Highways Asset Management Plan

DRAFT v1 2022

Moving Dorset Ahead

Healthy - Connected - Sustainable

Document History

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	• Highways Asset Risk and Programming Board
	• Highways and Transport Task and Finish Group
	• Place & Resources Overview Committee
	• Dorset Council Cabinet
Implementation date	
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Service Director	

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Highways Asset Management Plan – Introduction

Welcome to Dorset Council's 2022 Revision of the Highways Asset Management Plan (HAMP). The revision of the HAMP follows the formation of Dorset Council in April 2019, and its key priorities documented in the Dorset Council Plan, and that of the Dorset Highways Service Plan.

Embedded in this revised HAMP we have incorporated the former highways maintenance operational plan.

The HAMP is part of a wider framework of documents and processes that inform and monitor our approach to maintenance of our highway assets, to ensure we are maximising investment.

The document demonstrates a commitment to engaging with senior decision makers and stakeholders and transparency in how our highway assets are managed, and how we are performing.

It also documents how we will operate under the umbrella of the risk based approach, promoted through the Well managed Highway Infrastructure - Code of Practice in its approach to inspection and maintenance of highway assets.

 Jack Wiltshire, Head of Highways

Message from Ray Bryan, Cabinet Portfolio Holder for Highways, Travel and Environment

At £6.4billion, Dorset Council's highways are its most valuable and tangible asset. It is used by everyone either living, working or visiting Dorset, and is fundamental to the economic, social and environmental wellbeing of all members of the community.

Public Sector spending has never been under so much pressure, with the impacts of COVID-19 only adding to the demands on service provision. It is a risk based approach that will ensure that available funds are directed to the most in need asset maintenance activities, that delivers the best return on public funds, in securing efficiencies in terms of the customer, quality and costs
Dorset Highways is committed to listening to its customers, and evaluating how we have performed, with a view to reviewing our approach through future service planning.

Our risk based approach is reflected in our approach to service governance. Working in collaboration with strategic partners, contractual and relational governance structures are used to create the policies and plans required to meet these challenges. These processes are informed by elected officials through the work of the Highways Asset Risk and Programme Board and Highways and Transport Task and Finish Group.

As one of our biggest carbon consumers, our Highways Team has a key part to play in reducing the impact on the environment, through implementing practices and materials that reduce this carbon footprint."

Cllr Ray Bryan
Cabinet Portfolio Holder for Highways, Travel and Environment

1. Dorset Highways Asset Management Policy

1.1 Policy Statement

1.1.1 Dorset Council is committed to an asset management approach and embedding this into the delivery of its Highways services in the design, construction, adoption, maintenance, management, administration and disposal of highway assets.

1.1.2 Our asset management approach will support Dorset Council priorities set out in the Plan, which incorporates 'staying safe and well', 'economic growth', protecting out 'unique environment', 'sustainable housing', and promoting 'strong healthy communities'. Whilst also addressing the authority's declared climate and ecological emergency.

1.1.3 Senior member buy in to our asset management approach from the Portfolio Cabinet Member for Highways, Transport and Environment, and Lead Member for Highways, is secured through the Task and Finish Group for Highways and Transportation, and quarterly Highways Asset Risk and Programme (HARP) Board meetings.

1.1.4 Maximum return on investment will be sought by providing and procuring services which enhance network resilience, minimise risk to highway users, and extend the serviceable life of highway assets. This mirrors the National Audit Office principles of value for money, economy, efficiency and effectiveness.

1.1.5 Dorset's asset management approach includes a risk-based methodology, as promoted in Well Managed Highway Infrastructure (WMHI) and will embrace innovations in technology and materials to reduce carbon emissions.

1.1.6 Dorset Highways will regularly monitor and review the effectiveness of the service through outcome based performance indicators, benchmarking, audits and feedback from key stakeholders.

1.2 Highways Asset Management Strategy

1.2.1 The Dorset Council Plan – Priorities

Responsibility • Respect • Recognition • Collaboration

1.2.2 Dorset Highways plays a key role in supporting the Dorset Council Plan. All parts of our highway asset facilitate movement and safe access to communities, businesses, our environment, schools, hospitals, recreational areas.

Economic Growth

1.2.3 We aim to support a more productive and prosperous economy by improving the reliability, efficiency and connectivity of our transport networks. We provide strategic infrastructure improvements and maintenance focussed on our resilient network, to strengthen connections and support regeneration and growth.

1.2.4 Emphasis of our highway asset maintenance approach is in improving asset knowledge, using data to support decisions on key parts of the network, and understand investment requirements. We will implement a strategy of effecting early life interventions to keep our assets in good condition (which for carriageways is keeping the greens 'green').

1.2.5 Using a holistic approach to reduce congestion through efficient management and maintenance of the network, providing alternative sustainable travel options and investing in capacity improvements in key areas.

Unique environment

1.2.6 Our maintenance activities and materials will be sympathetic to the environment, and impact on ecological systems reduced.

1.2.7 We will achieve this through engagement with ecological experts and our Grounds Team, to ensure we minimise the impacts our works have on natural habitats.

1.2.8 We will engage with heritage colleagues and external bodies to ensure our material choices enhance historic environments within our county.

Climate emergency

1.2.9 We will design, construct and maintain the transport network to withstand the potential impacts of extreme weather events, flooding and rising sea levels arising from climate change. We will achieve this through focus on our resilient network, and vulnerable assets/areas, using a network resilience toolkit to map resilience risks, which will inform programmes of works for investment.

1.2.10 We will reallocate road space to encourage alternative modes to the car by building and maintaining high quality walking, cycling and bus infrastructure.

1.2.11 We will reduce our carbon footprint through exploring low carbon options that include early preventative treatment strategies to prolong asset life, recycling of materials, use of low energy materials, and LED technology, whilst considering options for carbon offsetting.

Suitable Housing

1.2.12 We work across Dorset Council as ‘One Team’ to ensure that the planning of new housing, employment and other development gives opportunities to reduce travel and promotes opportunities to travel without

reliance on the car. We will work with partners and stakeholders to contribute to the Local Plan and influence housing and other development proposals.

Strong healthy Communities

1.2.13 This starts by reducing the need to travel through sustainable development and providing sustainable travel links through existing urban areas. This will be achieved by encouraging homes, employment, health and education opportunities to be planned and delivered with measures that promote safe, active travel patterns.

1.2.14 Developing our approach to walking and cycling infrastructure including our hierarchy review, will be critical to supporting this 'priority'; developing links to communities via our footway, cycleway and rights of way networks.

Staying safe and well

1.2.15 Providing infrastructure to increase the number of people using active travel safely, such as walking and cycling, to support healthy lifestyles.

1.2.16 We aim to reduce all transport related casualties and improve safety for all users of our network by using engineering, education and enforcement solutions to create safer travelling environments.

1.2.17 We will manage risk by development of our risk based approach to maintenance, including that of our Skid Policy, using data to support key decisions, which will ensure we focus investment in high risk areas.

1.2.18 Residual risks will be documented in the Highways and, where appropriate, the corporate risk register, and be reviewed at Quarterly Highways Asset Risk and Programme Board meetings.

1.2.19 In the interests of transparency we will implement the Highways Performance Framework to review feedback and performance to inform future decision making.

1.3 Customer Feedback

1.3.1 Dorset Council is committed to listening to its customers and making sure they are informed about what we do and how we are performing. Details of this are documented in the Dorset Highways Communications Strategy.

https://www.dorsetcouncil.gov.uk/documents/35024/294291/Dorset_Highways_comms_strategy_Jan+2021.pdf/f21002f0-e706-d28c-0f41-f725371a58eb?version=1.0&t=1619385772780

1.3.2 In 2020 we conducted a public satisfaction survey to seek feedback on our Highways Service. Through that survey the Dorset Public told us that the most important things to you, are:

Safer roads—What we are doing?

Managing skid resistance on the network. Prioritising high risk sites based on skid resistance and collisions

Dorset Council has contributed an additional £6.3million into highway maintenance which includes increased investment into skid resistance and road markings.

Road condition—What are we doing?

We're investing in early life interventions to preserve roads in good condition, based on predicted intervention dates and condition monitoring

Using lower carbon treatments to reconstruct heavily damaged roads using recycling.

Investing part of an additional £6.3million to make up the shortfall in funding required to maintain the condition of our road network.

Footways—What are we doing?

Investing in countywide slurry sealing of bituminous pavements

Trialing new technology to record footway condition

1.3.3 The Dorset public highlighted a dissatisfaction in the way we manage highway drainage and non-illuminated highway signs

1.3.4 What are we doing:

- Developing a risk based approach to gully maintenance to focus on increased maintenance in high risk areas, at the expense of low risk sites.

Using technology to inform indications of priority sites, as well as data sets linked to silt levels, enquiries, and flood risk maps.

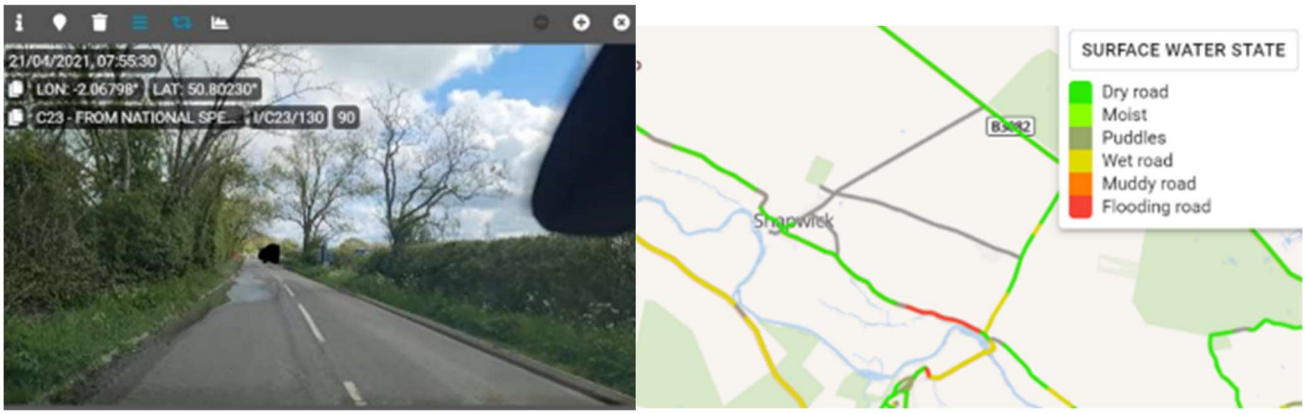


Illustration of technology being used to identify repeat 'ponding' occurrences

- Using innovative technology to capture the condition of our road signs, to evaluate future investment requirements and inform future replacement programmes.
- In 2021/22 Dorset Council have invested an additional £6.3million of corporate funds into highway maintenance, including carriageways, footways, drainage and signs, to counter the £4million reduction in Government maintenance funding.

1.4 Objectives

Support priorities in Dorset's Council Plan, Local Transport Plan and Service delivery objectives in the Highways Service Plan
Support the highway network strategy and integrated transport objectives
Fulfil our statutory obligation to maintain the public highway, under the guidance of Well Managed Highway Infrastructure – Code of Practice
Develop and implement specific climate change resilience strategies to support the corporate Climate and Ecological Emergency Strategy
Increase the perception of the population feeling safe on Dorset's roads and reduce collisions.
Maximise asset knowledge including inventory and condition
Understand and communicate investment requirements, scenarios and impacts
Ensure our stakeholders are well informed
Respond to the needs of communities and highway users
Protect network resilience
Promote preventative strategies to reduce reactive liabilities, and preserve and prolong asset life

1.5 Legislation

1.5.1 Dorset Council Highways' approach to maintenance of its highway assets are based on statutory duties, powers and standards contained within relevant legislation, and duties and interpretations of these powers and duties

1.5.2 The specific national legislation and guidance relating to these duties are as follows:

The Highways Act 1980 (Section 41)

- Imposed duty to maintain highways deemed be maintainable at public expense
- In particular a highway authority is under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.

The Traffic Management Act 2004 (Section 16(1))

- Securing the expeditious movement of traffic on the authority's road network
- Facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority

The Road Traffic Act 1988 (Section 39)

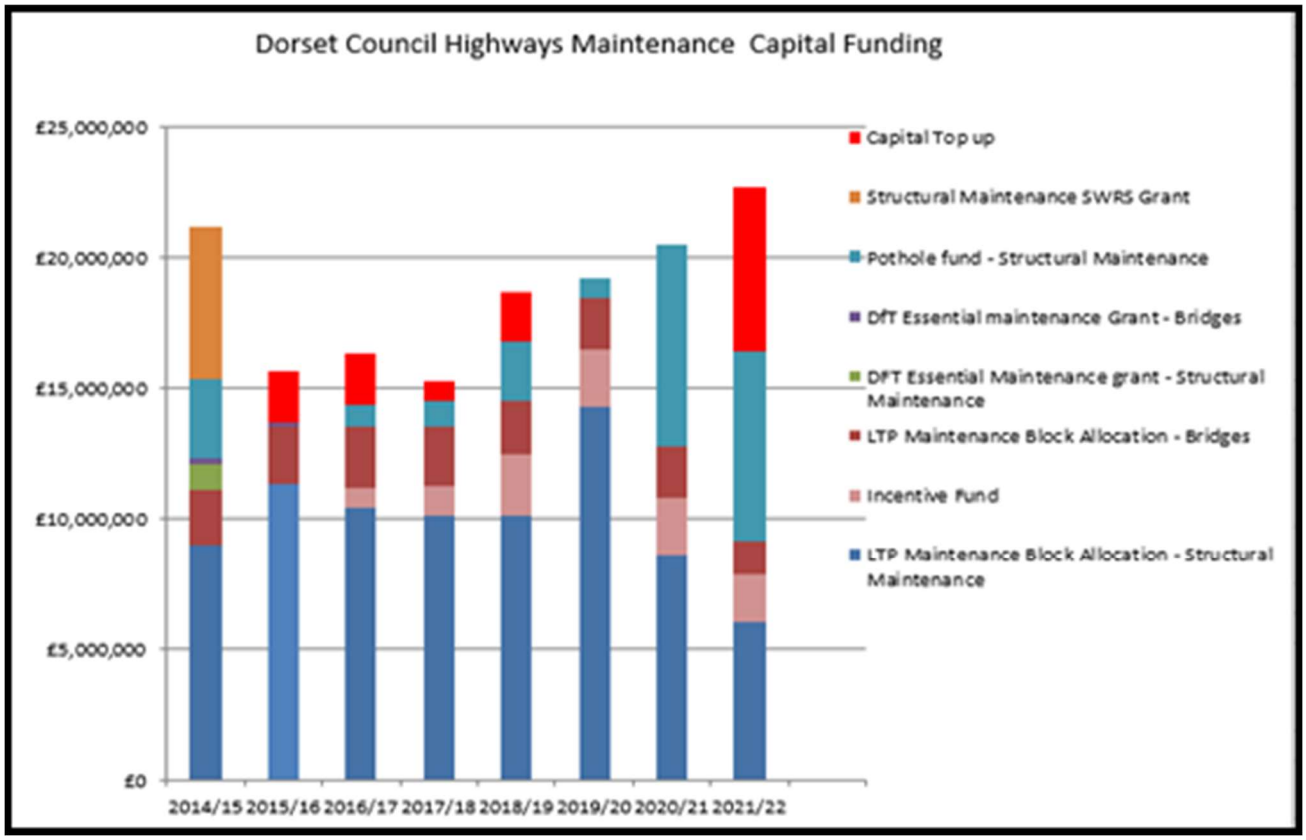
- Promoting road safety
- Conduct studies into accidents on roads
- Implementing measures to prevent such accidents

1.6 Codes of Practice / National Guidance

1.6.1 Following the publication of the Code of Practice—Well Managed Highway Infrastructure, Dorset Highways carries out a review of its compliance with the code every two years and uses the resultant action plans to drive continual improvement in the service. This process aligns with other action planning exercises which are delivered through the Dorset Highways Performance Networks.

1.7 Highways Maintenance Funding

1.7.1 Capital – These are planned activities that are predominantly funded by the Department for Transport (DfT) in the form of maintenance block funding, Incentive Funding, and additional funds such as the Pothole Fund, that enhance our existing assets. We have also received corporate capital top ups.



