
HIGHWAY ASSET INVESTMENT STRATEGY

Purpose of Report

1. To provide Members with the opportunity to consider the draft 'Highway Asset Investment Strategy'. This document aims to define a strategic long term approach to Highway Maintenance funding; the document outlines a series of available long term service and funding options. A copy of the draft 'Highway Asset Investment Strategy' has been attached to this report as **Appendix 1**.

Background

2. The total replacement cost of the highway asset is estimated to be approximately £2.3billion; this figure includes carriageways, footways & cycle tracks, structures (including the Bute Tunnel), lighting, traffic management apparatus and street furniture.
3. The replacement cost calculation is undertaken annually for use in the 'Welsh Government Whole of Government Accounts' return. The cost has been calculated by utilising specialist tools generated by the 'All Wales County Surveyors Society Wales HAMP Project' and undertaken in accordance with the methods set out in the CIPFA Transport Asset Infrastructure Code.
4. Traditionally Highway Maintenance budgets have been set on an annual basis and are often based on previous or historic values which create a short term reactive approach to management and improvement. The 'Highway Asset Investment Strategy' seeks to adopt a long term strategic approach to Highway Maintenance funding based on sound Asset Management principles as

endorsed by Welsh Government and the CSS Wales (County Surveyors Society Wales) and joint all Wales & SCOTS HAMP working group.

5. It should be noted that UK Government is proposing to make £575m available between 2015 and 2021 to improve highway infrastructure across the whole of the network. The distribution of this grant is to be aimed at Councils demonstrating an existing sound asset management approach to highway maintenance management; the new Highway Asset Investment Strategy is advocating this type of approach.

6. During the period from 2012 to 2015 the Welsh Government supported approximately £15m of investment in the Highway asset via the Local Government Borrowing Initiative (LGBI); this ended in March 2015. A stipulation of being awarded this funding was to provide a twenty year maintenance regime for the elements improved by the investment; the recommendations set out in the draft 'Highway Asset Investment Strategy' document are designed to support this type of long term strategic funding requirement. Since the LGBI investment period ended in March 2015 highway maintenance budgets have reverted to internal Council capital funding, i.e. circa £1.59 million per annum.

7. Following Welsh Government LGBI funding significant improvements have been made to the carriageway asset performance indicators. **Tables 1 - 4** (below) set out the statutory performance indicators that the Council has to report against relating to the carriageway asset. They reflect the quantity of A, B and C class roads that are measured in red condition (i.e. in need of maintenance) by the UK accredited SCANNER machine survey.

Table 1 - THS011a	
Percentage of principal (A) roads that are in overall poor condition (red)	
Result Period	Result
2010/2011	9.2%
2011/2012	6.9%

Table 2 - THS011b	
Percentage of principal/classified (B) roads that are in overall poor condition (red)	
Result Period	Result
2010/2011	15.0%
2011/2012	9.6%

2012/2013	7.0%
2013/2014	4.0%
2014/2015	4.3%
2015/2016	3.7%

2012/2013	8.4%
2013/2014	8.2%
2014/2015	7.4%
2015/2016	6.5%

Table 3 - THS011c	
Percentage of principal/classified (C) roads that are in overall poor condition (red)	
Result Period	Result
2010/2011	10.1%
2011/2012	11.4%
2012/2013	12.8%
2013/2014	10.1%
2014/2015	9.3%
2015/2016	6.6%

Table 4 - THS012	
Percentage of principal (A) roads and non-principal/classified (B & C) roads that are in overall poor condition (red)	
Result Period	Result
2010/2011	n/a
2011/2012	9.12%
2012/2013	9.43%
2013/2014	6.9%
2014/2015	6.8%
2015/2016	5.2%

8. **Tables 1 – 4** indicate that during the period 201/11 to 2015/16 there has been a continuous improvement in the condition of the carriageway. As previously suggested this reflects the positive impact that investment from the LGBI has produced. All of the indicators in **Tables 1 - 4** exhibit a significant improvement as a result of the focused investment. This approach supports the argument that adopting a strategic long term approach to Highway Maintenance funding will contribute in enhancing Cardiff's economy and improving the daily lives of its citizens.
9. Another driver for asset management planning and a long term strategic approach is the requirement of CIPFA from 2016/17 to include accounting information on the valuation of Highway Network Infrastructure assets in the Councils Statement of Accounts. Given that such data will be audited, it is important that the directorate ensures data is available for significant assets, robust assumptions made and processes and resources are in place to be able

to continue to supply and use data in the short and long term to meet statutory accounting requirements. These changes aim to address the following:

