



<u>Committee and Date</u>
Place Overview Committee
6/2/2023

<u>Item</u>
<u>Public</u>

Carriageways, Footways and Cycleways Capital Programme

Responsible Officer Andy Wilde; Head of Highways
e-mail: Andy.wilde@shropshire.gov.uk

1. Summary

- 1.1. The highway service has seen considerable change and significant improvements over the last eighteen months. A substantial amount of work has been completed to improve core services and achieve greater value for money by delivering these services more efficiently. This has been achieved by implemented a new operating model to underpin reactive maintenance services, which has seen revenue cost reduce significantly and performance increases when compared to the same level of works in the previous years.
- 1.2. Working alongside this improvement to core services, capital investment has been focused on delivering preventative maintenance, to try and slow the rate of deterioration of the network, which helps reduce number of network potholes year on year.
- 1.3. It is recognised that engagement ahead of planned works has, at times, been poor and has led to stakeholder frustration. This has been eased by a stronger team commitment to a more pro-active engagement style and the funding certainty for future years from the DFT and Shropshire Council which we welcome. This has supported a more proactive approach to scheme design and delivery with clear lines of sight for supply chain.
- 1.4. The four year funding investment of funding, provided by the council has provided, removes this annual and in year variation of funding and so allows for more definitive programmes of work to be developed, the service is able to have more confidence in its forward programmes and the commitments it makes to the communities we serve. The service is working its way out of this cycle and there are interim resources in place to ensure that the service continues to improve its engagement with local communities.
- 1.5. This report acknowledges the issues that have led to the current position; and the proposals for services improvement in the delivery of capital works and the associated closures and diversion routes. It provides an overview of the capital programme which sets out the overall approach to investment in

highways assets, as directed by the Highway Infrastructure Asset Management Strategy and the outcomes being achieved.

2. Recommendations

The Committee is asked to;

- 2.1. Note the contents of this report;
- 2.2. Identify areas of concern, not already considered within the report for consideration as part of the ongoing improvements.

REPORT

3. Risk Assessment and Opportunities Appraisal

- 3.1 The Council have a duty to maintain the highway in a fit for purpose way and to maintain safety. In order to ensure that safety is maintained the council seeks to repair defects that it identifies and represent either an immediate risk or potential risk to personal injury within 1, 7 or 28 days depending on the assessed seriousness of the defect.
- 3.2 As a result of increasing pothole numbers year on year, a greater proportion of the capital programme is being directed towards permanent repairs of potholes which has a knock-on effect on the available amount of budget available for more comprehensive whole road repairs. The highway network is continuing to deteriorate, despite additional investment, and therefore the proportion of capital expenditure directed towards reactive repairs rather than preventative maintenance is likely to increase.
- 3.3 The current funding environment means that the service has been reacting to varying amounts of in year funding from the Department of Transport, meaning accelerating forward programmes and significantly reducing the timescales for which the service is able to engage. The additional investment into highways means a more fixed funding profile and enables a two-year cycle of identify, engage and design in year one and consult and construct in year two.
- 3.4 There has been significant inflation within the highway maintenance industry over the past 12 months which is reducing the number of schemes that can be delivered within current budgets compared to previous years.

4. Financial Implications

- 4.1. There are no direct financial implications as a result of this report.
- 4.2. Any alternative improvements proposed by Committee could have the potential to require additional resources to implement which could be unaffordable within existing budgets.

5. Climate Change Appraisal

- 5.1. There are no direct climate change implications as a result of this report.
- 5.2. Consideration when identifying maintenance solutions to reduce the embodied carbon in highways maintenance schemes and to manage the whole life-cycle of the road in a condition that minimises carbon emissions.

Capital Programme Overview

6. Introduction

- 6.1. The highway network supports almost all travel in Shropshire whether by motor vehicle, public transport, cycle or on foot. For many rural communities, there are few reasonable routes to connect with key services. When these routes are unavailable, the communities can be subject to long diversions or even severed from services. The availability of the road network is therefore vital.
- 6.2. The highway network is an intrinsic element of the environment, both contributing to its visual appearance and impacting on areas in the vicinity of the highway in terms of noise, water and air pollution. In ensuring that Shropshire is a great place to live, learn, work and visit, the environmental impact from the highway must be considered.
- 6.3. The capital programme for carriageways, footways and cycleways is an output of the Council's highways asset management approach. Highways asset management is a strategic approach that seeks to optimise the allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future users of the transport network.
- 6.4. The approach is based on robust intelligence that is informed by asset data. Maintenance strategies and works programmes are established based on this intelligence; risks are similarly managed with this intelligence. All activities are aimed at the provision of defined levels of service. Performance reporting is used to show how these levels of service are being met.