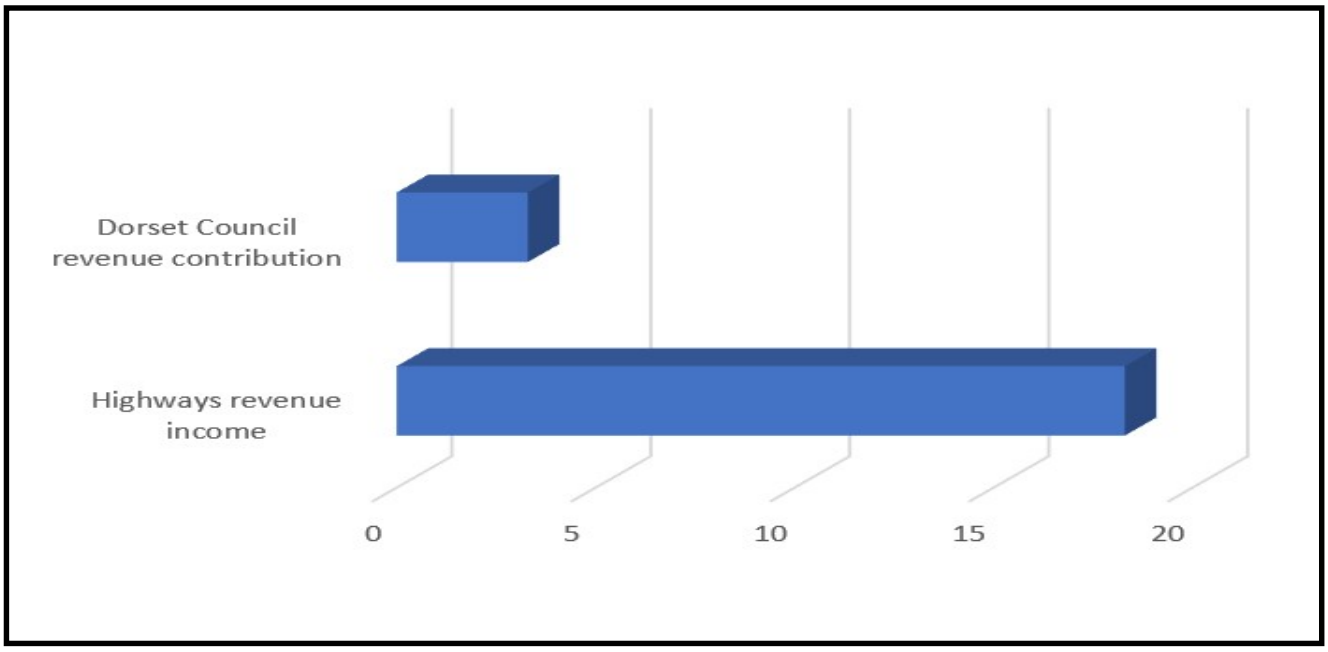
1.7.2 The 2021/22 DfT capital maintenance funding for highways was based on the Government's single year spending plans, which equated to a 20% reduction in funding.

1.7.3 There has been no announcement on highways funding from 2022/23 onwards.

1.7.4 Dorset Council's Cabinet awarded £6.3million of corporate capital funding is support of highway maintenance activities in 2021/22.

Revenue – Cyclical, reactive and emergency maintenance activities

1.7.5 Funds are provided by Dorset Council, and income generated through parking fees, permitting surplus and the delivery of external construction contracts.



1.7.6 There are different types of maintenance referenced in this document that are used to manage and maintain our highway assets. These are as follows:

1.7.7 Planned – Work which is programmed, to include patching, surface treatments or end of life replacements

Routine – Scheduled work to include gully emptying or grass cutting

Reactive – Safety responses to public reports, through inspection or emergencies

Winter Service – Gritting operations (including ploughing in snow conditions, and responses to adverse weather

1.7.8 Regulatory - Statutory duty to inspect the work of all works promoters on the highway under New Roads and Street Works Act 1991

1.8 Network Hierarchy / Inspection

1.8.1 In line with WMHI we have reviewed our network hierarchy to accurately represent it's use, which is fundamental to supporting a risk based approach. Details of the network hierarchy and associated inspection frequencies can be located in the Code of Practice for the Classification of Highway Safety Hazards & Defects

Insert link

1.9 Resilient Network

1.9.1 During periods of prolonged extreme weather, the highway network can be disrupted. This was highlighted during the winters of 2013/14. We have therefore established a resilient network.

1.9.2 The resilient network will also be used as a tactical tool with which priority can be given to minimise the impacts of extreme weather.

1.9.3 This could include the following –

- Additional maintenance interventions may be used to ensure the asset continues to function.
- Prioritise funding to mitigate the onset of deterioration of the asset.
- Prioritise work programme to reduce the risk of failure in the asset.
- Prioritise reactive maintenance in the case of extreme weather.
- Assisting in emergency planning events including recovering from an emergency event

Methodology

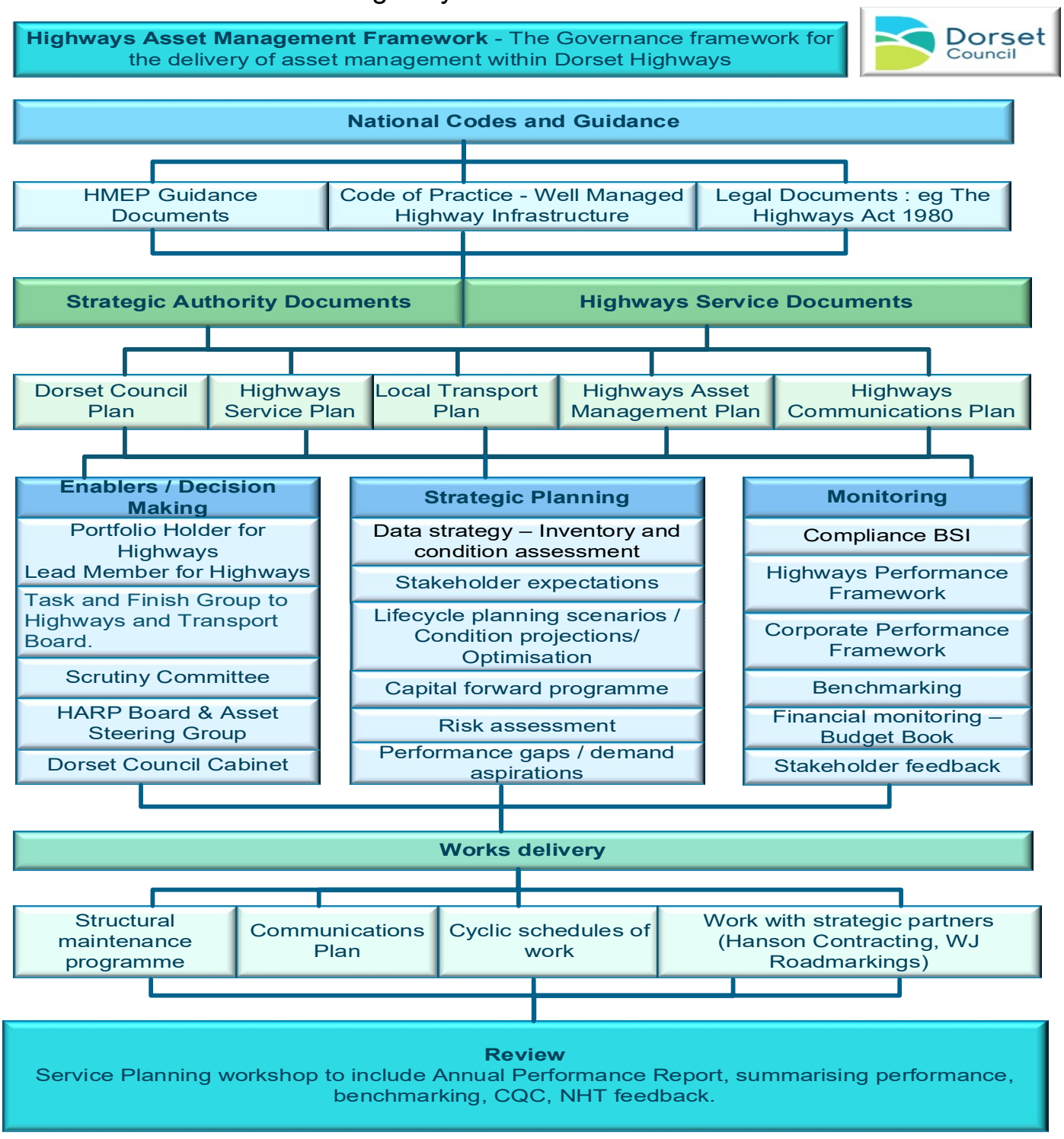
1.9.4 To identify the network to be included in the resilient network we have assessed the relevant data and used the following criteria.

1.9.5 All of the following network classes - strategic, main distributors, secondary distributors (all A, B and well-used C class roads)

- Links to hospitals, large industrial estates, transport interchanges, emergency service (including manned Coastguard and RNLI) stations and identified critical infrastructure.
- Routes to all urban schools with more than 500 pupils and rural schools with more than 350 pupils.
- Primary bus routes with a substantial frequency, School bus routes are not included.
- Main routes that don't meet criteria 1 above through towns and villages with populations of more than 750.

1.10 Highways Asset Management Framework

1.10.1 Dorset Council's Highways Asset Management Framework shows how our policies and processes are interlinked and support each other to deliver an effective and efficient Highways Service.



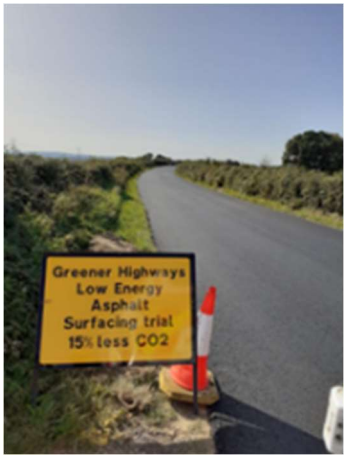
1.11 Dorset Highways Climate & Ecological Strategy

1.11.1 The Dorset Council Highways Service is committed to reducing our carbon footprint and reducing our impact on the environment.

Allasso CBGM Mixing Plant— Ex-situ structural repairs

How we will do this -

- Climate impact assessments to be compiled for maintenance schemes
- Use of low energy asphalts
- In situ and ex situ recycling of materials (including tar bound material)
- Develop lifecycle plans for carbon— demonstrate positive impacts of our strategy
- LED retrofit of lighting assets (where possible)



Over 60% of all surfacing materials used are low energy asphalts (LEA)

LEA - 16,000t YTD and % of use is increasing month on month now that surface course is online. 15% eCO2 on material production. Dropped from 62-58kg/t of asphalt laid

23,600 YTD total asphalt laid

16-17% RAP, used to be 30% but had to reduce to allow for lower thermal energy of the RAP. Move to pre-heat and blend RAP before mixing.

Allasso – tonnes used

7,000t CBGM 2019-20

4,700t CBGM 2020-21

1.11.2 Climate impact / mitigation

				Impacts of climate change			
	Climate impact	**Mitigation**	**Opportunities**	**Heat**	**Wind**	**Rain**	
Carriageways	Carbon use	* Asset strategy (early life intervention) * Low energy asphalts * Recycling * Offsetting	Offsetting - planting trees, sea grass (building this into the cost of the scheme)	Yes	No	If drainage not functioning correctly	If drainage is not functioning to capacity then standing water will get into the fabric of the carriageway, which will reduce its life, seeing earlier onset of deterioration and failure. It will also affect the integirty of supporting embankments. Standing water in itself poses a risk to accessibility of the network and therefore resilemce of the network.
Footways	Carbon use	* Asset strategy (early life intervention) * Low energy asphalts * Recycling * Offsetting	Offsetting - planting trees, sea grass (building this into the cost of the scheme)	Yes	No	If drainage not functioning correctly	If footways have standing water on them, they are unlikely to be used by the public. This will also accelerate the rate of deterioration of the footway.
Cycleways	Carbon use	* Asset strategy (early life intervention) * Low energy asphalts * Recycling * Offsetting	Offsetting - planting trees, sea grass (building this into the cost of the scheme	Yes	No	If drainage not functioning correctly	If cycleways have standing water on them, they are unlikely to be used by the public. This will also accelerate the rate of deterioration of the footway.

Bridges	Carbon use	*Asset Management (maintain, repair, adapt rather than replace) *Minimise use of high embodied carbon materials (concrete, steel) *Use lower carbon or recycled materials. *Offsetting	Offsetting - planting trees, sea grass (building this into the cost of the scheme)	No	No	Yes	Extreme floods and increased frequency of high river flows resulting from heavy rain. High river flows and changes in flow regime can cause scour of river beds to develop rapidly. Shallow bridge and riverside wall foundations are vulnerable to undermining and structures could collapse.
Retaining walls	Carbon use	*Asset management (Reactive) *Stabilise existing (prop or tie) *Show preference for earthworks rather than new structure if space available.	Offsetting - appropriate for new or replacement structures.	No	No	Yes	Soil structure weakened by water saturation behind wall imposing higher loads. Walls bulge or collapse. Saturated ground and weakened foundation causing settlement and wall to lean becoming unstable.

Cutting and embankment slopes	Carbon use	*Low embodied carbon *Minimal maintenance	Appropriate planting improves habitat and controls erosion	No	No	Yes	Overly steep slopes with ground weakened by water saturation vulnerable to landslide. Erosion by uncontrolled water run-off from adjacent ground or highway.
Drainage				No	No	Yes	Our current approach to management of drainage is struggling to cope with the increased and intense weather events. We need to develop our risk based approach to maintenance to effect increased proactive maintenance in high risk areas, and consider reinstating maintenance activities that include expos gullies (side verging) and maintenance of other drainage assets. *Risk that we are not prepared for impacts of climate change, which will result in increased highway flooding - already being evidenced*

Non illuminated signs				No	Yes	Maybe	There is currently limited capital replacement of our sign asset, and high winds could impact on large signs, with rusted poles, causing a danger to highway users.
Traffic control and ITS	Carbon usage - powered by electricity	Use of LED bulbs		No	Yes	No	High winds may impact on units mounted on poles that are rusted

2 Highways Asset Group Chapters

The following section provides an appraisal across all of our highway assets.

2.1 Carriageways

2.1.1 The carriageway asset is by far the biggest highways asset and is valued at £4billion. They are used every day by residents, businesses and visitors to the county and support the economic, social and environmental well-being within the county of Dorset.

2.1.2 Carriageways in Dorset range from designed roads constructed to modern standards, to those which have evolved over many years, having originated from historic tracks. The carriageway also includes any kerbing, usually in urban areas to retain the road edges. Transport infrastructure is

critical to the wellbeing and economy of the county and the UK so the condition of the carriageway is of great importance.

2.1.3 It is essential, if we are to support economic growth, and the health and wellbeing of the travelling public in Dorset, that we ensure that our highway infrastructure meets the changing needs our customers.

Carriageways – Public perception

2.1.4 Public satisfaction in the carriageway asset is generally good, with satisfaction relating to condition of highways and road surfaces 6% above the national average.

2.1.5 National Highway Transport (NHT) surveys show consistently that carriageway condition and road safety are the most important highway services, with condition being considered the most in need of improvement.

2.1.6 Carriageway inventory

Total length 3,795 kms

A roads 368.1 kms

B roads 382.91 kms

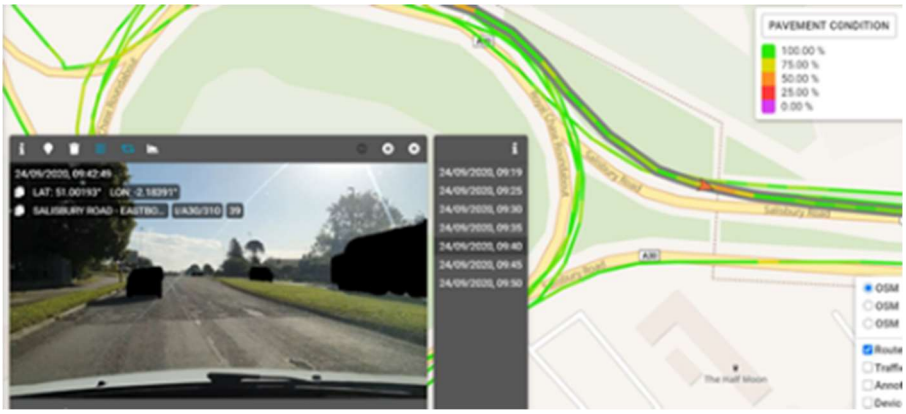
C roads 1110.44 kms

D roads 1933.34 kms

Confidence in our road inventory is good.

2.1.7 The carriageway asset is valued at approximately £3.9billion, with an estimated £203million of accumulated depreciation.

