

# Annex A – Asset Group Status Reports

Status reports for the asset groups are included below.

## Asset Group: Carriageway

### *The network*

Road Type	Urban (km)	Rural (km)	Total (km)
Principal (A) Roads (Cat 2)	78	519	597
Classified (B) roads (cat 3a)	50	418	467
Classified (C) roads (cat 3b)	596	1345	1941
Un - Classified (C) roads (cat 4a)	507	1144	1651
<b>Total</b>	<b>1230</b>	<b>3426</b>	<b>4656</b>

**Commentary:** Lengths are as provided to the Department for Transport as part of the R199b return. Future growth in the asset is predicted to come from new developments

## Customer Expectations

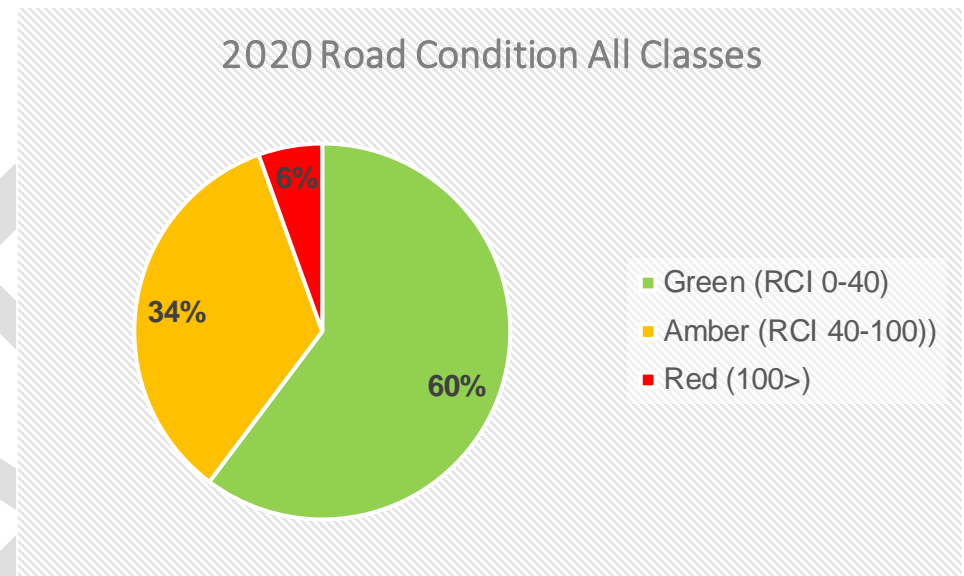
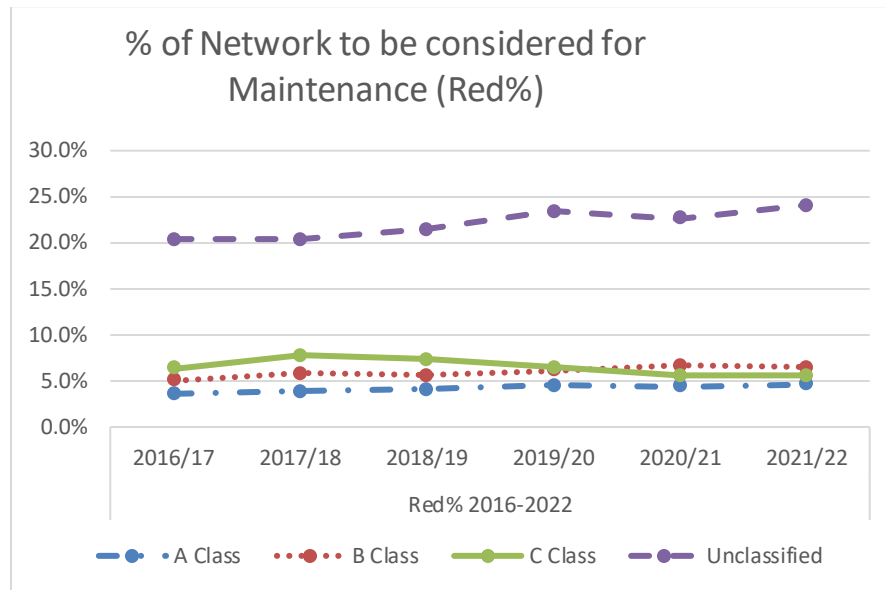
Indicator Reference	Benchmark Indicator	2021			2020		2019	
		Oxfordshire	NHT Average	Quartile	Oxfordshire	NHT Average	Oxfordshire	NHT Average
CMQ I106	Informed about action to repair local roads	29%	30%	3	34%	33%	29%	31%
HMBI 01	Condition of Road Surfaces	28%	32%	3	33%	37%	31%	38%
HMBI 03	Condition of road markings	49%	51%	3	55%	54%	54%	56%
HMBI 13	Deals with Potholes and damaged roads	27%	31%	4	31%	35%	30%	36%
HMBI 30	Speed of repair to damaged roads	22%	27%	4	28%	31%	NA	NA
HMBI 31	Quality of repair to damaged roads	30%	34%	4	37%	38%	NA	NA
HMQI 11	Number of potholes	23%	22%	2	29%	28%	30%	30%
HMQI 12	Action to repair local roads	35%	32%	2	42%	48%	40%	39%

Key to the table is:

Ranking	Quartile
Top 25%	1
26-50%	2
51%-75%	3
Bottom 24%	4

The National Highways & Transport (NHT) Survey is an annual postal customer satisfaction survey. The table below shows Oxfordshire's results from 2019 to 2021 compared to the NHT Average, benchmarked alongside 111 Local Authorities

## Condition



Carriageway condition is measured by a variety of national indicators (for Principal (A) Roads and Non-principal (B & C) roads and local indicators for the unclassified road network. Condition is measured by the % of network requiring structural maintenance ((Red Condition).

### Commentary:

Condition surveys are carried out annually, however full network coverage is achieved over different frequencies, as detailed below.

- 50% A roads one direction, reverse direction the following year - 2-year cycle to make a 100% coverage
- 50% B roads one direction, reverse direction the following year - 2-year cycle to make a 100% coverage
- 33.3% C roads - 3-year cycle to make a 100% coverage
- 25% U roads - 4-year cycle to make a 100% coverage

Target Condition: Our aim is to maintain the condition at its current level.

## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
4,621,700	4,417,350	4,417,350

The Gross Replacement Cost (GRC)\* has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the road asset.

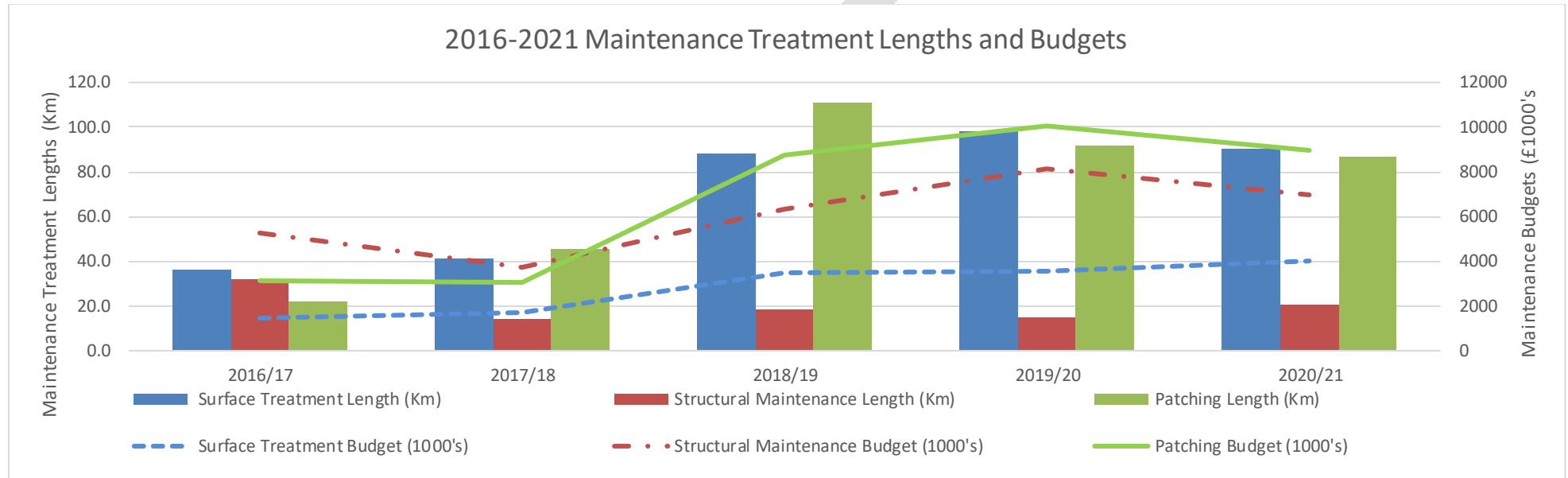
Accumulated depreciation (AD) is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

Depreciated Replacement Cost (DRC) is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value.

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at £239.4M.

## Historic Capital Expenditure

The graph shows capital expenditure and length of surfacing for each of the last five years.



**Commentary:** Surface treatments are preventative/intermediate treatments on “Amber” condition sections of road. The average cost of this type of treatment is £40,246/Km and is effective at reducing Whole Life Costs (WLC).

