Annual Status and Options Report

Roads Infrastructure
November 2025

Executive Summary

The Annual Status and Options Report records the condition of our road assets and provides a means of identifying and prioritising the overall funding needs.

Investment in roads infrastructure is critical to achieving the outcomes and grand challenges set out in the Strategic Plan 2022 to 2027 as it supports the delivery of sustainable transport and travel, becoming a net zero carbon city and the creation of safe, clean and thriving neighbourhoods.

Asset Overview

Carriageways
1,938km

Footways
3,124km

Lighting
74,000 columns

Structures
408 structures

Traffic Signals
913 junctions

Cycleways
354km

Successes

- Glasgow continues to excel as one of the best performing Road Authorities in the country, with 69.4% of carriageways in acceptable condition, compared to the Scottish average of 65.3%. Significant additional Capital investment has been secured over the next 3 years to allow us to build on this progress.

- Significant capital investment has been made in footways and cycleways through City Deal projects and active travel schemes throughout the City. Key projects include the Sauchiehall Precinct Avenue, Cambridge Street Avenue, Holland Street and Pitt Street Avenue.

- Our neighbourhood gully programme has been hugely successful and has been well received where it has been delivered. These neighbourhoods have seen a reduction in flood reports, supporting resident mobility, whilst also improving the look and cleanliness of the local environment.

- Funding has been secured to replace approximately 9,000 of the poorest condition lighting columns, convert the outstanding 21,700 sodium lamps to LED and commence prioritised replacement of our aging overhead cable network.

Asset Condition

	Carriageways	Footways	Lighting	Structures	Traffic Signals	Cycleways
Good	69% ↓	87% –	17% ↓	46% ↓	50% ↑	94% –
Moderate	26% ↑	13% –	22% ↑	46% ↑	36% ↓	5% –
Poor	5% –	0% –	61% ↑	8% –	13% ↓	1% –

Key Investment Priorities

- Investment in our carriageway asset has been continually below the required steady state value of £12.6m per annum, with 2025/26 being the first year since 2013/14 that allocated investment has been above this value. Sustained increased investment will provide greater network resilience and resistance to potholes. On conclusion of the current three year investment programme, an investment of £10.8m per annum would maintain the percentage of carriageways requiring attention at 23% or less of the network. Notably, the overall cost of improvement plans

are lower than that required to maintain the current steady state, making it a cost effective solution for enhancing our road network.

- The rapid expansion of the cycle network and its associated infrastructure brings new challenges, particularly due to the bespoke maintenance and labour required. This new infrastructure requires increased inspection, maintenance and winter gritting along with specific plant and machinery to maintain it. The specialist routine and cyclic maintenance, including more frequent sweeping and gritting, along with the use of more expensive materials, places a significant strain on existing resources and revenue budgets. As the cycle network continues to grow, alongside the 17 schemes within the £115 million Avenues Project, it is essential to increase future revenue budgets to adequately address these maintenance needs.

- An increase in revenue investment from £750k to £1.1m per annum would enable us to maintain current service levels for gullies on flood and arterial routes, as well as sustain a three yearly cycle of the neighbourhood gully programme.

- Currently, 49% of Glasgow's street lighting columns are beyond their Expected Service Life, which poses an increasing risk to public safety. An average investment of £10.6m for 15 years would replace up to 37,000 'at-risk' columns and associated cabling which will result in a substantial improvement in infrastructure condition followed by a steady state of £3.81m per annum for the next 15 years. This will significantly reduce the risk of structural column failure and improve our column age profile by addressing the columns that currently exceed their expected service life.

- Approximately 50% of traffic signal installations have been identified as needing replacement. To mitigate the risk of traffic signal lamps becoming unavailable and to ensure all signalized junctions meet the current standards outlined in the Equality Act 2010, an investment of £5.5 million per annum for five years is necessary. This funding will enhance safety and accessibility at traffic junctions throughout the City.

- Historic investment in signs, lines, and street furniture has only allowed for reactive maintenance, addressing repairs solely to mitigate the risk to public safety. The current Capital investment of £1.5m over the next three years will allow for an identified backlog of repairs to be targeted on a risk basis, however, an increased annual revenue investment is required going forward to effectively manage this asset.

- Structures are in a poor condition. This condition factor does not indicate that the structures are unsafe; it indicates there is a potential for deterioration in condition of an element, or elements, of the structure if maintenance works are not carried out. Maintenance priorities are targeted to ensure structures are safe, but many structures cannot be fully refurbished due to lack of funding.

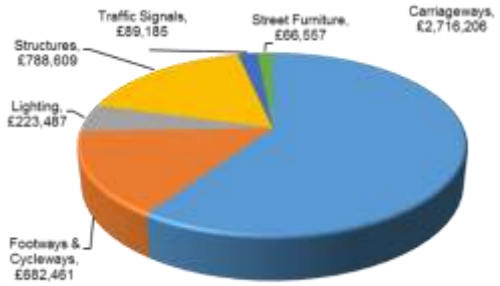
- The Clyde Tunnel and its approaches require significant investment to address necessary repairs to operational infrastructure and structural issues.

Contents

1.0 Introduction

The Annual Status and Options Report is a product of our Road Asset Management Plan. This report discusses the status of our road assets in terms of extent, value and condition and presents the projected outcome of a number of investment options. The options and scenarios presented aim to assist with the budget setting process and identify where investment should be prioritised.

Latest figures indicate that the cost of replacing all road infrastructure assets is estimated at £4.57bn. The pie chart below details the value of the assets broken down by asset type.



Gross Replacement Cost per Asset (£'000)

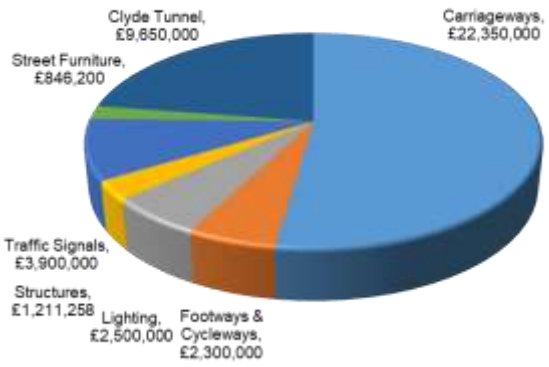
The level of investment required to maintain our roads infrastructure in its current condition (steady state) is estimated at £32.7m per year; this equates to an annual investment of 0.72% of the total asset value.

The Report contains a section for each road asset that outlines;

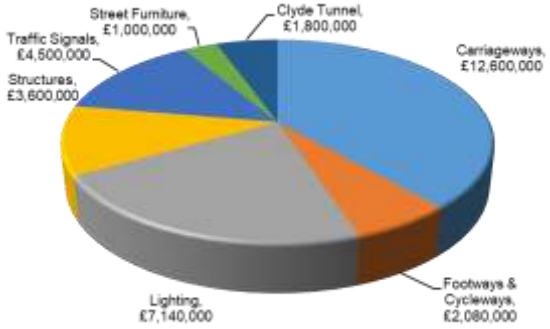
1. Asset Overview
2. Asset Condition
3. Investment Options

The pie charts below illustrate and compares the annual level of investment required to maintain the asset in its current condition against the current level of investment.

It's important to clarify that the current investment focuses solely on the additional budget allocation for the financial year aimed at enhancing the condition of the asset. This excludes cyclic or reactive revenue budgets, such as temporary pothole repairs, except for the budget related to street furniture. For information, the total Street Lighting budget is currently £28.93m, but the chart below only shows the allocation for this financial year.



Current Investment - £42.8m

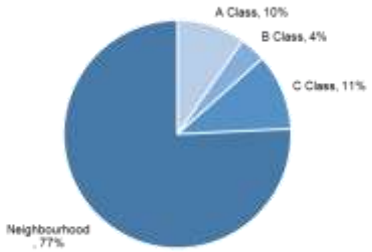


Steady State Investment - £32.7m

2.0 Carriageways

2.1 Asset Overview

Glasgow City Council is responsible for the management and maintenance of 1,938km of carriageways. Neighbourhood carriageways represent the majority of Glasgow's network (76%).



A Class	188km
B Class	72km
C Class	210km
Neighbourhood	1468km

Figure 1.0 – Carriageway Length

The latest data from the Scottish Road Maintenance Condition Survey (SRMCS) 2023 indicates that the condition of our carriageways has slightly deteriorated to 69.4% of our carriageways in acceptable condition, however, this does mean that 30.6% or 593km of carriageway should be considered for maintenance treatment. Despite the deterioration of 1.4% Glasgow continues to be one of the best performing Road Authorities in the country when compared to the latest available Scottish average of 65.3% of carriageways in acceptable condition.

Customer Satisfaction

There is a direct correlation between customer satisfaction and public pothole reports. Extreme winter weather and more frequent summer rain events has a detrimental impact on the number of public pothole reports received and, therefore, customer satisfaction.

The latest data indicates that satisfaction with roads maintenance, which is measured by an annual household survey, has increased slightly from 12% to 15%. In addition, there was a decrease in public pothole reports to approximately 15,000 in 2024/25 which can be attributed to exceptionally mild winters and slightly increased investment since 2022/23.

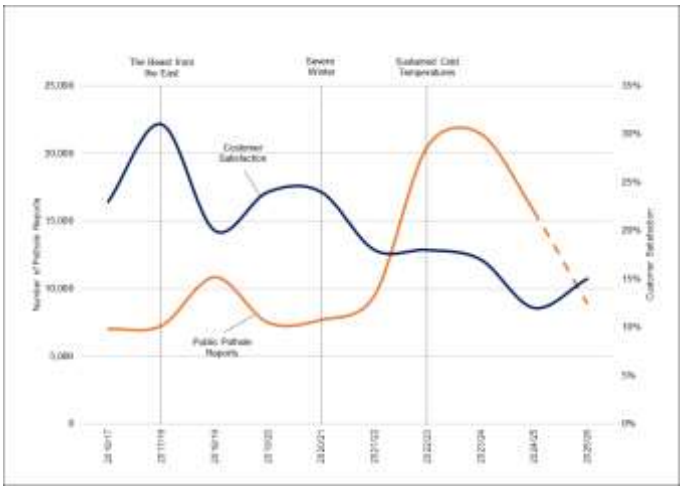


Figure 2.0 – Public Pothole Reports vs. Customer Satisfaction

Level of Investment

The primary cause for the increase in public pothole reports can be attributed to historical under investment in the carriageway asset.