2.1.8 Carriageway condition



Condition data is collected by Inspectors with devices mounted in inspection vehicles, using Road AI technology to identify defects

Category 1 &2 Good or Very good condition
Principal 77.01% or 283.04 kms
Non Principal B road 65.75% or 251.8 kms
Non principal C road 61.75% or 685.7 kms
Unclassified road 55.68% or 1076.5 kms

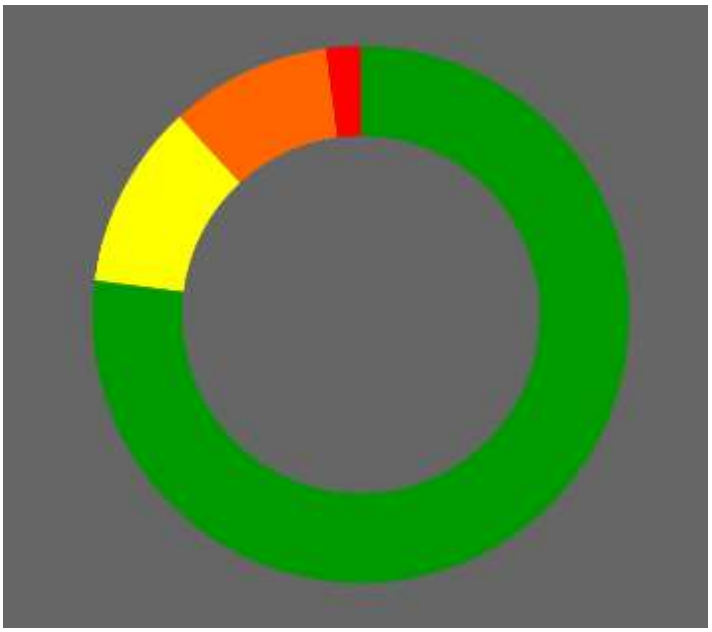
Category 3 Fair - Consider surface treatment
Principal 11.26% or 41.4 kms
Non Principal B road 14.43% or 55.2 kms
Non principal C road 14.99% or 166.5 kms
Unclassified road 13.79% or 266.6 kms

Category 4 Poor - Where maintenance should be planned
Principal 9.67% or 35.6 kms
Non Principal B road 16% or 61.3 kms
Non principal C road 17.08% or 189.7 kms
Unclassified road 17.72% or 342.6 kms

Category 5 Very poor - Where maintenance should be considered includes structural failures
Principal 2.06% or 7.6 kms
Non Principal B road 3.82% or 14.6 kms
Non principal C road 6.18% or 68.6 kms
Unclassified road 12.81% or 247.7 kms

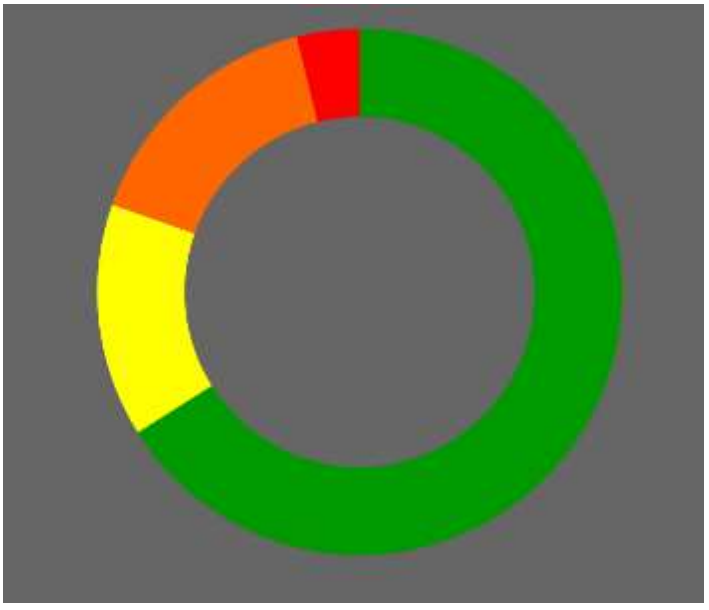
2.1.9 Carriageway condition summary charts

Principal roads



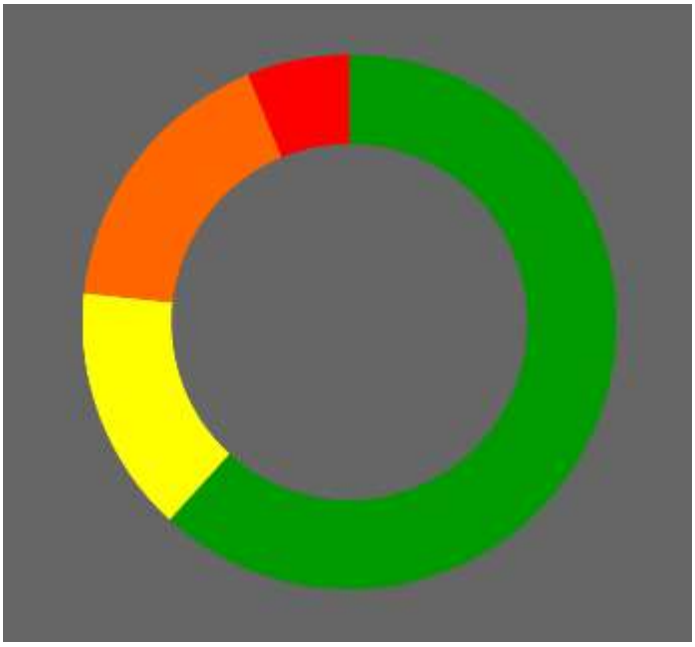
Condition is generally good to very good, reflecting investment strategies focused on the strategic road network

Non principal B roads



Condition of our B roads is generally in good to very good, again reflecting investment in our strategic networks

Non principal C roads



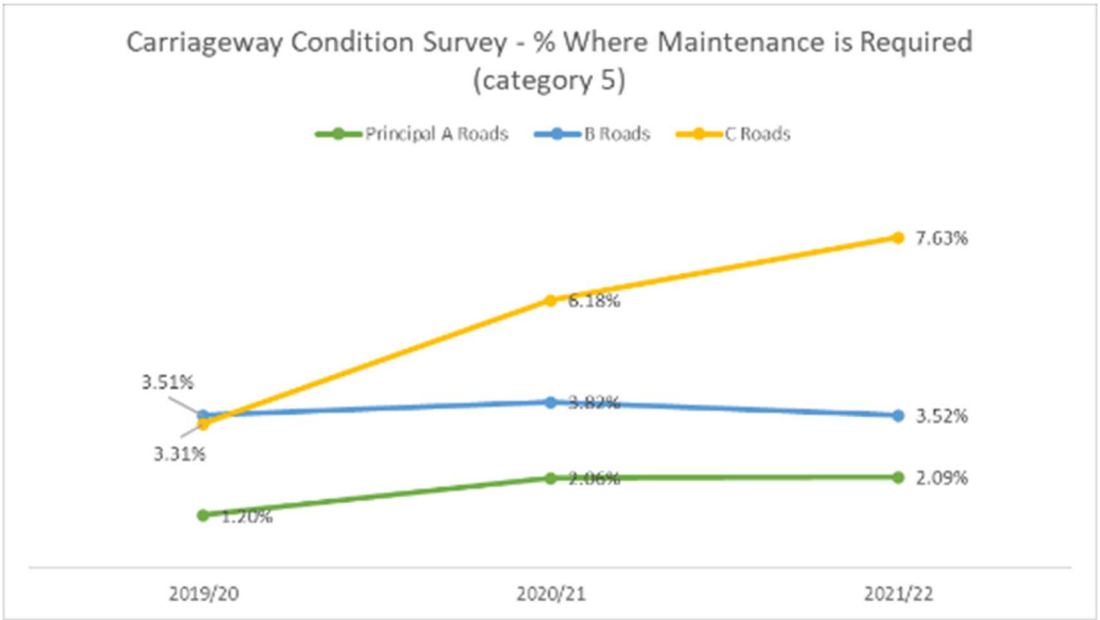
Whilst still a large proportion in good to very condition, there is a greater percentage in the very poor category.

Unclassified D roads

A greater proportion of the unclassified network is in fair to poor condition

Action - Network coverage in terms of condition data collection on our unclassified network is still quite low and continues to be collected through annual inspection. A dedicated resource now identified to start filling these gaps

2.1.10 Carriageway condition trends



The chart shows the percentage of network in poor condition (where maintenance should be considered)

2.1.11 The carriageway condition trend data reflects investment strategies, with increased investment targeting improvements in the strategic network.

2.1.12 It also reinforces findings through lifecycle planning that current investment across all road classes has been below that required to hold condition, with the percentage in poor condition increasing over the past year. The only exception is in our B road network, which saw 0.3% improvement.

2.1.13 Carriageway defect trend

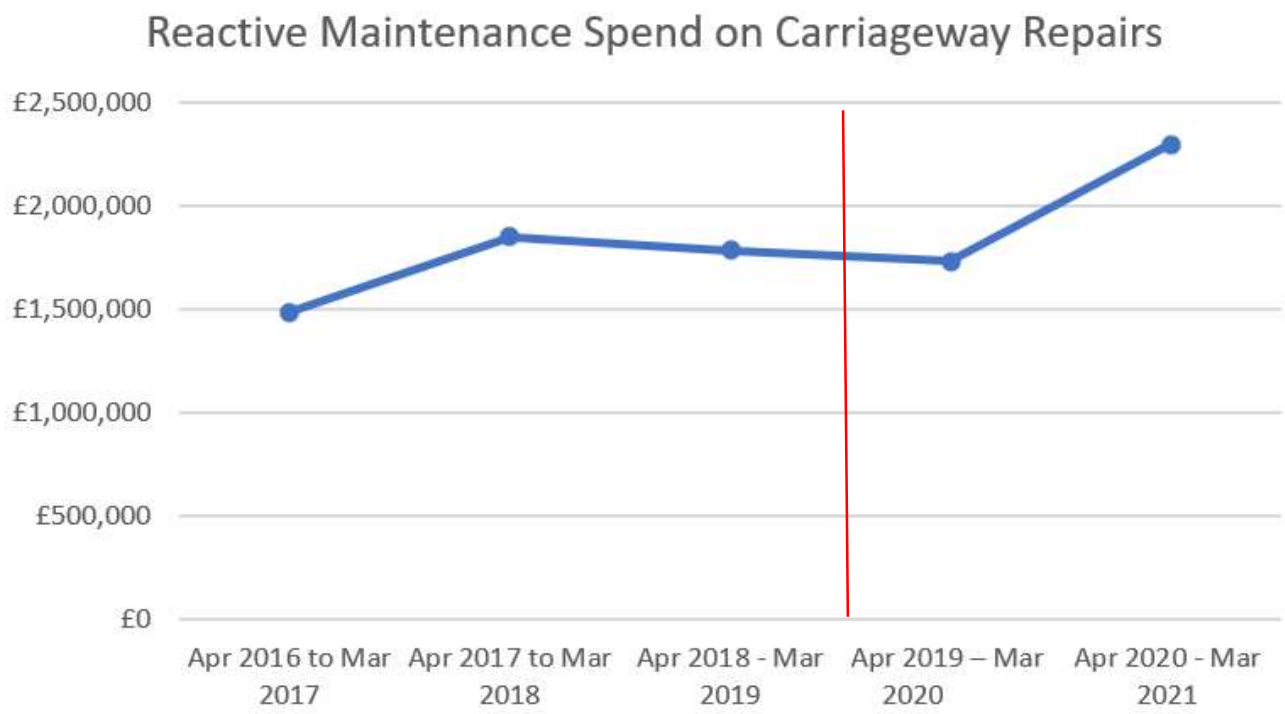


Chart showing increasing trend in reactive carriageway maintenance

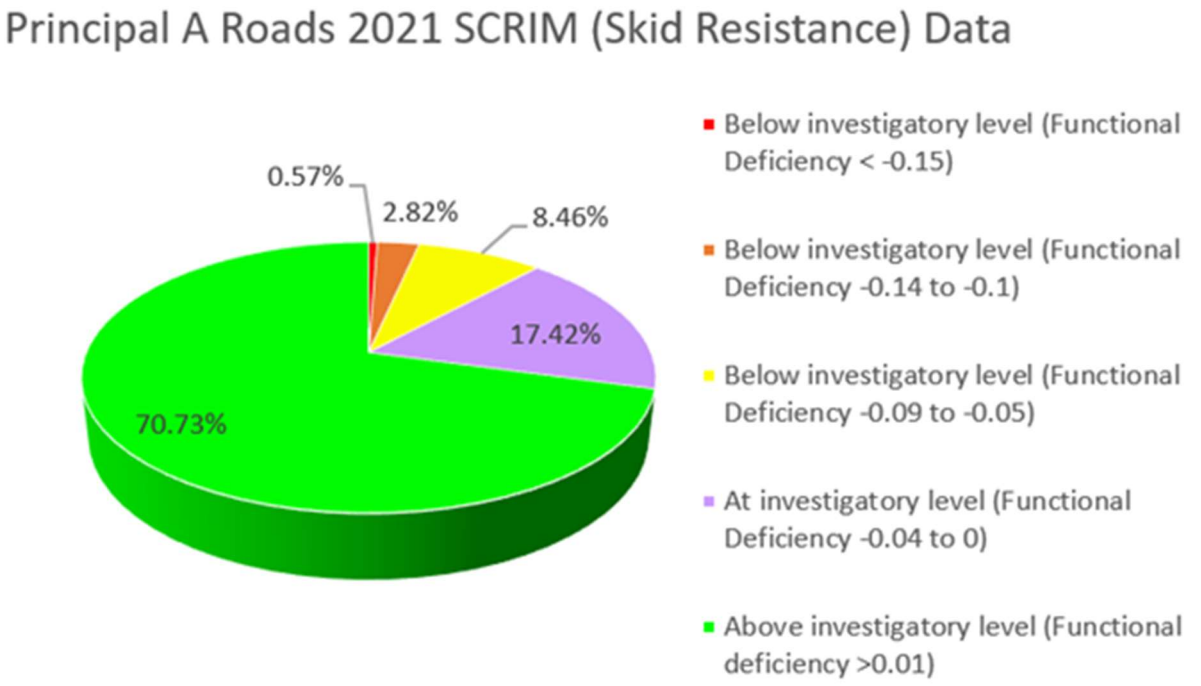
2.1.14 The chart illustrates the increasing trend in reactive carriageway maintenance, reflecting the increasing trend in the percentage of network in the worst condition, highlighting the impact of under investment in carriageways

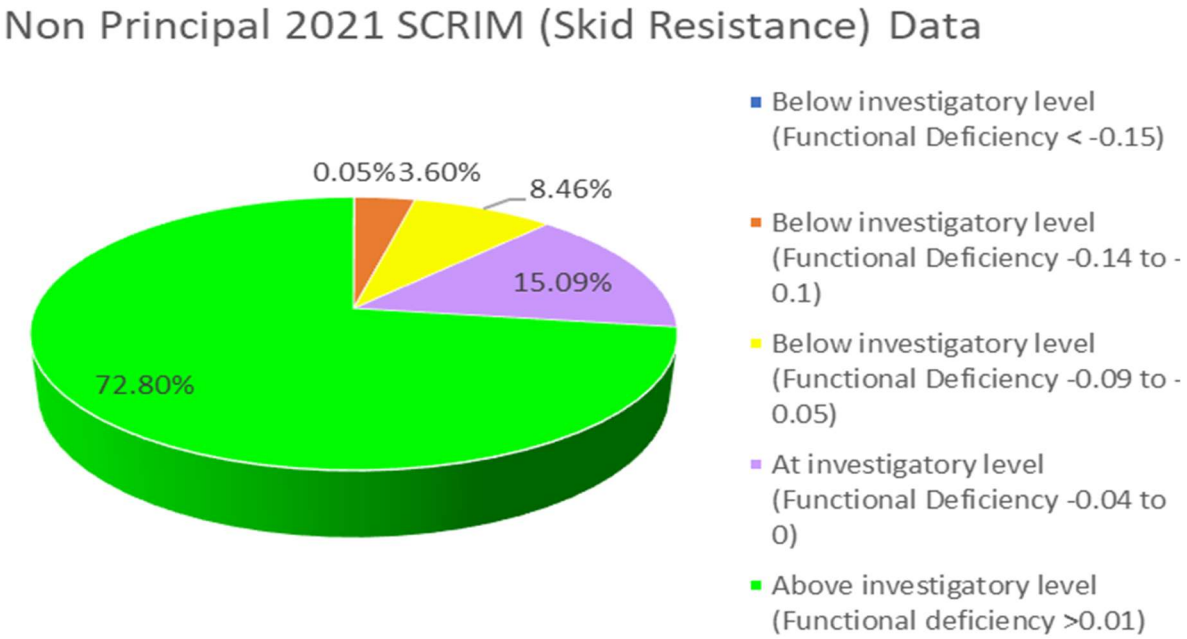
2.1.15 Carriageway Condition - Skid Resistance

The management of how Dorset Council manages skid resistance on its network is documented in the Dorset Skidding Resistance Strategy.

Insert link once approved

2.1.16 Current skid resistance is illustrated from the 2021 early season SCRIM surveys below:





2.1.17 The charts illustrate low percentages of network in the lowest bandings of points below minimum levels of skid resistance.