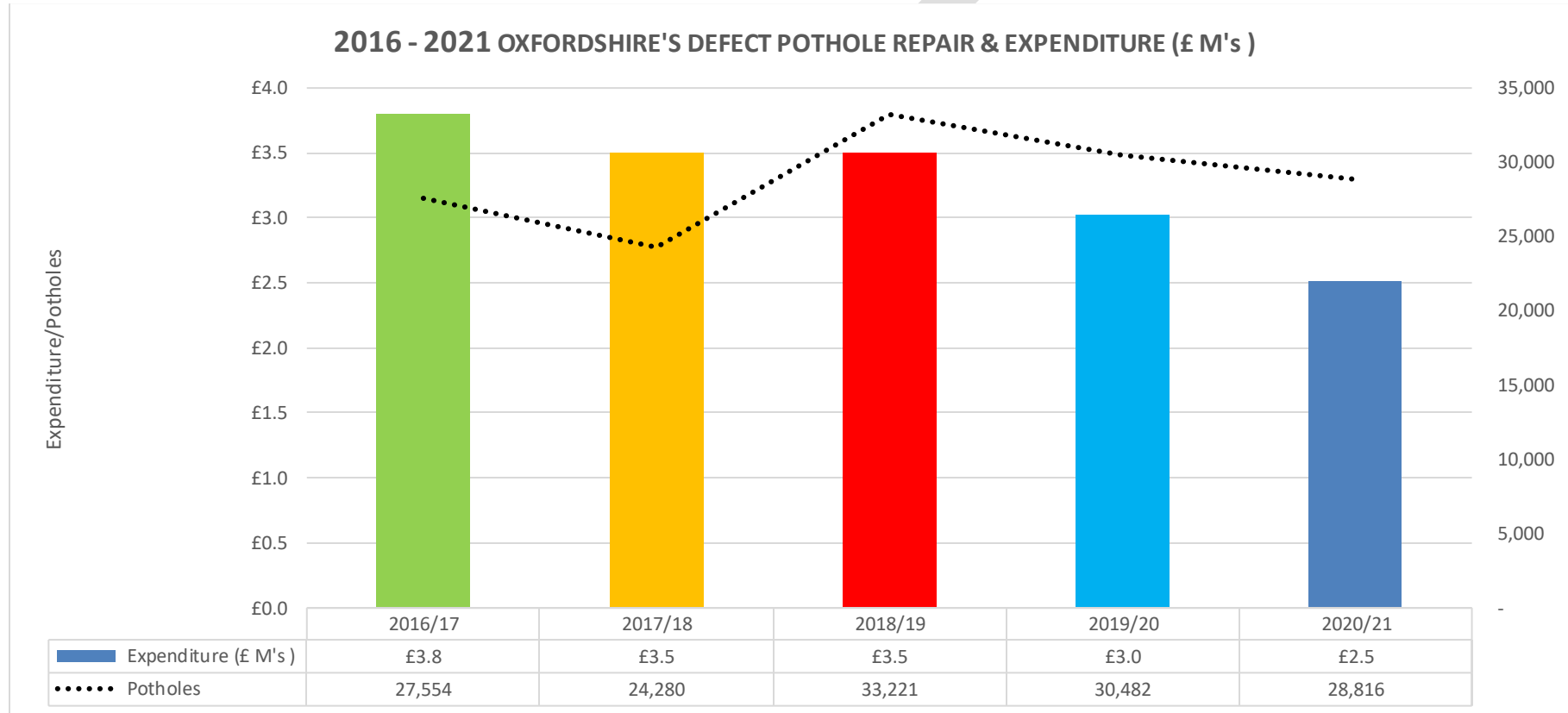
Structural Maintenance is an end-of-life treatment on “Red” condition sections of road. The average cost of this type of treatment is £302,983/Km, is used less frequently than surface treatments and will deliver reduced WLC, when employed correctly.

Dependant on condition patching can be used as an end of life or preventative treatment as it can be used for both red and high amber condition sections of deterioration. The average cost of this type of treatment is £94,837/Km, however it is not considered good value for money in terms of WLC.

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## Historic Revenue Expenditure

The graph shows revenue expenditure and number of pothole defects repaired for each of the last five years.



**Commentary:** Reactive maintenance of carriageways is an extremely inefficient approach to maintenance and can cost in the region of 4 times the cost per square metre when compared to a full resurfacing scheme.

Medium Term Financial Plan

There are three forward works programme budgets for carriageways

Programme	Budget	Last Year	Approved Allocations			Proposed Allocations	
		21/22	22/23	23/24	24/25	25/26	26/27
		£'000	£'000	£'000	£'000	£'000	£'000
Carriageway Resurfacing	Carriageway Prog Budget	7,329	8,325	9,200	6000	4,000	4,000
	B4012 Thame Park Rd	375	175				
Surface Treatments	Surface Treatments Prog Budget	6,659	5,300	5,700	7,550	2,500	2,500
Structural Highways	Structural Highway Prog Budget	8,849	6,000	6,000	7,000	3,000	3,000
	<b>TOTALS</b>	<b>23,212</b>	<b>19,800</b>	<b>20,900</b>	<b>20,550</b>	<b>9,500</b>	<b>9,500</b>

**Commentary:** Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) contribute approximately £9.5M per annum to the carriageway budget, this allocation is not ringfenced to carriageways alone but must be spent on highway assets



## Investment Need

5 Year Total Investment Profile From 2022/23 until 2026/27			
	MTFP Allocation 2022/23 to 2026/27 (£000's)	Basic Need Requirement (£000's)	Enhanced Need Requirement (£000's)
DFT Formulaic Allocation (£000's)	£47,725		
OCC & DfT Additional Investment * (£000's)	£32,525		
<b>Total Allocation</b>	£80,250	£91,100	£238,022
<b>Budget Shortfall from MTFP (£000's)</b>		£10,850	£157,772

**Basic Need** - Maintain carriageway at current condition, through a programme of structural and preventative maintenance treatments

**Enhanced Need** – Improve carriageway condition by 4.4%, through a programme of structural and preventative maintenance treatments

**Commentary:** By not increasing investment above the MTFP, it is estimate that condition is likely to remain the same until 2026, as there has been an additional £80M invested from 2019.even. However, after 2026 the network is likely to deteriorate significantly over the next 10-15 years, with over a fifth (20% Red) of the network requiring significant resurfacing or reconstruction by 2040. This level of structural deterioration is likely to increase revenue expenditure of pothole repairs, lead to a sharp increase in claims and an unacceptably low levels of customer satisfaction.

## **Risks**

### **Risks Associated of not investing in the Asset**

Increased Potholes  
Increased defect repair and revenue costs  
Fall in customer satisfaction (condition of carriageways being a primary driver)  
Increased claims  
Increased hazard to carriageway users, particularly cyclists and motorcyclists

### **Current Risks & Issues**

Specific risks, issues and mitigation measures are documented and managed within Oxfordshire's Corporate Risk Register. However, when considering carriageway maintenance, it is important to consider the following risks and issues:

- Effects of climate change and extreme adverse weather on the durability of road construction, which is particularly sensitive in flood zones or areas of poor drainage.
- Prevalence of carcinogenic coal-tar in the fabric of the road.
- Future reductions in carriageway maintenance expenditure
- Increased numbers of cyclists using the road network

### **Condition led strategy**

It is our intention to maintain the carriageway structural (red) condition at, or within 1% of the 2020 condition (steady state), which is approximately 12% to 13% of the A-U road network requiring structural maintenance, from the year 2022 to 2025.

To maintain “Steady State” we have calculated that £18,100,000 of investment is required annually, of which approximately £14,600,000 is required to be spent on structural (red) and intermediate (high amber) maintenance and £3,500,00 spent on (amber) preventative maintenance. Although in monetary terms, structural maintenance receives just over four times the investment as preventative maintenance, due to the low cost of preventative maintenance this investment translates into five times the area of preventative maintenance to structural maintenance being delivered on the ground.

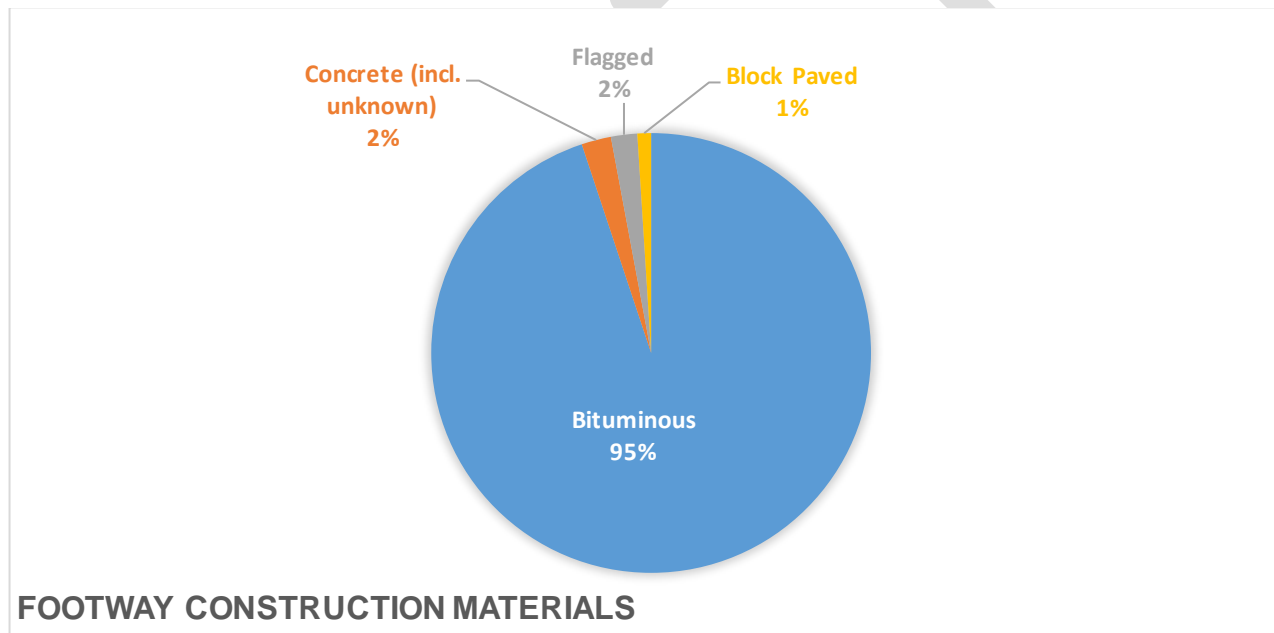
### **Finance led strategy**

If the financial need cannot be met to maintain steady state condition, then a finance-driven strategy will be employed, which will be determined by the agreed carriageways allocation within the Medium-Term Financial Plan. The split of structural maintenance to preventative maintenance will depend on total amount of funding available, but we will recommend that at least £2,000,000 be ringfenced to preventative maintenance. This strategy will result in an overall decline in the condition of the network and increased revenue and claims expenditure. Priority of structural maintenance schemes will be determined using a risk-based approach and will consider the importance of the location, condition, construction, claims history, bus, and active travel use, with the highest risk locations prioritised for maintenance.