The level of investment has been continually under the £12.6m per annum that is required to maintain the carriageway in its existing condition. 2025/26 is the first year since 2013/14 that allocated investment has been above the steady state value, with an investment of £22.85m being the first part of a committed

three-year investment programme. Sustained increased investment will provide greater network resilience and resistance to potholes.

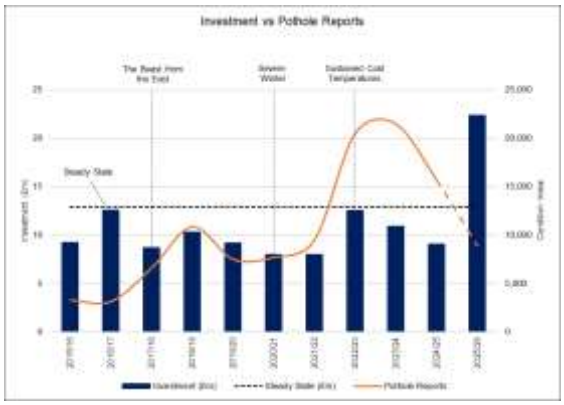


Figure 3.0 – Public Potholes Reports vs. Investment

Seasonal Risk

The historical impact of extreme winter and summer weather on the condition of our carriageways is clear. There remains a risk of structural deterioration, and, in the event of subsequent bad winters, the number of potholes will increase significantly.

Targeted investment strategies after severe winters previously helped to improve the level of customer satisfaction and reduce the number of public pothole reports, however, subsequent severe winters in 2017/18 and 2020/21 negatively impacted the carriageway network.

It should be noted that the impact of a severe winter, or sustained frost and freezing temperatures, is not realised immediately and an increase in public pothole reports should be expected approximately a year after the event.

2.2 Asset Condition

Road structural condition is measured by the Scottish Road Maintenance Condition Survey (SRMCS). The survey assesses parameters including; smoothness, rutting, surface texture and surface cracking, and is undertaken nationwide, allowing us to compare parameters against other Scottish Authorities. The parameters surveyed provides an indication of the integrity of the unseen road structure and a measure of the percentage of carriageways that should be considered for future maintenance treatment. However, it does not indicate the condition of the road surface or potholes and, therefore, there is likely to be a discrepancy between public perception of carriageways and the road structural condition shown below.

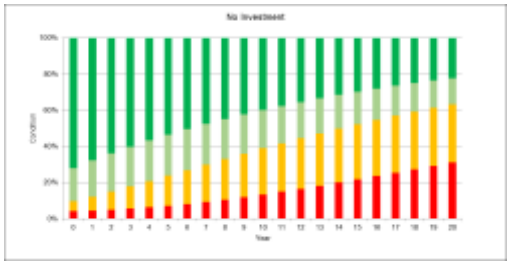
Figure 4.0 shows that whilst the structural condition of our carriageways has remained relatively steady since 2015/16 (between 69% and 71% of carriageways in acceptable condition), they have never recovered to the pre-2010 levels of above 75%, which were recorded prior to consecutive severe winters. As above, this can be attributed to continued, long term investment under steady state which has led to a managed decline in road condition.

Figure 4.0 – Carriageway in Acceptable Condition

2.3 Carriageway Investment Options

Road infrastructure deterioration is slow. It is affected by external factors and is often unseen, meaning that any impact of investment usually cannot be assessed in the short term. The investment options presented below consider the projected impact over a 20-year life cycle. This allows decisions to be taken with an understanding of medium and long-term implications.

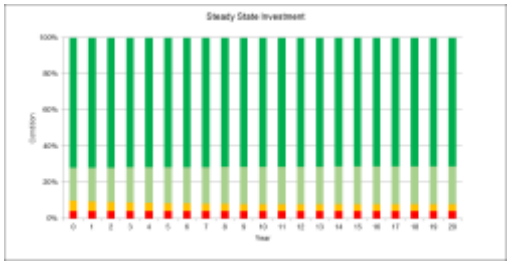
It is significant to note that the overall cost of the current Investment Programme and the Improvement Plans are less than the cost to preserve steady state. It is cheaper to intervene early in the material lifecycle than to wait until more extensive repairs are required and a fairly small increase in investment now, will save a substantial amount of money in the future.



Option 1 – No Investment

No investment in the carriageway asset would lead to severe deterioration, with 78% of carriageways in poor condition after 20 years. This scenario would see a dramatic increase in the number of potholes reported, the cost of temporary repairs and cause severe reputational and economic damage to the city.

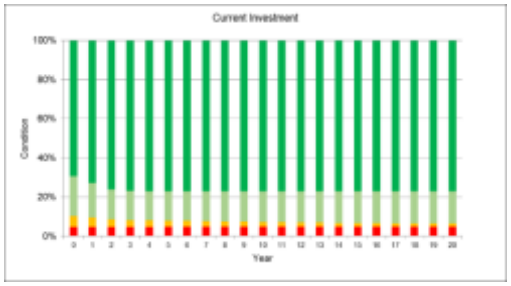
20 Year Investment - £0m



Option 2 – Steady State Investment

An annual investment of £12.6m is required to maintain the existing condition of our carriageways at 31% of carriageways requiring attention, with marginal improvement.

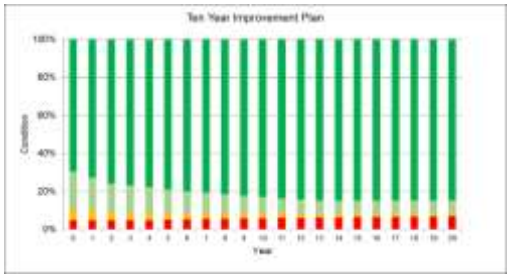
20 Year Investment - £252m



Option 3 – Current Investment Programme

It is estimated that the current 3 year investment programme will reduce the percentage of carriageway requiring attention to 23% of the network. The condition could then be maintained at this level for £10.8m per annum. This investment scenario would result in Glasgow's road network being in its best condition for over a decade.

20 Year Investment - £216m



Option 4 – Ten Year Improvement Plan

On conclusion of the current 3 year investment programme, an annual investment of £12.35m over 10 years would reduce the percentage of carriageway requiring attention to 15% of the network after 10 years – the best condition since 2006. This condition could then be maintained at this level for £10.8m per annum. It is key to note that both improvement plans offer better condition for less money than maintaining steady state.

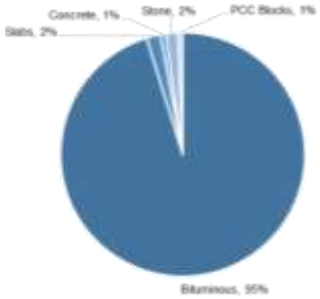
20 Year Investment - £232m

3.0 Active Travel Infrastructure

3.1 Footways Overview

3.11 Asset Overview

Glasgow City Council is responsible for the maintenance of 3,124km of footways.



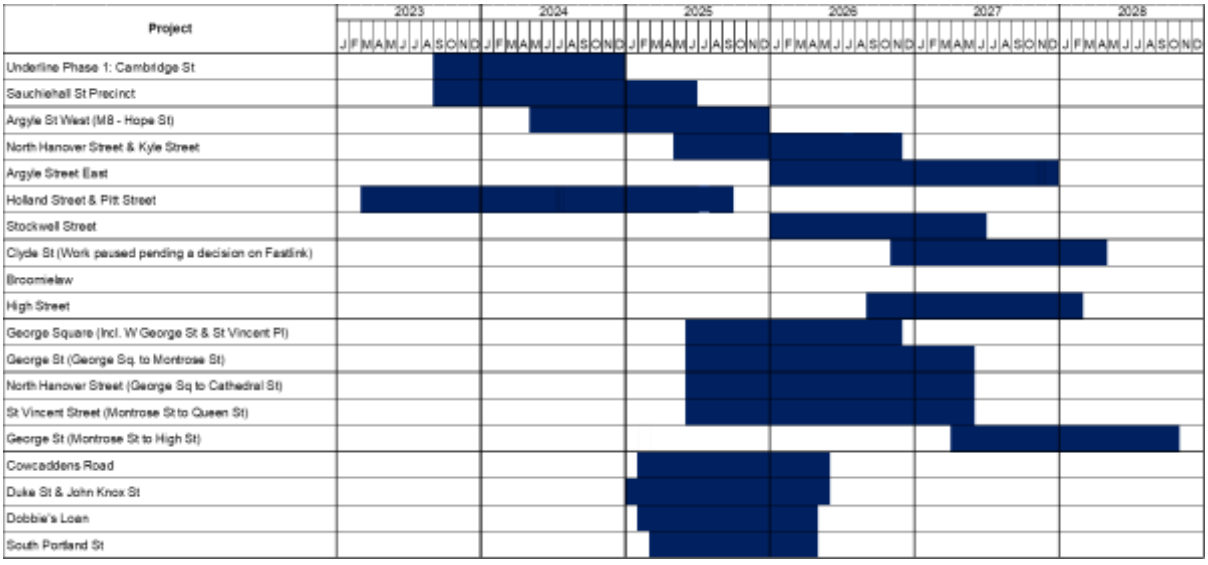
Bituminous	2974km
PCC Slabs	58km
Concrete	22km
Stone	51km
PCC Blocks	19km

Figure 5.0 – Footway Length

Impact of Recent Investment

An additional investment of £1.3m in 2024/25 allowed for 12.75km of the footway asset to be improved in addition to continued Capital investment in footways through City Deal projects and improvements made in conjunction with active travel schemes on key thoroughfares and transport links throughout the City.