2.1.18 Skid resistance trends

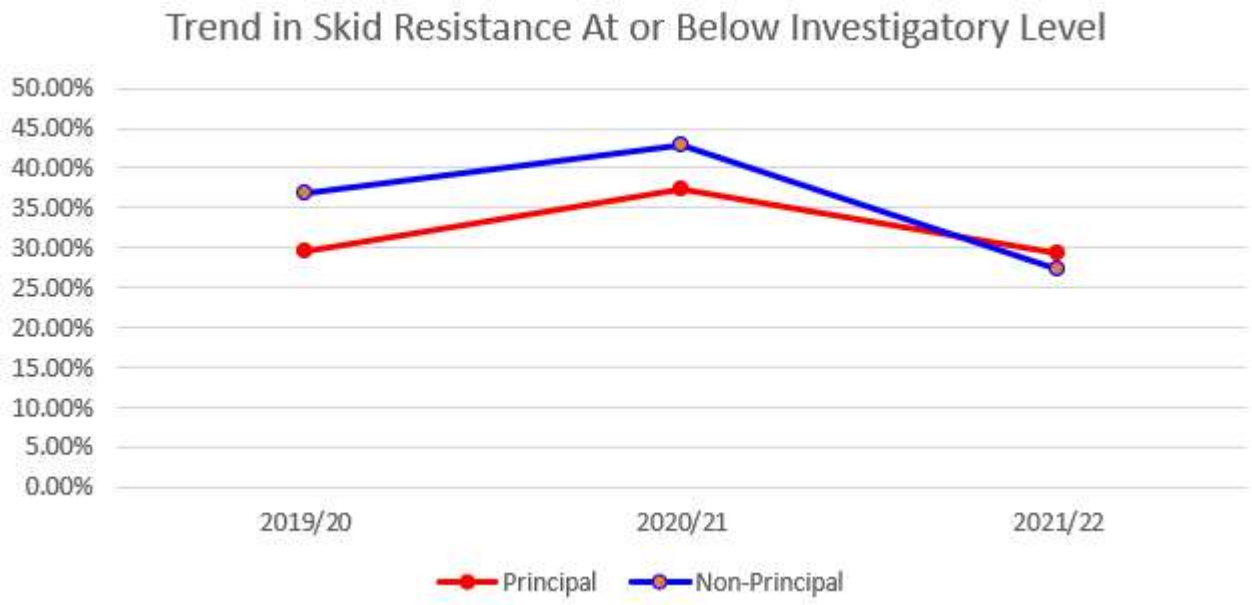


Chart showing trend in the percentage of network at or below the minimum required level (the lower percentage is a positive result).

2.1.19 The 2020 late season survey results suggested a non-recovery of values during the survey, which would be explained by a prolonged dry spell into the autumn, and may be combined with the absence of vehicles which would normally force debris out of the macrotexture during wet conditions.

2.1.20 The trend shows principal A roads largely staying the same, contrary to strategies implemented to reduce this percentage. Investigations have highlighted a possible issue with aggregates used in premium surface dressing sites which very early in their life are dropping to at or just below investigatory level (IL).

2.1.21 The B road data however illustrates a 9.63% improvement in skid resistance, compared to 2019 data, reflecting targeted maintenance strategies of resurfacing, surface dressing and retexturing.

2.1.22 Carriageway Investment requirements

We have conducted lifecycle planning exercises using both the HMEP Lifecycle Planning toolkit, and more recently using Vaisala Road AI data analysed through Horizons asset management software.

- Investment scenario - Impact of current investment £12million per year

  5 year projections - RCI

  Principal roads

Chart showing declining trend in principal road condition

This shows that the indicator 130-01 (A roads where maintenance should be planned – red banding) could increase from 2% in 2020, to 4% over a five year period.

  Non principal roads

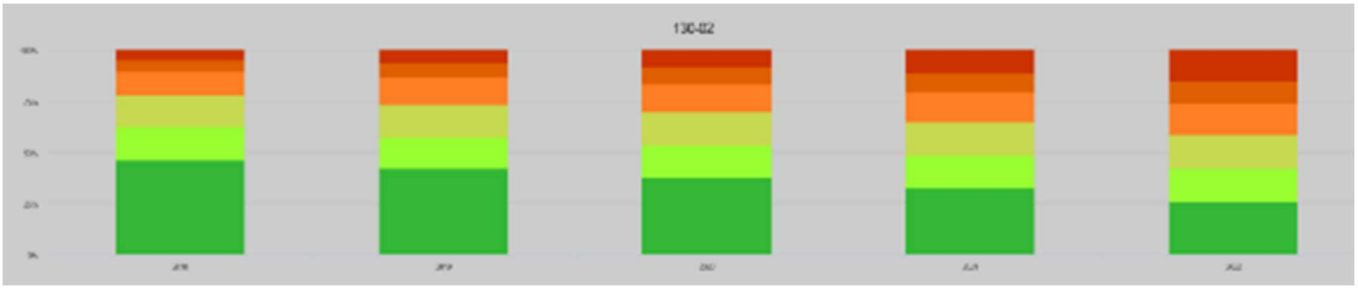


Chart showing declining trend in non-classified road condition

The indicator 130-02 for B and C roads could increase from 5.1% to 15.9% requiring maintenance (red category).

- Investment scenario – hold condition – Annual investment of £16.2million required across all road classes

  A roads - £4 million per year

  B roads - £2.7million per year

  C roads - £6.2million per year

  D roads - £3.2million per year

- To improve road condition to turn all roads ‘green’ (ie good) would require increased investment to approximately £21million per year over a ten year period.

2.1.23 Carriageway Maintenance Backlog

The carriageway backlog of maintenance is estimated to be £203million. This is based on a hypothetical reinstating all damaged section of road overnight, so they are all in good condition.

2.1.24 Carriageway Maintenance Strategy

Short term

Carriageways are managed through safety inspections and repaired in accordance with the Code of Practice for the Classification of Highway Safety Hazards & Defects Classification of Highway Safety Hazards & Defects

Treatments

Conventional patching

Velocity injection patching

Thermal patching

Cold lay alternative patches

Medium / long term strategy—£16.2million Annual Capital Investment to include corporate top up

1. Early life interventions are based on a combination of predicted intervention and condition monitoring. Sites are identified and prioritised based on optimum intervention using Horizons asset management software, lifecycle planning scenario.
   - Surface dressing
   - Preservation
   - Crack sealing
   - Planned patching
   - Thin surfacing (microasphalt)

These treatments serve to prolong asset life, and slow the rate of deterioration that leads to expensive interventions and replacement.

2. End of life replacement (resurfacing/reconstruction) based on condition monitoring. These sites are identified through asset lifecycle planning in Horizons recognising that they are at the end of their serviceable life.

These treatments include:

- Asphalt replacement
- Structural patches (ex situ recycling)
- Reconstruction using in-situ recycling or conventional methods

We are increasingly looking at alternatives to conventional methods for construction, which reduces our carbon footprint. We are recycling tar bound material to produce CBGM material for structural patching. We are expanding programmes of in-situ recycling both shallow and deeper construction, where required.

Management of skid resistance through our Skid Policy

2.1.25 Our approach to assessment of skid resistance is linked to risk, and is based on skid resistance testing, collision history, and site risk (site category).

2.1.26 Remedial programmes of work consist of surface treatments (retexturing, surface dressing) and resurfacing.

Outcomes

2.1.27 The outcomes of our strategies are linked to the Highways Performance Framework Insert link

and reflect Dorset Council priorities in the Corporate Performance Framework

- Reduced number of people killed or seriously injured on our roads
- To hold the performance indicator for condition of principal and non-principal and unclassified roads
- Increased accessibility of the network / resilience
- Reduce number of reactive carriageway repairs
- Improved communication of forward works and why we are doing them
- Reduced carbon use linked to maintenance of carriageways

2.2 Footways

2.2.1 The footway asset facilitates the safe passage of pedestrians, and promotes healthier active life choices and travel options.

2.2.2 Our objective is to promote walking which reduces both congestion on the road network, and pollution, whilst encouraging healthier travel choices to improve physical and mental wellbeing.

Inventory

2.2.3 Our footway network equates to 2,640 kms

2.2.4 The revised footway hierarchy and associated inspection regime is documented in the 'Dorset Highways: Code of Practice for the Classification of Highway Safety Hazards & Defects.'

2.2.5 Confidence in this asset is good. A planned combined inventory / condition survey will firm up inventory attributes.

2.2.6The footway asset is valued at £409million

Footway condition

2.2.7 Footway condition is based on a snapshot of condition in 2018, collected through a high definition camera survey.

2.2.8 These surveys are not totally reliable due to the vehicle mounted camera being on a car, with issues of park cars obstructing the footway.

2.2.9 Footway condition is categorised by grades 1-5 which examples are documented below:

2.2.10 Footway condition categories

Category 1 - As new / free from defects

Category 2 Signs of surface wear

Category 3 - Mid life

Worn surface, minor cracks

Category 4 - Functionally impaired

Some cracking, loss of surface course, fretting

Category 5 - Structurally impaired

Significant structural fails, including subsidence, deformities, potholes

2.2.11 The snapshot of footway condition is represented in the chart below:

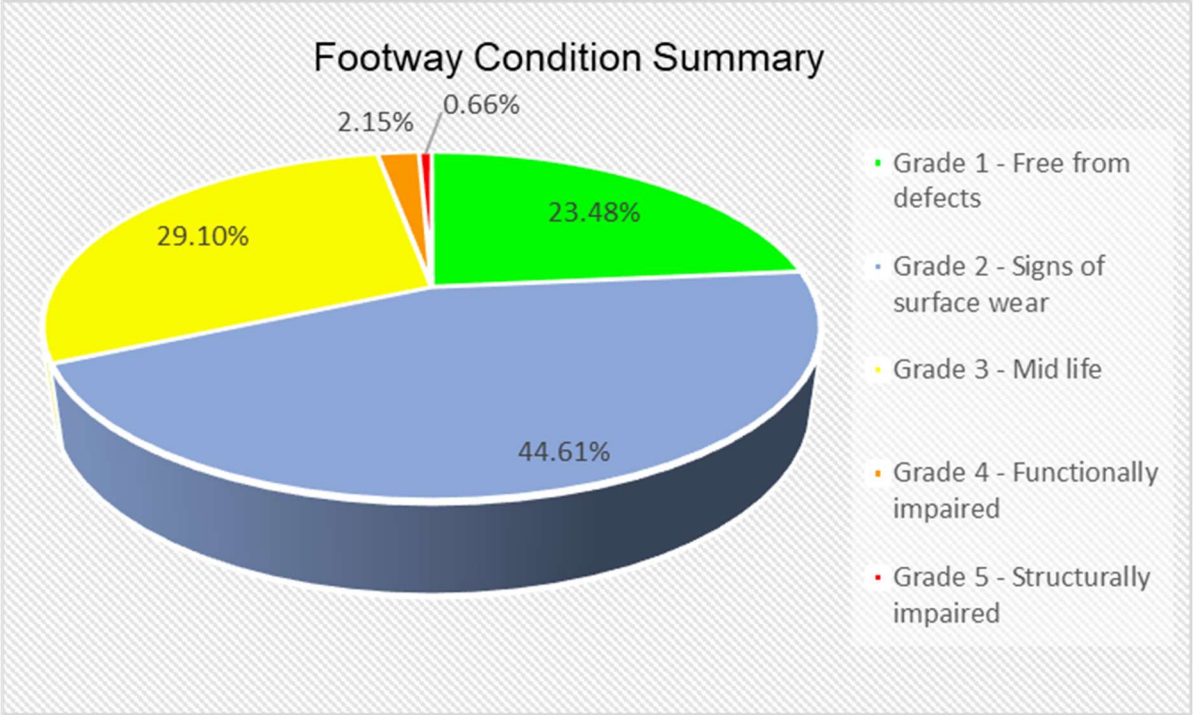


Chart illustrating footway condition showing less than 1% in the worst, category 5 condition. Our feeling is that the reliability of the data would mean that this figure is in fact higher.

2.2.12 A footway condition data refresh is required using alternative methodology

Action – Consider appropriate footway condition survey methodology and commence data collection. Trial of Vaisala camera mounted on a measuring wheel.

2.2.13 Investment scenarios

Capital

Lifecycle planning using the UKRLG Footway Lifecycle Planning Toolkit suggests an annual capital investment of £1.5million is required to hold current condition.

Experience suggests that this figure is a little on the high side and we need to review the lifecycle planning models to look at the deterioration rates.

Works needs to be done to collect a reliable data set and look at the deterioration models in the toolkit to develop a more accurate projections.

Action – Develop lifecycle plans for our footway asset

Revenue

2.2.14 Current policy is to reinstate modular paving in the footway with asphalt for the purpose of a safety repair. Estimates indicate we would require an additional revenue investment of £500K per year to reinstate with consistent materials.

2.2.15 The current backlog in footway maintenance is estimated to be approximately £19.5million

2.2.16 Footway Maintenance Strategy

Short term

The footway asset is managed through safety inspection and defects repaired in line with the Code of Practice for the Classification of Highway Safety Hazards & Defects.

Modular paving is reinstated with asphalt to ‘make safe’.

We need to consider our future approach to :

- Clearance of leaves (sweeping)
- Prevention of formation of ice
- Modular reinstatements in prestige / heritage areas

Medium to longer term £500,000 annual capital investment

Backlog of work identified based on September 2018 snapshot of condition (focus on condition category 3—5, high defects)

Treatments include the following:

- Patching
- Slurry sealing
- Reconstruction / resurfacing
- In-situ recycling
- Replacement of modular paving with asphalt where possible, including imprinted asphalt

Image Footway slurry seal

2.2.17 Footway outcomes

- Increased use of footways
- Improved public perception of footways and accessibility
- Low maintenance materials, reducing reactive liabilities
- Less risk to our workforce associated with lifting and cuttting
- Improved health and wellbeing
- Less congestion on roads / pollution

2.3 Cycleways

2.3.1 The Government have set out a vision for walking and cycling recognising the important role cycling has in improving health and reducing pollution and congestion.

2.3.2 In line with Dorset Council priorities to promote healthier lifestyles; alternative travel choices are being encouraged in the form of walking and cycling. This supports personal wellbeing and will also seek to address issues around road congestion and in some areas the air pollution caused by motor vehicles.

2.3.3 The national cycle network (NCN) includes off and on road routes and is separate from this network. The NCN network is managed through the carriageway asset and was recognised in the carriageway hierarchy /resilient network.

Transforming Cities Fund (TCF)

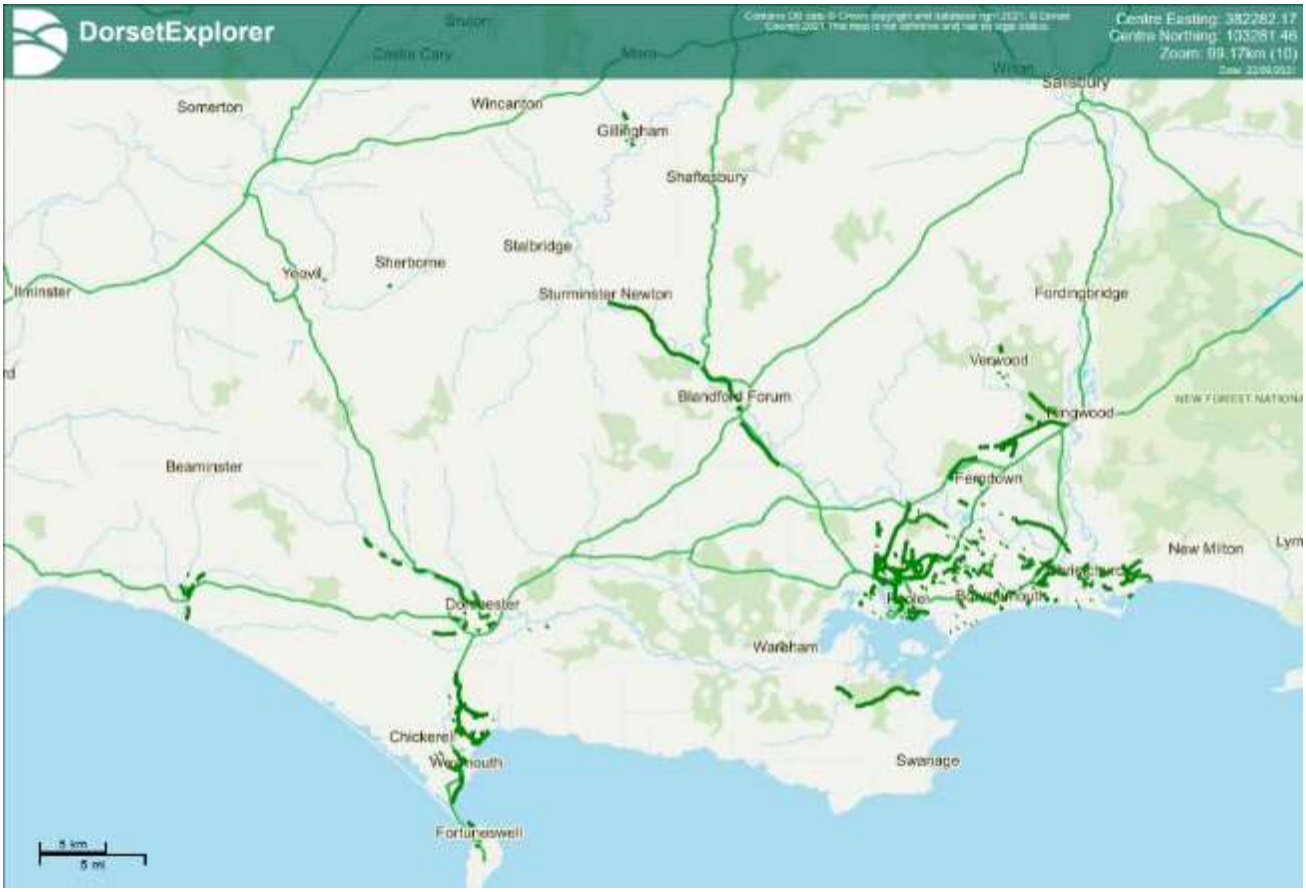
2.3.4 Dorset Council, in conjunction with Bournemouth, Poole and Christchurch (BCP) Council have been awarded £79million to improve sustainable infrastructure in the south east area of Dorset.