## Asset Group: Footways

### *The network*

The council maintains 3,185km of footway in Oxfordshire comprising bituminous (3,011km), concrete (69km), flagged (61km) and block (26km) construction. Natural stone paving is used in many conservation areas and other heritage locations and is particularly expensive to replace.



A hierarchal system exists for categorising footways with Category 1a being the busiest and Category 4 being the least busy. The length of footway in each category is shown below, as well as the proportion in urban and rural areas.

Hierarchy	Category Name	Brief Description	Lengths			%age
			Urban (Km)	Rural (Km)	Total (Km)	
1a	Prestige Walking Zone	Prestige Areas in towns and cities	11.5	-	11.5	0.36
1	Primary Walking Route	Busy urban shopping and business areas and main pedestrian routes - major shopping outlets typically +100 number shops.	79.0	0.6	79.6	2.50
2	Secondary Walking Route	Secondary Walking - Medium usage routes through local areas feeding into primary routes, local shopping centres typically +20 shops, Town centre links to transport hubs.	287.3	12.4	299.7	9.41
3	Link Footway	Link Footways – Linking local access footways, small retail shopping outlets typically +5 shops, large schools, and Industrial outlets, +500 pupils or equivalent pedestrian movements	259.7	94.7	354.5	11.13
4	Access Footway	All remaining footways not qualifying for a higher category. Rural footways, Town paths, non-link footways in housing estates.	2,181.9	257.6	2,439.5	76.6
		<b>TOTALS</b>	<b>2,829.4</b>	<b>365.3</b>	<b>3,184.70</b>	

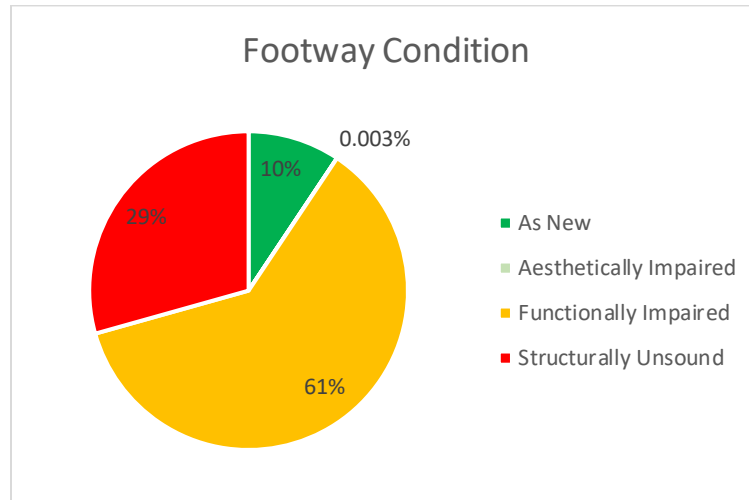
**Commentary:** Lengths are as provided to the Department for Transport as part of the R199b return.

Future growth in the assets predicted to come from new developments

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## Condition

Footway condition is recorded in-house by inspectors using a nationally recognised survey methodology, the Footway Network Survey (FNS)



Condition Descriptions	Definitions
As New:	Brand new footway, Recently reconstructed
Aesthetically Impaired:	Sound footways with patching, Modular footways with sound bituminous patches, Modular footways with elements of different colour/age/material, Faded bituminous materials (especially coloured bituminous). Graffiti / Spray paint
Functionally Impaired:	Cracked but level flags/blocks, Missing Filler Minor surface deterioration/fretting/fatting, Including the appearance of moss. Minor cracking, minor scaling, and moderate local settlement/subsidence from 10 to 30mm
Structurally Unsound:	Cracked and/or depressed flags or blocks exceeding 13mm. Depressed or missing blocks. Major fretting and potholing. Major cracking, Major scaling, Poor shape, severe local settlement/subsidence creating a difference in level greater than 30mm. Trips exceeding 13mm

## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
618,607	162,701	455,906

The Gross Replacement Cost (GRC)\* has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the footway/cycleway asset.

Accumulated depreciation (AD) is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

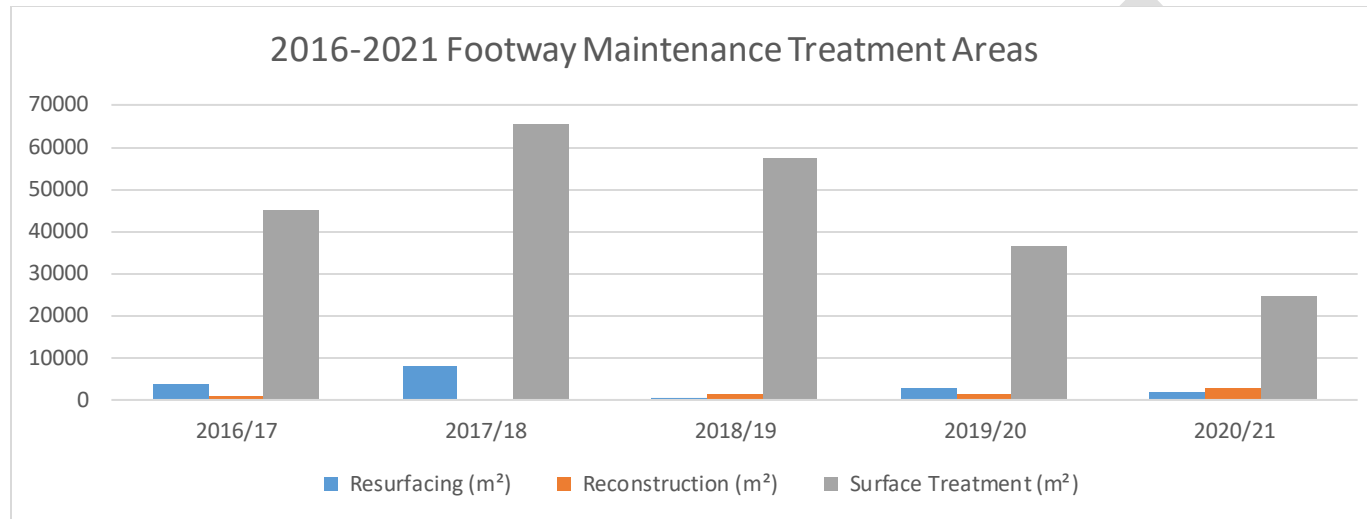
Depreciated Replacement Cost (DRC) is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at 120M.



## Historic Capital Expenditure

The graph shows capital expenditure and length of surfacing for each of the last five years.



Annual Budgets	2016/17	2017/18	2018/19	2019/20	2020/21
Surface Treatment	£318,862	£343,700	£313,307	£351,000	£448,735
Resurfacing	£209,858	£545,500	£21,000	£80,573	£100,803
Reconstruction	£108,906	£0	£134,000	£172,871	£357,568

**Commentary:** Surface treatments are preventative/intermediate treatments on “Amber” condition sections of footway/cycleway. The average cost of this type of treatment is £8/m and is the most effective treatment for reducing Whole Life Costs (WLC).

Resurfacing is used where the bituminous layers have failed. The average cost of this type of treatment is £60/m, it is used less frequently than surface treatments and will deliver reduced WLC, when employed correctly.

Reconstruction is used where all layers of the footway/cycleway, bituminous and foundation layers have failed. This type of failure is uncommon and attributed to external factors not considered within the asset’s life cycle, such as geotechnical issues. The average cost of this type of treatment is £120/m however it is not considered good value for money in terms of WLC.

## Historic Revenue Expenditure

The table shows capital expenditure and length of surfacing for each of the last five years.

Year	Cat 1 Safety Defects	Cat 2 Urgent Defects	Total Defects (No.)	Reactive Expenditure
2016/17	NR	NR	-	NR
2017/18	NR	NR	-	NR
2018/19	165	499	664	£140,000
2019/20	277	1,894	2,171	NR
2020/21	380	2,489	2,869	NR

NR - Denotes "Not Recorded", this is due to defect and budgets being combined with other asset groups.

**Commentary:** Reactive maintenance of footways/cycles is an extremely inefficient approach to maintenance and can cost in the region of 4 times the cost per square metre when compared to a full resurfacing scheme.

Defects are categorised in three types:

Category 1 - those that require prompt action because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration.

Category 2 - Medium priority defects which are expected to become

Category 3 if not repaired within 28 days.

**Medium Term Financial Plan**

		Last Year	Approved Allocations			Proposed Allocations	
Programme	Budget	21/22	22/23	23/24	24/25	25/26	26/27
		£'000	£'000	£'000	£'000	£'000	£'000
Footway	Footway & Cycleway Programme	854	1,500	2,200	4,100	400	400
<b>TOTALS</b>		<b>854</b>	<b>1,500</b>	<b>2,200</b>	<b>4,100</b>	<b>400</b>	<b>400</b>

Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) do not contribute directly to the footways budget. However, they provide a highways budget of £11.58M, allocated to Carriageways, Structures, Streetlighting and Electrical maintenance, this allocation is not ringfenced to these assets alone but must be spent on highway maintenance. It is also of note that the allocation from the DfT is not sufficient to maintain the asset at its current condition, therefore Oxfordshire funds maintenance internally.