During 2024/25 significant public realm improvements have been delivered as part of the Avenues Programme with the completion of the Holland Street Avenue, Sauchiehall Precinct Avenue and Cambridge Street Avenue. The below table gives an overview of the ongoing Avenues programme as of Summer 2025;



Customer Satisfaction

Customer satisfaction with regards to the footway network, which is measured by a household survey, has generally fluctuated between 42% and 52% over the last ten years. This is attributed to previously sustained investment to maintain the condition of our neighbourhood footways utilising value for money treatments to prolong the life of these footways by sealing the surface, whilst removing minor defects.

The latest data saw the customer satisfaction level increase slightly to 39%. This low satisfaction level is attributed to continued under investment in the asset. With an allocated footway budget of £5.9m as part of the current investment programme, in addition to a number of significant active travel and

Avenues Project schemes, we anticipate that customer satisfaction will improve in the near future, however, to achieve significant improvement, continued investment above steady state will be required.

Figure 6.0 – Customer Satisfaction

3.12 Asset Condition

The most recent footway condition data indicates that 87% of our footways are in either a good or fair condition. 0.4% (approximately 13km) of our footways exhibit major or structural deterioration and 12.6% (approximately 393km) exhibit minor deterioration such as cracking and oxidisation.

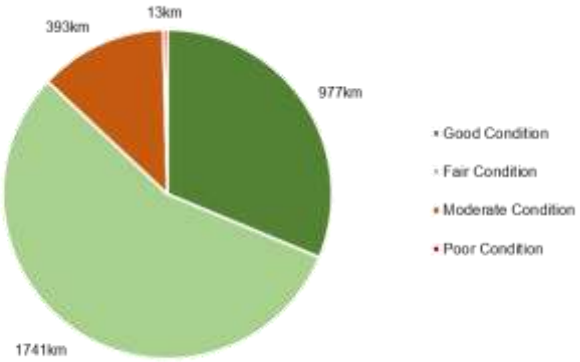


Figure 7.0 – Footway Condition

The above condition data is dervied from a recent survey of two multi-member wards, which has been upscaled to represent the entire footway asset. We intend to keep updating the assets condition through additional sample surveys.

The condition of footways is the most significant factor in the number of public injury claims and 2024/25 saw the highest number of footway claims settled since 2015/16.

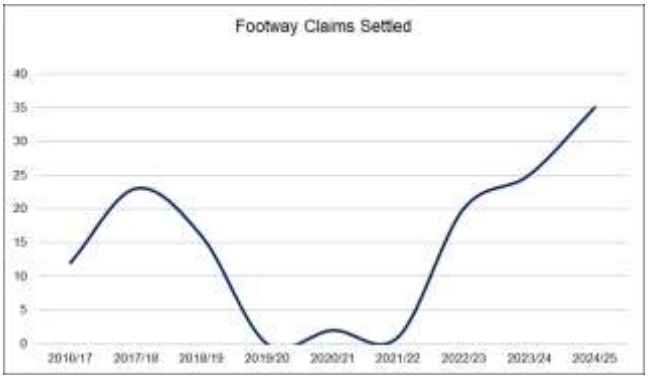


Figure 8.0 – Footway Claims Settled

3.13 Footway Investment Options

As our latest condition indicates that only 0.4% of our footways are in poor condition, the investment options below highlight the sustained level of investment required to maintain the condition of our footways.

Additionally, public realm footways create high quality public spaces that, in addition to having a natural stone surface, include certain features, such as rain gardens and cycleways. These areas have a more aesthetically pleasing appearance as well as assisting with climate adaptation through the use of new drainage techniques.

It is imperative that existing revenue investment, such as the £350k public realm budget to repair loose and damaged slabs, is increased in line with the continued expansion and creation of these high-quality public spaces.

Option 1 – No Investment

No further investment in the asset would lead to severe deterioration, with over half of footways in poor condition after 20 years. This option would result in significant risk to public safety and dramatically increase the number of slips trips and falls and the cost of reactive repairs.

20 Year Investment - £0m

Option 2 – Steady State Investment

An annual investment of £2.08m is required to maintain the existing condition of our footway network. This is comparable to the current investment of £1.95m for 2025/26.

20 Year Investment - £41.6m

3.2 Cycleways

3.21 Asset Overview Cycleways

Glasgow's active travel network currently consists of approximately 354km of cycle infrastructure, made up of five types of cycle routes as per new terminology.

Glasgow's Cycle Route Map has been updated, enclosing latest cycling infrastructure development and presenting intuitive route descriptions. The updated map introduces easy to understand terminology to describe various types of cycling infrastructure, as below;

- Segregated Cycle Lane: A lane physically separated from motor traffic, either on-road, on the footway, or remote, using hard or soft segregation.
- Cycle Lane: A lane marked on the carriageway with a painted line, which may be advisory (dashed line) or mandatory (solid line).
- Shared Footway: A footway adjacent to a road with no segregation or demarcation between cyclists and pedestrians.
- Shared Path: A footpath remote or detached from the road with no segregation or demarcation between cyclists and pedestrians.

- Mixed Traffic Street: A low-speed, low-traffic environment where cycles and motor traffic share the road.

Segregated	60.1km
Cycle Lane	28.7km
Shared Footway	25.5km
Shared Path	196.6km
Mixed Traffic Street	43.3km

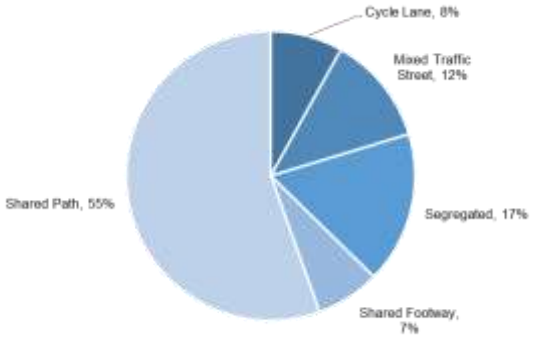


Figure 9.0 –Cycle Network Length

Impact of Recent Investment

The recently adopted City Network Final Delivery Plan represents Glasgow's commitment to create a safe Citywide cycling network. Council Officers are progressing a range of projects to deliver on our City Network commitments.

The list below includes projects recently completed, ongoing or due to commence during 2025/26, with greater detail provided in the table as part of Appendix 1.

- Connecting Woodside works to install cycle segregation at St Georges Road/Charing Cross
- Connecting Battlefield works to install cycle segregation on strategic routes within Langside
- East City Way to upgrade Spaces for People infrastructure on London Road, between Canmore Street and Braidfauld Street
- Flourishing Molendinar works to improve walking, wheeling and cycling connections in the vicinity of the Molendinar Burn in the north east of Glasgow

For Secure on Street Cycle Parking

Cyclehoop was appointed in November 2024 as the sole supplier for Phase 4 of the secure on street cycle parking programme including supply, install, management and maintenance. Phase 4 will deliver up to 500 new units over the next 5 years, in addition to the existing 205 units already in place.

As of September 2025, 87 new units have been installed under the new contract. The location drawings for an additional 33 units are ready for internal review, with installation planned by November 2025. The current plan is to install 120 units per year for the first three years.

3.22 Asset Condition

As the cycle network continues to expand and be improved, we are continuing to collect data to assist and inform future maintenance requirements.

The condition data available at present for the cycle network only covers the 61km primary cycle network maintained by Glasgow City Council. This data indicates that 94% of the asset is in good or fair condition. This reflects the fact that much of this infrastructure is relatively new.

However, additional information from Sustrans Scotland's Walking and Cycling Index 2021, indicated that 42% of the public feel that their local area is a good place to cycle in. Additionally, 38% of the public stated that they feel safe cycling in their local area. Whilst these figures may appear low, in 2020, 23.5million cycling trips were made across Glasgow totalling 103.1 million miles. The developing City Network is an essential component for Glasgow in reducing carbon and promoting health and wellbeing.

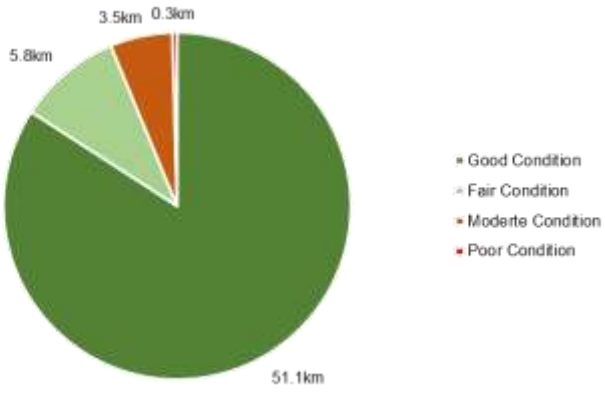


Figure 10.0 – Primary Cycle Network Condition

3.23 Cycleways Investment Options

The rapid expansion of the cycle network and the installation of associated infrastructure present new challenges, particularly due to the bespoke maintenance and labour needed. The use of various materials to create a more aesthetically pleasing environment and provide a smoother ride has led to higher maintenance costs compared to standard bituminous surfaces. Public concern is evident, with a recent survey about the South City Way showing that 8% of respondents are worried about future routine maintenance.

This new infrastructure requires increased inspection, maintenance and winter gritting as well as different plant and machinery to maintain it. The specialist routine and cyclic maintenance, including more frequent sweeping and gritting, along with the use of more expensive materials, adds a significant burden to existing resources and revenue budgets.

As the cycle network continues to grow, alongside the 17 schemes within the £115 million Avenues Project and the expansion of public realm areas, it is essential to increase future revenue budgets to meet maintenance requirements.

Cycle Network Investment Option – New Infrastructure Maintenance Requirements

To effectively maintain the expanding cycle network, it’s essential to explore different maintenance techniques, such as the joint funding initiative by Glasgow City Council and Sustrans for a multipurpose vehicle used for winter maintenance. Currently, this vehicle enables the maintenance of 25 km of segregated cycleway citywide. Although the vehicle costs £130,000, adding more units, optimizing routes, and expanding the network could reduce the unit cost to around £90,000.

However, to sustain this level of service as the cycle network grows, an increase in the annual revenue budget is necessary. Specifically, a dedicated annual investment of £80,000 is required to ensure effective gritting, sweeping, rain garden maintenance, and surface upkeep. Insufficient funding at this level could compromise the network's condition, impact the Council’s net zero ambitions and limit the ability to perform cost-effective planned maintenance on its unique features.