2.3.5 This will help to transform alternative travel choices; connecting local people, local jobs and education. The changes to the travel network will also reduce congestion in the region and address the Council's climate aspirations.

Cycleway Inventory

2.3.6 With the drive to promote walking and cycling, new cycleway infrastructure has been constructed included that ahead of the 2012 Olympic event. Much of this network has not been quantified, and not routinely inspected, which puts the authority at risk of third party claims. Some high use cycleways are being inspected.

2.3.7 An exercise carried out in conjunction with Sustrans quantified the extent of our 'traffic free' cycleway networks. These routes are mapped in Confirm and form the bases on our network inventory.



2.3.8 A project is underway to develop a maintenance hierarchy that will inform future inspection and maintenance strategy, that includes these cycleways and other definitions as set out in the national guidance.

Action – To complete the cycleway hierarchy project and implement an inspection regime

Cycleway condition

2.3.9 Condition data has been quantified through this survey, and provides a crude, overall assessment of these cycle routes.

It suggests the following:

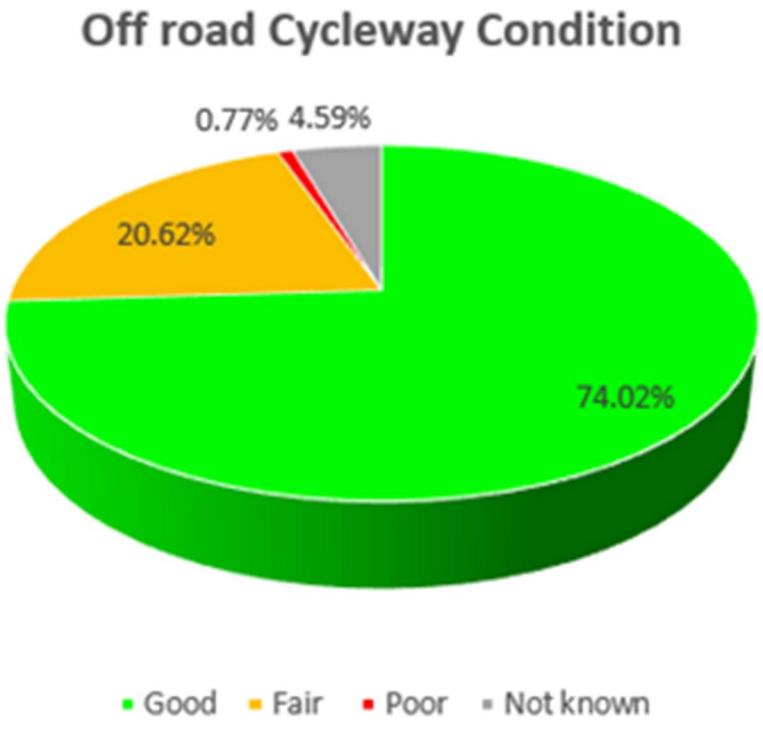


Chart illustrating 'traffic free' cycleway condition assessment

2.3.10 The chart shows almost ¾ of the network in good condition, though the confidence in this data is low.

2.3.11 We have commenced a pilot project using Road AI technology, to capture cycleway condition with a Smart phone mounted on a bicycle, processing images through artificial intelligence to identify defects and summarise overall condition.

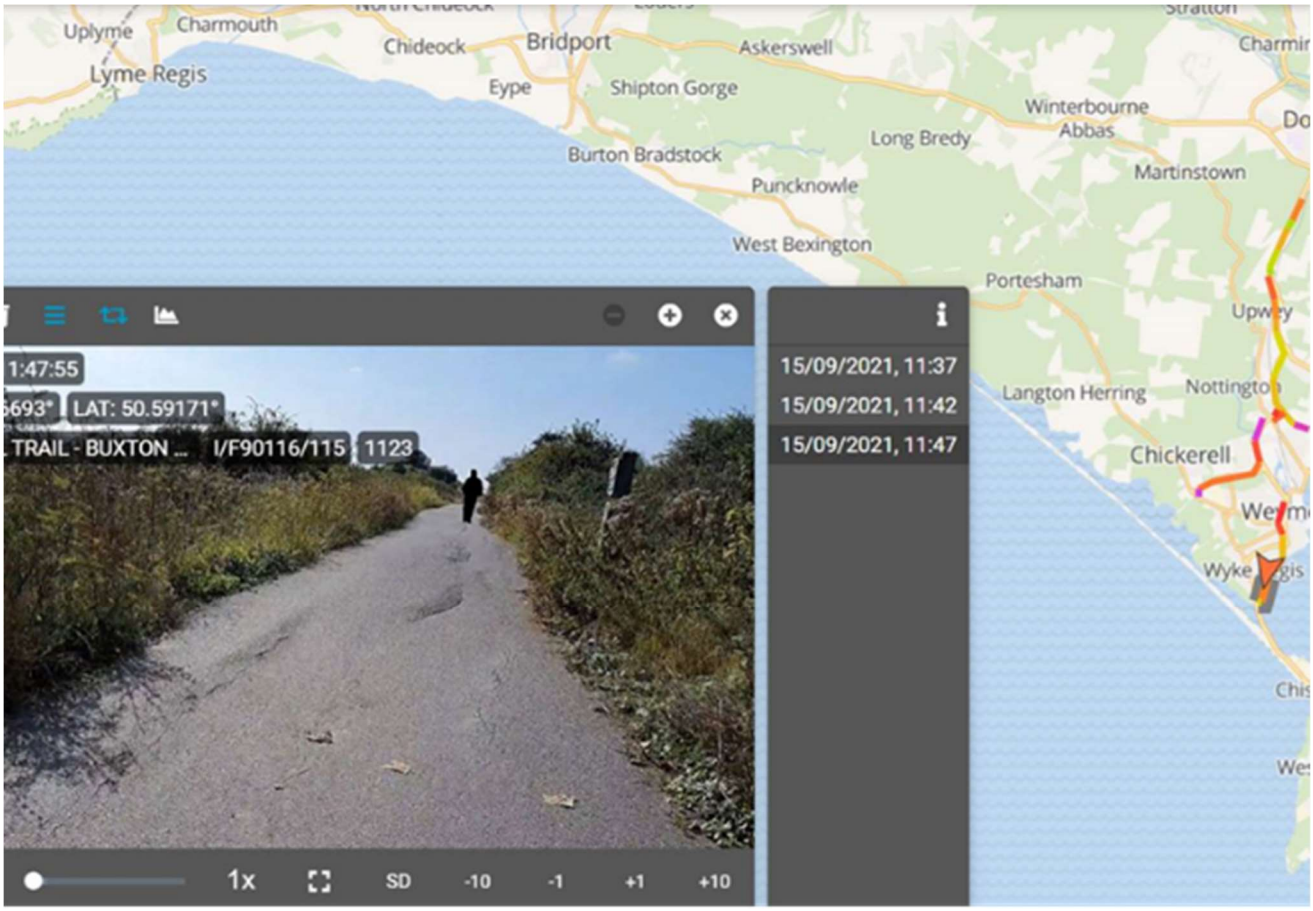


Image illustrating cycleway condition data capture method

2.3.12 This project will be progressed to explore ways in which we can capture this cycle network condition data.

Action – To roll out cycleway condition data capture survey.

2.3.13 There are concerns about additional cycling infrastructure and a risk that the cycleways could fall into neglect if there is no budget or strategy for post construction maintenance of these assets.

2.3.14 The infrastructure constructed ahead of the 2012 Olympics in Weymouth is a good example of this (see illustration of condition below).

Illustration of cycleway condition (0% - purple being poorest condition)

2.3.15 Cycleway investment scenarios

With the absence of any valid comprehensive condition data we are currently unable to project future investment requirements. The completion of the inventory and condition data actions will provide the data required to complete this exercise in the future.

2.3.16 Cycleway Maintenance Strategy

Short term

The cycleway asset is managed through safety inspection and defects repaired in line with the Code of Practice for the Classification of Highway Safety Hazards & Defects.

We need to consider our future approach to:

- Clearance of leaves (sweeping)
- Prevention of formation of ice

Medium/Longer term

Investing £200K annually supported through corporate investment

Schemes to be identified.

Some shared use (walking and cycling) routes have been identified and are funded through our footways budget.

Separate bids have secured additional funding for cycleway infrastructure where we have collected some initial data, focussed on sites with subsidence (structural failure), and longitudinal cracks.


2.3.17 Cycleway outcomes

- Increased walking and cycling
- Improved knowledge of inventory / condition
- Improved public satisfaction linked to cycleways
- Improved health and wellbeing
- Less congestion on roads / pollution

2.4 Bridges and Structures

2.4.1 Bridges and structures are essential to support the carriageway network. Without them, a continuous highway network would not exist. Around 10% of this stock is covered by a form of heritage protection, either listed building, or scheduled monument classification.

2.4.2 The other major class of highway structure is retaining walls, provided to overcome a difference between highway and adjacent ground levels where it is not practical for economic or engineering reason to construct an embankment or cutting.

2.4.3 The remaining minor groups of structures in Dorset, are cattle grids and fords. There are two individual structures that do not fit conveniently into any group are Weymouth Town Bridge and Beaminster Tunnel.

2.4.4 Bridge inventory

Asset Group	Number	Confidence Level in Extent of Asset	Notes
Bridges	846	98%	All highway bridges with span of 1.5m and over, except pedestrian underpasses
Pedestrian Underpasses	11	100%	Often have associated pumping operational requirement
Culverts	288	95 %	Small span structures less than 1.5m span down to 0.9m span.
Footbridges	93	98%	Adjacent to or over the carriageway. Includes bridges supporting cycle and equestrian use.
Rights of way	47	100%	Only those larger bridges currently allocated to Bridge Management to inspect and maintain
Retaining walls	152	20%	Walls supporting the highway or retaining ground above the highway. Number only includes those on regular inspection regime
Cattle Grids	11	95%	
Town Bridge, Weymouth	1	100%	Bascule Bridge with significant annual operational requirements
Beaminster Tunnel	1	100%	

2.4.5 As can be seen above; the largest gap in inventory knowledge relates to retaining walls. The number of these that are included on the inventory with relevant asset data is very low, compared to the number of retaining walls that can be observed alongside the highway. There is a basic list of locations, but no validation of this data or recording of any attributes against this asset, has been undertaken.

Bridge condition

2.4.6 The condition of the bridge stock is measured as an average of all the individual bridge condition scores weighted by bridge size. The average score includes the condition of all elements of a bridge (BCIav). The critical score only includes those element score that directly affect structural safety (BCIcrit).

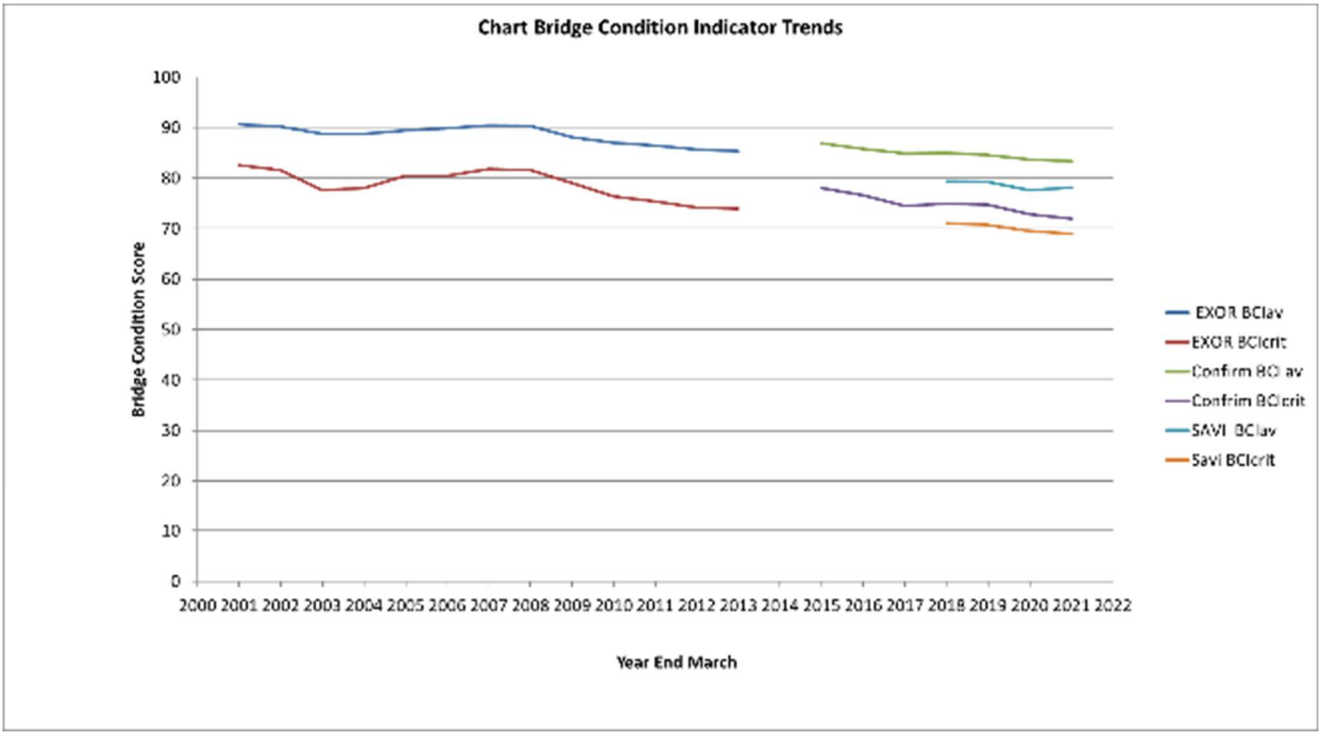


Chart illustrating the declining trend in average bridge condition score

2.47 The bridge condition indicator shows a declining trend in bridge condition year on year, based on the current level of annual investment, which suggests that it is deteriorating more quickly than we are able to maintain our bridge stock, based on current investment.

2.4.8 Over the 20 years the condition has been reported using BCI figures there has been a steady decline.

2.4.9 The SAVI figures are consistently lower because the worst part of any span is used in the evaluation and weighted with the area of the entire bridge.

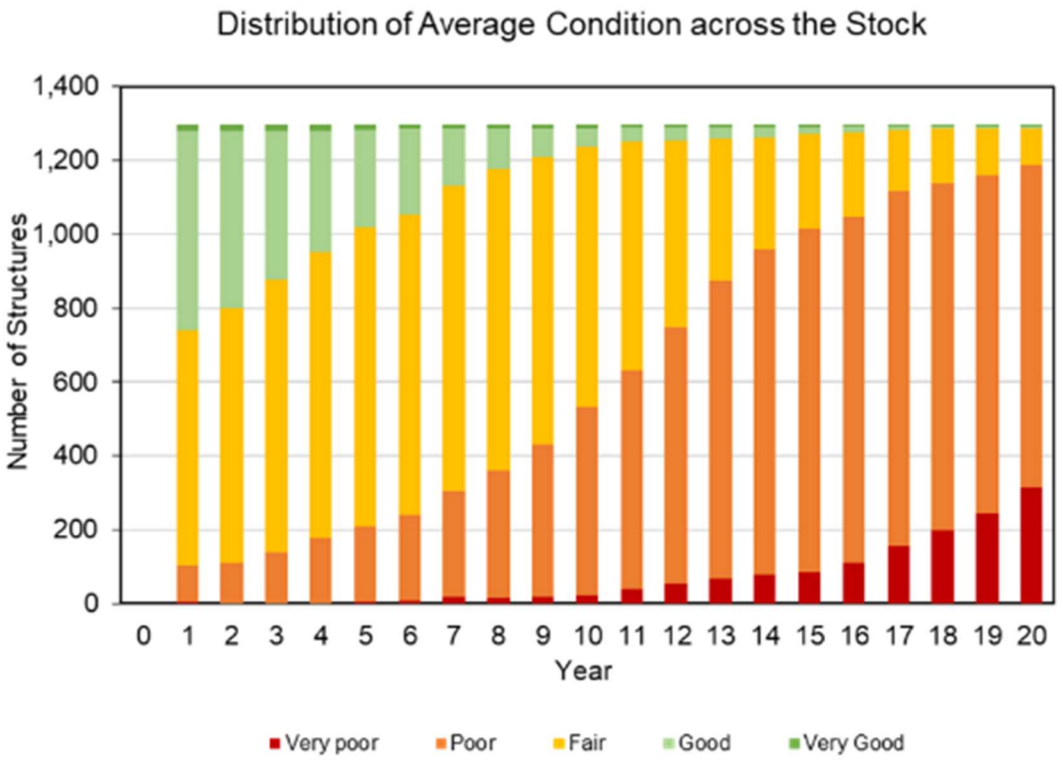
There is a possible anomaly in the SAVI figure for the BCIav which shows a marginally increase which is not reflected in any of the other figures. A mid-year run in November 2021 on SAVI shows the BCIav returning to the long term trend