- Increase visibility and impact of infrastructure assets in delivery of Council services;
 - Nationally a perception that not enough spent on maintaining infrastructure assets, with the impact of not maintaining assets now resulting in more expense later;
 - Lack of consistent data on quantities, condition of such assets, maintenance backlogs and true cost of holding such assets;
 - Data held in disparate systems or not held at all;
 - The only infrastructure assets held in the Council accounts are those where expenditure has been incurred since a certain date in the 1990s. They are measured at historic costs and do not reflect true value, condition or use in service delivery;
 - Lack of information to improve service delivery and resource allocation in line with Asset Management Plans.
10. It should be noted that changes to the future accounting approach to Highways Infrastructure Assets were considered by Audit Committee on 22 March 2016, with feedback highlighting the importance of ensuring processes are in place and resources allocated to achieve the Asset Management aims.
11. With regard to benchmarking with other authorities, it has become normal for some authorities (e.g. South Gloucester, Bristol, North East Somerset and Oxfordshire) to increase highway capital investment to achieve near steady state funding. The CSS / SCOTS HAMP project has produced advanced tools that provide accurate predictions of future funding requirements which have been used for this report. It may be that the authorities listed have not used

such a scientific approach, but they have recognised the economic and social benefits from maintaining the Highway Asset in a steady state.

Issues

12. The historic approach to funding Highway Maintenance has resulted in fluctuating budgets which have been increased and reduced over time. This prevents the development of a long term investment strategy which in turn creates the following issues:
 - Highway assets are managed separately thus limiting efficiency opportunities;
 - Inability to set long term targets and define acceptable backlogs, e.g. road condition;
 - Levels of service vary over short term;
 - It will limit the opportunity to adopt a long term strategic approach thus creating the situation where the maintenance backlog continually increases.

13. It is very important to appreciate the principle that the level of funding has a direct correlation to the future condition of the asset. The Capital programme budget allocation for highway capital renewal which has a direct impact on improving condition for 2016-17 has been confirmed at £1.590 million for 2016/17. The lower the level of funding the poorer the condition of the asset and the faster its deterioration. To demonstrate this the Council has used a tool that has been developed through the CSS Wales joint all Wales & SCOTS HAMP working group (endorsed by Welsh Government) that forecasts future carriageway condition for a period of 20 years based on expected investment levels; a number of capital investment profiles are shown in the **Tables 5 - 8** to illustrate alternative options.