## Investment Need

5 Year Total Investment Profile From 2022/23 until 2026/27			
	MTFP Allocation 2022/23 to 2026/27 (£000's)	Basic Need Requirement (£000's)	Enhanced Need Requirement (£000's)
DFT Formulaic Allocation (£000's)	£0		
OCC & DfT Additional Investment * (£000's)	£9,600		
<b>Total Allocation</b>	£9,600	£9,893	£18,750
<b>Budget Shortfall from MTFP (£000's)</b>		£293	£9,150

**Basic Need** - Maintain footway and cycleway at current condition, through a programme of structural and preventative maintenance treatments

**Enhanced Need** – Improve footway/cycleway condition by 10%, through a programme of structural and preventative maintenance treatments

**Commentary:** The current proposed level of investment in footway maintenance should see a halt to further deterioration of until 2026/27, however an annual investment of approximately £2M will have to be maintained there-after.

## **Risks**

### **Risks Associated of not investing in the Asset**

Increased Potholes and trip hazards  
Increased defect repair and revenue costs  
Fall in customer satisfaction (footways and cycleways being an important driver)  
Increased claims  
Increased hazard to footway users, particularly vulnerable users, and cyclists

### **Current Risk & Issues**

Specific risks, issues and mitigation measures are documented and managed within Oxfordshire's Corporate Risk Register. However, when considering footway maintenance, it is important to consider the following risks and issues:

- Effects of climate change and extreme adverse weather on the durability of footway construction, which is particularly sensitive in flood zones or areas of poor drainage.
- Prevalence of carcinogenic coal-tar in the fabric of the footway
- Future reductions in maintenance expenditure
- Increased numbers of cyclists using the footway/cycleway network
- Insufficient inventory, condition/age data to develop a Cycleway LCP

## Footways & Cycleways Asset Maintenance Strategy

### **Maintenance Strategy**

Maintenance schemes will be initially prioritised on the basis of condition (worst first) and hierarchy. However as 90% of the network is Category 3 and 4 footways other information such as history of claims, defects, complaints, etc. should be used to determine maintenance priorities.

This strategy will be implemented as a risk-based approach and will consider the importance of the location, condition, construction, claims history, etc, with the highest risk locations prioritised for maintenance.

If funding were not to be maintained at the basic need requirement, the relatively high level of customer satisfaction compared to other assets and the low level of claims suggests that there could be a case for delaying planned maintenance but increasing safety inspections and reactive maintenance response where there are higher risks (i.e., cycleways, high trafficked areas, flagged footways).

With regards to cycleways, it is proposed that we improve our cycleway network, inventory, and condition data, which will allow us to more effectively target maintenance and improve customer satisfaction.

## Asset Group: Bridges & Structures

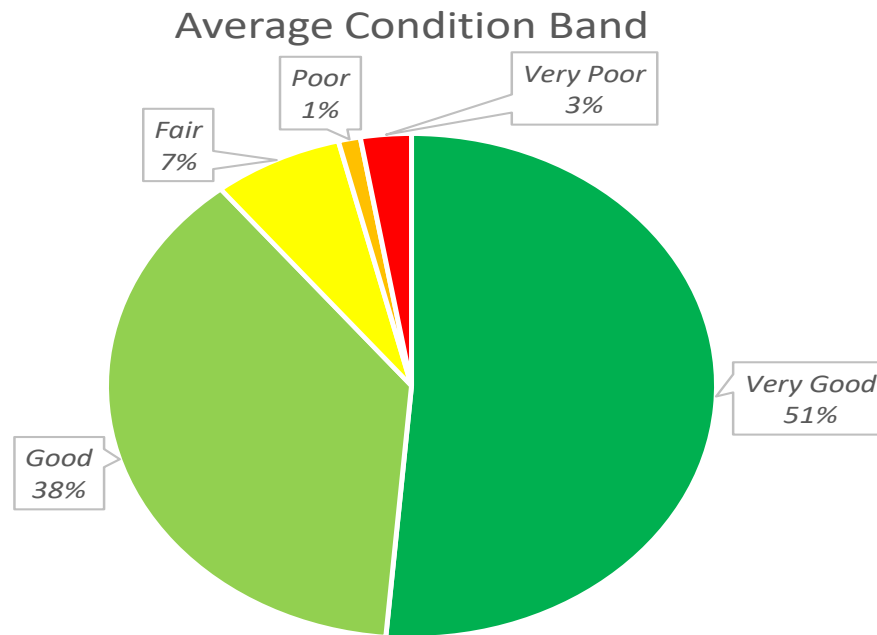
### *The Network*

Structure Type (Detailed)	Number	Structure Type	Number
<b>Bridge: Pedestrian/Cycle (multi-span)</b>	24	Pedestrian/Cycle Bridges	107
<b>Bridge: Pedestrian/Cycle (single span)</b>	83		
<b>Bridge: Vehicular (2 or 3 spans)</b>	143	Vehicular Bridges	728
<b>Bridge: Vehicular (4 or more spans)</b>	49		
<b>Bridge: Vehicular (single span)</b>	536		
<b>Culvert (multi-cell)</b>	34	Culverts	251
<b>Culvert (single cell)</b>	217		
<b>Underpass (or Subway): Pedestrian</b>	27	Underpasses	29
<b>Underpass: Vehicular</b>	2		
<b>Retaining Walls</b>	2416	Retaining Walls	2416*
<b>Grand Total</b>	<b>3531*</b>		

*\*Inventory details of retaining walls are under review. The Countryside bridges, for which there are approximately 3000, are separately recorded.*

**Commentary:** The asset data accuracy has not been checked for a large number of years and the checks carried out so far indicate many anomalies. The structure records are being updated with large retaining walls associated with bridges and culverts, being split out, together with some associated spans and are being separately recorded to give a more accurate record of the quantity of assets.

## Condition



Both BCI Average and BCI Critical are defined on a scale of 100 (best possible condition) to 0 (worst possible condition). Rating bands are also used to further simplify the scoring as follows

Rating Band	Condition Index Range
Very Good	$\geq 90$ and $\leq 100$
Good	$\geq 80$ and $< 90$
Fair	$\geq 65$ and $< 80$
Poor	$\geq 40$ and $< 65$
Very Poor	$\geq 0$ and $< 40$

- *There is a backlog of required inspections and some problems with the bridge management software, such that the data accuracy is under review.*



## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
569,285	270,431	298,854

The Gross Replacement Cost (GRC)\* has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the road asset.

Accumulated depreciation (AD) is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

Depreciated Replacement Cost (DRC) is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value.

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at £270M.

### **Historic Capital and Revenue Expenditure**

The table below shows capital and revenue expenditure and maintenance activity outputs each of the last five years.

#### **Capital & Revenue Expenditure (£1000's)**

	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Bridge's budget (Capital)	£1,146	£1,984	£1,016	£2,406	£2,300
Kennington Railway Bridge (Capital)	£818	£160	£1,181	£400	£2,685
Bridge's budget (Revenue)	£374	£310	£310	£300	£300

**Commentary:** Reactive maintenance of any asset is an extremely inefficient approach to maintenance and can cost in the region of 10 times the cost per asset when compared to planned maintenance.

Also adopting a reactive maintenance approach carries an increased safety risk to the user, as you are relying on at least part, if not all of the asset to fail as the trigger to repair.

## Medium Term Financial Plan

We have two Forward Works Programmes:

Programme	Budget	Last Year	Approved Allocations			Proposed Allocations	
		21/22	22/23	23/24	24/25	25/26	26/27
		£'000	£'000	£'000	£'000	£'000	£'000
Bridges	Bridges Packages Structural Maintenance	2,416	4,000	4,100	4,500	1,600	1,500
Improvement Programmes	Highways Bridges Recovery Programme	0	250	500	1,000	1,000	0
	Kennington Railway Bridge	1,108*	*	*	*	*	*
	<b>TOTALS</b>	<b>3,524</b>	<b>4,250</b>	<b>4,600</b>	<b>5,500</b>	<b>2,600</b>	<b>1,500</b>

\* The Kennington Railway Bridge works, include its replacement, provision for the Oxford Flood Alleviation scheme and a new bus lane, for which a separate budget has been obtained. Estimated scheme costs are £90m.

**Commentary:** Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) contribute approximately £1.78M per annum to the bridges budget, this allocation is not ringfenced to carriageways alone but must be spent on highway assets.

## **Investment Need**

	<b>5 Year Total Investment Profile From 2022/23 until 2026/27</b>		
	<b>MTFP Allocation 2022/23 to 2026/27 (£000's)</b>	<b>Basic Need Requirement (£000's)</b>	<b>Enhanced Need Requirement (£000's)</b>
<b>DFT Formulaic Allocation (£000's)</b>	6,529		
<b>OCC &amp; DfT Additional Investment * (£000's)</b>	11,921		
<b>Total Allocation</b>	18,450	50,708	TBC
<b>Budget Shortfall from MTFP (£000's)</b>		32,258	TBC

**Basic Need** – Inspection, Structural Review/Assessment, design, and repair of high-risk Structures

**Enhanced Need** - Arrest annual deterioration and reduce maintenance backlog and risk liability of all Bridge Assets

## Asset Group: Street Lighting & Electrical

### Inventory

Road Type	Height <8m	Height >8m	Total
Streetlights (pole, column and wall mounted)	45,864	14,661	<b>60,525</b>
Signs	3680		<b>3,680</b>
Belisha Beacons	273		<b>273</b>
Illuminated Bollards (including Solar)	2845		<b>2,845</b>
Highways Pumps	5		<b>5</b>
Subway Pumps	6		<b>6</b>
Subway Lights	355		<b>355</b>
<b>Total</b>	<b>53,028</b>	<b>14,661</b>	<b>67,689</b>