2.4.10 Bridge investment scenarios

- Scenario 1 Current investment £1.9million per annum

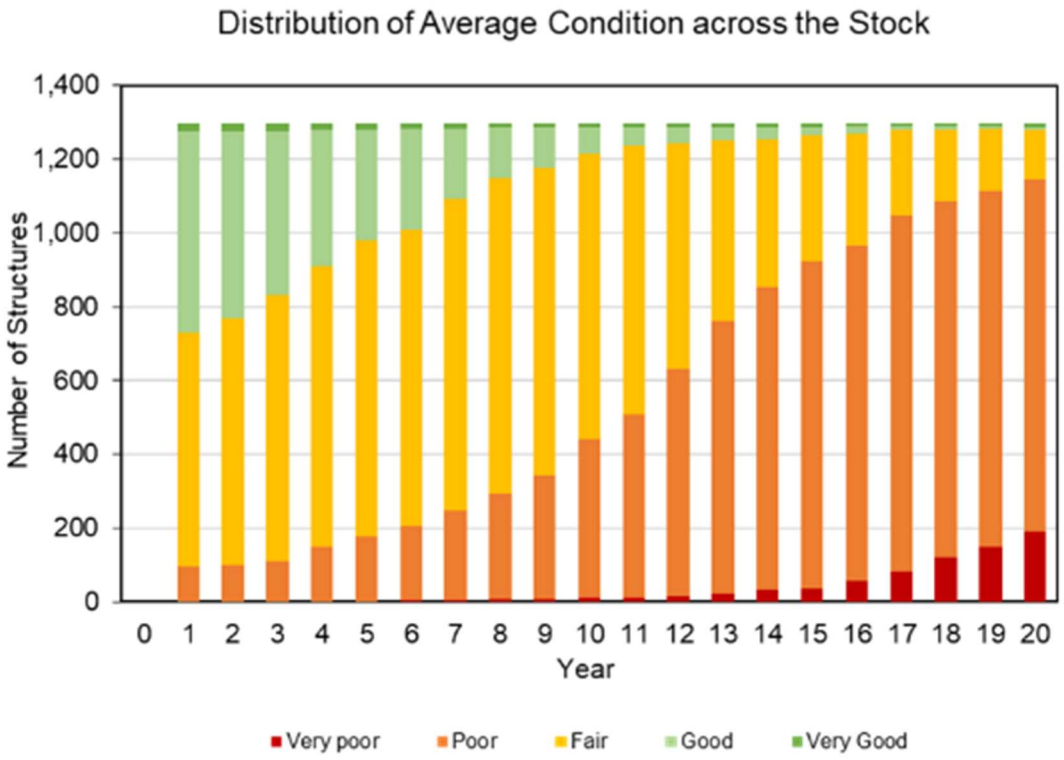
Bridge stock deteriorating from

Investment at the current level of £1.9m per year in bridges, over a 5 year period, will see the average condition fall from BCIav = 78.9 to 73.3



- Scenario 2 Double annual investment to £3.8miillion

Doubling the investment to £3.8m per year would slow the deterioration and the fall from BCIav = 78.9 to 74.6 over twenty years.



2.4.11 Continuing to invest at the current level, or even double that, is shown to result in a continuing worsening in condition over a 20 period and a drift towards increasing numbers of bridges in the poorer condition bands.

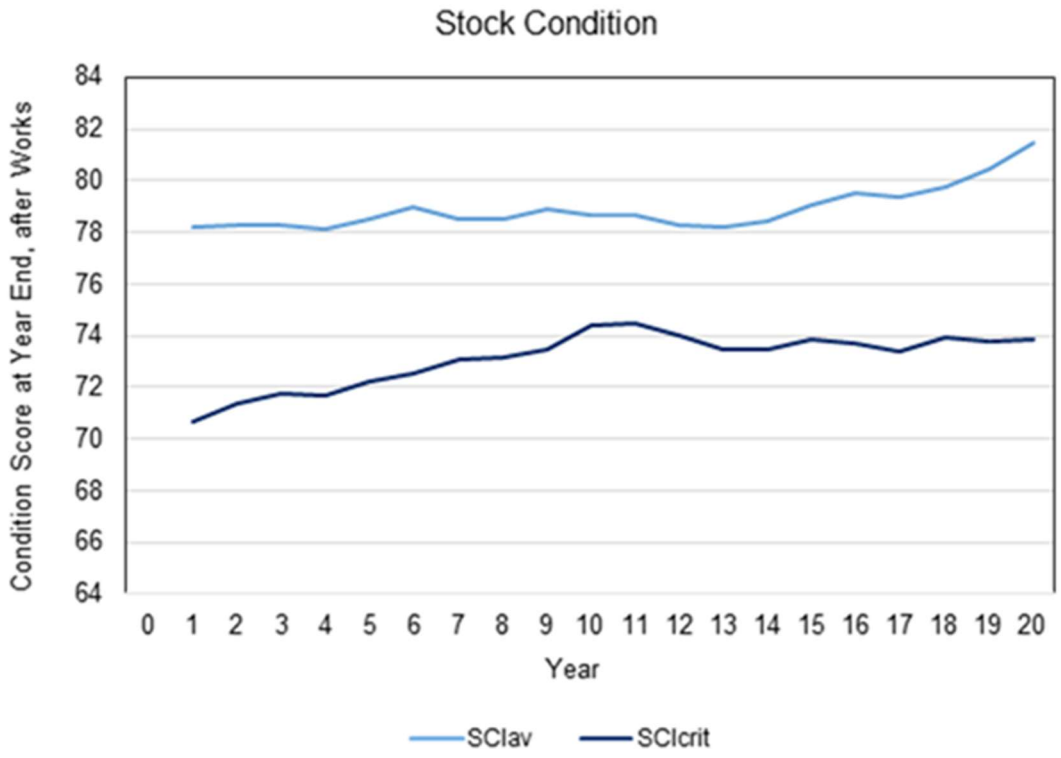
2.4.12 The rate of deterioration accelerates around years 8 to 10 of the 20 year plan.

2.4.13 Comparing figures calculated directly from the confirm database and using the tools provided for the WGA assessment for the years 2018-20 show the same trend.

2.4.14 The WGA figures are consistently lower because the worst part of any span is used in the evaluation and weighted with the area of the entire bridge. Whereas for the directly calculated figures one poor span has less influence as it is only given weighting for the area of the relevant span.

- Scenario 3 Improve condition - Invest £10million per year

	2021	2031
SCI ave	78.1	81.5
SCR crit	70.5	73.9



2.4.15 The total maintenance backlog for our bridges is estimated to be £317million

2.5.16 Bridge Maintenance Strategy

Short term

Continue with 2 yearly general inspections of all bridges: collecting condition data and identifying defects that require maintenance.

Develop risk-based approach to principal inspections of bridges to determine need and frequency for each structure – currently 10% of stock every 6 years.

Commence scour risk assessment of bridges – major cause of structural failure

Develop a hierarchy for structures for maintenance investment based on network hierarchy, local factors and constraints.

Retaining walls - continue with reactive inspection and maintenance strategy

Medium / Longer term

Maintain and review prioritisation of 3 year forward maintenance plan

Investing £2million annually to include a corporate top up.

2.4.17 Bridge outcomes

- Managed decline of the condition indicator
- Resilience of the network facilitated by bridge assets

2.5 Safety Fences

2.5.1 The purpose of safety fences is to redirect errant vehicles back on to the highway. They are located on the central reserves of dual carriageways to reduce the risk of collision with traffic travelling in the opposite direction and at the side of the road to protect drivers from hazards.

2.5.2 Safety fence inventory

In Dorset there are seven different types of safety fence. The vast majority of these provide ‘standard containment’ and are designed to redirect vehicles up to 1.5 tonnes, approaching at 70 mph, at an angle of 20 degrees. They will be less effective for larger vehicles, higher speeds and greater angles of approach.

		SSOBB	DSOBB	DROBB	SSTCB	DSTCB	UCB	Other	TOTAL (m)
Road Class	A	10497	947	135	7647	22217	333	483	**42259**
	B	697	0	0	0	0	23	0	**720**
	C	1118	0	0	561	0	34	0	**1713**
	D	446	0	0	255	0	140	0	**841**
TOTAL (m)		**12758**	**947**	**135**	**8463**	**22217**	**530**	**483**	**45533**

Key

SSOBB - Single sided open box beam

DSOBB - Double sided open box beam

DROBB - Double rail open box beam

SSTCB - Single sided tensioned corrugated beam

DSTCB - Double sided tensioned corrugated beam

UCB - Un-tensioned corrugated beam

Table showing safety fence inventory by road class and fence type

2.5.3 Inventory data is held in Confirm, and is considered to be good with a high level of confidence.

Safety fence condition

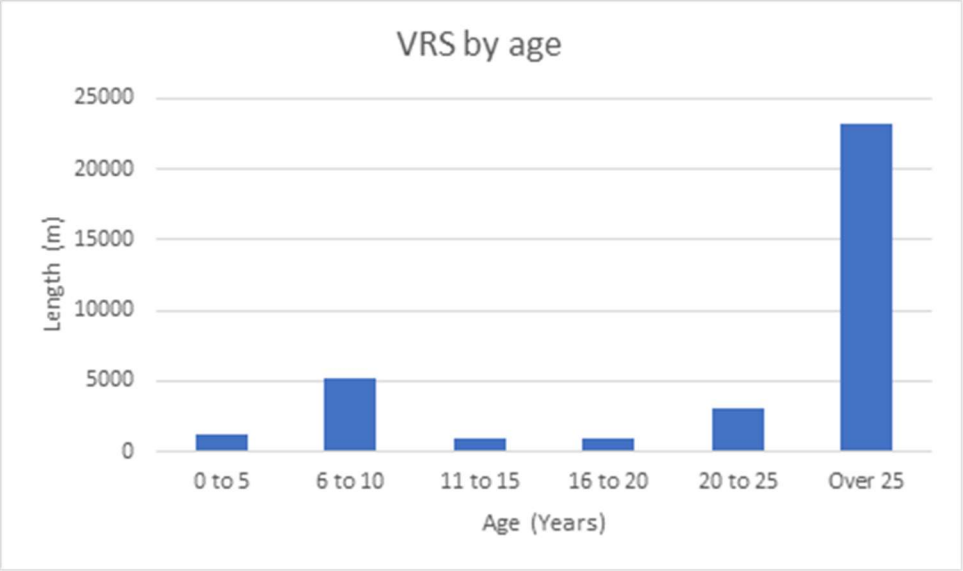
2.5.4 The visual inspection records the condition of all of the elements (posts, rails, connections, terminations etc) of the asset. Any visual deterioration that

might affect the capacity of the part, or whole system, will result in the part being replaced.

2.5.5 In addition to appearance, there is a checklist of other features to be checked on a sample basis. This includes: height above verge, distance from kerb the tension in the bolt of the connections measured by a torque wrench

Action – Develop a means of summarising safety fence condition to develop investment / maintenance strategies

2.5.6 The expected life of a safety fence as quoted by the Transport Research Laboratory (TRL), in their report to the Highways Agency on the Whole Life Cost Benefit Analysis for Median Safety Barriers is 25 years.



2.5.7 The figures indicate that 67% of the safety fencing is already over 15 years old. Therefore if no renewals take place in the next 10 years 78.5% of the Dorset's safety fence will have exceeded its expected service life by 2031. This risk is mitigated through safety inspections.

Safety fence investment scenarios

2.5.8 We currently haven't produced any investment scenarios against this asset.

Action – Produce lifecycle projections of investment required to implement an asset replacement strategy

2.5.9 Safety fence maintenance strategy

Short term

2 yearly safety inspection

Medium / long term

Replace when no longer serviceable

2.5.10 Safety fence outcomes

- Ensure safety is maintained
- Recoverable works are completed to damaged assets

2.6 Drainage

2.6.1 The role of the drainage asset is to capture water falling onto the road or footway surface, to then remove and convey the water to natural outfalls, including streams, or other watercourses.

2.6.2 These assets are designed to -

- Prevent the accumulation of surface water on carriageways, footways and cycleways, which can freeze in the winter months.
- To avoid the erosion of side slopes/verges
- Reduce future maintenance liability by minimising water damage to the highway structure.

2.6.3 A significant proportion of the maintenance of the drainage asset relates to revenue funded, cyclic and reactive maintenance activity.

2.6.4 In 2012-2013 a policy decision was taken by the former Dorset County Council to reduce funding in these essential activities which meant we proactively empty gullies on the resilient network only, once per year.

2.6.5 In 2014 we reintroduced grip cutting and digging ditches through capitalisation. All other drainage maintenance is ad hoc, and reactive, in response to flooding enquiries or inspection.

Climate impact on drainage

2.6.6 Our drainage asset is one of those most impacted upon by the effects of climate change, with incidents of intense rainfall occurring more frequently.

2.6.7 Much of our drainage infrastructure includes historically installed systems, much of which may be under sized or restricted capacity based on today's needs.

2.6.8 Some of these systems discharge into statutory undertakers systems, which is dependant on those being maintained.

2.6.9 Others will discharge into ditches across private land, that are often no longer maintained by the landowners, or into rivers that have limited capacity due to a build up of silt.

2.6.10 This issue is exacerbated by land water management issues whereby agricultural practices or failure to maintain ditches to channel water, are adding to the problem, with both water, soil, aggregates etc being washed onto the highway.

2.6.11 It is imperative that we address these issues to protect network resilience, and homes and businesses from flooding. To address these issues will require multi agency and landowner co-operation on a large scale across the county.

Drainage inventory

2.6.12 Most of our drainage inventory is based on historic inventory data.

Drainage Gullies.	No.	90556
Linear 'Aco' Drainage Channels (C/ws & ft/ws).	No.	875
Manholes to Highway Drainage.	No.	16658
Catchpits to Highway Drainage	No.	294
Interceptors to Highway Drainage	No.	14
Highway Storm Water Carrier Drains.	Km	1459
Highway Gulley Connection Drains.	Km	509
Highway French Drains.	Km	34
Culverts – (Structures <0.9 metres).	No.	2217
Highway Verge Ditches.	Km	726
Highway Verge Grips.	Km	150
Outfalls, Soakaways & SUDS.	No.	357
Storm water pumping stations.	No.	10

2.6.13 These assets are recorded in Confirm.

2.6.14 The value of the drainage asset is costed into carriageways (for valuation purposes).

2.6.15 We did a drainage data collection exercise in 2019 on the resilient roadwork and targeting flooding hotspots to verify drainage inventory. This data was loaded into our Confirm software. We haven't actioned the outputs from that exercise.

Action – To review data drainage inventory data imported into Confirm

Drainage condition

2.6.16 Our current strategy is to proactively empty gullies on the resilient network once per year and cutting grips every two years, with all other drainage activity being ad hoc and in response to inspections and enquiries relating to highway or property flooding.

2.6.17 Data suggests that our current approach is making us increasingly reactive, due to the increased number of weather events and intense rainfall.

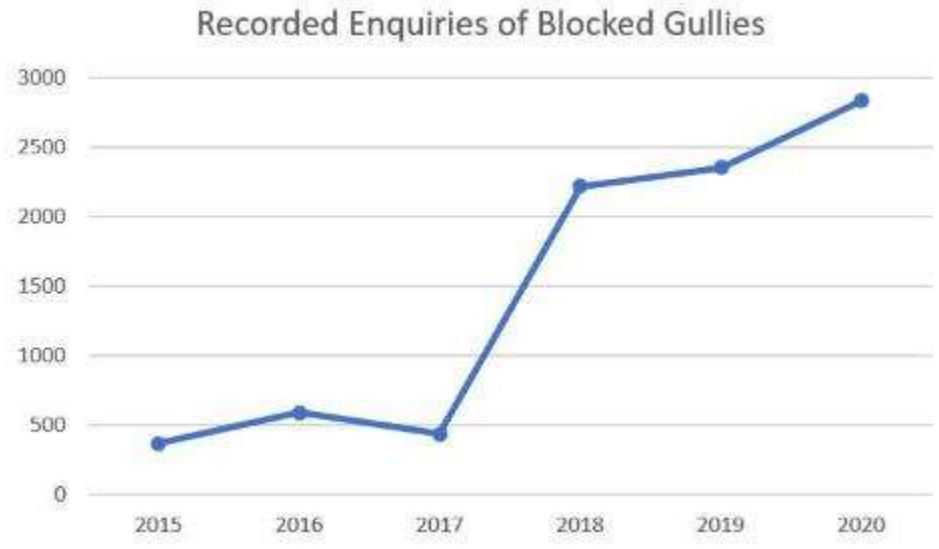


Chart showing the number of reported incidents of highway flooding

2.6.18 The increasing trend year on year, highlights our reactive, approach to gully maintenance, and reflects on our policy to only empty gullies proactively on the resilient network.