Additional Revenue Investment - £80k per Annum

4.0 Road Drainage

4.1 Asset Overview

Our road drainage systems comprise of approximately 74,000 gullies (stanks), 2,500km of road drains, countless manholes, pumps, kerb drains and a variety of Sustainable Drainage Systems (SUDS). These assets form an integral part of the public road and are a vital component in preventing costly damage to our road network, ensuring public safety on our roads and preventing property damage due to flooding.

Much of our drainage network was designed and installed in the late 19th or early to mid-20th century to cope with expected weather patterns of the time. Climate change and the predicted change to warmer wetter weather in Scotland is putting pressure on this asset group as we experience more frequent, more intense rainfall. During these events many of the flooding/apparent blocked gullies reported to us are due to lack of capacity in the sewer system to cope with the rainfall intensity being experienced.

It is recognised that flood risk and climate change continue to present a significant environmental risk to the City. Glasgow City Council is proactively working in partnership with key stakeholders in the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP) to deliver a programme of drainage schemes targeting areas of the city where rainfall adversely impacts communities. These schemes will reduce flood risks and impacts on homes, businesses and travel corridors, improve water quality, bring greenspace improvements and increase drainage capacity. Increasing drainage capacity will allow land to be released for new homes and businesses, which supports continued economic development and regeneration across the city region.

The MGSDP is currently developing a route map that will end uncontrolled flooding in the city for a 1 in 200 year/0.5% probability event by 2060. It is likely that this route map will identify the need for increased levels of investment in order to deliver a range of interventions.

Impact of Recent Investment

Neighbourhood Gully Programme

The Council's neighbourhood gully programme has been hugely successful and customer satisfaction has been good where it has been delivered. These neighbourhoods have seen a reduction in flood reports supporting resident mobility and the look and cleanliness of the local environment is much better.

The second three-year cycle began in October 2025 and is being delivered on a risk basis taking account of leaf fall, blocked gully reports and flood reports.

During the planned cleaning the dedicated drainage Inspector uses a digital collector app to record gullies cleaned, parked cars, damaged gullies, damaged underground pipe work and other information which is used to monitor performance and inform follow up repair programmes. Important lessons have

been learned from the delivery of the first cycle and they have been taken on board in the second cycle supporting performance and service delivery effectiveness.

There are two permanent mounted gully vehicles and outwith winter an additional two interchangeable gully vehicles in the fleet. During periods of adverse weather, such as heavy rain and/or thunderstorms, additional plant and equipment can be hired and the decision to hire is based on risk based engagement with our Flood Management Team.

The fleet strategy has planned for two new replacement permanent gully vehicles. One is expected to delivered in the first quarter of 2026 and the second in the first quarter of 2027. The second permanent mounted gully vehicle will have a higher rated jetting unit which will allow the team to clear more underground blockages during the cyclic programme, reduce the amount of follow up repairs and reduce the reliance on supply chain contractors.

The Metropolitan Glasgow Strategic Drainage Partnership (MGSDP)

The complexity of flooding events requires a partnership approach. Glasgow City Council, Scottish Water, SEPA, Clyde Gateway and Scottish Canals continue to work in partnership under the umbrella of the MGSDP.

The development and implementation of Surface Water Management Plans (SWMP) to reduce the impact of flooding across the city is underway. New flood storage has been created in multiple locations including Drumchapel along the Garscadden Burn, Cranhill Park, Sandyhills Park, Early Braes Park, Blarttummock Park, and King's Park.

Sustainable Drainage Systems (SUDS)

SUDS provide an environmentally friendly method to manage surface water and aim to control the flow, volume and frequency of surface water and prevent pollution by intercepting silt and runoff.

New SUDS infrastructure, such as; rain gardens, swales, basins, ponds or tree pits, have been installed as part of the expansion of the cycle network and the continued City Deal programme. This programme will continue to install SUDS across the City Centre as projects progress over the next two years.

This new infrastructure will help to reduce the impact of the more intense rainfall that we can expect but will require increased revenue budget in future to maintain its effectiveness.

We are monitoring the maintenance costs of early schemes to more accurately quantify the increased costs of maintenance and we expect to include this in the 2026 ASOR. Increased costs have been partially mitigated in the early years of the life of these projects by incorporating extended maintenance agreements into some contracts but as these contracts end, additional revenue budget will be needed to fill the funding gap.

4.2 Asset Condition

Glasgow's road drainage system is a historic asset with some infrastructure within Glasgow dating from the Victorian era. We maintain good records of the infrastructure which is visible on the surface but the below ground infrastructure such as pipes is not well recorded. There is no practicable method of retrospectively mapping below ground structure and condition is therefore assessed on a pass/fail basis. We pro-actively test and clean all gullies on our network at a pre-determined target frequency which will identify any that are not working or have sustained physical damage.

Performance indicators are regularly reviewed to help us to monitor the effectiveness of our cleaning regime and identify any hot spots that may require attention.

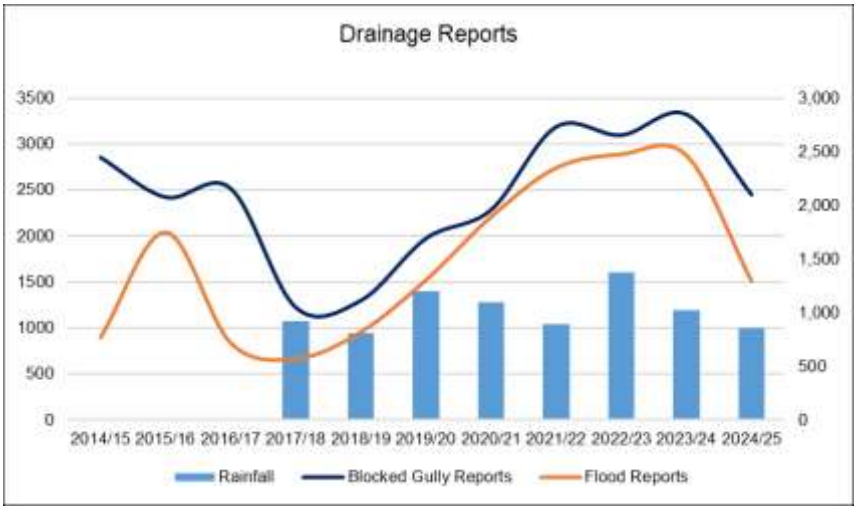


Figure 11.0 – Blocked Gully & Flood Reports

Figure 11.0 tracks rainfall against the number of blocked gully and flood reports that we receive. It is encouraging to note that the intense rainfall events experienced more recently have not resulted in such a sharp peak in blocked gully reports, potentially indicating that our neighbourhood gully programme is starting to have an impact on the resilience of our drainage network.

However, it should also be noted that floods are not always due to blocked gullies. During periods of intense rainfall the underlying capacity of the sewer network may be insufficient to cope with the volume of water and sewers may back up through the gullies. Seasonal leaf fall is also a common source of complaints when leaves clog up gully grates preventing floodwater from draining. This is an issue which can be greatly reduced with the assistance of the residents themselves by clearing leaves in the vicinity of their property and we are pleased to offer advice and assistance to any residents wishing more information and even basic equipment to do this.

The neighbourhood gully programme has been well received by communities as it's holistic approach to maintenance which includes gully cleaning and street sweeping results in an improvement to local street scenes.

4.3 Road Drainage Investment Options

Metropolitan Glasgow Strategic Drainage Partnership (MGSDP)

The forward programme of work to meet the MGSDP objectives includes;

- High Knightswood SWMP to reduce the impact of flooding in the Rotherwood Avenue and Trinley Road area.
- Eastern Springburn SWMP to facilitate the regeneration of the Red Road TRA.

- Working in partnership with Scottish Water to construct flood storage on the Camlachie Burn downstream of Barlanark Park.
- Camlachie Burn Phase 3 to desilt a section of culvert and install a penstock to fully activate the Camlachie Burn Overflow.
- Drumchapel SWMP Phase 2A to increase road drainage capacity on Summerhill Road with part funding from the Climate Ready Clyde Adaptation Delivery programme.
- Drumchapel SWMP Phase 2B to form a new flood storage basin at Pitmilly Road.
- Yokermains SWMP Phase 1 and Phase 2 to reduce the impact of flooding at Waldemar Road and Wykeham Road respectively.
- Glasgow Lost Rivers project where the Council is working in partnership with East Renfrewshire Council and SEPA on a Water Environment Fund project to improve the Capelrig / Auldhouse and Brock Burns.

This work is already funded.

Neighbourhood Gully Programme

It is now clear that issues caused by the volume of cars parked in the city was not fully understood and adversely impacted the programme. Every day many parked cars need to be lifted to allow access to the gullies despite a comprehensive engagement process. This caused the programme to be delayed and is a major cost consideration. A review to align budgets to achievable service levels to take account of the additional organisational and operational requirements has been carried out to identify the required budgets to achieve a range of service levels. The existing revenue drainage budget used for gully maintenance is £750k per year and actual costs were used to calculate the service level in terms of the frequency of cleaning that we can afford to provide for different budget scenarios. In order to ensure that our main roads are protected, all investment options considered retain annual cleaning of gullies on arterial routes and three times yearly of locations known to be prone to flooding.

Investment Option 1 – Existing Revenue Budget of £750k per Annum

Maintaining the current revenue investment of £750k would deliver;

• cyclic maintenance of our flood and arterial gully routes to be carried out at existing frequency
• neighbourhood gully cleaning on a 5 yearly cycle

Although our arterial routes will be protected by maintaining the existing annual cleaning regime, the risk of blockage and flooding occurring in our neighbourhoods will be higher. More silt and debris will collect and cleaning will be more difficult and costly. The resilience of our road network to water damage will decrease, increasing the risk of accelerated damage to our roads and footways and consequential impact on road users and businesses due to vehicle damage and increased journey times. There will also be an increased risk to property from flooding and to personal safety.

This option is not recommended.