Table 5

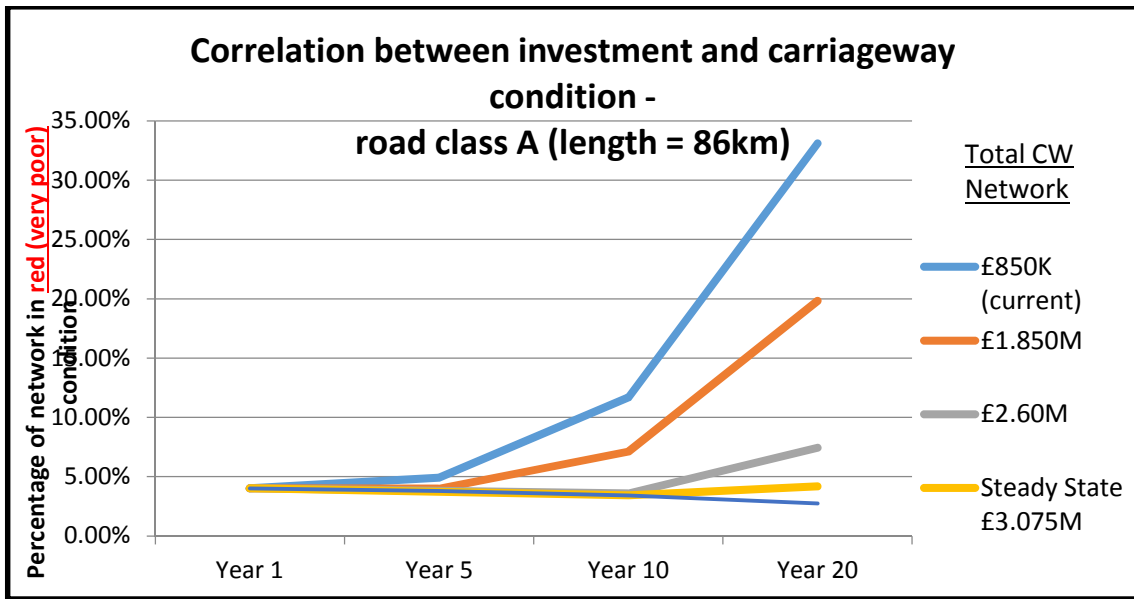


Table 6

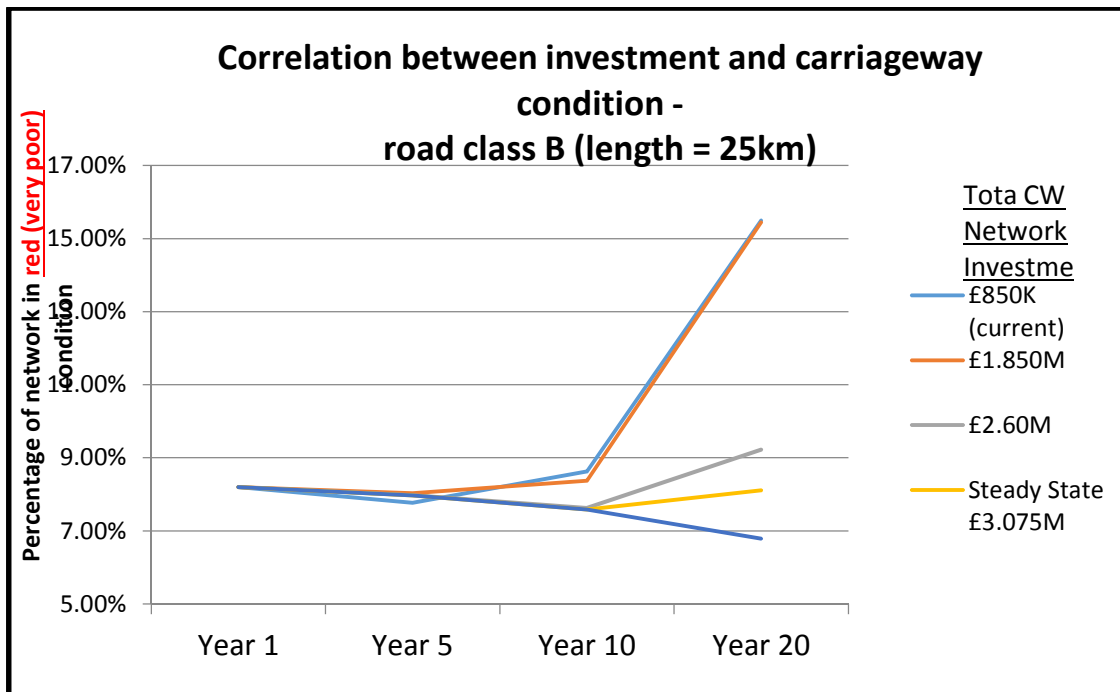


Table 7

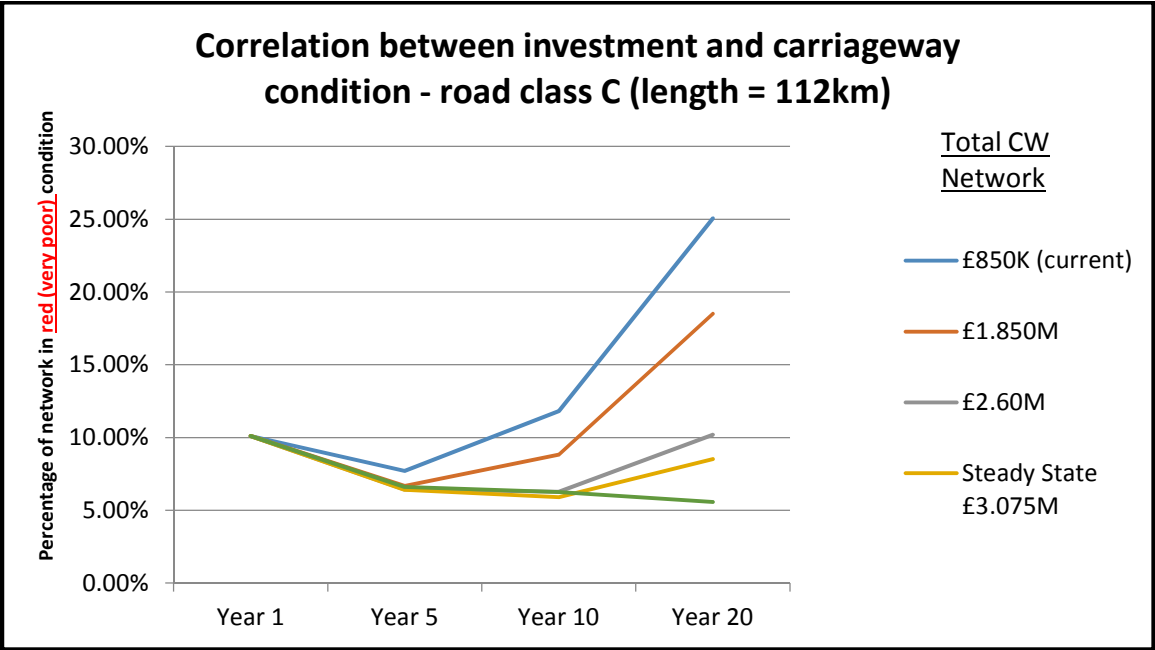
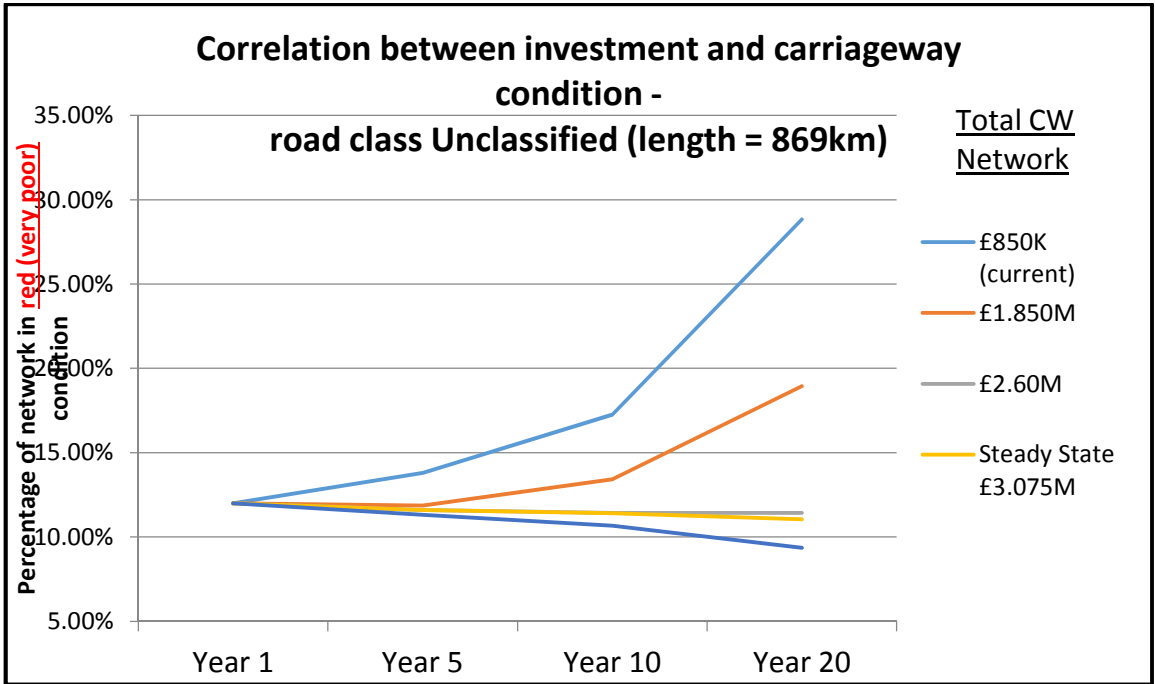


Table 8



14. It can be seen that any investment less than a Steady State approach to maintaining the highway asset will result in deteriorating condition and consequent increase in maintenance backlog over time. Consideration must also be given to the levels of revenue investment that will be required to

undertake reactive repairs to the asset. It should be understood that the lower the investment level and poorer the condition of the asset the higher the revenue demands to repair the increasing quantities of reactive safety defects.

15. Broadly speaking the graphs illustrate that the more investment allocated into the carriageway the lower the percentage of poor quality network; equally the lower the investment the higher the percentage of poor quality network. Table 9 sets out the 'Historic Network Target Condition' by road type.