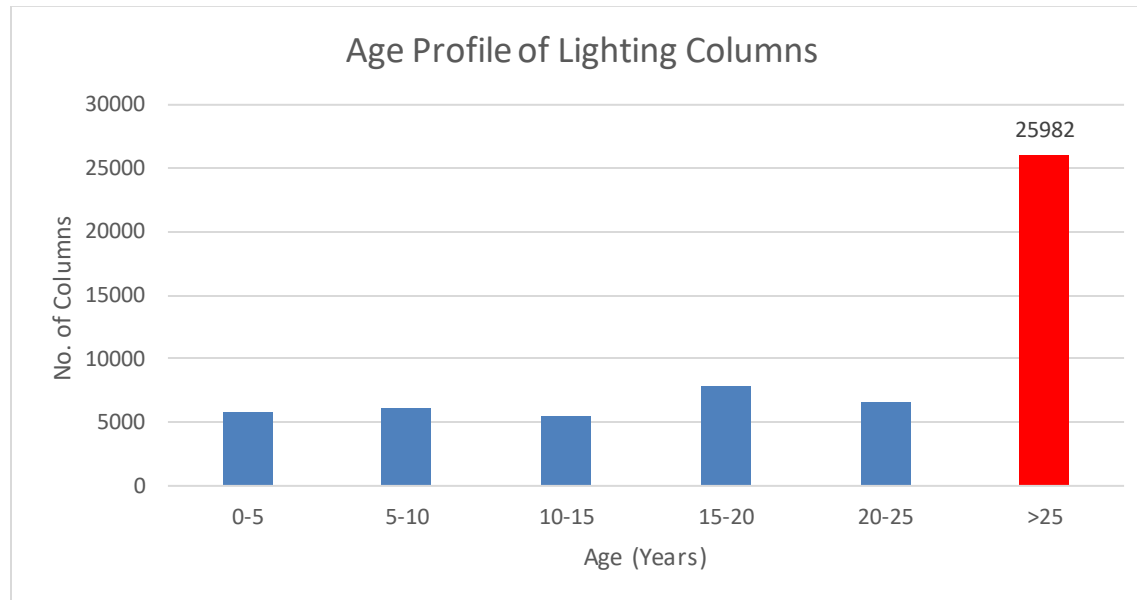
## Customer Expectation

Indicator Reference	Benchmark Indicator	2021			2020		2019	
		Oxfordshire	NHT Average	Quartile	Oxfordshire	NHT Average	Oxfordshire	NHT Average
ACQI25	Electric Vehicle charging points	25%	26%	3	NA	NA	NA	NA
HMB 05	Provision of street lighting	63%	60%	1	65%	62%	67%	65%
HMB 06	Speed of repair to streetlights	56%	56%	3	60%	58%	59%	60%
HMQI 13	Provision of streetlights	81%	78%	2	83%	79%	NA	NA
KBI 25	Street lighting	65%	62%	1	65%	64%	65%	64%

Key to the table is:

Ranking	Quartile
Top 25%	1
26-50%	2
51%-75%	3
Bottom 24%	4

## Condition/ Age



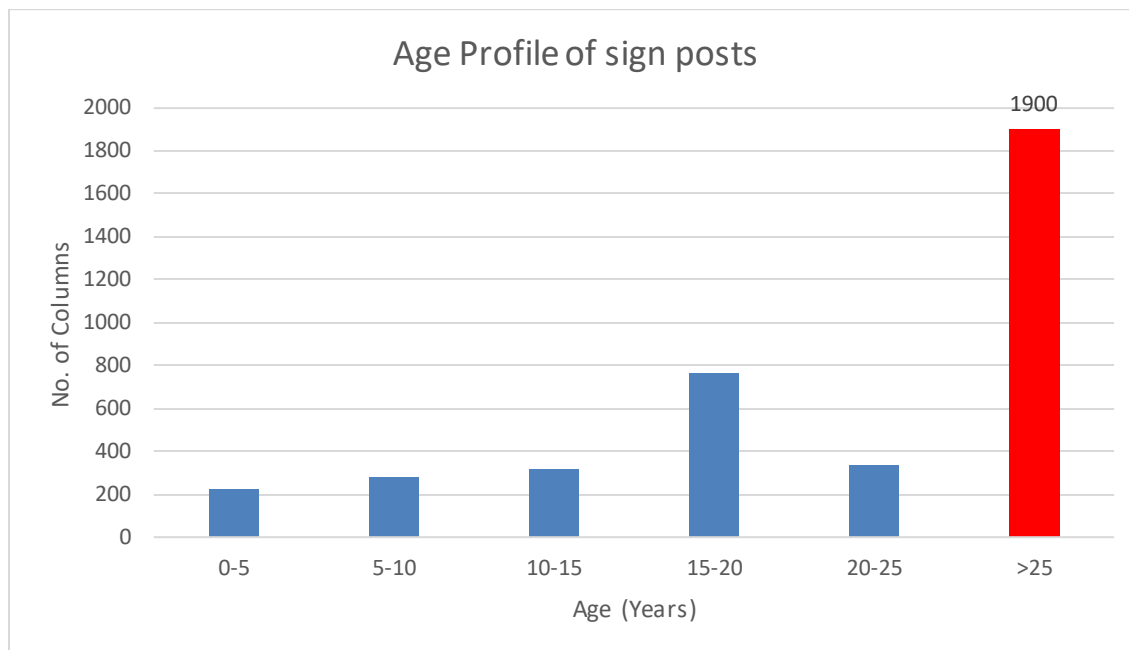
Asset condition is defined by two separate measures;

### **Electrical Condition (Applies to all assets)**

Carried out on a 6 year cycle in line with the recommendations of BS7671:2018 Requirements for Electrical Installations and also during maintenance or improvements activities. All defects are resolved at the time or are removed from service until the faults are rectified.

### **Structural Condition**

Structural Condition of street lighting assets (note; structural testing only applies to steel lighting columns) is currently assessed by a combination of the age profile of the steel lighting columns, non-destructive structural testing and assessment of condition during reactive and cyclic maintenance using the principles of Institution of *Lighting Professionals Guidance Note 22, Asset-Management Toolkit: Minor Structures (ATOMS)* in line with the UK Roads Liaison Group Well-managed highway infrastructure Code of Practice. Any assets found with defects are either made safe by removing from service or by arranging for replacement as applicable.



The age profile of the sign posts within Oxfordshire also shows that nearly 1,900 have exceeded their expected service life. They continue to be monitored for deterioration in their condition. No programme for replacement is in place currently for replacement of these assets. When replacement is deemed to be required, the assets will be further assessed for their need to be illuminated in line with the requirements within the Traffic Signs Regulations and General Directions.

**Commentary:** Steel lighting columns have an expected service life of between 20 and 30 years.

The age profile of over nearly 26,000 the assets found within Oxfordshire is greater than 25 years. A current programme is underway to replace 24,000 of these units by March 2024 as part of a Countywide invest-to-save programme to convert all streetlights to efficient light sources.



## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
130,086	95,768	34,318

The Gross Replacement Cost (GRC)\* has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the road asset.

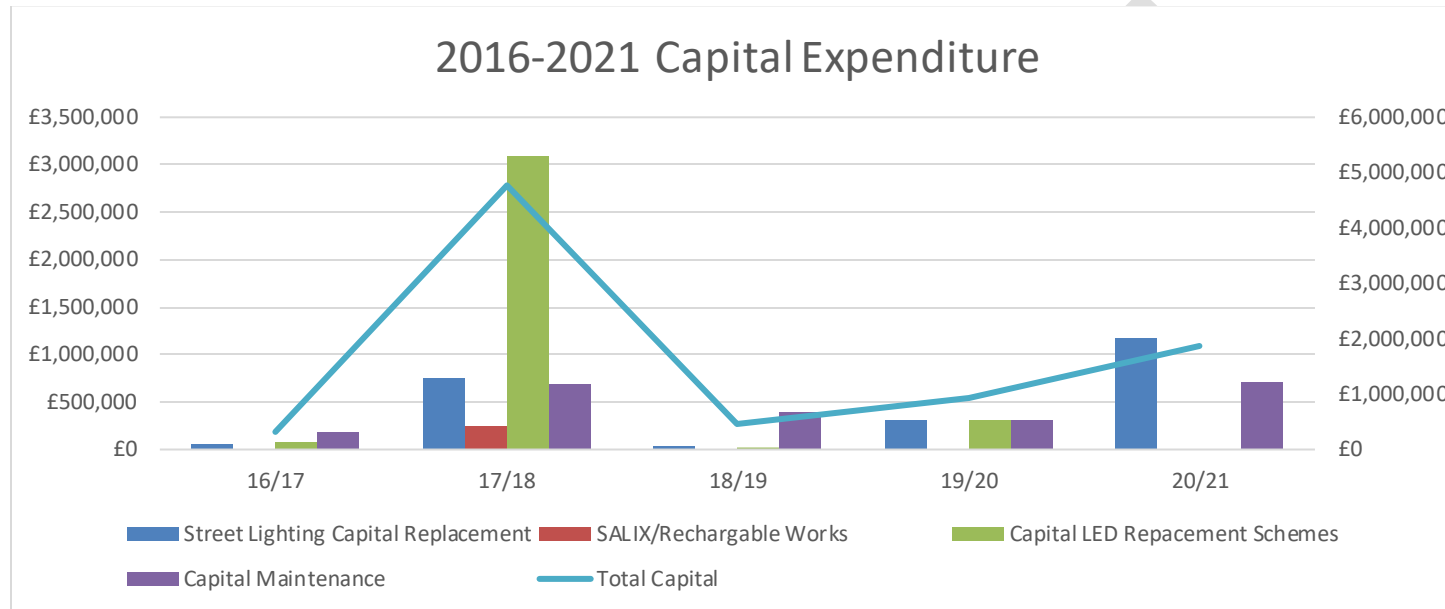
Accumulated depreciation (AD) is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

Depreciated Replacement Cost (DRC) is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value.

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at £23.6M.