Investment Option 2 – Increased Revenue Budget of £1.1m per Annum

An increase in revenue investment to £1.1m per annum will deliver;

• cyclic maintenance of our flood and arterial gully routes to be carried out at existing frequency
• neighbourhood gully cleaning on a 3 yearly cycle

This represents a shift from our target 2 yearly cycle of gully cleaning to a 3 yearly cycle. The consequences of this will be similar in nature to Option 1, but with a significantly reduced risk.

Additional Revenue Investment - £1.1m per Annum

Investment Option 3 – Increased Revenue Budget of £1.4m per Annum

An increase in revenue investment to £1.4m per annum will deliver;

• cyclic maintenance of our flood and arterial gully routes to be carried out at existing frequency
• neighbourhood gully cleaning on a 2 yearly cycle

These frequencies of cleaning comply with the most widely accepted levels of service considered to reduce the risk of blockage and flooding. Levels of silt and detritus gathering in the gully pots will be cleaned out regularly reducing the risk of flooding, injury, property damage, and costly damage to the fabric and serviceability of our road network.

This is the recommended option.

Additional Revenue Investment - £1.4m per Annum

5.0 Lighting

5.1 Asset Overview

Glasgow City Council's Street Lighting network consists of over 74,000 lighting columns/supports and approximately 74,490 lanterns.

Impact of Recent Investment

Recent significant investment has allowed us to replace 7,000 of our poorest condition lighting columns and convert 52,000 older sodium lamps to LED. Funding is also secured to continue these replacement programmes with plans ongoing to replace a further 9,500 poor condition columns, convert the remaining 21,700 sodium lamps to LED and undertake prioritised replacement on some of our aging overhead cable network. This phase is currently scheduled for completion by Spring 2028.

This programme continues to focus on replacing columns that pose the greatest public risk on a priority basis, however, further funding is required to replace the associated cable network and address the increasing number of columns outwith service life. The most cost efficient way of undertaking this work would be to replace the cabling when we are replacing the columns, negating additional mobilisation costs and minimising disruption to road users. This would ensure that the lighting asset is fit for the future, minimise the risk of electrical faults causing outages, mitigate the public safety risk associated with electrocution and dark streets and reduce ongoing maintenance costs associated with fault repair attendance.

Energy Costs

The biggest factor currently influencing street lighting is the price of electricity. Over the last decade the cost of electricity has increased considerably and is currently approximately £5m over the available budget. If the recent trend is to continue, the additional cost to the street lighting service will be significant.

In Figure 12.0 below, growth rates, between 5% and 12%, have been used to measure potential increases in electricity costs (based on today's consumption) over the next 20 years. If the projected energy cost increases are realised, the energy bill could increase significantly, from £8.39m in 2024/25 up to £72.3m in 20 years.

The energy costs are already rising and compared to last year, it would not be unreasonable to forecast that the figure could rise to £9.4m for 2025/26.

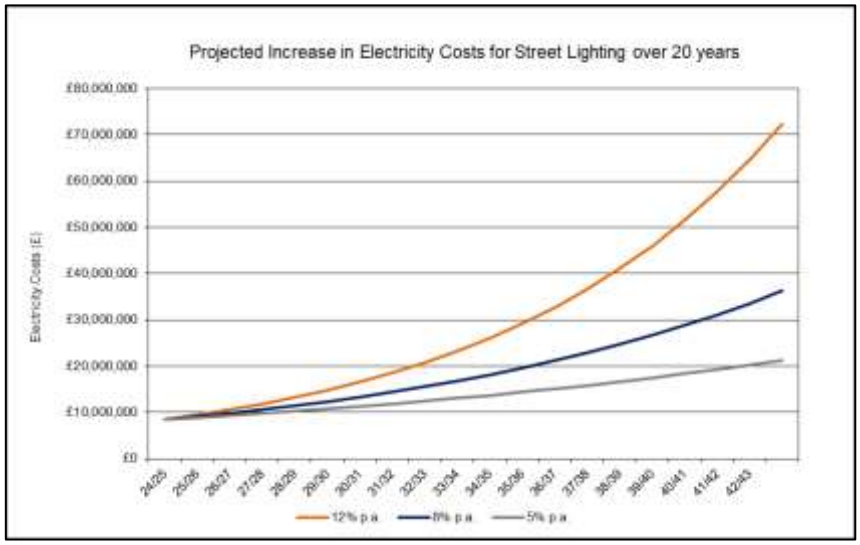


Figure 12.0 – Projected Increase in Electricity Costs for Street Lighting

Environmental Issues

The LED lanterns installed are using an average of 65% less energy. This is improving the efficiency of the lighting network and contributing towards the Council's corporate sustainability objectives by reducing carbon emissions and the aim of being one of the most sustainable cities in Europe.

Energy Efficiency

Over 80% of the remaining sodium lanterns (orange-coloured lamps) have exceeded their expected service life. As these lamp types are no longer produced our street lighting teams are now replacing any sodium lanterns that need changing with LED lanterns as standard.

It is important to explore options for reducing street lighting energy usage that will protect the Council against predicted energy cost rises noted above. Additional costs are also incurred as part of the Climate Change Levy.

5.2 Asset Condition

Structural Columns

Glasgow's lighting infrastructure consists of various column types and is in poor condition with approximately 37,100 lighting columns (49%) beyond their Expected Service Life (ESL). This is a significant issue as the deteriorating condition of the infrastructure poses an increasing risk to public safety which is currently being managed with the available funding.

In recent years, there has been a number of lighting column failures most notably a failure in 2023 which unfortunately led to injuries to member of the public. The subsequent investigation by the Health and Safety Executive has led to a formal prosecution of the Council for breach of Health and Safety legislation and this process is yet to be concluded. Ongoing risk is mitigated by investment in our column replacement programme and aligns with our Risk Management Strategy that has been implemented to ensure those most at risk are prioritised for replacement, however it is vital that the current level of investment is maintained in the medium term to address the columns outwith ESL and replace the aging cable network.

Despite ongoing programmes the number of high-risk condition Type 4 columns identified has increased by approximately 3% in the last year to over 9,500. In response to this, the Council has reviewed the Risk Management Strategy and introduced a risk based approach to prioritising column replacements. and now have a team of dedicated lighting safety inspectors. To date, over 7,000 columns have been replaced as part of the ongoing replacement programme, however, a further 9,548 columns require to be replaced as soon as reasonably practicably.

The roll out of LED lanterns has continued and there are approximately 52,000 LED units installed throughout Glasgow.

The photographs below are examples of Type 4, high risk condition columns (which have since been replaced).

The photographs below are an example of a Type 4 column that has been replaced (before and after photographs).

5.3 Lighting Investment Options

The investment scenarios below would address the highest risks associated with the ageing lighting assets following completion of the ongoing column renewal and LED projects. It should be noted that no allowance is made for inflation; forecasts are made at current market rates.

Due to the condition of the existing street lighting, option 4 will offer a realistic approach to address the continual deterioration of Glasgow's street lighting network.

Investment Option 1: No Investment

If the assets beyond their expected service life are not replaced, the risk of injury by column collapse or exposure to electrical wiring will increase. Over 71% of lighting columns will exceed their expected service life by 2033. In the absence of a sustained renewal programmes the reduction of condition of our lighting assets will accelerate and lead to an ever-increasing number of network failures, reactive repairs, increased public safety risk, public liability claims, reputational damage and legislative compliance.

30 Year Investment - £0m

Investment Option 2: Current Level of Investment

If we continue at the current level of investment (£2.5m/year), the age profile of the columns will continue to deteriorate and the risk of injury by column collapse or exposure to electrical wiring will increase. Over 60% of lighting columns will exceed their expected service life by 2033.

30 Year Investment - £150m

Investment Option 3: Steady State Investment

At present, 49% of Glasgow's Street lighting assets are beyond their ESL. An annual investment of £7.14m is required to maintain the current condition of the asset.

30 Year Investment - £214.4m

Investment Option 4: Replacement of Columns Exceeding Service Life

An average investment of £10.6m for 15 years would replace up to 37,000 columns and associated cabling that is outwith ESL. This will result in a substantial improvement in infrastructure condition followed by a steady state of £3.81m per annum for the next 15 years. This will significantly reduce the risk of structural column failure and improve our column age profile by addressing the columns that currently exceed their expected service life. This action will show an improvement in condition and approximately 26% of columns will exceed their service by 2038. The fitting of new LEDs and smart nodes for these columns would be included within the investment, providing the associated reductions in energy consumption and carbon emissions.

The benefit of this investment is an improvement and stabilisation of condition of the street lighting infrastructure, a significant reduction in the risk of structural column failure and electric shock, a reduction in reactive repairs and increased customer satisfaction. This would ensure our lighting asset is fit for the future.

30 Year Investment - £308.2m

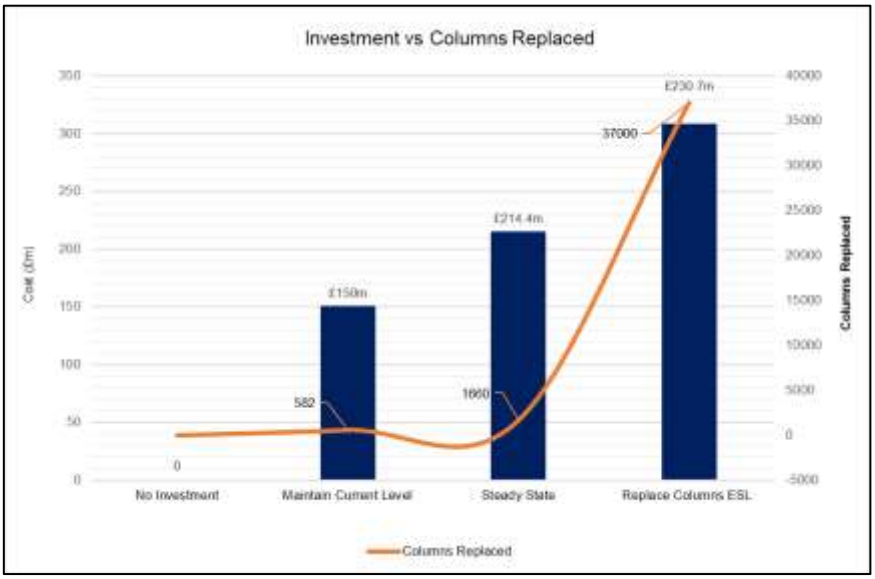


Figure 13.0 – Investment vs Columns Replaced

6.0 Traffic Signals

6.1 Asset Overview

Traffcom is the Council's traffic control centre that manages the intelligent transport systems within the City. This includes;

- 913 traffic signal-controlled junctions and crossings, comprised of; poles, cables, traffic signal lanterns, push buttons, detectors and controllers.
- A Urban Traffic Management Control (UTMC) system that includes; bus priority, which is installed at over 130 sites allowing the signals to detect late buses and adjust the traffic signal timings to help get them back on schedule, Split Cycle Offset Optimisation Technique (SCOOT), which is a real time adaptive traffic control system which deals with increased congestion and improves traffic flows and progression between junctions, remote access functionality, allowing operators to manually adjust traffic signals during events, emergencies, or incidents to maintain network efficiency.and the Council's traffic signal fault management and reporting system, ensuring timely identification and resolution of traffic signal faults.
- 5 strategic Variable Message Signs (VMS) on arterial routes into the City that can be configured to display key travel information to motorists regarding events and incidents on the road network.