Table 9

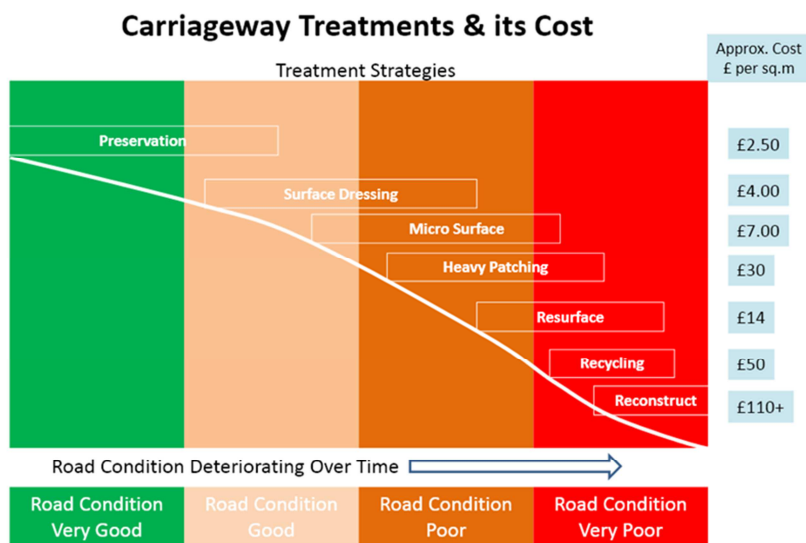
Historic Network Target Condition		
Road Type	Network Length	Current Target (% of network in red condition)
A class	86km	5%
B class	25km	8%
C class	112km	8%
Unclassified	869km	11%

16. **Table 8** (Correlation between investment and carriageway condition – road class Unclassified) clearly illustrates the following issues:

- A total carriageway network (i.e. investment in A, B, C and U class roads) investment level of £850K per annum (the blue line) for a 20 year period means that the quantity of U class roads in a very poor red condition increases from 12% (104km in year 1) to 29% in year 20; this equates to 252km (29% of the u class network) of road in a **very poor red condition**.
- At a repair cost of approximately £84k per km (based on a conservative £14sq.m resurfacing unit rate as shown below on a 6m wide road), in year 20 it would require a one off investment of approximately £21m to return the unclassified network to its current condition. Note; a very poor road condition can mean complete structural failure and possible road closures.

- Treatment costs could range from £14sq.m to £110sq.m dependant on the type of treatment required, this is illustrated in **Table 9** (below).
- If this 29% (252km) were left to deteriorate to the point of requiring reconstruction (at a cost of £110sq.m – i.e. £660k per km)) the total repair cost would be circa £166m.
- It should be noted that for the 2016-17 period a £750k capital pressure bid was made and approved for localised reconstruction works on roads suffering from structural deterioration. However, following recent engineering inspections it has become apparent this is the “tip of the iceberg” and this type of structural deterioration is becoming more widespread.

Table 9



What does this mean for other assets?

17. The principle described above for carriageways can be applied to all highway asset groups, i.e. if investment is such that deterioration is left to continue then the following asset defects could be eventually expected:

- Road closures due to dangerous defects;

- Increased insurance claims from deteriorated footways and carriageways;
 - Structural failure of traffic signs and barriers due to corrosion of posts and illegible sign faces resulting in possible traffic accidents;
 - Weight restrictions and closure of structures due to structural deterioration;
 - Deterioration of the drainage system resulting in increased flooding and impairment to traffic safety, public perception and a risk to property;
 - Deterioration of lighting columns resulting in structural failure and possible collapse. Failure of lamps resulting in blackout, possible accidents and poor public perception;
 - Failure of traffic signals and control systems resulting in possible accidents or severe network disruption.
18. Over time the highway asset will grow, for example, new housing or industrial developments will be created in Cardiff. Whilst growth is encouraged it also places increased demand on maintenance activities. Pressure is also exerted on the asset with changes in use such as modal shift, for example, when new bus or cycle lanes are built. This pressure would apply to all asset groups.
19. A new Highway Policy was introduced in April 2014 which has helped limit the effects of third party insurance claims against the Council. However, if both revenue and capital budgets are reduced the condition of the network will deteriorate raising the likelihood of increased claims.
20. The absence of a long term defined approach to maintenance makes communication with customers difficult in that there are no defined service levels and that there appears to be ongoing customer demand for the assets. Further to this:

- Not adopting a Steady State approach to maintaining the highway asset will prevent delivery of the lowest cost long term option and implementation of a sustainable long term investment profile.
- A funding strategy below steady state investment will result in an increasing backlog over time. The highway assets current Gross Replacement Cost is estimated at £2.3bn with a maintenance backlog of circa £316m. Recent Welsh Government LGBI funding has improved the condition of the highway asset. However, condition profiles shown in **Appendix 1** illustrate a rapidly deteriorating condition if existing investment levels are maintained over time.
- As stated previously, consideration must be given to the levels of revenue investment that will be required to undertake reactive repairs to the asset. Depending on the option selected there will be different revenue requirements. The investment strategy shows that by not adopting a Steady State approach to maintaining the highway asset the result will be a deteriorating asset condition and consequently an increasing maintenance backlog over time. Consideration must therefore be given to the increased levels of revenue investment that will be required to undertake the increased volume of reactive repairs to the asset as its condition continues to deteriorate over time.
- However, given the significant capital costs, consideration must be given to the funding mechanisms available to the Council to help meet such costs as well as any costs of undertaking borrowing to support that investment over a consistent period.
- Investment in the assets could be supplemented by the following sources:
 - **Insurance Reduction Reassignment** – Utilise investment from insurance into the highway asset to be offset against reductions in 3rd party pay out, although reductions in such costs may have a significant time lag and investment would be required before any benefits are realised.

- **Parking and Moving Traffic Offences** – The Council generates income from charging for parking and enforcing moving traffic offences. These two mechanisms could be utilised to partly fund highway asset improvement.
 - Investment options & consequent budget requirements must be looked at in detail as there are significant risks in achievability. If supplemental funding cannot be obtained the total investment level would need to be funded by either re-prioritisation of existing Council capital budgets or additional borrowing.
21. Based on an assumption of phased steady state investment and useful life of expenditure incurred, the cumulative revenue budget requirement (Capital Financing costs) to meet the incremental capital expenditure requirements is c£3 million by 2027/28 and c£6.5 million by 2037/38.

Insurance Issues

22. The recharge for public liability claims for 2014/15 for Strategic Planning, Highways, Traffic & Transportation was circa £2.1million. In year recharges are not indicative of the claims received in one year in isolation, instead they reflect the top-up required to the Council's insurance provision, taking into account a number of factors over a number of years. These factors include the level of new claims received which could relate to an incident in the current or previous years, as well as the value at which claims previously received are ultimately settled. For this reason, any fluctuation in the level of claims may not result in an immediate corresponding change in recharge.
23. **Managed Decline (equivalent to current funding)** – If the condition of Highway's asset deteriorates, it will generally follow that more third party claims will be received by the Council. Any defence against a claim could be adversely affected as there could be an increased workload on the Council's Highway's maintenance teams which potentially creates a risk of the new Highways Policy being met. The Council could, therefore, see an increase in Highway public

liability claims and a possible reduction in defensibility of these claims. There could also be an increase in insurance premium as the Council's liability insurers could see the reduction in the condition of Highway assets as a greater insurance risk.

24. Steady State – If the condition of Highway's assets stays consistent, it would be expected that the number of third party claims received would stay consistent. Obviously, there are other factors that affect claims numbers but generally a big increase or decrease would not be expected. The defensibility of claims should also stay consistent as the maintenance teams workload stays consistent, with all things being equal.
25. Enhanced / Ideal State – If the condition of Highway's assets improves, it should follow that the number of third party claims will reduce. Claims defensibility maybe also improve as the maintenance teams workload could reduce.

Benefits of Adopting a Long Term Approach to Highway Maintenance Funding

26. The benefits of adopting a long term approach to Highway Maintenance funding include:
 - The Highway Maintenance service will have a long term defined strategy;
 - A clear direction will be defined for each highway asset group providing targets to work to and outcomes based approach enabling the right level of resources to be planned (staff and finance);
 - Better understanding of service levels by the customer;
 - Provide the Cabinet with a proactive choice for investment in the Highway asset and specify the amount of backlog that is acceptable and define the funding to achieve this;

- Improved management and defence of third party claims against the Council and consequent reduction in related costs;
- Improve the prediction of long term revenue costs.

