Questionnaires (2019)

2.60 During 2019, 322 surveys were issued over 11 schemes. 68 surveys were returned equating to a 21.1% return rate. Of these, 58 stated that they were Very Satisfied, 9 Fairly Satisfied, 1 neither satisfied nor dissatisfied. There were zero submissions on the dissatisfied scale of the survey.

2.61 Some of the positive comments submitted by residents included:

"Workers should be proud of a job well done"

"Very good new surface"

"Very efficient first-class job very good workmanship"

"Got some very good photos of before and after"



2.62 Some of the negative comments submitted by residents included:

"Was it necessary to fill the potholes two days before work on the new surface started"

"I tripped over the leg of a warning sign hidden behind a lamppost"

"Should have done the footpaths at the same time"

"There are other parts of the estate in desperate need of repair"

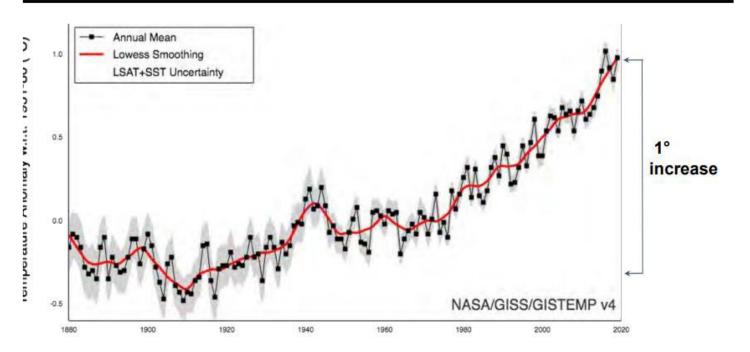
"It was a pity the work didn't carry on into other roads as there are a few potholes on them roads as well"

2.63 The results of the National Benchmarking Analysis are due for release on 29 October 2021 and the analysis of the results will commence after then.

### **Climate Change**

### Weather vs Climate

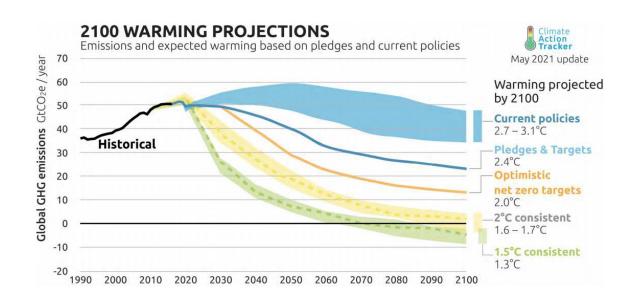
2.64 Weather is defined as the short term (minutes to months) changes in the atmosphere (temperature, precipitation, clouds etc). Whereas climate is used to describe the average weather over a long period of time (30 years+) in a particular area.



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### Predicted effects on weather

2.65 Within the UK it is likely we will experience:

- Hotter Summers
- Droughts
- Heatwaves
- Wetter winters
- More frequent intense downpours -- Flash flooding
- Short periods of intense cold spells

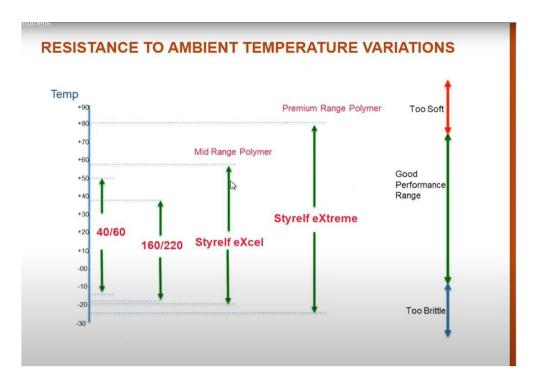
### What can SBC do to mitigate impacts?

2.66 Prevention is better than cure. SBC can contribute towards the decarbonisation of the highway construction and transportation sector through:

- The use of alternative materials –Warm mix asphalts, low carbon concrete
- Collaboration with and learn from the supply chain
- Research and development of materials to withstand changes in climate







### New / Alternative Materials

### **Recycled Rubber**

2.67 Old tyres are processed to a crumb material that is then added to the bitumen prior to it coating the stone. When combined with warm asphalts and recycled aggregate stones, it can give an up to 8% saving on CO2 emissions with the additional benefit of protecting the environment by removing certain waste products from the waste stream. Recycled rubber is not yet widely used in the UK, but it is being promoted. At the moment, it is slightly more expensive than traditional materials but hopefully as the use increases, costs should also start to decrease.



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#### **Recycled Plastic**

2.68 This material is composed of selected domestic and commercial plastic waste intercepted from the waste stream. The savings on the environment are given as plastic bag equivalents.

#### THE NEED

As part of a campaign by the client to find new and innovative uses for waste plastics Durham County were introduced to MacRebur's products by their asphalt supplier, Tynedale Roadstone.

#### THE CHALLENGE

To replace existing Asphalt which had reached the end of its life with a new innovative sustainable product to further develop the local authorities understanding of the performance of these, MR8 was chosen as one of the products to use on site.