Impact of Recent Investment

People with disabilities face significant challenges when navigating city environments, particularly in the City Centre and key public transport areas. The Equality Act 2010 mandates that local councils make reasonable adjustments to eliminate barriers in road infrastructure. In Glasgow, upgrading traffic signal junctions has been a central focus in enhancing accessibility and safety for vulnerable citizens. Improvements include tactile paving, enhanced junction layouts, and other inclusive design features that support safer, more accessible movement through the City.

The Glasgow Transport Strategy (GTS) and related plans aim to build a transport network that supports active travel, reduces dependency on private cars, and promotes inclusivity. The Strategic Plan (2022–2027) further emphasises the city's commitment to tackling climate change through sustainable transport solutions that remain accessible to everyone, including those with disabilities. Key initiatives include;

1. Investment in accessible pedestrian crossings ensuring all crossings meet full accessibility standards.
2. Adopting of an equalities-based approach to transport infrastructure maintenance and design.

Funding from the Transport Scotland, Active Travel Tier 1 Budget has enabled the upgrade of fourteen traffic signal junctions and pedestrian crossings, significantly improving pedestrian access and active

travel opportunities. Additional funding has targeted deprived areas, enhancing routes to schools, community facilities, and other essential destinations.

Collaboration with Community Councils and Elected Members has been crucial to these efforts, resulting in more inclusive and accessible pedestrian infrastructure across Glasgow.

6.2 Asset Condition

Over the years, a sustained reduction in investment for traffic signal maintenance has led to an increase in system faults and a growing number of obsolete equipment. Many installations have now exceeded their designed operational lifespan, resulting in components that are progressively more difficult and resource-intensive to maintain.

Under the current maintenance contract, traffic signal condition monitoring is undertaken as part of routine inspection procedures. These inspections assess the condition of critical infrastructure elements, including controllers, signal poles, underground cabling, and signal heads. Each asset is evaluated using a five-point condition rating scale, where a score of 1 represents equipment in good working order, and a score of 5 indicates that the asset is obsolete, in poor condition, and requires replacement.

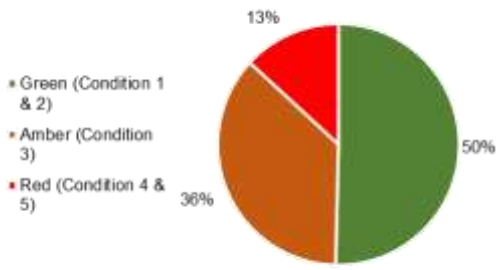


Figure 14.0 – Traffic Signal Condition

Monthly fault trend analysis throughout 2024 has identified a continued increase in traffic signal faults, highlighting the challenges associated with managing an aging asset base and obsolete equipment.

A major contributing factor is the ongoing shortage of halogen lamps, which still comprise more than 40% of the city's traffic signal network. These legacy lamps are not only energy-inefficient and environmentally unsustainable, but they have also become increasingly difficult to procure due to global manufacturing constraints.

Current assessments indicate that approximately 40% of Glasgow's traffic signal assets now require upgrading or replacement, emphasising the urgent need for a modernisation programme to ensure network reliability, efficiency, and environmental compliance.

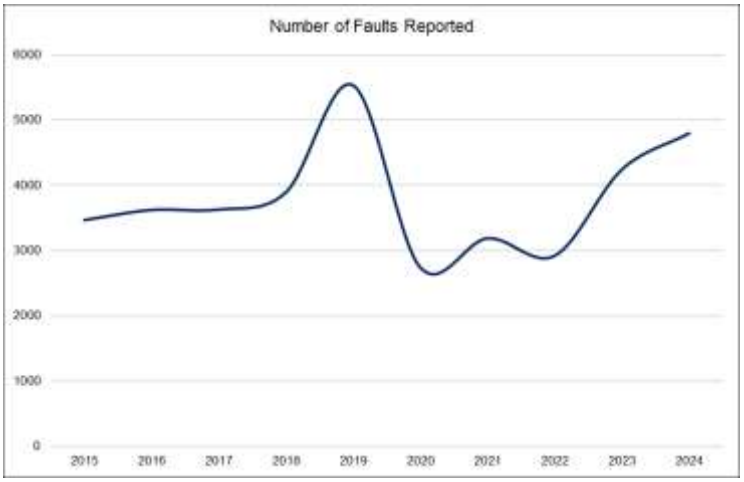


Figure 15.0 – Number of Traffic Signal Faults Reported

6.3 Traffic Signal Investment Options

Sustained investment is essential to address the deteriorating condition of the city's traffic signal assets, reduce cyclical maintenance costs, and improve overall energy efficiency.

Investment Option 1 – No Investment

Without additional investment, the condition of the traffic signal infrastructure will continue to decline rapidly. This will result in more frequent faults, extended downtimes, and heightened road safety risks for pedestrians, cyclists, and motorists. The deterioration of safe crossing points and turning movements, including those critical to public transport will be particularly concerning.

Network disruptions will intensify as equipment fails, reducing the ability of the Traffic Control Room to adjust signal timings in key areas. Fault numbers will rise due to obsolete components and major cable failures, both of which are costly and time-consuming to repair.

Investment Option 2 – Current Investment

The 2024/25 capital investment for traffic signal upgrades was £3.9 million. While this represents a notable increase compared to previous years, sustained investment at this level would be required to upgrade the entire network within an estimated seven year period.

It should also be noted that annual investment levels remain difficult to forecast, with funding allocations subject to variations from year to year. This uncertainty continues to pose challenges for long-term planning and programme delivery.

It should also be noted that the current level of investment places increased demands on existing resources.

While this approach allows for gradual improvements, it would not adequately mitigate road safety risks or prevent increased network disruptions associated with aging and obsolete infrastructure.

Investment Option 3 – Steady State Investment

An annual investment of £4.5m is required to maintain a steady state across the network addressing assets assessed as being in poor but serviceable condition. This level of funding would support essential replacement works and enable the Council to manage ongoing maintenance demands effectively.

Investment Option 4 – Comprehensive Upgrade to LED and Equality Act 2010 Compliance

An investment of £5.5m per year for 5 years is necessary to; eliminate reliance on obsolete halogen lamps, upgrade all signalised junctions to LED technology and achieve full compliance with the Equality Act 2010.

This programme would significantly improve network reliability, energy efficiency, and accessibility. It should be noted, however, that increased investment would also require an expansion of internal resources to support the design, delivery, and management of capital projects.

5 Year Investment - £27.5m

Investment Option 5 – Tactile Cones and Tactile Paving

Traffic signals, tactile cones and tactile paving play a vital role in enabling visually impaired pedestrians to navigate the City safely and independently. Currently there are 112 sites without tactile paving and 70 sites without tactile cones.

Upgrading these sites, alongside a Citywide transition to LED signal technology, at a cost of £7m, would deliver multiple benefits; significant energy and maintenance cost savings, reduced CO2 emissions and environmental impact, improved operational reliability and reduced component failures and enhanced accessibility and safety for all pedestrians.

Additional Investment - £7m

Investment Option 6 – Upgrade UTMC System

The existing UTMC system, operational since 2014, will require a full upgrade within the next five years to align with industry developments and emerging technologies. Key components include bus priority systems at 130 junctions and SCOOT systems at 400 junctions. Minor improvement works were undertaken this year to migrate the server to a hosted environment, which will enhance reliability and extend operational life for up to five years. A complete system upgrade will require an estimated investment of £2m. The benefits of a new system would include; enhanced strategic network management, integration of AI-based optimisation tools, improved journey time and incident monitoring, enhanced pollution and congestion management and greater support for active travel and sustainable transport initiatives.

Additional Investment - £2m

7.0 Traffic Signs, Lines & Street Furniture

7.1 Asset Overview

Glasgow City Council is responsible for the maintenance of;

- 24,000 traffic signs
- 20,000 bollards
- 110km of pedestrian barrier
- 5.3km of vehicle safety barrier
- 5,700km of road markings

All these assets improve the safety and usability of the road network. Additional street furniture such as seating, grit bins and bus shelters is also included within this asset group.

Impact of Recent Investment

A Capital investment of £500k in 2024/25 allowed for the repair of identified vehicle safety barrier on the Clydeside Expressway, Springburn Road and Rhymer Street in addition to the repair of outstanding street furniture defects including damaged kerbs and the replacement of missing bollards.

A committed investment of £1.55m over the next three years as part of the current investment programme will allow for planned maintenance programmes to be developed to target a significant backlog of repairs prioritising the street furniture assets in worst condition for repair to reduce the risk to public safety.

Impact of Recent Investment

Despite the increased Capital investment stated above, the current Revenue investment of £546k per annum is restrictive. For example, in 2024/25, 75% of the roads marking investment under the Roads Maintenance team (£96k) was required to be spent by August 2024 to replace worn and faded lining to mitigate the risk to public safety, therefore, resulting in extremely limited maintenance of road markings until the next financial year.