Investment Strategy

- 6.5. The Council agreed a Highway Infrastructure Asset Management Policy and Strategy in 2018. This policy and strategy are published on the Council's highways asset management web pages.

<https://shropshire.gov.uk/roads-and-highways/plans-policies-strategies-reports-and-schemes/asset-management/>

- 6.6. The strategy sets out the approach to investment for carriageways and footways. The desired outcome for the investment is that they are maintained in a steady-state condition (neither improved or degraded overall) at a minimum whole life cost supported by steady investment.

- 6.7. The key elements of the strategy are:

- Establishing a baseline level of funding that achieves the outcome.
- Prioritising maintenance interventions based on demand and risk.
- Minimising the whole life costs by considering both the cost today and the future costs of maintenance when making decisions.
- Taking a preventative approach.
- Ensuring that both planned and reactive interventions are 'right first time'.

- 6.8. Life cycle planning analysis has been used to understand the future impact of our decisions on the network. This technique uses knowledge of how the network deteriorates with mathematical models to forecast the state of the network based on specified levels of investment. The Council has considered many different maintenance strategies in its efforts to investment most wisely in the network. In the examples in Figure 1, the forecast condition based on resurfacing only has been calculated (A) is compared to the forecast condition using same level of investment where the balance of investment is changed to a more preventative approach using surface dressing (B). Through attempting to maintain road using resurfacing only, few roads are maintained and the network deteriorates. By investing in preventative maintenance treatments such as surface dressing, more roads are maintained, the condition of the network is stabilised in the long-term (steady-state), and the condition of the network is improved overall. To achieve the same outcome by resurfacing roads only would require vastly increased levels of funding.

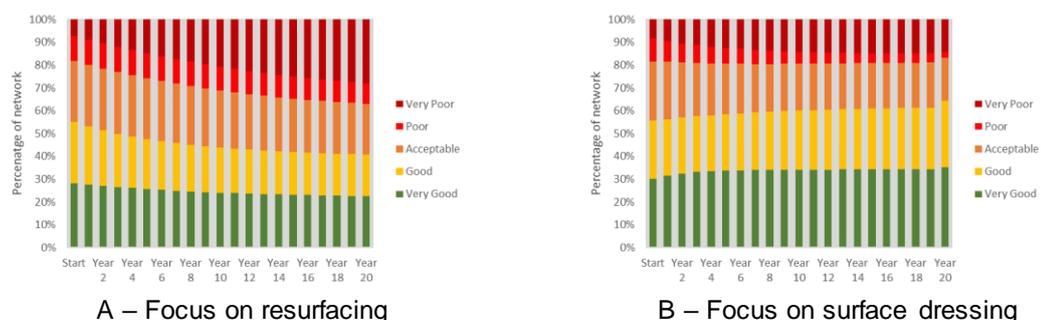


Figure 1. Life cycle plan forecasts of network condition

6.9. It is clear that preventative maintenance treatments such as surface dressing, which seal the surface and prevent water ingress, freeze/thaw and deterioration, play a critical role in maintaining the condition of the network for customers.

Making good decisions

6.10. As part of its asset management approach, the Council collects condition data on all its key assets including carriageways and footways. For carriageways, the condition of main roads is assessed every two years and every four years for all other roads. The whole network was surveyed in 2020 and an update for main roads is planned for 2022.

6.11. The condition of the network is collected using a video survey. The video imagery is then processed to grade the surface into five categories from: Grade 1 – Damage Free to Grade 5 – Structurally Impaired. The assessments are presented areas the road surface on a map, along with the accompanying images of the road to allow the Council to verify the assessment. The coloured areas are shown in the example in Figure 3A.

6.12. Network condition is one element of demand or risk which links to the desired outcome of the asset management strategy. The other elements are potholes, the repairs of which are a demand on the Council resources and affect its ability to invest, and customer enquiries about potholes which is an actual demand for action. Both pothole repairs and customer enquiries are captured within the Council's Highways asset management system, Confirm. This system not only allows the Council to report on the number of potholes and enquiries overall, but to accurately locate each pothole and each enquiry so that officers can understand the precise nature of the deterioration across the network as shown in the example in Figure 3B.