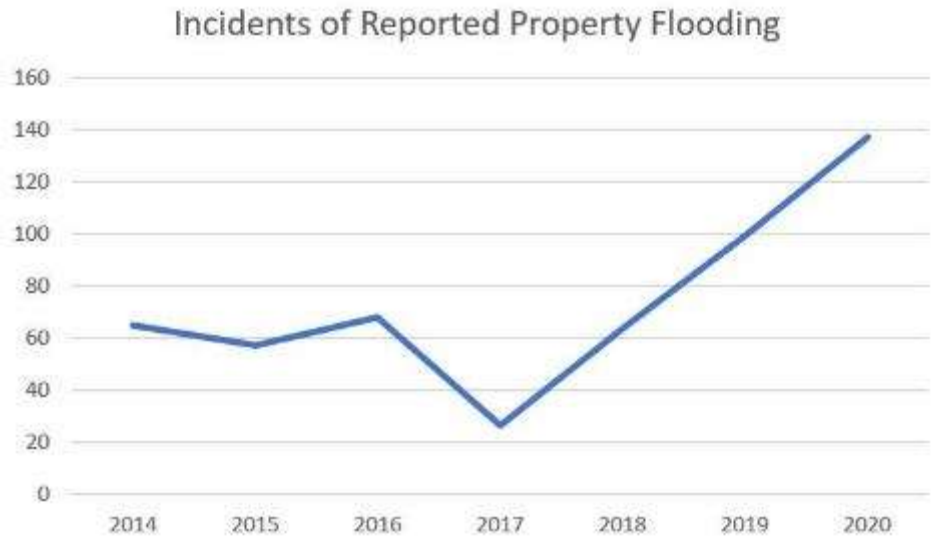


Chart showing number of reported incidents of property flooding

2.6.19 This again demonstrates an increasing trend in reported incidents involving property flooding, further demonstrating the impacts of climate change.

2.6.20 Public perception of our approach to drainage maintenance supports that we need to review our management of this asset, with the public feedback through the National Highways and Transport (NHT) Public Satisfaction Survey suggesting a drop in satisfaction in :

- Provision of drains,
- Keeping drains clear and working

2.6.21 Drainage investment scenarios

We have considered the cost of reinstating proactive drainage activities across all of our drainage assets. These would be revenue funded activities.

2.6.22 We have therefore identified the following revenue funding requirements:

- Reinstate proactive gully emptying on the highest risk non-resilient network – annual cleansing £200K (revenue) funding per year + purchase of a gully emptier £185K. This may reduce the burden on existing resources to do ad hoc gully emptying.
- Reinstate cyclical jetting of pipe work, cleansing of manholes/catchpits £548,600 (revenue)
- Cyclic side verging programme on a quarter of the rural network each year £100,000 (revenue)

2.6.23 We also need to address the issue of capacity for tipping gully emptying waste. We currently have a single site at Gibbs Marsh Depot in the north.

2.6.24 Drainage resilient sites (HIRAM) - We currently have 147 drainage sites countywide that impact on resilience and therefore require investigation. Approximately £600,000 of capital is invested annually into the investigation and remedial of these issues.

Gully emptying

2.6.25 We are working on a project to develop a risk based approach to drainage maintenance focusing on high risk areas where increased maintenance is required, at the expense of low risk areas which do not require the same level of visits.

2.6.26 Data sets feeding into this project include:

- Enquiries relating to highway flooding
- Flood risk maps
- Recorded silt levels

- Potentially data set identifying standing water from road condition survey

Action – To complete the risk based approach to gully maintenance and quantify funding required to implement this

2.6.27 Drainage maintenance strategy

Short term

Maintenance issues and flooding incidents are inspected in line with of Practice for the Classification of Highway Safety Hazards & Defects

Planned gully emptying—once per year on the resilient network

Planned grip cutting—once every two years

Non resilient network drainage maintenance is ad-hoc based on inspection / enquiries

Capital grip / ditch cutting programme

Medium / Longer Term £900,000 annual investment to include corporate top up.

Drainage schemes impacting on network resilience or causing property flooding are ranked in HIRAM (a Network Resilience toolkit) based on risk.

Schemes identified through inspections / flooding incidents are investigated through site 'dig downs'

Liaison with the Flood Risk Management Team

Small community drainage projects (dig downs) to remedy local issues

2.6.28 Drainage outcomes

- More targeted maintenance at high risk sites
- Reduce the number of people killed or seriously injured
- Reduce number of collisions linked to flooding
- Protecting network resilience
- Reduce the number of recorded incidents of highway flooding
- Reduce the number of recorded incidents of property flooding

2.7 Road markings and studs

2.7.1 The road markings and road studs asset is to enforce, inform and direct highway users, to improve road safety and provide information.

2.7.2 They are therefore an essential safety feature on the highway which will manage driver behavior, especially at night and in foggy conditions.

2.7.3 Future proofing these assets, especially road markings, is essential in light of the emergence and future of autonomous vehicles. If the markings can't clearly be seen, then these vehicles will be unable to operate in the Dorset area.

Roadmarkings / studs inventory

2.7.4 Road markings /studs are not recorded separately as point or linear items in Confirm. There is currently considered to be limited value in recording this.

Road marking and studs condition

2.7.5 Road marking condition has been assessed using a combination of Ecodyne surveys measuring reflectivity, and Road AI to assess visibility of the roadmarkings across our whole of our surveyed network.

2.7.6 Road studs on our principal (A) road network have been assessed using a Retroreflectivity survey.

2.7.7 Current condition – Roadmarkings (A) Roads reflectivity

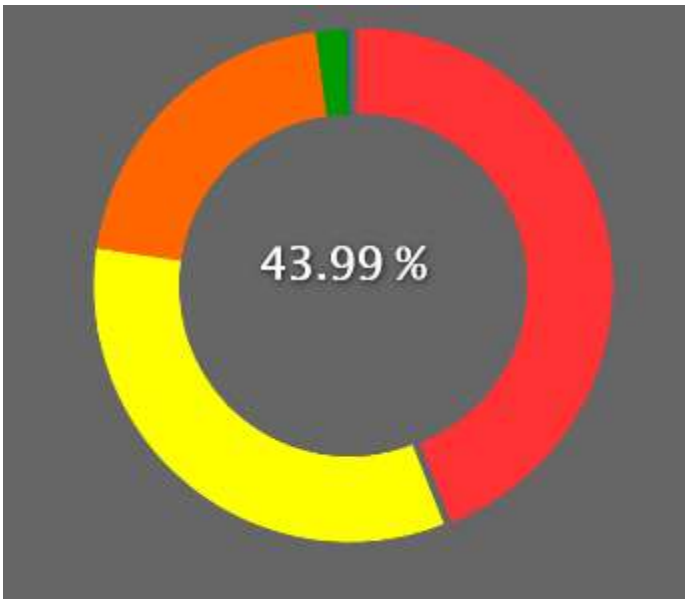


Chart illustrating A road marking reflectivity

2.7.8 This data suggests a large proportion of our road markings are in the lowest bracket of reflectivity, with 43.99% in the worst banding (ie the least reflective).

2.7.9 Current condition – Roadmarkings (A) Roads Visibility

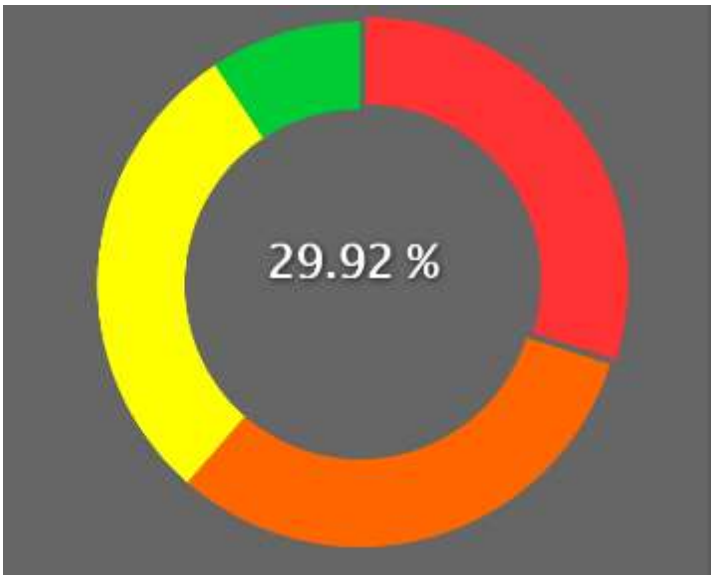


Chart illustrating network wide road marking visibility

2.7.10 The road marking visibility assessment further supports concerns about condition, with 29.92% in the lowest band (ie poorest visibility). The summary data suggest 61.4% is in the two lowest bands of visibility.

2.7.11Current condition – Road studs (A) Roads Reflectivity

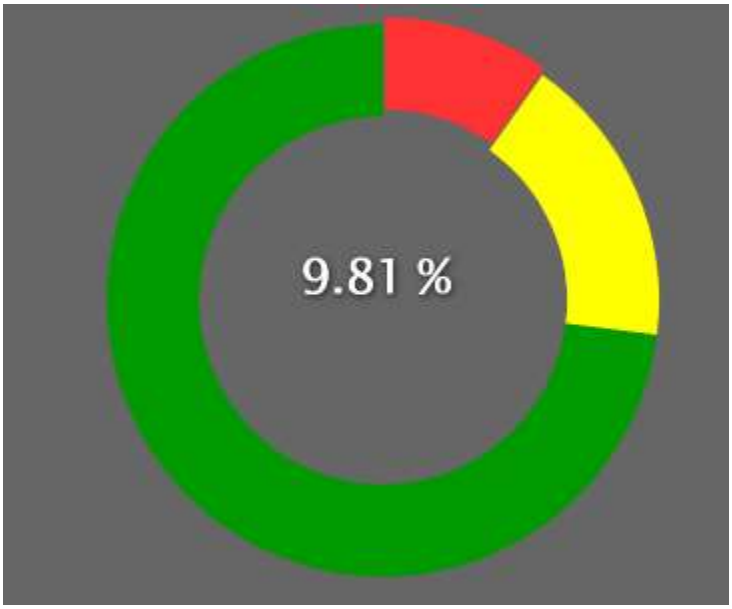


Chart illustrating road stud retro reflectivity on our principal road network

2.7.12 This data suggests road studs on our principal A roads are generally showing good levels of reflectivity, with only a small percentage (9.81%) falling into the low category banding.

Road marking investment scenarios

2.7.13 Projections have been established, based on our road markings visibility data across the network, that address the worst bandings first. These scenarios include:

- Scenario 1 Removing 0 – 10% (almost half of the reds)

  Annual investment over 5 years £200,000 per year

- Scenario 2 Removing the 0-25% banding (red)

  Annual investment over 5 years £450,000 per year

Road marking / stud maintenance strategies

Short term

2.7.14 Both road markings and studs are managed through safety inspection and defects repaired in line with the Code of Practice for the Classification of Highway Safety Hazards & Defects

Medium / Longer Term—Annual investment £200,000 (to include corporate top up)

2.7.15 Programmes of line and stud replacement based on tackling low reflectivity and visibility focused on the 0-10% category.

2.7.16 One off increased investment for 20221/22 from additional corporate capital funding to accelerate this program to include strategic route line and stud replacement.

2.7.17 Trial on the A37 of the Weatherline + road marking which offers increased reflectivity, improved performance in wet/foggy conditions, and increased longevity.

2.7.18 Road marking studs outcomes

- Improved condition of these assets
- Reduced number of people killed or seriously injured
- Reduced number of collisions

2.8 Non illuminated highway signs

2.8.1 The non-illuminated sign assets deliver on key Service priorities of keeping motorists safe and reducing the risk of collisions through warning and informing, and regulating speeds of motorists, therefore reducing the risk of collisions, and the number of people killed or seriously injured on Dorset's roads.

2.8.2 These signs also provide directional information to motorists, which range from large reflective direction signs on our strategic networks, down to small wooden fingerposts in our rural locations.

2.8.3 In 2013 a policy decision was taken by the former Dorset County Council to remove revenue funding for planned, cyclic sign cleaning.

Non illuminated sign inventory

2.8.3 Sign inventory is based on historic data in our Confirm system. Confidence is fair in the value of this data.

2.8.4 We are undertaking an exercise using the Road AI survey data and images to verify our signs assets held in the system. This is a desktop exercise in which the AI technology has identified all of the signs on our surveyed network. We now need to do the correlation between this and our inventory held in Confirm, adding / removing any signs assets where appropriate.

Action – Complete the inventory correlation exercise using Road AI

Non illuminated sign condition

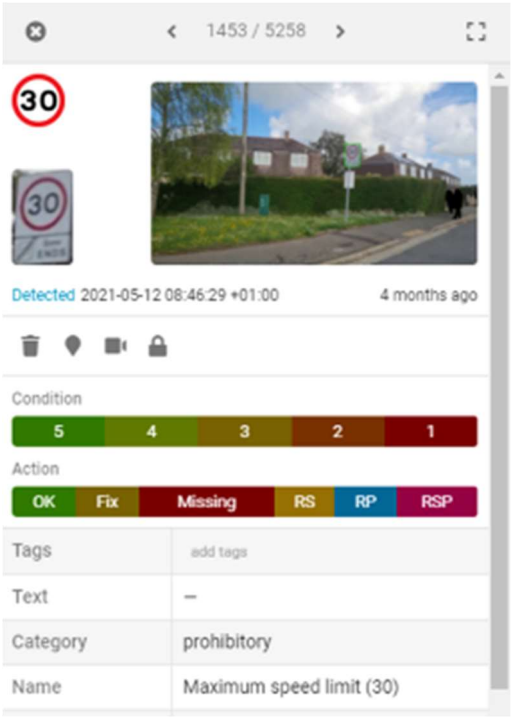
2.8.5 We have no data sets supporting condition assessment.

2.8.6 The NHT Public Satisfaction Survey suggests low public satisfaction with our approach to maintenance of our sign assets, to include:

- cleanliness of road signs and
- condition of road signs

2.8.7 A project is underway to establish sign condition using the Road AI technology. This is a desktop exercise to view the images collected and evaluate the condition of the sign face and the pole.

2.8.8 This is a desktop exercise, and there are limitations to this survey, which may be the imagery itself, or where the pole is obscured by vegetation.



2.8.9 However, this exercise will provide some condition data on which to base future decision making.

Action – Complete sign condition survey using Road AI

2.8.10 Reactive regulatory and warning sign spend

Chart showing actual spend on reactive maintenance to regulatory and warning signs

2.8.11 We are spending increasing sums on unplanned maintenance to regulatory and warning signs, and making safe all other signs.

Non illuminated sign investment scenarios

2.8.12 Capital - We currently do not have enough data to support modelling of future investment requirements associated with capital sign replacement.

Action – To complete sign asset replacement / investment scenarios on completion of the inventory /condition data project

Revenue

2.8.13 Proactive sign cleaning is a revenue funded activity that ceased in 2014 due to restricted revenue budget constraints.

2.8.14 To reinstate sign cleaning activity would require an additional approximate £100,000 revenue funding each year, based on a cycle of cleaning half of the sign stock each year.

2.8.15 This type of activity could also be conducted by the reinstatement of Proactive Maintenance Units, which would cost approximately £1million of additional revenue funding.

2.8.16 Non illuminated sign maintenance strategies

Short term

The non illuminated sign asset is managed through safety inspection, and hazards removed, in line with the Code of Practice for the Classification of Highway Safety Hazards & Defects

Medium to long term - Annual investment £125,000

Aligned to safety inspections; replacement of warning and regulatory signs/posts

A programme of sign replacement to be identified based on strategic routes on completion of inventory / condition survey

Signs to be rationalised in line with the Road Safety Team, and Dorset Council's Rural Roads Protocol.

2.8.17 Non illuminated signs outcomes

- Improved asset knowledge
- Future improvement of public perception of this asset

2.9 Traffic Control and Intelligent Transport Systems (ITS)

2.9.1 Traffic Control and Intelligent Transport Systems (ITS) are the electronically controlled traffic management assets across Dorset's highway network. This group includes items such as traffic signals, pedestrian crossings, weather stations, static and towable electronic message signs.

2.9.2 The traffic control asset is managed through a maintenance contract with Siemens, overseen by Dorset Council, with annual programmes of crossing upgrades.

Traffic control and ITS Inventory

2.9.3 Asset inventory for this group is held in 'Inrix', and confidence in this data is good.

2.9.4 Traffic control and ITS assets can be found across Dorset enabling all vehicular, pedestrian and equestrian travel across the County.

2.9.5 Traffic Signals and Crossings

- 93 Signal Junctions (Traffic lights)
- 59 School Crossing flashing lights (Warning lights for school crossings)

Types of Pedestrian Crossings

- 59 Puffin (Controls and crossing indicators on pole adjacent to pedestrian)
- 56 Pelican (Controls and crossing indicators on pole opposite to pedestrian)
- 44 Zebra (Flashing amber lights on black and white posts on crossing)
- 23 Toucan (Crossing shared with cyclists) 1 Pegasus (Crossing for horses)
- 1 Wig Wag (Flashing warning lights in triangular shape)
- Intelligent Transport Systems (ITS)

112 School Crossing Units (for the control of School crossings)
67 Vehicle Activated Signs(Speed and narrow section control warning)
64 Car Park Signs (Shows current availability for parking in a town)
31 ANPR Cameras (Automatic Number Plate Recognition cameras)
29 CCTV (Monitoring key traffic junctions across the county)
27 Safety & Speed Camera Equipment 27 Blue Tooth Sensor (traffic control sensors)
21 Variable Message Signs (Live travel and safety messages for drivers)
12 Weather Stations (Provides data for winter service)
4 Mobile Variable Message Signs (Works and Major Event noticing)

Action – To review traffic control inventory

Traffic control and ITS condition

2.9.6 An exercise is under way to evaluate traffic control asset condition through the maintenance agreement with Siemens, as part of their scheduled inspections.