Parking Zone Refresh

This financial year, £500,000 was provided to allow the refresh of the road markings within 11 restricted parking zones. As many of these zones had not been maintained adequately for some time, it was resulting in parking attendants being unable to issue penalty charge notices within some roads, therefore, impacting parking income. This refresh work remains ongoing.

To allow this work to continue within the remaining parking zones, it is estimated that a further £500,000 would be required next financial year to ensure that all parking zones have sufficient road markings in place to allow the enforcement of these assets.

Bus Corridors

Our bus corridors require the refreshment of road markings and associated signage in order to enforce contraventions, reduce congestion and improve journey times for passengers which will support the delivery of sustainable transport and travel. Many of these corridors have not seen road markings refreshed for a significant number of years which has resulted in ongoing enforcement issues due to a lack of road markings and associated signage.

Parking attendants took part in a pilot scheme where they travelled on a number of bus services and noted all contraventions witnessed on these routes. The information on the bus corridors these services utilise, as well as number of contraventions noted are summarised below which make it clear that the journeys for passengers are heavily impacted by vehicles parking in contravention of regulatory restrictions.

Bus Corridor (Service)	Total Contraventions (Vehicle No.)
Maryhill Road (60/60a)	384
Great Western Road (6/6a)	322
Alexandra Parade/Cumbernauld Road (38/38a/38b/38c/38e)	314
Eglinton Street/Pollokshaws Road (38)	464
Paisley Road West (9/9a)	617

There are significant issues with missing/damaged regulatory signage on these corridors as many of the signs and associated poles were installed when some of these corridors were first introduced during 2003-2005.

These corridors play a key role in achieving the outcomes and grand challenges set out in the Strategic Plan and delivering reliable public transport services for Glasgow residents. It is vital they can be fully enforced in order to continue to improve passenger journey times and that they are well maintained in terms of regulatory road markings and signage.

7.2 Asset Condition

There is no accurate, up to date condition data available for the various street furniture and road marking asset for the full City. However, it can be assumed that the condition of the asset is deteriorating as reactive maintenance requirements are increasing and investment is limited.

Future condition assessments of this vast asset will be based upon sample data. A sample survey of two multi-member wards has been completed that captured traffic signs, lines and street furniture asset inventory and condition data. This data is to be prorated to provide an estimate of condition for the full Council area.

7.3 Traffic Signs, Lines & Street Furniture Investment Options

Increased and sustained investment would proactively target assets beyond or nearing the end of their useful life, improve asset condition and reduce ongoing maintenance costs.

Investment Option – Vehicle Safety Barrier Maintenance Programme

An additional annual revenue investment of £125k would allow for the effective and efficient management of vehicle safety barrier damaged in road traffic accidents. At present, there is no separate, identified budget for this work and money has to be reallocated from other asset budgets.

Additional Revenue Investment - £125k per Annum

Investment Option – Bus Corridor Improvements

Based on the costs of the ongoing Paisley Road West corridor refresh and the costs to supply and install new poles and signage, it is estimated that £1.3m is required for road markings and £1.6m is required for poles and signs to bring all 20 bus corridors up to the required standard and to allow for regular enforcement. Due to the internal resources required to prepare up to standard drawings to be utilised by external contractors, as well as being able to source suitable external contractors, it would be recommended to deliver the above programme over a period of 5 years.

If an investment programme is put in place, there may be opportunities to utilise this funding as match funding and undertake additional improvements on the corridors as part of the wider work being undertaken by the Glasgow City Region Bus Partnership.

5 Year Investment - £2.9m

Investment Option – Repair Assets in Need of Renewal

An additional revenue investment of £100k over a sustained period would allow for the repair or replacement of all street furniture identified as being in poor condition, including traffic signs, pedestrian barrier and bollards. This investment will improve road safety and remove unsightly road furniture.

Additional Revenue Investment - £100k per Annum

8.0 Structures

8.1 Asset Overview

Glasgow City Council is responsible for maintaining and managing 408 structures throughout the City.

These include listed structures, such as the Albert Bridge (built 1871), old masonry arch bridges such as Snuff Mill footbridge (built 1730) in Langside and modern iconic structures such as the Clyde Arc (built 2006) and the Govan Partick Footbridge (built 2024). All have differing maintenance requirements dependent upon their structural type and condition.

Glasgow's structures connect communities and ensure commerce allowing citizens and business easy access across rivers, railways and roads ensuring efficient travel and transportation.

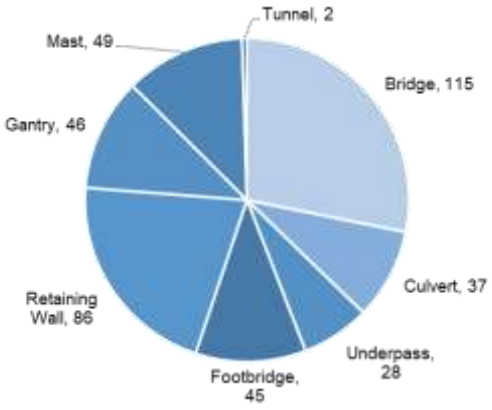


Figure 16.0 – Structures Asset

Impact of Recent Investment

Finnieston Overpass and Pointhouse Bridge on the Clydeside Expressway had their expansion joints replaced as the joints were beyond their service life. To minimise disruption to traffic, the works were carried out over nightshifts. Kelvindale Road and London Road bridges also had their expansion joints renewed as part of road improvement projects.

Occasionally parapets are struck by errant vehicles and need repairs. Balmuildy Bridge parapet is repeatedly hit by vehicles due to the change in road width and alignment. Part of the masonry stone wall was rebuilt and a Police Report managed to help reclaim the cost of the repair. No such reports were available for Hawthorn/Wallacewell Road bridge and Garscube Road Underpass. Steel parapet parts were welded and bolted in place for those repairs.

Road salt spray had corroded the parapet steel cladding on the bridge carrying Springburn Expressway over the railway. Corrosion resistant panels were bolted onto the face of the parapet.

Dressed granite parapets on four bridges in Pollok were covered in grime and had mortar loss from joints. Cleaning and repointing the parapets greatly improved their appearance.

Kittoch Bridge is on the boundary with East Renfrewshire Council, who manage the structure. Under a boundary bridge agreement, Glasgow City Council pay for half of maintenance costs. Refurbishment works for the masonry arch bridge comprised stonework repairs and drainage improvements.

Large horizontal cracks had formed on Shieldhall Road retaining wall. The wall was partially taken down and rebuilt to ensure its long term stability. Heavily weathered stonework on the sixty steps retaining wall was replaced. The cope stones were replaced with sandstone and dressed and cast-iron railings replaced to match existing. The wall is an Alexander Thomson wall and Category B listed structure. This necessitated a high standard of workmanship.

Bell's Bridge canopy was badly damaged by winds during Storm Éowyn. Twelve polypropylene panels and guttering were replaced. Buchanan Bus Station Canopy occasionally has glass panels damaged by vandals. The glass panels were replaced with thick projectile resistant polypropylene.

Routine maintenance was also carried out. Bird proofing of Network Rail bridges is the responsibility of the Council. Mesh and spikes were replaced on twelve bridges. This prevented pigeons fouling the footways.

The new Sighthill Footbridge and South Portland Street suspension bridge were being targeted by vandals spraying graffiti. Special arrangements were made for access to clean the graffiti off the south tower of South Portland Street suspension bridge.

Structural Assessments

A load assessment programme has been ongoing since the 1990s. 20 Council owned/maintained bridges failed the load assessment in addition to 63 privately owned bridges, mostly owned by Network Rail. These bridges either have weight restrictions or interim measures in place, such as vehicle containment barriers to keep traffic to stronger areas of the bridge.

8.2 Asset Condition

There are two key Bridge Stock Condition Indicators (BSCI) used to measure and compare the condition of the Scottish Council Bridge stock. 'BSCI Average', is a measure of the overall condition of all the structures, and 'BSCI Critical' is a measure of the most deteriorated parts of the structures.

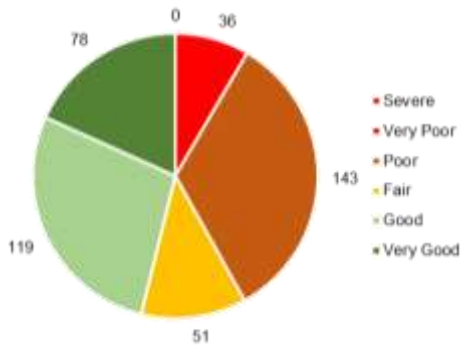


Figure 17.0 – Asset Condition

The Average Condition Indicator is 82. This equates to a condition rating of 'good'.

Glasgow's Critical Condition Indicator is 49. This value equates to a rating of 'poor'. Structures in very poor condition or lower have been investigated and remedial works prioritised. This condition factor does not indicate that the structures are unsafe; it indicates there is a potential for deterioration in condition of an element, or elements, of the structure if maintenance works are not carried out.

Maintenance priorities are targeted to ensure structures are safe. Many structures cannot be fully refurbished due to lack of funding and this is reflected in the condition indicator figures.

76 structures have been identified for future remedial programmes. The table below lists the top ten priorities.

1. Shieldhall Overpass Refurbishment	£7.4m
2. Edinburgh Rd Bridge o/rail Refurbishment	£650k
3. Edinburgh Rd o/dis Bridge Repairs	£330k
4. Eldon St Bridge o/dis Rail	£195k
5. Dumbarton Road o/dis Rail	£20k
6. Cathcart Road (E&W) Footbridge Refurbishment	£100k
7. Edmiston Drive Govan Bridge Repairs	£150k
8. Bellfield St Footbridge Replacement	£1.7m
9. Dumbarton Road Bridge o/tunnel Approaches Parapet Upgrade	£150k
10. Finnieston Overpass Refurbishment Phase 2	£2.8m

The top priority structure is Shieldhall Overpass. This bridge was opened in 1966 on the southern approach to the Clyde Tunnel and carries A739 Clyde Tunnel Expressway over A8 Shieldhall Road. The overpass is heavily trafficked and is vital to the transport network as it links the tunnel to the southwest of the city, Glasgow Airport and M8 traffic to the Queen Elizabeth University Hospital and areas north of the river.