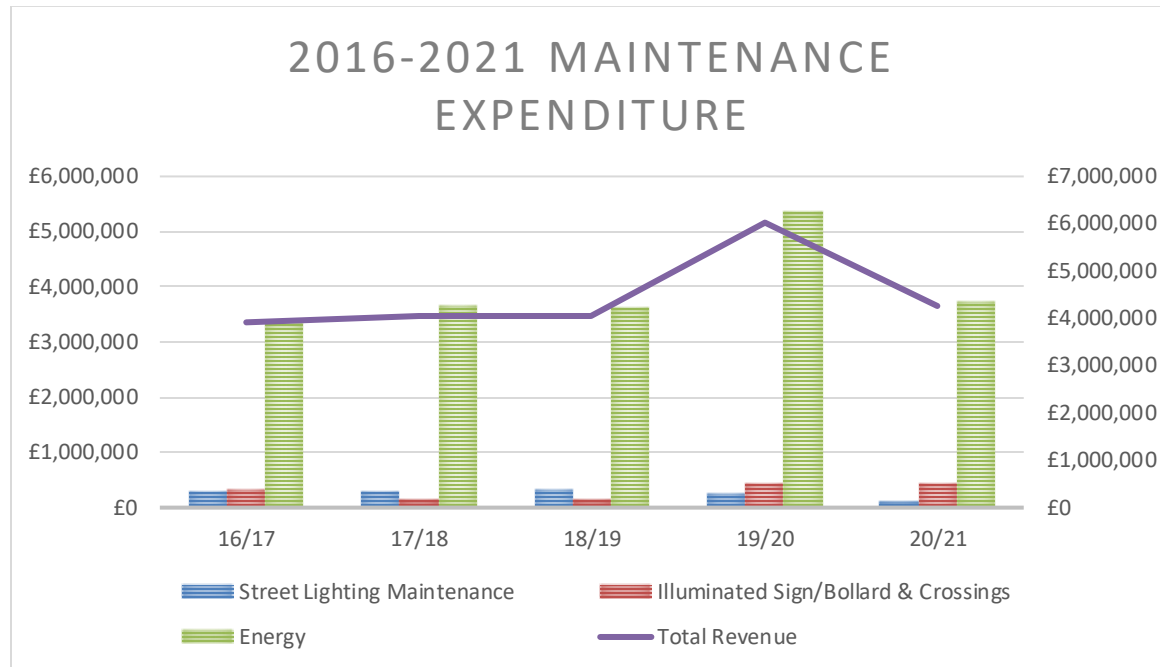
## Historic Capital Expenditure

The graph shows capital expenditure and maintenance activity outputs each of the last five years.



**Commentary:** Capital works have focussed upon the conversion of assets to modern, efficient light sources in order to reduce the County Council's carbon footprint and to mitigate for ever increasing energy costs as are seen within the revenue expenditure below. Historically LED conversions have focussed upon assets of below 8m in height which yield the least savings in energy from conversion, but which were also in greatest need of replacement due to the existing lamp type ceasing production.

## Historic Revenue Expenditure



**Commentary:** Reactive maintenance of streetlighting and electrical assets is an extremely inefficient approach to maintenance and can cost in the region of 30% more than the cost per asset when compared to planned maintenance. Also adopting a reactive maintenance approach carries a safety risk to the highway user, as allowing a column to fail would cause a hazard

## Medium Term Financial Plan

We have two Forward Works Programmes:

Programme	Budget	Last Year	Approved Allocations				Proposed Allocations	
		21/22	22/23	23/24	24/25	25/26	26/27	
		£'000	£'000	£'000	£'000	£'000	£'000	
Electrical & Traffic Signals	Street Lighting	2,416	1,325	1,053	1,041	138	138	
Improvement Programmes	Street Lighting LED Replacement	0	250	500	1,000	1,000	0	
	<b>TOTALS</b>	<b>2,416</b>	<b>1,575</b>	<b>1,273</b>	<b>1,986</b>	<b>1,138</b>	<b>138</b>	

**Commentary:** Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) contribute approximately £255K per annum to the Streetlighting and Traffic Signals budget, this allocation is not ringfenced to Streetlighting and Traffic Signals alone but must be spent on highway assets

## Investment Need

### 5 Year Total Investment Profile From 2022/23 until 2026/27

	MTFP Maintenance Allocation 2022/23 to 2026/27 (£000's)	Basic Need Requirement (£000's)	Enhanced Need Requirement (£000's)
DFT Formulaic Allocation (£000's)	688		
OCC & DfT Additional Investment * (£000's)	3,007		
<b>Total Allocation</b>	3,695	7,975	TBC
<b>Budget Shortfall from MTFP (£000's)</b>		<b>4,280</b>	TBC

**Basic Need** - Assessment of all structural assets over 15 y/o and reduce high risk-maintenance backlog

#### Enhanced Need –

- Investigation, mapping, and replacement of council owned underground cable networks. These networks have been valuable assets for many years but due to changes in road layouts and connections, point of failure have been introduced that will require repairs to be carried out or the cables to be replaced.
- Alongside the testing of lighting columns (basic need) an additional programme to continue the replacement of column that are approaching or have served their original design life is required. Upon completion of the current programme, a further 10,500 assets will be moving into the age profile of over 25 years of age and will require replacement in parallel with structural testing so that they can be replaced using a risk-based approach.

\* OCC & DfT Additional Investment – Excludes LED replacement programme, as this does not affect overall asset condition

## **Risks**

### **Risks Associated of not investing in the Asset**

1. 10,478 columns will be over 25 years old after the completion of the current programme, with an estimated failure rate of 40% in the next 5 to 10 years
2. Replacement outside a planned programme of assessment of repair would carry additional costs, estimated at 30% over and above a bulk order of components.
3. Due to current supply chain issues labour and materials may be unacceptably long.
4. Increased traffic management costs and potential for delays for electrical service connections
5. Increased risk of sudden structural failure of columns posing a hazard to the public safety and 3rd party property damage, resulting in increased claims
6. Up to 70% energy savings per lantern replaced, as part of the programme of repair.

### **Current Risks & Issues**

Specific risks, issues and mitigation measures are documented and managed within Oxfordshire's Corporate Risk Register. However, when considering streetlighting and electrical maintenance it is important to consider the following risks and issues:

- Future reductions in highways maintenance expenditure
- Shortages of steel lighting columns and the electrical components within LED lanterns
- Increased delivery times
- Increased costs of equipment

## Current Streetlighting Asset Maintenance Strategy

A current programme is underway to replace the remaining 38,000 traditional lamps with LED equipment and to carry out the replacement of 21,000 aged lighting columns. To enable these tasks to be completed as swiftly as possible, the works have been broken down into two separate packages:

- Columns and lanterns of 8m height or greater
- Columns and lantern less than 8m height

Two contracts were procured to deliver the programme:

- An 18-month short-term contract to carry out the required actions on assets of greater than 8m in height (10,000 lantern conversions and 6,000 column replacements)
- A Term Maintenance contract of 5-year duration (option to extend for three further 12-month periods) to deliver the conversion and replacement of units of below 8m in height alongside the reactive and cyclic maintenance activities (approximately 27,000 lantern conversions and 14,000 column replacements). This contract will also be carrying out structural and electrical testing of the assets not included within the programme over an initial 6-year programme to identify further improvements that may be required

## Asset Group: Traffic Signals

### Inventory

Asset Type	Number
Traffic Signals - Junctions	157
Traffic Signals - Crossings (Pelican / Puffin / Toucan / Pegasus)	266
Traffic Signals – Dual Crossings (Pelican / Toucan)	10
Vehicle actuated signs - (Over Height Warning)	2

Indicator Reference	Benchmark Indicator	2021			2020		2019	
		Oxfordshire	NHT Average	Quartile	Oxfordshire	NHT Average	Oxfordshire	NHT Average
KBI 17	Traffic levels & congestion	37%	42%	4	33%	46%	37%	43%
KBI 19	Traffic management	42%	40%	2	46%	42%		

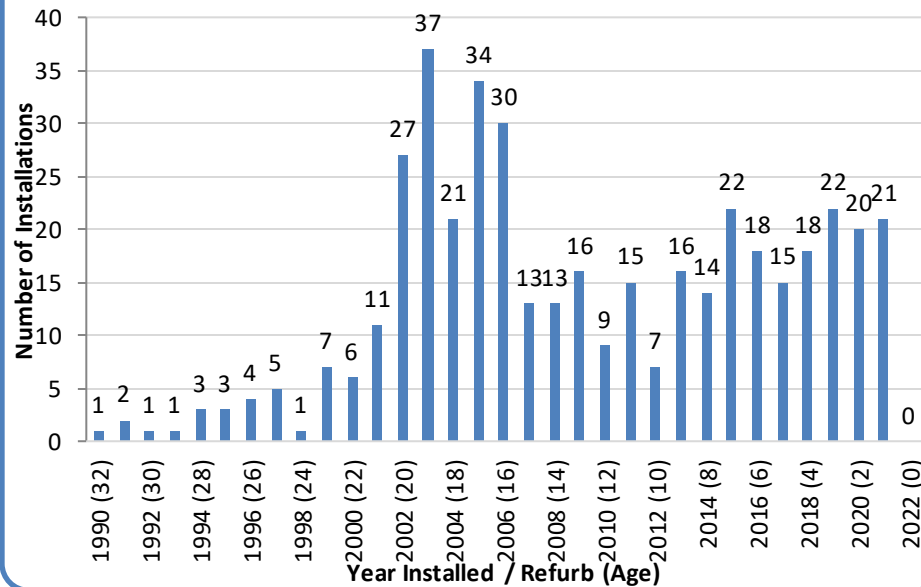
Key to the table is:

Ranking	Quartile
Top 25%	1
26-50%	2
51%-75%	3
Bottom 24%	4

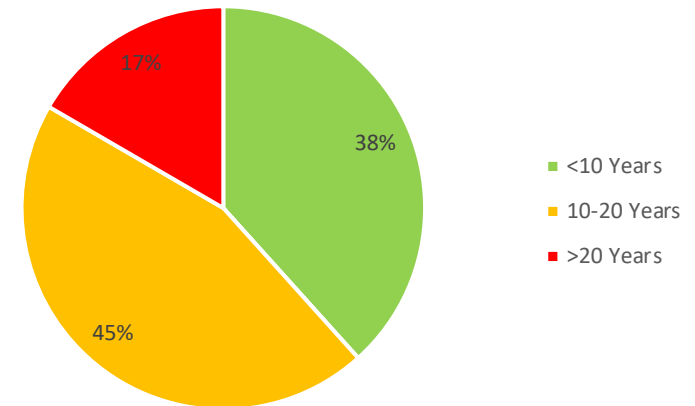


## Condition

### Age Profile of Traffic Signal Installations



### Age Profile of Traffic Signal Sites



#### Commentary:

- More than 10% of the county's signal installations are more than 20-years old (45 in number).
- Over the next 10 years, a further 215 will exceed their 20-year lifespan; and
- There is also a spike of 149 installations that are between 15 and 19 years old.

## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
20,887	12,509	8,378

The Gross Replacement Cost (GRC)\* has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the road asset.

Accumulated depreciation (AD) is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

Depreciated Replacement Cost (DRC) is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value.

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at £2.97M. (£66K multiplied by back log of 45 sites). Much depends on Civils and TM costs.

### **Historic Capital & Revenue Expenditure**

The table below shows capital and revenue expenditure and maintenance activity outputs each of the last five years.

	<b>Capital &amp; Revenue Expenditure (£1000's)</b>				
	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Traffic Signals (Capital)	£156	£216	£226	£680	£252
Traffic Signals (Revenue)	NR	£787	£673	£1,084	£499

NR - Denotes "Not Recorded", this is due to defect and budgets being combined with other asset groups.

**Commentary:** Reactive maintenance of streetlighting and electrical assets is an extremely inefficient approach to maintenance and can cost in the region of 3 times the cost per asset when compared to planned maintenance.

## Medium Term Financial Plan

We have three Forward Works Programmes:

Programme	Budget	Last Year	Approved Allocations		Proposed Allocations		
		21/22 £'000	22/23 £'000	23/24 £'000	24/25 £'000	25/26 £'000	26/27 £'000
Electrical	Traffic Signals	£252	£469	£372	£284	£117	£117
	<b>TOTALS</b>	<b>£252</b>	<b>£469</b>	<b>£372</b>	<b>£284</b>	<b>£117</b>	<b>£117</b>

**Commentary:** Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) contribute approximately £255K per annum to the Streetlighting and Traffic Signals budget, this allocation is not ringfenced to Streetlighting and Traffic Signals alone but must be spent on highway assets

## Investment Need

5 Year Total Investment Profile From 2022/23 until 2026/27			
	MTFP Allocation 2022/23 to 2026/27 (£000's)	Basic Need Requirement (£000's)	Enhanced Need Requirement (£000's)
DFT Formulaic Allocation (£000's)	585		
OCC & DfT Additional Investment * (£000's)	774		
<b>Total Allocation</b>	1,359	5,184	11,814
<b>Budget Shortfall from MTFP (£000's)</b>		3,825	10,455

**Basic Need** - Assessment of all structural assets over 15 y/o and reduce high risk-maintenance backlog

**Enhanced Need** - Assessment of all structural assets over 10 y/o and reduce high risk-maintenance backlog.

## **Risks**

### **Risks Associated of not investing in the Asset**

1. There are currently 45 traffic signal sites, which are over 20 years old, in 5 years' time there will be 193.
2. Traffic Signals older than 20 years old suffer from; Equipment obsolescence, material fatigue of poles and support equipment, increased faults frequency (10 per year, as opposed to 2 per year on average)
3. Without any additional investment, equipment obsolescence will make replacement parts more difficult to source, causing delays and added cost.
4. Material fatigue increases risk of sudden structural failure of poles and supporting equipment posing a hazard to the public safety and 3rd party property damage, resulting in increased claims.
5. Increased electrical faults results to increased reactive revenue costs, potentially trebling in 5 years, added delays to the road user and increased carbon and increased complaints and a drop in customer satisfaction.

### **Current Issues & Risks**

Specific risks, issues and mitigation measures are documented and managed within Oxfordshire's Corporate Risk Register. However, when considering traffic signal maintenance, it is important to consider the following risks and issues:

- Future reductions in highways maintenance expenditure
- Shortages of steel and the electrical components within signal heads and control equipment
- Increased delivery times
- Increased costs of equipment

## Current Traffic Signals Maintenance Strategy

Our strategy is primarily condition/age driven.

The condition/age targets for traffic signals are as follows:

- No signals should be more than 20-years old (theoretical lifespan), but this is dependent on condition
- No signals should include obsolete or unsupported technology.

For schemes younger than 20 years We will consider the following in the development of an asset Maintenance programme:

1. Whether the cost of responding to electrical faults exceeds the cost of replacing the signals; and Fault rate, our fault management system is used to highlight sites with a high fault rate as these are a burden to resources.
2. The age of the asset (older sites tend to be more of a maintenance problem due to obsolete equipment / failing infrastructure )
3. Site condition, periodic inspections are used to monitor deterioration of the signal equipment.
4. Operational issues / complaints, these are used to help identify areas of improvement.

## Asset Group: Public Right of Way

### *Inventory*

Asset Type	Number	Unit
Footpath	2820	Km
Bridleway	1095	Km
Restricted Bridleway	255	Km
Byway open to all traffic (BOAT)	79	Km
Crossing/Bridge	695	No.
Crossing/Boardwalk	50	No.
Crossing/Deck	471	No.
Crossing/Beam	946	No.
Finger posts	5816	No.
Styles	3678	No.
Field gates	2,468	No.
Bridle gates	723	No.
Kissing / pedestrian gates / other	3,995	No.

**Commentary:** All measurements taken from the Countryside Access Management System [CAMs] by IIMS team

We need to undertake a desktop survey to separate out metalled Urban [tarmac surfaced] PRoW from Rural [unsurfaced] PRoW as they are managed in different groups and to align with the presentation of the carriageways AGSR



## Customer Expectation

The National Highways & Transport (NHT) Survey is an annual postal customer satisfaction survey. The table below shows Oxfordshire's results from 2019 to 2021 compared to the NHT Average, benchmarked alongside 111 Local Authorities.

Indicator Reference	Benchmark Indicator	2021			2020		2019	
		Oxfordshire	NHT Average	Quartile	Oxfordshire	NHT Average	Oxfordshire	NHT Average
KBI 15	Rights of way (overall)	57%	56%	2	60%	57%	58%	57%
WCBI 18	Bridleways for horse riding and/or cycling	54%	56%	4	56%	57%	NA	NA
WCBI 19	Signposting of rights of way	55%	56%	3	58%	56%	NA	NA
WCBI 20	Condition of rights of way	54%	54%	3	57%	56%	NA	NA
WCBI 22	Information about rights of way routes	44%	47%	4	50%	48%	NA	NA
WCBI 23	Overgrown footpaths and bridleways	38%	40%	3	45%	42%	NA	NA

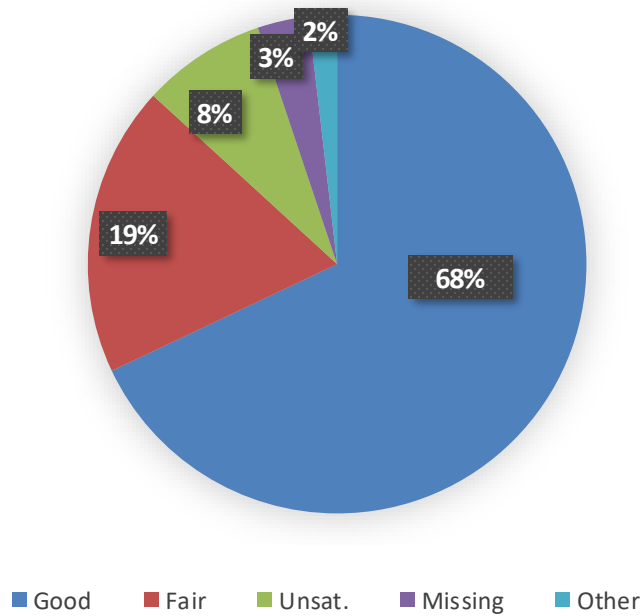
Key to the table is:

Ranking	Quartile
Top 25%	1
26-50%	2
51%-75%	3
Bottom 24%	4

## Condition

### Bridge Structures Asset – Condition Assessment & Monitoring

Small Kit Bridges - Recorded Condition



#### Small kit bridges

Good	963
Fair	267
Unsat	114
Missing	47
Other	26

#### Condition Key

##### Good

Condition when last inspected

##### Fair

Serviceable, work will be required to maintain Good status or complete replacement scheduled