Options

27. **Table 10** is being finalised and will be completed in time for the meeting on the 17 May 2016. This will demonstrate an overview of investment options by asset group and provide estimates of future capital investment option costs for Managed Decline, Steady State and Enhanced. Table 10 and other financial information will also be added to a revised **Appendix 1**.
28. Based on sound asset management principles supported by analysis undertaken in the Highway Asset Investment Strategy endorsed by the Council's Environmental Scrutiny Committee on 9th September 2014 the recommended adopted investment profile is Steady State.
29. It is recognised that current financial pressures may make this unachievable at the present time. In order to make the investment more affordable a "phased approach" to increasing Capital investment could be adopted. This would mean capital investment would be increased annually over an agreed period to reach the required level. The level of capital investment required will vary based on the options of condition selected.
30. Utilising the carriageway example in **Tables 5 to 8** it can be seen that an investment of £1.85m p.a. which is an increase of £1m p.a. over current investment levels provides a considerable reduction in the rate of deterioration over the initial 5 year period. However, at this level of investment the improvement in carriageway condition is not sustained over the longer term. Therefore, by investing an additional £1m p.a. for years 1 to 3 then increasing funding to the higher value to achieve steady state of £3.1m over the following 3 years a reasonable condition can be maintained over the longer term. This is illustrated in **Table 11**:

Table 11

Ramped Investment Profile for <u>Carriageways</u> to Achieve Steady State in Year 6							
Year	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Annual Investment	£850k	£1.85m	£1.85m	£1.85m	£2.20m	£2.60m	£3.075m
Increase on current investment level	+£0	+£1.00m	+£0m	+£0m	+£0.35m	+£0.40m	+£0.47m

31. As this example is based on the carriageway asset the same approach can be adopted for other asset groups. Therefore investment for all highway asset groups would require an overall increase of £1.93m p.a. rising proportionally to that of the carriageway asset for the first 3 years then ramping up in years 4 to 6 to achieve steady state investment of £7.32m. This is illustrated in **Table 12**.

Ramped Investment Profile for <u>All Assets (including carriageways)</u> to Achieve Steady State in Year 6							
Year	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Annual Investment	£1.62k	£3.52m	£3.52m	£3.52m	£4.78m	£6.04m	£7.32m
Increase on current investment level	+£0	+£1.93m	+£0m	+£0m	+£1.26m	+£1.26m	+£1.28m

32. **Table 13** illustrates a SWOT analysis of adopting a steady state maintenance strategy (based on recommended condition indices).

Table 13

SWOT Analysis	
Option: Steady State Investment Levels	
Objective: Adequately maintain the asset at consistent level over a 20yr period	
Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Prevent increase in backlog and reduce revenue costs 2. Halt ongoing deterioration 3. Improve safety by reducing reactive repairs 4. Reduce 3rd party claims 5. Improve customer satisfaction 6. Supports an asset management approach 	<ol style="list-style-type: none"> 1. Increased cost on existing capital investment levels 2. No ongoing improvement of condition
Opportunities	Threats
<ol style="list-style-type: none"> 1. Satisfy WG LGBI borrowing requirements (i.e. maintaining cw for 20yr period) 	<ol style="list-style-type: none"> 1. Budgets increasing in highways when overall decrease in Council funding

2. Employment opportunities to satisfy increased investment	
3. Improves social and economic agendas of the council	

33. **Table 14** below illustrates a SWOT analysis of an Enhanced state of the highway asset to an ideal condition.

Table 14

SWOT Analysis	
Option: Enhanced / Ideal Investment Level	
Objective: Adequately maintain the carriageway network at a consistent level over a 20yr period	
Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Prevent increase in backlog and reduce revenue costs 2. Ongoing Improvement of condition 3. Halt deterioration 4. Improve safety by reducing reactive repairs 5. Reduce 3rd party claims 6. Improve customer satisfaction 7. Supports an asset management approach 	<ol style="list-style-type: none"> 1. Increased cost on existing capital investment
Opportunities	Threats
<ol style="list-style-type: none"> 1. Satisfy WG LGBI borrowing requirements (i.e. maintaining cw for 20yr period) 2. Employment opportunities to satisfy increasing investment over time 3. Improves social and economic agendas of the council 	<ol style="list-style-type: none"> 1. Budgets increasing in highways when overall decrease in Council funding

34. **Table 15** illustrates a SWOT analysis of adopting a managed decline in highway asset condition (which is equivalent to current funding levels).