#### THE MACREBUR SOLUTION

MR8, which is manufactured from plastics destined for disposal, is added to the Asphalt mix and allows for the fossil fuel proportion of the mix to be reduced, in this case 6%, of the bitumen in the mix, this gives clients the option to explore new methods to use waste plastics within the construction of asphalt which contribute to the environment with CO2 reductions and controlling the disposal of waste plastics.

#### THE RESULTS & BENEFITS

The existing asphalt was removed and then replaced with an AC 10 Asphalt Concrete. This allowed for a reduction in bitumen used in the mix which was replace by a tonne of MacRebur's MR8. — This platic would other wise have gone to disposal.

For more infomation about our MR products please visit: www.macrebur.com





### **Potential Invest to Save Opportunities**

Roadmender – Capital Cost of Equipment Circa £30,000

- 2.69 The benefits are:
  - Reduced cost per sq.m of patching.
  - > Carbon savings estimated at 1-2tonne  $CO_2$  per day.
  - Environmental benefits utilises recycled rubber (from tyres) in the patching material.
  - In-house provision improved flexibility and more control over response times.

2.70 Traditional patching methods cost  $\pounds$ 50- $\pounds$ 75 per sq.m. Roadmender is estimated at  $\pounds$ 35 (on an assumption that the crew can get 30sq.m coverage in a day).

2.71 As with everything it is about having options available and ensuring that the correct method is used in the right location. For example, what may be suitable for the middle of the road along Portrack Lane would not necessarily be the right choice for a footpath outside of somebody's house.



Crack Sealing – Capital Cost of Equipment circa £15,000

2.72 The benefits are:

- Reduced cost per sq.m of patching
  - Carbon savings on traditional patching methods
- In-house provision

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### JCB Pothole Pro

2.73 This is a machine mounted method for localised traditional patching and is a self contained patch planer and sweeper unit. The JCB Pothole Pro removes operators from the carriageway and cuts down on use of hand operated machinery (saws / pneumatic drills etc). The benefits of purchasing this equipment include increased output. Further analysis of cost benefits are needed to determine if it is a invest to save opportunity.



### Patch Master

2.74 This method uses cold lay material for permanent pothole repairs. This can be used in any weather, but is more expensive the traditional materials. However, there will be some carbon savings as the Patch Master is not heated etc.





### Drones

2.75 Drones could be used to identify defects and repair with 3D printed materials. A new digital initiative by Department of Transport is currently investigating the viability of using drones (or other similar video capture equipment) with the use of Artificial Intelligence (AI) to identify and repair potholes.



## How do Asset Management Practices Compare?

2.76 The Tees Valley Highway Infrastructure Asset Management Group is a local collaboration on policies, procedures, best practice and funding bid opportunities.

2.77 The North East Highways Alliance is a regional collaboration on sharing best practice and collaborative procurement.

2.78 SBC also partakes in collaboration nationally. For example, the Local Council Roads Innovation Group (LCRIG) and the Association of Public Service Excellence (Highways, Winter Service and Street Lighting Forum).

2.79 The Council also engages in the co-ordination of regional works, such as through liaison with Trunk Road Agencies (A66/A19).

### New Developments and Asset adoptions

2.80 At the planning stage of a new development there is an approval of general layout, flood risk mitigation measures.

2.81 The pre-construction technical approval stage consists of the approval of detailed design for layouts, materials, streetlights, drainage and surface water retention.

2.82 Where possible, the use of special or bespoke materials is minimised in favour of standard materials to reduce future maintenance liabilities. If this is not possible then the Council would consider requesting commuted lump payments from developers.

2.83 During the construction phase, the Council would monitor the site during and post construction to ensure everything was up to standard.



### Commuted Lump Sum

2.84 This allows the Local Authority to ask a developer for a contribution towards the future maintenance cost of new or bespoke assets. This contribution is calculated on the difference in cost of maintaining the bespoke assets over and above the cost of standard materials. The maintenance term is dependent on the asset type (streetlights 60 years, bridges 120 years). This process is currently undergoing review.

2.85 For the adoption of roads, the 12-month maintenance period is first mentioned as the usual maintenance period in the DfT's advice note on highway adoptions (Sept 2017). Locally it was agreed by the five Tees Valley Authorities and has been published within SBC's design guide specification.

2.86 The 12 months only starts once the final surface has been laid and a joint inspection carried out and any problems put right. Adoption will only happen once the 12 months has expired and a further inspection has been carried out and any faults rectified.

2.87 The Council can request longer, although this is the exception rather than the rule. This is because, generally, the majority of the road (up to the final surface) will have been constructed for a lot longer as they tend to be some of the first part of any development to be built to allow for the movement of staff and deliveries around the site.



## 3.0 Conclusion, Key Findings and Recommendations

#### Conclusion

3.1 There are challenging times ahead in terms of infrastructure asset management:

- Climate Change is becoming more and more prevalent
- The key focus for SBC is 'keeping the borough moving'.
- Communication with internal stakeholders and residents / businesses is imperative moving forward
- Major schemes (structures) will have major traffic impact but little visual benefit from a residential, travelling public perspective
- Public awareness is also important. This means getting the message 'out there' whilst trying to retain resident's satisfaction levels
- SBC will continually review / refine what is being done to ensure maximising efficiencies. The Council will also ensure bidding for additional funding at every opportunity
- The use of new technology and more sustainable materials also needs to be considered

3.3 Several high-profile structures needing maintenance over next few years. Drawing on the maintenance of Mandale Bridge as an example, this is a £2m scheme for which the public have only seen a small proportion of the works.