2.9.7 Previous assessment of condition suggested a large proportion of traffic control assets were nearing the end of their recommended life.

2.9.8 This is a risk, with some units now containing parts which are becoming obsolete and with issues sourcing such parts.

Action - To quantify the extend of these potential sites deemed obsolete or using old technology and estimate the cost of replacement

2.9.9 Traffic control and ITS investment scenarios

2.9.10 There is currently no funded asset replacement strategy for traffic control assets.

2.9.10 Investment scenarios have been produced using Imtrack (asset software) which projected the following scenarios

- Current investment £0 annual capital investment

Deterioration of asset from a current score of 65.5% to 4.29% in 2036

- Increased investment of £150K per year

This would equate to deterioration of asset condition from a current score of 65.5%, to 11.11% by 2036

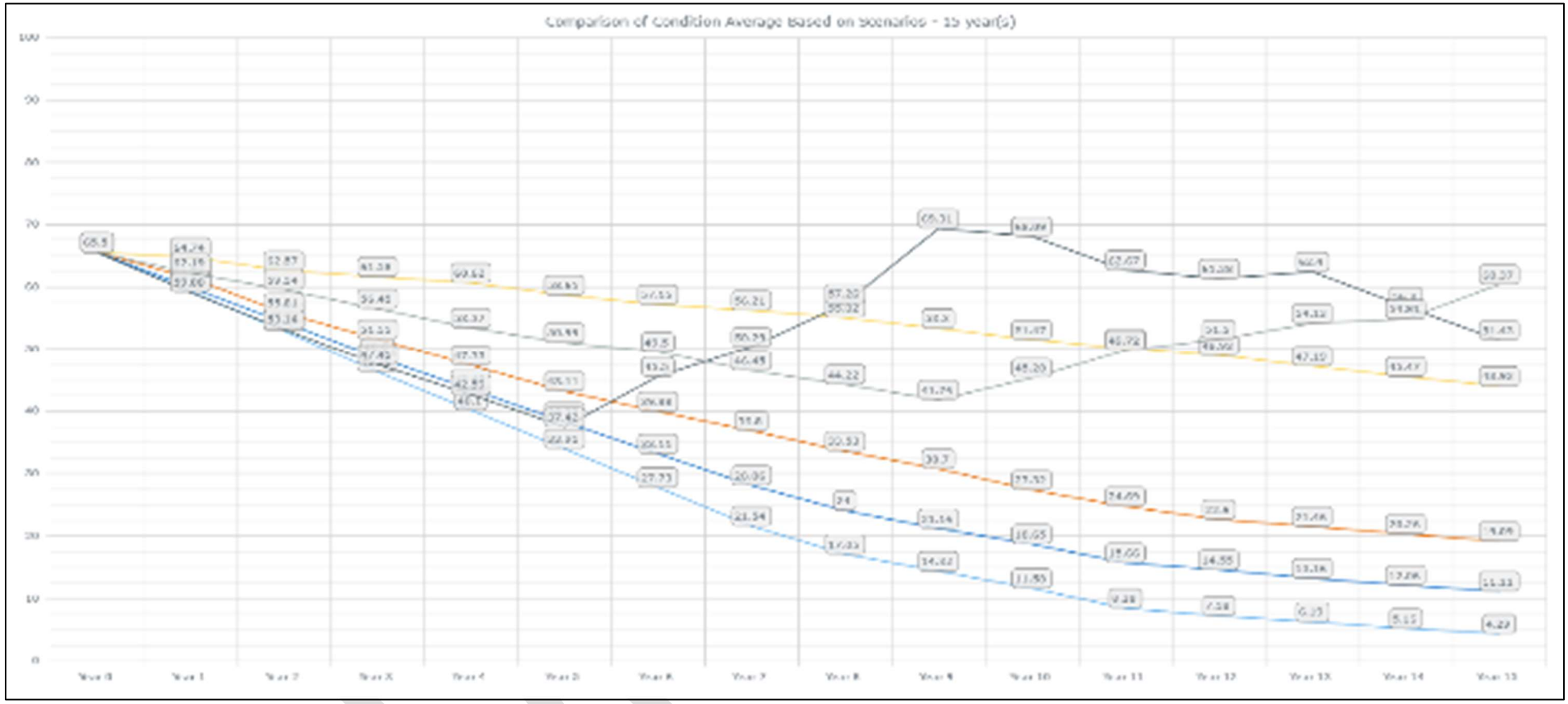
- Increased investment of £600K per year

Projected deterioration of asset condition from a current score of 65.5%, to 19.09 – 43.92% in 2036, depending on the rate of degradation.

- Hold condition

Annual average investment of £1,434,273 is required to hold condition over a 15 year period, based on 50% rate of degradation.

2.9.10 These scenarios are summarized in the chart below.



2.9.11 Reduced activity to other asset groups, eg cutting of verges, repairs to carriageways/footways, is impacting on traffic control units, either through inaccessibility, or disrepair is causing for example loops to break.

2.9.12 The current service provider requires hard standings around these units to inspect/maintain. We will need to build this into future schemes.

2.9.13 Traffic Control and ITS Maintenance Strategy

Short term

There is a maintenance contract in place with Siemens to inspect and repair units.

Medium / longer term

£200,000 LTP funded programme of crossing upgrades

Additional £200,000 annual investment of corporate funds for asset renewal

One off £200,000 LED retrofit programme using 2020/21 Transport Infrastructure Investment Funding

Sites unable to be retrofitted with LED bulbs will be the focus for any future refit if funding is awarded.

Additional £200K programme of replacement funded by additional corporate funding for 2021/22.

2.9.14 Traffic Control and ITS outcomes

- Manage the decline in condition of this asset

2.10 Bus Stops and Shelters

2.10.1 Bus stops and shelters support an accessible bus service across the county.

2.10.2 The vast majority of Dorset's bus stops are physically identifiable with shelters and bus timetables.

2.10.3 Many new assets are being constructed linked to bus infrastructure as part of the Transforming Cities Fund (TCF). Designers have been liaising with the asset team to ensure future maintenance is considered, and that new assets are recorded in the asset register.

Bus stops and shelters Inventory

2.10.4 The team managing these assets are working on a project to verify what assets we have and their location.

2.10.5 We anticipate loading this into our Confirm highways system on completion.

Action – Finalise inventory verification project and record assets in Confirm. To include new TCF assets.

Bus stops and shelters - Condition

2.10.6 There is no data held on condition of bus stops and shelters. Though they are visited routinely to do cleaning.

Action : Develop a methodology for inspection and recording condition

Investment options

2.10.7 We currently have no data to support these projection.

2.10.8 Bus stop / shelter maintenance strategy

Short term

Repairs following reports of vandalism, damage to assets

Shelters are routinely cleaned. Defects reported where they are identified.

Medium to longer term

Replace when no longer serviceable

No current funded replacement programme

Some 106 Developer contributions (plus other funding sources) to replace / construct bus stop / shelter assets

2.10.9 Outcomes

- Increased use of bus infrastructure
- Improved knowledge of inventory / condition

2.11 Street Lighting

2.11.1 Carriageways and footways in urban and sub-urban areas of Dorset are usually lit to assist users of the highway after dark.

2.11.2 Street lighting is not a statutory duty, except in some limited instances, but does help to reduce accidents and the fear of crime.

2.11.3 The highway street lighting asset is externalised and managed through a Private Finance Initiative (PFI) contract with SSE(C&R).

2.11.4 Almost all structural elements in the asset have been renewed and guaranteed until 2032 +5 years; the ongoing maintenance, testing and inspection of the service is carried out by the service provider in accordance with all industry best practice, guidance and statutory requirement.

2.11.5 A modest investment has recently been made in LED lantern technology, reducing energy and carbon and arising from the Challenge Funding 2020/21, following a much larger investment in LED by the private sector service provider themselves. Along with the original PFI replacement programme, these initiatives have now reduced the total asset consumption by over 50% since 2008, saving an estimated £1.3M (at current prices) and over 2,000 tonnes of CO2 (at 256g per kWh) per annum.

Inventory

2.11.6 The inventory for street lighting is of an excellent standard with a high level of confidence in the data held.

2.11.7 The street lighting asset lists some 46,000 individual elements, which includes around 4,600 illuminated traffic signs and bollards.

2.11.8 The service provider, SSE, holds the data on its secure server, within an industry standard software package, maintaining this data themselves in real time.

Condition

2.11.9 The asset condition is held in compliance with all national recommendations for inspection, repair, maintenance and replacement.

2.11.10 Street lighting maintenance strategy

Management of the asset wholly rests with the service provider, who is responsible for all risks however they might arise.

Short term

Inspection, Testing and all necessary maintenance by SSE(C&R).

Longer term

Inspection, Testing and all necessary maintenance by SSE(C&R) until the PFI concludes in 2032.

2.12 Public Rights of Way

2.12.1 The rights of way network is the best way for the public to access Dorset's countryside and is seen as the backbone of our tourism-based rural economy.

2.12.2 The physical asset i.e. the surface of these public rights of way, does not belong to Dorset Council, unless it is on Council land. It is vested in the authority to maintain access and the public have a right to pass and re-pass. The Council has a statutory duty to protect the right of the public to use the public rights of way network, for instance, by keeping them in a safe and accessible condition.

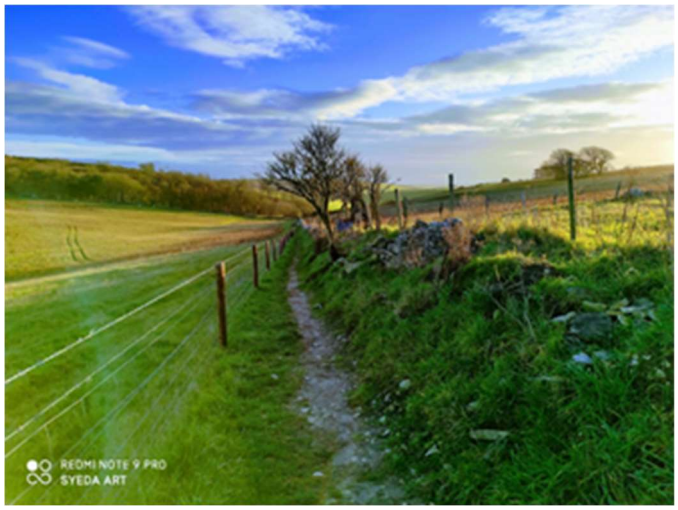


Photo credit Tara Hansford

2.12.3 Dorset Council has a statutory duty to ensure that access furniture such as gates and stiles are maintained in safe and accessible condition. This includes liaison with landowners and enforcement where required to ensure these assets are in a safe condition allowing the public to pass and re-pass unhindered. We know the public enjoy the natural environment in many different ways and are passionate about their rights of access to the Dorset countryside on foot, bicycle, horse, horse-drawn carriage or motorised vehicle.

Inventory

2.12.4 Dorset has over 6,719 public rights of way. The total length of the network is 4,541 km and eight thousand-five hundred hectares of open access land, most of which is in private ownership.

2.12.5 Open access rights extend to heathland, downland, moorland, commons and town/village greens where the public have a right of access on foot.

Photo credit Tara Hansford

Type	No.	Kilometres
Footpaths	4863	2852
Bridleways	1815	1787
Restricted byways	0	0
Byways open To all traffic	41	24
	6719	**4663**
Open access land		11,359 Hectares

Rights of way network by status

2.12.6 Dorset Council is responsible for ensuring that gates, stiles, bridges and other structures are fit for purpose and do not obstruct or deter users by facilitating public access, without having a negative impact on farming operations.

Furniture type	Number
Signposts	6,187
Gates	13,977
Stiles	8,281
Bridges	3,113
Boardwalks	127
Steps	636
Stepping stones	27
Waymark	10,210
Handrails	326
Safety barriers	437
Total structures	**43,321**

Public Rights of Way Condition

2.12.7 There is little known data about these assets. Rights of Way bridges has been identified as an area of focus to consider how we can start to collect valued condition data, to load into our asset management system and look at investment / maintenance scenarios.

Action – Progress the condition data collection project for rights of way bridges primarily. Then consider tools for recording inventory/condition, projections.

Public Rights of Way Investment scenarios

2.12.8 Consideration of investment scenarios will be developed as we improve our asset condition knowledge.

2.12.9 Public Rights of Way maintenance Strategy

Short term

Reactive - responding to enquiries / reports received by the public

Medium to long term £400,000 Annual investment from LTP

Developing methodology for condition of rights of way bridges to inform future maintenance and investment strategy

2.12.5 Outcomes

- Increased use of sustainable travel choices
- Improved health and wellbeing
- Less congestion on roads / pollution

2.13 Future Highways Asset Management Plan Actions

To incorporate the countryside assets including grassed areas and trees.

To develop our environmental and ecological strategy.

3.0 Cross Asset Investment Strategy

3.1 Discussions of how we invest across our highway asset groups is illustrated below, which is based on expected funding (we await confirmation from the Department for Transport on funding from 1st April 2022 onwards).

3.2 The findings from the HAMP were presented the Highways and Transport Task and Finish Group, and the investment strategy was discussed and agreed through a working group associated with this Task and Finish Group.

Asset	**Base budget without corporate top up**	**Minimum required budget**	**Proposed budget 2022/23 onwards (Combined DfT and corporate funding)***
Carriageway	£11.6million	£16.2million	£16.2million
Footway	£0.36million	£1.5million	£0.5million
Cycleway	£0	£n/k	£0.2million
Bridges	£1.359million	£3.7million	£2million
Drainage	£0.5million	£1million	£0.9million
Traffic control	£0	£0.6million	£0.2million
Roadmarkings/ studs	£0.125million	£0.4million	£0.2million
Non-illuminated signs	£0.125million	£n/k	£0.125million
Bus stops and shelters	£0	£n/k	£0
Capitalised maintenance activities	£2.4million	-	£2.4million

This is a five year commitment from 2022/23 onwards.

3.3 Note that this is based on assumed capital funding whilst we await news of future highways funding. The agreed strategy is based on a percentage of funding received for each asset group.

3.4 The Task and Finish Group recognise the need for minimum increased investment in the following asset groups:

- Road markings £75,000
- Cycleways £200,000
- Traffic control £200,000 from 2023/24

3.5 Alternative sources of funding will be sought for these assets.

3.6 The summary of investment scenarios across all highway assets is documented below.

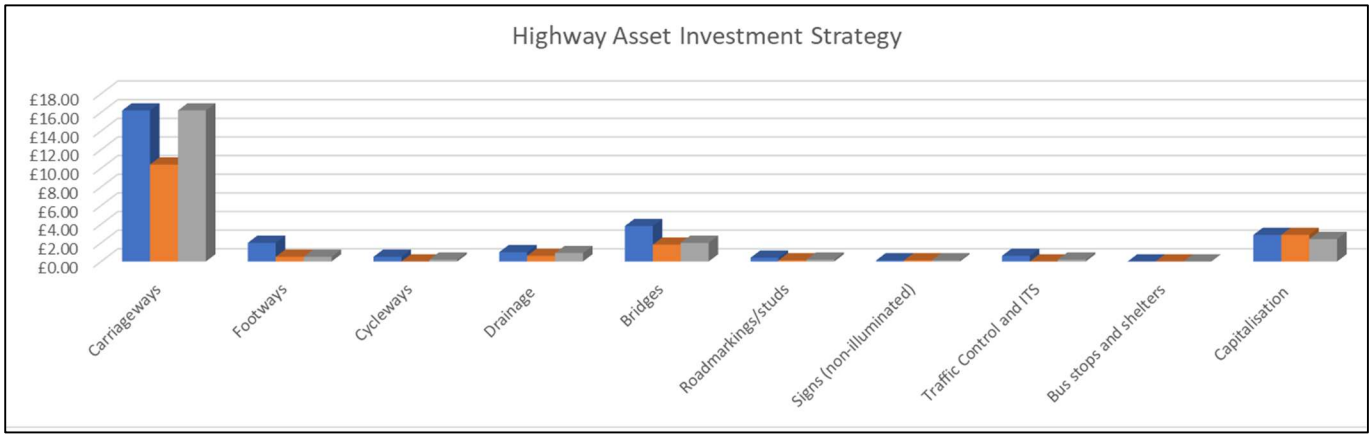


Chart illustrating current and minimum/ recommended annual funding across all road groups.

3.7 The chart illustrates how we are investing less than the minimum level required across all of our asset groups. This means they will be deteriorating quicker than we can repair them, which will impact on performance.

3.8 As a result, the asset value will continue to depreciate.

Key message - The minimum recommended investment across all of our highway assets is £29.2million. Current investment is £16million, meaning a £13.2million shortfall.

3.9 As demonstrated in certain asset group chapters; these current investment levels are seeing increased reactive responses, which are typically revenue funded. Revenue funding continues to present a challenge to the authority in the current economic climate, and we have already capitalised £2.7million of activity that has historically been revenue funded.

3.10 We are therefore in a position of managed decline and a cycle of increased reactive, unplanned and expensive maintenance. It is therefore important to develop risk-based strategies (which are already in place for some assets) to mitigate the biggest risks to the authority.