SWOT Analysis	
Option: Adopt a Managed Decline Based on Continuation of Historic Funding Levels	
Objective: Adequately maintain the asset at a consistent level over a 20yr period	
Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Reduced short term capital cost compared 	<ol style="list-style-type: none"> 1. Condition deteriorates

to other higher cost investment strategies	<ul style="list-style-type: none"> 2. Reduced safety by increasing reactive repairs 3. Higher long term maintenance costs 4. Road closures 5. Does not support an asset management approach
Opportunities	Threats
<ul style="list-style-type: none"> 1. Short term Council savings made through reallocation of funding 	<ul style="list-style-type: none"> 1. Unable to satisfy WG LGBI borrowing requirements (i.e. maintaining cw for 20yr period) on WG asset investment enhancements. 2. Increasing 3rd party claims / serious injury 3. Increasing customer dissatisfaction 4. Could hinder the Councils social and economic agendas

35. Any increase in Capital funding would need to be managed through the medium term financial plan and submitted for approval as part of the Councils budget process for 2017/18. Any such proposals would need to be considered alongside other priorities, existing commitments and affordability considerations in the current climate.

Previous Scrutiny

36. The Environmental Scrutiny Committee considered this proposal at its meeting on the 9 September 2014. A paper titled 'Highway Asset Management Strategy' was received by the Committee as a part of a pre decision scrutiny prior to it being presented at Cabinet for a decision; a copy of the papers for this meeting are attached to this report as **Appendix 2**. Due to circumstances the Cabinet report titled 'Highway Asset Investment Strategy' has yet to be considered at a formal Cabinet meeting; a report with the same title is now due to be received by Cabinet in June 2016. This meeting will provide the Committee with the opportunity to scrutinise those proposals.

37. The item explained that between 2012 and 2015 Welsh Government supported circa £15m investment in the Highway asset via the LGBI and that this ended in

March 2015. A stipulation of being awarded the funding was to provide a 20 year maintenance regime for those elements improved by this investment. Following the investment period highway maintenance budgets reverted to internal Council capital funding. To address this it was felt that adopting a strategic long term approach to highway maintenance funding would enhance Cardiff's economy and improve the daily lives of its citizens.

38. Following the meeting on the 9 September the Committee sent a letter to the Cabinet Member for Transport, Planning & Sustainability; this has been attached to this report as **Appendix 3**. The main Member comments and observations of this letter were that:

- The overall replacement cost of the Highway Asset was somewhere in the region of £2.8 billion to £3 billion. Members were informed that the repair backlog on its own is £320 million, approximately a third of the Council's gross annual expenditure;
- Despite receiving an explanation as to how the highway asset can be maintained, Members felt that further clarification was required about the level of investment actually required to maintain Cardiff's highway asset in a steady state;
- The Committee felt that the Council urgently needed to identify alternative funding sources to replace the loss of the LGBI;
- Members felt that there should be a review of street signs, and that signs that are no longer required should be recycled to generate an income;
- The Committee agreed that adopting a steady state funding approach was the best way forward for Cardiff in the current financial climate;
- The Committee was concerned that there was only a small budget to support the maintenance of major assets such as bridges in Cardiff. Members felt

that the Council should review how it would deal with such a large failure and how this would be addressed financially.

39. A copy of the response to the Committee letter to the Cabinet Member for Transport, Planning & Sustainability following the meeting on the 9 September 2014 (**Appendix 3**) has been attached to the report as **Appendix 4**.

Way Forward

40. Councillor Ramesh Patel, Cabinet Member for Transport, Planning & Sustainability and officers from the City Operations Directorate have been invited to attend to give a presentation and to answer Members' questions.
41. The meeting will provide the Environmental Scrutiny Committee with the opportunity to scrutinise and comment on:
- The content of the draft Highway Asset Investment Strategy prior to it being considered at Cabinet;
 - The future budget and other funding proposals for maintaining the highway asset.

Legal Implications

42. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters there are no direct legal implications. However, legal implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any legal implications arising from those recommendations. All decisions taken by or on behalf of the Council must (a) be within the legal powers of the Council; (b) comply with any procedural requirement imposed by law; (c) be within the powers of the body or person exercising powers on behalf of the Council; (d) be undertaken in accordance with the procedural requirements imposed by the Council e.g. Scrutiny Procedure Rules; (e) be fully and properly informed; (f) be properly motivated; (g) be taken having regard to the Council's fiduciary duty to its taxpayers; and (h) be reasonable and proper in all the circumstances.

Financial Implications

43. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters there are no direct financial implications at this stage in relation to any of the work programme. However, financial implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any financial implications arising from those recommendations.

RECOMMENDATIONS

The Committee is recommended to:

- Consider the information in the report, appendices and provided at the meeting;
- Decide whether they would like to make any comments to the Cabinet;

- Decide the way forward for any future scrutiny of the issues discussed.

DAVID MARR
Interim Monitoring Officer
11 May 2016