3.4 Climate change also means that there needs to be a focus on the decarbonisation of the transport network via various methods/treatments. Planning for and responding to extreme weather events also needs to be considered. There is an increased likelihood of extreme weather events and material choices need to reflect anticipated temperature increases. Therefore, there should be a greater use of new materials such low temp asphalts, recycled rubber, plastics etc. together with investigating invest to save opportunities.

### **Key Findings**

- Management of the Highways Infrastructure Asset includes the repair and maintenance of highways, including potholes, as well as structures, streetlights, footpaths, illuminated signs/bollards, public rights of way, gullies and traffic signal junctions/crossings.
- A single capital budget is allocated for the maintenance of the Highways Infrastructure Asset, which is also occasionally supplemented by ad-hoc additional funding streams, however, the variable nature of this means that it can be difficult to plan for the long term.



- The existing budget is not sufficient to manage the Highways Infrastructure Asset at a steady state. Therefore, we are currently managing a deterioration of the asset, utilising the principals of asset management.
- Moving forward over the coming years there are some significant structural schemes that will need to be undertaken as a priority.
- The above points may result in future Residents' surveys increasingly demonstrating areas of dissatisfaction within highways infrastructure asset management.
- There are a variety of processes available to manage and maintain the highway and repair potholes, which include patching and resurfacing.
- Alternative processes have been examined as part of this review. For example, surface dressing, spray injection patching, and crack/pothole sealing.
- The introduction of alternative processes and resources, such as rubber roads, will form an important part of the Council's environmental sustainability and carbon reduction strategy in the context of the current and projected effects of climate change and innovative environmentally friendly measures will continue to be explored and utilised where appropriate.
- Surface water flooding is a particular issue in areas of the Borough with older style gullies, which often lack sufficient capacity to deal with intense periods of rainfall, which due to the impacts of climate change are expected to intensify and become more common. These older gullies are generally replaced as part of wider resurfacing schemes, however, it may be possible to accelerate their replacement via a programme based on evidence / priority.
- The Council's Highway Operational and Asset Management teams are currently investigating 'invest to save' options. Currently being utilised on a trial basis is a product known as Roadmender. This equipment if used by suitably trained operatives has the potential to reduce the cost to repair potholes from circa £50 per pothole to approximately £30-£35 per pothole. There are other potential invest to save options that could be developed and considered over future months.
- Some Committee Members have already started to communicate the pressures the Council are under in respect of managing the highways infrastructure asset to residents. Wider communication of this information may prove valuable to all local Ward Members to allow them to communicate this to residents, as and when issues are highlighted. Other methods of communication are used both during the planning of schemes and once a scheme is complete, with the level being commensurate with scale of the scheme. These scheme communication methods



include press releases, webpages, scheme boards, residents' letters and post scheme satisfaction questionnaires.

- The most common issues reported tend to focus on road/footpath condition, gullies and streetlights. Whilst there has been a general reduction in the number of issues reported there have been instances of short term increases due in the main to adverse weather events. With regards to how issues are reported, the use of the online 'Report It' system has shown a steady increase over the last five years with a corresponding decrease in the number of in person contacts.
- The Highways Safety Inspection regime includes scheduled annual inspections and reactive inspections in response to the reporting of an issue. All inspections are based on a hierarchy of need, priority, and uses. This also assists with determining a timeline for repairs.
- The Council collaborate with other Local Authorities, both regionally and nationally, on funding opportunities and to share best practice and policy development.
- In terms of new developments and asset adoptions, the Council liaise with developers from the planning stage through to the construction stage. The 12-month adoption period commences after the final surface has been laid and a joint inspection has taken place and any issues or faults have been rectified.

### Recommendations

- 1. That options to utilise, alternative interventions, processes and resources, such as the use of recycled rubber materials, are considered and where appropriate are implemented both as part of delivering more maintenance interventions and contributing towards the Environmental Sustainability & Carbon Reduction Strategy.
- 2. That options to 'invest to save' are explored and costs and returns are calculated.
- 3. That options are included, where appropriate, to build on existing collaborative work or procure collaboratively with other Tees Valley authorities to advance innovation, adopt alternative processes and materials, improve efficiency, harmonise standards and maximise integration.
- 4. That a communications plan is devised and agreed to ensure that all elected Members are made aware of the current Highway Infrastructure asset management processes and current pressures experienced by the Service.
- 5. That a proactive programme of gully replacement is considered and implemented based on priority, need and available resource.



- 6. That, recognising that correspondence has been sent to local MPs urging them to lobby Central Government for additional funding, their response and any further actions are kept under review.
- 7. That, in order to raise awareness of funding issues, the final scrutiny report is shared with the Tees Valley Combined Authority Transport Advisory Group.