##### Unsat

Asset requires repair or planned replacement

##### Missing

Asset is missing on legal alignment of PRow, often a structure is used nearby

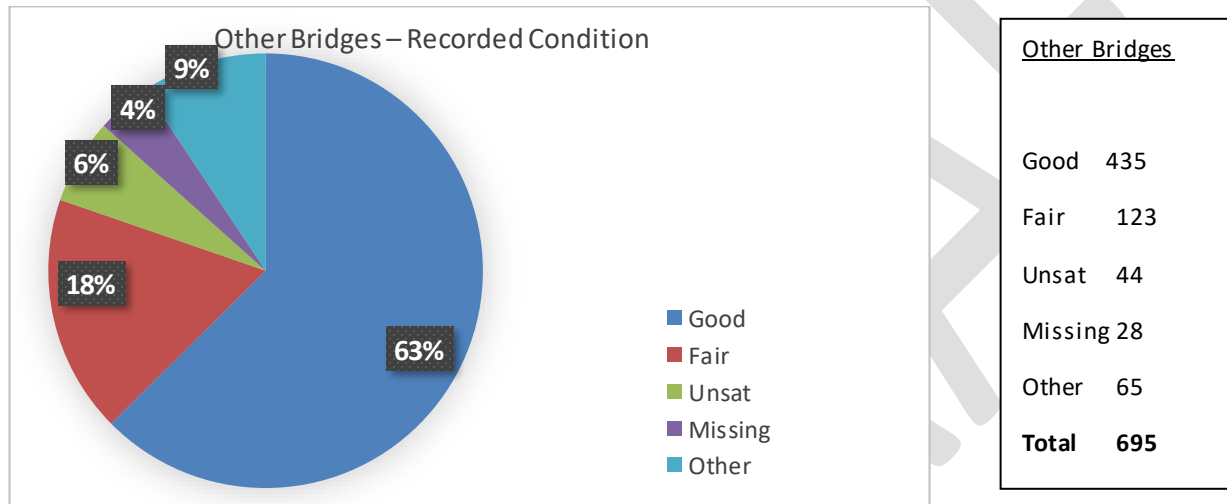
##### Other

Requires further investigation

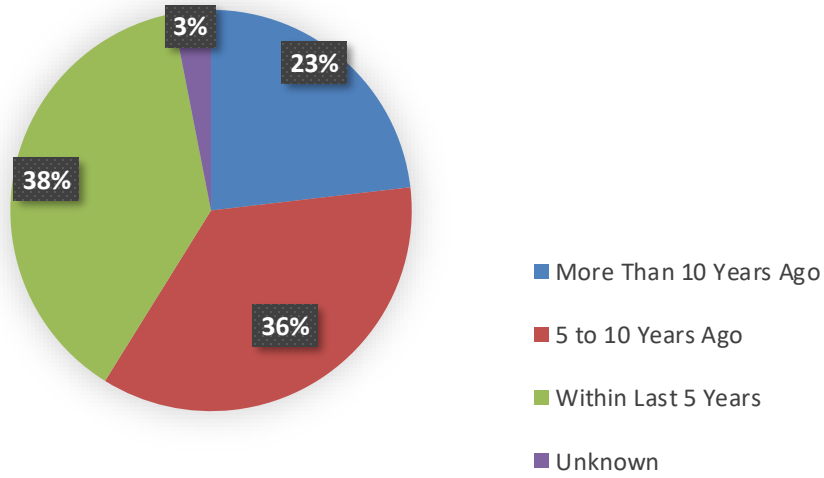
**Commentary:** Condition data is limited to that held on Assets in CAMs that OCC are responsible for. The data opposite reflects current records on CAMs **but**, limited condition surveys have been undertaken on the network thus far as there isn't capacity to undertake this work alongside other demands. See data on age structure/replacement needs as a more accurate picture of demand/condition

Bridges offer the best source of current data on asset condition – this information is lifted mostly from the current bridge's asset LCP.

Further work is planned to draw more information from CAMs regarding other assets e.g., roadside fingerposts/ boardwalks &



When Bridges Last Surveyed



Last surveyed

10+	489
5-10	754
5>	804
Other	65
<b>Total</b>	<b>2112</b>

## Valuation

GRC (£1000's)	AD (£1000's)	DRC (£1000's)
8m> 'kit' bridges <sup>1</sup> £2.4m		Incomplete asset data means an accurate DRC calculation is not possible
>6m bridges <sup>2</sup> £34.6m	£156k pa @ 15 years <sup>3</sup>	
Total £37m	£580k pa @ 60 years <sup>4</sup>	

**The Gross Replacement Cost (GRC)\*** has been calculated for the Whole of Government Accounts (WGA) return. It represents the cost of replacing the existing asset with a new modern equivalent asset. It is a theoretical figure but serves to illustrate the massive value of the road asset.

**Accumulated depreciation (AD)** is the total amount of depreciation assigned to a fixed asset over its useful life. Current condition and repair cost is used to calculate depreciation.

**Depreciated Replacement Cost (DRC)** is the theoretical value of the asset taking into account condition by deducting the AD from the GRC, which reflects the current asset value

<sup>1</sup> Based on PRow Life Cycle Plan – July 2021

<sup>2</sup> For indicative purposes only, limited data exists to make accurate calculation – mixture of OCC/private/shared/moiety structures

<sup>3</sup> Assumes £1,650 per structure

<sup>4</sup> Assumes £50k per structure as an average, however some will be nil/minor contributions [HE/NR/CART/private], some £100k+

**Commentary:** We have calculated the estimated cost of repairing all maintenance backlog in a single year, with a single investment is estimated at £1M.<sup>1</sup>

8m> kit bridges = 1,417 assets

>8m bridges = 695 assets

### ***Historic Capital Expenditure***

The table shows capital expenditure and maintenance activity outputs each of the last five years.

<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>
£100,000	£100,000	£100,000	£200,000	£285,000
£75,000	£83,000	£110,000	£220,000	£290,000

**Commentary:** All capital expenditure in this area is directed to PRow bridge work.

Work is delivered through Milestone Bridges Team 1 for small 6m> wooden kit bridges.

In addition, Milestone Bridge design/project team deliver 1/2 larger structures >6m

There is significant demand in this area refer to PRow Bridge LCP

### **Historic Revenue Expenditure**

<b>Annual Revenue Budget - PRow</b>				
2016.17	2017.18	2018.19	2020.21	2021.22
£141,842	£137,700	£128,500	£128,500	£128,500

**Commentary:** These figures include all operational costs of the Countryside Access team including vehicle leases, materials, contract labour, training, National Trails contribution, contributions to outside volunteer groups that support this work.

**The actual operational budget for revenue delivery is £75k pa**

**Medium Term Financial Plan**

Programme	Budget	Last Year	Approved Allocations			Proposed Allocations		
		21/22	22/23	23/24	24/25	25/26	26/27	
		£'000	£'000	£'000	£'000	£'000	£'000	
Public Rights of Way	PROW Prog Budget	272	400	450	525	125	125	
PROW (S106 Funded)		0	100	200	200	200	100	
	<b>TOTALS</b>	<b>272</b>	<b>500</b>	<b>650</b>	<b>725</b>	<b>325</b>	<b>225</b>	

**Commentary:** Currently all the identified schemes haven't been allocated to specific years.

Two years of budget allocations are approved in the final quarter of the previous financial year by Cabinet. Full approval is granted for the first year and provisional approval for the second year.

The Department for Transport (DfT) does not contribute directly to the maintenance of PROW unlike, Carriageways, Streetlighting and Structures, although the funding for these assets is not ringfenced



## Investment Need

### 5 Year Total Investment Profile From 2022/23 until 2026/27

	MTFP Maintenance Allocation 2022/23 to 2026/27 (£000's)	Basic Need Requirement (£000's)	Enhanced Need Requirement (£000's)
<b>DFT Formulaic Allocation (£000's)</b>	0		
<b>OCC &amp; DfT Additional Investment * (£000's)</b>	2,425		
<b>Total Allocation</b>	2,425	6,535	8,285
<b>Budget Shortfall from MTFP (£000's)</b>		<b>4,110</b>	<b>5,860</b>

**Basic Need –** Install 155 8m> kit bridges pa to catch up on overdue/pending replacements  
 Initiate an inspection programme of larger >8m structures  
 Assessment, design, and installation of 2/3 larger structures pa  
 £50k other - covers non bridge related capital projects on the PRow network

**Enhanced Need –** Increase replacement of larger structures to 5/6 pa informed by inspection programme  
 To replace all kit bridges within their 15-year cycle  
 Undertake broader programmes of enhancement across the PRow network including surfacing/drainage/replacing stiles with BS 5709 gates etc.

## Risks

### Risks Associated of not investing in the Asset

- 360 PROW structures have reached the end of their design/serviceable life & 214 approaching this point in the next 3/4 years. There is therefore there is an increasing risk of a structural failure.
- Risk to life/harm to animals [horses] if a structure fails
- Potential PROW network closures if a structure fails
- Damage or failed structures assets may affect 3rd party assets with associated liability
- The frequency of failures will increase
- Maintenance backlog grows exponentially increasing in cost & scale each year

### Current Risks & Issues

Specific risks, issues and mitigation measures are documented and managed within Oxfordshire's Corporate Risk Register. However, when considering PROW asset maintenance, it is important to consider the following risks and issues:

- Risk of structural collapse due to overdue inspections
- Effects of climate change and extreme adverse weather on the durability of structure elements and scour undermining bridge foundations.
- Future reductions in maintenance expenditure
- Detail and scope of historic inventory data not suitable format in the current bridge management system to produce accurate valuation of the asset
- Capacity to undertake inspections on the small 8m> kit bridge stock – approx. 574 structures at/beyond a key inspection date/design life
- No process in place to inspect larger structures >8m therefore no data to assess risk to third parties or inform a forward repair replacement programme
- How to increase delivery of kit bridges to meet demand for those at/beyond their serviceable design life & ongoing repair & maintenance

### Current PROW Asset Maintenance Strategy

- Investigating use of agency Bridge Engineer/Inspector to undertake 200 assessments pa on larger >8m bridges to collect data on condition/risk/current /future maintenance requirements to better inform forward maintenance & replacement programme
- Investigating options to increase inhouse delivery by using existing resources more effectively [kit bridges 8m>]
- Investigating using external design & build companies to provide more cost-effective solution to replacement of large >8m structures
- Discussions ongoing with Procurement re. setting up a [large] bridge delivery framework contract but this will require sustained investment at scale to attract suitable interest in bidding to be on the framework
- Maximise capitalisation across the PROW delivery area
- Pilot programme in place to target most overdue/high risk small [kit] bridge inspections

DRAFT