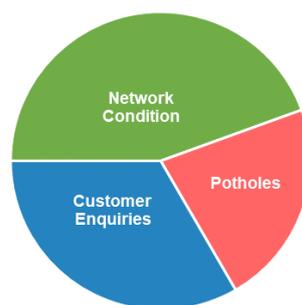


Figure 2. How demand and risk is balanced to determine the priority for maintenance

6.13. Figure 2 shows how the demands and risks are balanced to produce the priorities. A score for each section of road is calculated out of 100. A good proportion is assigned to each element of the prioritisation. Customer enquiries influence a third of the overall score. The condition of the network is reflected in Network Condition data and augmented by the Potholes data. Similarly, the level of use of the network is reflected in the Customer Enquiries

and Potholes data. This scoring has been used for a number of years and has provided a reliable measure of priority.

- 6.14. The priority score is used to identify high priority parts of the network for maintenance. Figure 3 illustrates the process using actual data. Figure 3A shows the condition of roads from the last survey in 2020; red is the worst condition, blue is Damage Free. Figure 3B provides a snapshot of the customer enquiries (green dots) and potholes (red dots) recorded. Figure 3C shows sites recently maintained or in the medium-term programme. It is clear from the images that investment is being targeted to produce the greatest value in line with the Highway Infrastructure Asset Management strategy.

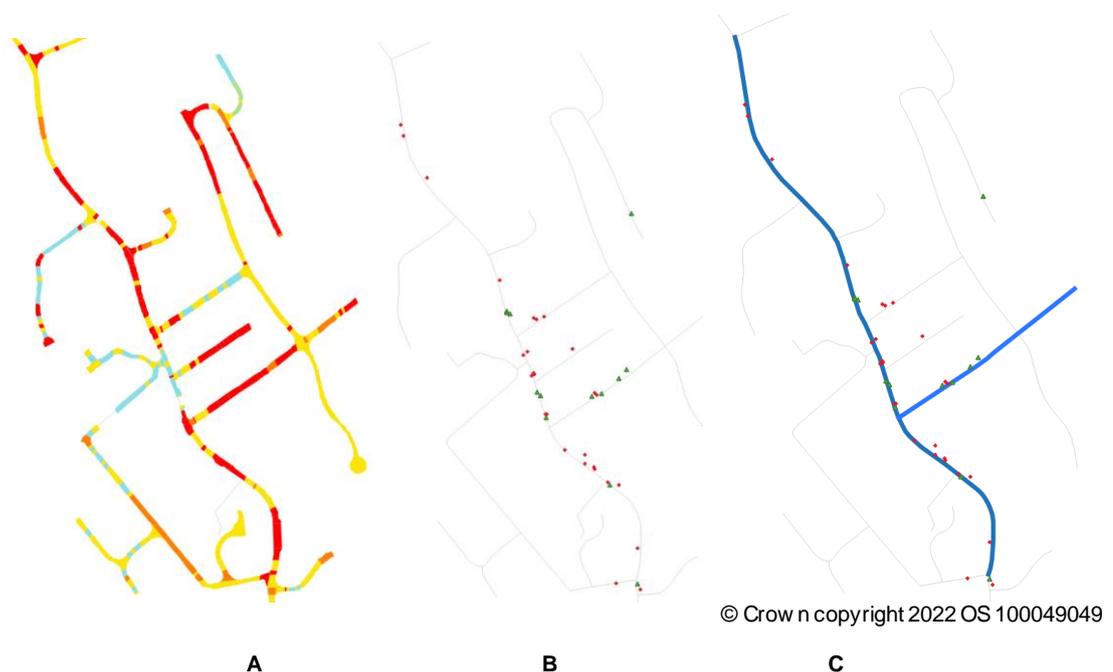


Figure 3. Prioritisation of work

- 6.15. In addition, there is also a supplementary process where local officers can highlight local concerns. These concerns can originate from local highway technicians asking for roads to be treated, but also from local sources. This mechanism permits the Council some flexibility to respond to key local concerns by prioritising an element of capital programme. All work put forward is scored in accordance with Figure 2, to allow scrutiny of the value of the work under the Highway Infrastructure Asset Management Strategy, but crucially the priority is finalised in a discussion about local needs with the local office.
- 6.16. Once prioritised the schemes are developed with our design consultant (WSP) and the Term Maintenance contractor (Kier). At all stages of the development of treatments, the Asset Management Strategy is at the fore front of thinking and local teams are closely involved to ensure that the solutions are optimised to be consistently 'right first time'.

- 6.17. WSP and Kier work collaboratively with the Council in the development of the programme. The contractor (Kier) is involved at the early stages to ensure that maintenance proposals are fit-for-purpose. Kier and WSP work with the Council to bring about innovation, such as Warm asphalt. Kier engages with the Council's Street Works Team to ensure that advance works are coordinated with other road space demands. Information on the programme is shared as early as possible to allow external stakeholders, such as utility companies, to schedule their work for the best outcomes. An example of this is on Monkmoor Road, Shrewsbury where work has been delayed allowing for gas main replacement thereby ensuring that the resurfacing done will remain in good condition.
- 6.18. One of the national challenges for highway authorities is the embedded tar content of road materials. The Environment Agency has decreed that unless authorities can prove that tar is not present, all road planings must be considered as hazardous waste, requiring specialist disposal. An authority can spend almost as much on disposal of this hazardous waste as the cost of the maintenance itself. It is clear that this can have an enormous impact on the amount of work done for the funding available.
- 6.19. Shropshire Council has engaged a specialist testing house, National Testing Ltd, to undertake hazardous waste detection. Hazardous Tar is present within roads in Shropshire and therefore we cannot eliminate hazardous waste disposal costs. However, for the sites tested, hazardous waste disposal has been reduced by 90% using improved testing accuracy.

Planning investment

- 6.20. One of the recent challenges in the Capital Programme has been funding. Until recently all capital funding for highways maintenance was provided by the Department for Transport (DfT). There were irregular, large contributions to capital funding from the DfT, which typically arrived with short-term conditions for expenditure. When this additional funding arrived, the Council's response was to pull work forward, leaving no forward programme.
- 6.21. The Council has decided to make additional investments in partial designed schemes
- 6.22. to buffer the irregular funding from central government. This has given the Council assurance of funding to develop longer term programmes of work.
- 6.23. In managing the capital programme, the Council has an annual works programme for the current year, a design programme for work to be delivered over the next two years and a forward plan for future years. This provides the Council with a medium-term programme for work.
- 6.24. From the opportunities available through changes in funding and developing the medium-term programme, the Council has broken the in-year cycle of funding uncertainty. Resources can be planned over more than one year

allowing efficiency benefits, detection of conflicts on road space and greater opportunities to communicate the Council's plans.

Funding

- 6.25. Maintenance of carriageways, footways and cycleways is supported by capital funding for a permanent enhancement of the asset (capital) or revenue funding, mainly for reactive repairs. The sources of capital funding for the years 2020/21, 2021/22 and 2022/23 is provided in Table 1.
- 6.26. The majority of capital funding is typically received as a grant from the Department for Transport (DfT). The level of funding in this grant changes from year-to-year, and within years, depending on the policies of the Department. As a result, the funding available for highways maintenance is volatile and it is a challenge to form robust forward plans of work.
- 6.27. The Maintenance Block is traditionally a needs-based contribution to maintenance of highways in Shropshire, based on the length of road, the number of bridges and the number of street lights. The Pothole Fund is a discretionary amount that is assigned using the same formula. It is expected that the level of funding allocated under the Highways Maintenance Block Pothole Fund is relatively stable while the funding allocated as the Pothole Fund is can change. This has proved not to be the case in 2022/23.

Table 1. Sources of Capital Funding

	2020/21	2021/22	2022/23
DfT – Highways Maintenance Block	11,040,000	16,312,018	6,575,982
DfT – Pothole Fund	11,570,000	9,155,000	8,985,000
Shropshire Council	-	3,983,412	14,011,588

- 6.28. The Council has acknowledged that additional funding for highways maintenance was needed to improve the condition of the network. This additional funding £59M over four years provided additional resources and assurance of funding over this period. The funding was agreed to provide a relatively consistent level of investment comparable to the 2021/22 year over the four-year period. Additional funding would be returned to the Council to reduce borrowing. The capital funding allocated in 2022/23 from DfT was considerably lower than in 2021/22.
- 6.29. Table 2 shows how funding has been allocated to Carriageways, Footways and Cycleways. Revenue funding has been reduced from 2021/22 while capital funding is been preserved through the additional funding that has been made available.

Table 2. Capital and Revenue Allocations for Carriageways, Footways and Cycleways

	2020/21	2021/22	2022/23
Capital	18,510,000	25,078,331	23,884,999
Revenue	2,527,540	2,538,900	1,949,160

Programme

- 6.30. A full list of schemes and how they have been delivered in programmes is provided in Appendix A. Carriageway schemes include resurfacing, patching and surface dressing treatments. The majority of footway schemes are footway slurry sealing treatments. Cycleways can be part of the carriageway or footway and are not specifically identified in maintenance terms; due to the characteristics of off-carriageway cycleways, the maintenance of these would be considered as a footway scheme.
- 6.31. A summary of the numbers of schemes planned and delivered by year as shown in Appendix A is provided in Table 3. ND indicated schemes programmed but not delivered. Nr is the total number of schemes delivered.

Table 3. Summary of schemes planned and delivered

Delivery	Type	Programmed					ND	Nr
		< 2021	2021/22	2022/23	2023/24	2024/25		
2021/22	Carriageway	20	230	0	0	0	12	250
	Footway	0	18	0	0	0	0	18
2022/23	Carriageway	1	26	196	0	0	2	223
	Footway	0	3	22	0	0	0	25
2023/24	Carriageway	0	13	23	92	0	0	128
	Footway	0	10	14	0	0	0	24
2024/25	Carriageway	0	6	23	46	0	0	75
	Footway	0	0	0	0	34	0	34

- 6.32. The majority of schemes are programmed and delivered in a single year. For technical, coordination and financial control reasons, programmed schemes can be delayed. A small number of schemes are not delivered, these are commonly due to their priority or value/cost being reassessed against other demands on funding.
- 6.33. Patching schemes are typically planned and delivered in the same financial period hence not currently included in future year's plans.
- 6.34. There are fewer footway schemes than carriageway schemes in the programme, but there is much less footway to maintain than carriageway. There is almost 30,000,000 m² of carriageway and 3,200,000 m² of footway in Shropshire.

Maintaining cycle infrastructure

Table 4. Cycle Infrastructure Summary

	Actual Length	% of highway network	Note
Cycle Lane	25.0 km	0.25%*	based on carriageway length
Cycle Path	51.7 km	2.8*	based on footway length

- 6.35. Due to the rural nature of the Shropshire network, only a small proportion of the network has cycle infrastructure; cycle infrastructure exists on approximately 65 km of the highway network. Maintenance of cycle infrastructure will most likely be done as part of carriageway or footway maintenance schemes.
- 6.36. During the development of maintenance treatments for carriageway and footway schemes, the needs of all users are considered. A particular focus at the moment is to optimise the treatments for active travel. The images below show two recent examples of carriageway maintenance schemes where cycle infrastructure exists and was improved. On Abbey Foregate [Scheme 19100308], a new smooth surface was produced but also the lining was revised to slow traffic and to give greater space to cyclists. On Whitchurch Road [Scheme 20100138], red mats on side roads were renewed to enhance the visibility of the cycle route along the main road. Similar development work continues such as on Monkmoor Road, Shrewsbury [Scheme 19100307] and Sedgeford, Whitchurch [Scheme 21083122]. The capital programme for carriageways and footways is also integrated with other programmes to produce better outcomes for all; an example is the maintenance at Longden Road Island, Shrewsbury [Scheme 22031813] which is being delivered together with an integrated transport enhancement.



Figure 4. Recently delivered maintenance on Abbey Foregate, Shrewsbury (left) and Whitchurch Road, Shrewsbury (right)

Managing risk

- 6.37. The Council has defined a network hierarchy based on the function of each road which is the foundation for highways maintenance. The approach to inspection and subsequent decision making is done considering this hierarchy from the busiest routes such as strategic routes and main distributor roads to the least used roads such as local access roads and minor lanes.
- 6.38. In recent years main roads were considered to be the highest risk and investment has been targeted to these routes. Now, rural link roads are emerging as a concern and investment will likely move towards these types of roads.
- 6.39. The Council has developed a resilient network to assist investment planning. A resilient network should be given additional priority for maintenance to ensure that availability of this network is less affected by disruptive events. For the capital programme, additional priority means reducing the risk of failure by intervening earlier than would otherwise be the case and/or choosing treatment solutions which are lower risk. The network covers just under 400km out of the network of over 5,100 km and is available to view on the Council's website.
- 6.40. The medium-term capital programme further enables the resilience risk to be managed allowing for identification of maintenance needs and the planning for early intervention.

Communication

- 6.41. Through the recent enhancements, improved communications have been made.
- 6.42. This report has highlighted how communications have been enhanced through the medium-term integrated programme for internal and external stakeholder such as utilities companies. In regard of a specific audiences, the following communications are carried out:

Public

- The schemes in the annual plan are publicised through local media channels and on the Council's website.
- For main roads, advance warning signs are placed.
- Local residents who are directly affected by the scheme are informed by a letter.

Political

- Council members and parish councils are informed of planned work in their area.
- Local members are updated in advance when schemes are starting and for how long the work will last.
- Local members are notified when schemes are starting.

Partners

- Emergency services and utility companies are informed by the OneNetwork service.
- In addition, programmes of work are shared with utility companies to facilitate coordination.

Internal

- Programme information is shared internally using map-based services. This is updated regularly following day-to-day decisions.
- Regular meetings are held between local highways teams and the capital programme delivery team. This interaction spans the prioritisation of work, selection of treatment and managing the delivery of work. The objective of these meetings is that intelligence is shared through two-way communication.

What are we achieving

- 6.43. The Council publishes its performance figures on the highway's asset management web page, including the levels of service. This page provides summary data that customers often ask the Council about such as the number of potholes repaired and how many potholes are repaired permanently. The page also provides an overview of the current condition of carriageways and footways using service ratings from Poor to Excellent.
- 6.44. In 2022/23 the Council has delivered an extensive programme of carriageway maintenance: 30km has been resurfaced, 210km has been surface dressed and a further 177km has been patched. In total 417km or 8% of the network has been treated this year.
- 6.45. The results of the National Highways and Transportation Survey 2022 have been published. The outcome of the 2021 survey, reflected the major dissatisfaction with the condition of highways which resulted from the sustained under investment in the asset over many years and its performance in repairing potholes. As well as changes to improve the service overall, the Council has decided to provide additional investment that will address some of the under investment and improve the condition of highways. The outcome of the 2022 survey already shows the impact of this investment on customer satisfaction.

The headlines are:

Satisfaction with:

- highways maintenance improved from 37% to 41%.
- the condition of road surface increased from 14% to 20%
- speed of repair to damage roads increased from 12% to 16%
- quality of repair to damage roads increased from 18% to 23%
- action to repair local roads increased from 19% to 31%

6.46. While making the most of investment, the Council remains focussed on the environment and reducing carbon emissions. For 2022/23 all resurfacing schemes have been completed using low-temperature asphalt with reduced carbon.

Future challenges

6.47. The service is still striving for ways to improve, there are improvements that can be made in communication, reducing carbon emissions and climate change. Working more efficiently can help fulfil these ambitions as well as reducing cost of increased productivity or performance.

6.48. Working with WSP and Kier, the Alliance has developed a communication protocol called CSEP. This enhance approach will seek to ensure that highway users and residents are well-informed in advance of work being carried out wherever possible. We are also looking at improvements to the Council website to better inform the public about the medium-term programme.

6.49. Moving forward from the adoption of low-temperature asphalt, a review of the maintenance strategy will be done to ensure that it is also optimal for carbon as well as cost.

6.50. Active travel is a key aspect for now and the future, the maintenance programme is being aligned with the Active Travel aspirations using the medium-term programme and design solutions are already being challenged to make increased provision for active travel.

7. Conclusions

7.1. The highway service has made significant and tangible steps in improving its service delivery over the last eighteen months; however, the team still faces significant challenges in managing demand due to available resources.

7.2. Additional investment in highways maintenance has been targeted according to the asset management strategy agreed by the Council using transparent, data-led methods and whilst allowing for some flexibility to respond to local concerns. This approach has been successful and has seen a significant reduction in the backlog of potholes. A focus on preventative maintenance will also ensure that the Council maximises the benefit of the investment in the long-term.

7.3. Customer satisfaction has improved as a result of changes to the service and additional investment. However, public satisfaction remains low suggesting that investing in highways maintenance is still critica

- 7.4. The asset management approach has been in place and is delivering the right solutions. Since the strategy was adopted the themes of climate change and active travel have emerged and are now prominent. It could be the right time to review this strategy to accommodate these themes.
- 7.5. A medium-term capital programme is in place to facilitate internal and external communication. The challenge remains to develop and apply this information for the greatest benefit to Shropshire.
- 7.6. The needs of all users are considered within the capital programme, in particular, for active travel users. Opportunities are being taken to make improvements for these users within carriageway maintenance schemes.

List of Background Papers (This MUST be completed for all reports, but does not include items containing exempt or confidential information)

None

Cabinet Member (Portfolio Holder) - Cllr Richard Marshall

Local Member - All

Appendices - None