The structure is in very poor condition with extensive concrete spalling and exposed corroded reinforcement. A bridge load assessment resulted in a 7.5 tonne weight limit being put in place in January 2013. A project to add a Cathodic Protection System and repair the reinforced concrete piers is underway. Cathodic protection protects steel reinforcement from corrosion by running an electric current through it. This will strengthen the bridge and remove the weight limit. The design is complete, and the works contract documentation is near completion. Capital funding has been secured for the current constructed cost estimate of £7.4. The works tender process will commence at the end of 2025, with works commencing during Spring 2026.

Variable message signs on the signal gantries reached the end of their service life and were removed last year. The matrix signs were important to manage traffic and improve safety on the City's expressways. To refurbish the gantries and restore the matrix signs requires £5m of Capital investment.

8.3 Structures Investment Options

It is estimated that £52m is required to strengthen weak bridges, upgrade parapets to current standards and address all maintenance needs identified during the cyclic inspections.

The investment options below are based on the whole structures stock. Individual structures assets vary greatly in size and value from retaining walls on the Clydeside Expressway with a depreciated replacement cost of £18k to £102m for George V Bridge. Their maintenance needs vary accordingly, and some years larger sums are required for larger projects.

Investment Option 1 – No Investment

In the absence of capital funding the condition of the structures stock will move towards very poor. The deterioration of these assets will accelerate until they become unsafe. In the short term there would be an increase in the number of weight restrictions and lane closures. In the longer-term bridges, and roads, would need to be closed.

20 Year Investment - £0m

Investment Option 2 – Steady State Investment

In order to halt deterioration it is estimated that an annual investment of £3.6m is required. With this level of funding the overall condition would not deteriorate. Existing measures including weight restrictions and lane closures would remain. It should be noted that this would be an average annual investment over the 20 year cycle as the spend profile would fluctuate year on year dependant on the nature of the works and structures being repaired.

20 Year Investment - £72m

Investment Option 3 – Structure Repair Plan

In order to strengthen and repair the structures in the worst condition, an annual investment of £4.5m is required for the 20 year cycle. Medium and long term programmes would allow the removal of lane & weight restrictions throughout the city, improve the Bridge Stock Condition Indicators and reduce journey times by HGVs through the City resulting in economic benefits.

20 Year Investment - £90m

Investment Option 4 – Structures Improvement Plan

To improve the condition and performance of the structures stock, including upgrading, would require an average annual capital investment of £6.2m over a 20-year period. Committing this level of investment would minimise whole life maintenance costs while prioritising the required levels of performance, i.e. removal of traffic restrictions from bridges across the network and would shift the structures to a stable 'fair' condition.

20 Year Investment - £124m

Investment Option 6 – Expressway Road Gantries

To provide essential driver safety information on the Clydeside Expressway, it is recommended that four gantry sites are upgraded. Also, several of the gantries require substantial capital investment to repair the basic structure and restore ITS functionality. The table below summarises prioritised investment needs;

Expressway Gantries (Priority = Red/Amber/Green)	**Estimate (£M)**
Structural gantry repair to support ITS Equipment	1.5
ITS Lane/Speed Control, counters & VMS Equipment	3.0
Integration with Traffcom OSPREY & Clyde Tunnel SIDERA	0.5
Total	**5.0**

9.0 The Clyde Tunnel

9.1 Asset Overview

Strategic Importance

Glasgow City Council is responsible for the maintenance of the only road tunnel in Scotland. The Clyde Tunnel is the busiest stretch of non-trunk road in Scotland with approximately 80,000 vehicles using the Tunnel each day. An independent study assessing the economic value of the Tunnel concluded that it has local, regional, and national importance. It also concluded that, if the Tunnel was closed to vehicles, there would be an unacceptable severe impact on the movement of goods and people in the Clyde Valley affecting the viability of commerce, industry, and tourism.

Grant Aided Expenditure

The operational funding for Clyde Tunnel funding is not properly accounted for in the Grant Aided Expenditure (GAE) formula. Glasgow City Council receives the same amount of funding as a similar length of local road. This funding takes no account of the need for the Tunnel to be staffed 24/7, the maintenance of the two tunnel bores and safety equipment, the maintenance of the two ventilation buildings, operational control room and the office block. The revenue funding shortfall is approximately £860k each year.

Traffic modelling confirmed that any unplanned closure of the Clyde Tunnel, due to lack of maintenance, would have an adverse socio-economic impact as well as a risk of reputational damage. The traffic modelling also confirmed the regional and national importance of this asset to the economy and its importance in serving the Queen Elizabeth University Hospital. Meetings were held with Transport Scotland (TS) to discuss the outputs of the traffic modelling and if any funding could be accessed. Although TS provided technical advice and information, they confirmed that they were unable to assist with any funding. GCC is preparing a Clyde Tunnel business case to support future funding bids.

Operational Requirements

There are strict regulations on the safety and management of road tunnels that require an operational workforce 24/7, 365 days a year. The workforce consists of one Tunnel Manager, one operations controller, one assistant operations controller, twelve network officers (three on shift at any one time) and one electrician/fitter. The appointment of a Tunnel Manager (Clyde Tunnel & Tidal Weir) was completed in November 2021 and provides professional oversight, compliance with the Road Tunnel Regulations 2007 and defends GCC's legislative position. Operation safety detail is included in Appendix 1 at the end of this report.

9.2 Asset Condition

Road Tunnel Structural Repairs, Cathodic Protection, Emergency Cross Passage & Approach Ramp Grouting

Structural repairs and the replacement of the Tunnel's cathodic protection system are required. There is a risk that localised repairs will be needed to the reinforced concrete road deck which would lead to traffic congestion. Partial funding of £1m has been provided within Capital Investment for 2024/25. However, costs received from bidders initial funding was insufficient and further funding of £3m was obtained to allow full completion of the works which are due to start late 2025. Structural modification to the existing cross passage is needed also it can become a compliant evacuation route. Approach ramp grouting repairs are required to improve condition and proper drainage. Once complete, plans are being made to resurface both tunnel bores.

Operational Buildings

The outcome of a building condition survey carried out in 2015 concluded that the two ventilation buildings, operational control room and the office block require upgrading; structural repairs and remedial works are required so that they are wind and watertight. The condition of these operational buildings increases the risk of system failures that may require the Tunnel to be closed.

Capital Investment funding was provided in 2023/24 to carry out some works with further funding of £1m in 2024/25 to complete required roof repairs to workshop roof and to the north and south ventilation buildings. During these roof works, the intake cowling and exhaust ventilation ducts on the north and south ventilation buildings were found to have lost protective galvanised coating allowing significant sections of rust to form, this is contributing to water penetration into the buildings and fans. Funding of around £500k is required to clean, repair and recoat the protective covering for these essential structural parts.

Cycle & Pedestrian Tunnels

The existing wall mounted fluorescent compact lamp fittings are beyond their design life and the associated cabling requires to be replaced. To promote active travel and safe use of the cycle and pedestrian ways, the existing lamps and cabling are be replaced with energy efficient LEDs, new cabling, CCTV & public address systems. This would greatly encourage active travel due to the more welcoming and safer environment. Capital Investment funding was provided in 2023/24 which has allowed AECOM consultants in mid-2024 to design LED lighting replacement throughout the pedestrian tunnel and service access. These works have been included with planned structural repairs.

North & South Ventilation and Plant Rooms

The original ventilation installation from the 1960s requires to be overhauled. This is used to automatically control pollution within the road tunnel via carbon monoxide/visibility sensors. The ventilation is also an essential part of the fire control systems. Funding has been located to replace the CO/VIS sensors in late 2025.

9.3 Clyde Tunnel Investment Requirements

The Tunnel and its approaches require substantial capital investment. The table below summarises prioritised investment needs.

Clyde Tunnel (Priority = Red/Amber/Green)	**Estimate (£m)**
Intake Cowling & Exhaust Ventilation Repairs	0.53
SCADA Integration Cycle & Pedestrian Tunnel	0.32
Road Tunnel LV Power Supply and Distribution Upgrade	0.63
Clyde Tunnel Yard Security Gates & Intercom/CCTV	0.16
Clyde Tunnel Fire Alarm System	0.25
CCTV Cycle & Pedestrian Tunnels	0.11
Road Tunnel Emergency Cross Passage	2.11
Road Tunnel Ventilation Upgrade	0.53
Road Tunnel Fire Auto Fixed Fogging System, Gas Detection & Fire Ring Main	3.68
Clyde Tunnel Approach Ramps Grouting	0.21
Total	**8.53**

10.0 Ex GCC Housing Infrastructure

10.1 Maintenance Obligations

The roads, footways and footpath infrastructure associated with the 2003 housing stock transfer to Glasgow Housing Association are not adopted as public and the Council has no statutory obligation under the Roads Scotland Act with regards to maintenance and replacement of these assets and consequently are not included in any safety inspection regime or considered for inclusion in investment programmes.

A number of these housing estates have been subsequently subject of secondary transfers and are the responsibility of Local Housing Associations and due to a lack of investment, this infrastructure is generally in poor condition and requires extensive investment to bring it up to an acceptable standard.

A recent legal interpretation of the 2003 transfer agreement has determined that although not statutorily obliged to maintain these assets, the Council corporately does have contractual (under the terms of the agreement) and a wider duty of care (as landowner) obligations to ensure that these assets are safe and maintained to a reasonable standard. At present NRS undertake reactive repairs to ensure that these assets remain safe, however without planned investment these assets continue to deteriorate and the requirement to undertake these repairs has increased resulting in dissatisfaction of residents, an increasing number of complaints and puts additional pressure on already stretched maintenance resources. It will not be feasible to continue to undertake these types of repairs forever and investment will be required to upgrade and replace these assets.

10.2 Scale of the Assets & Upgrade Costs

The roads infrastructure that serves the ex GCC Housing Estates is significant and comprises of approximately 44km of road (2% of existing network length) and 265km of footway and footpaths (8% of existing network length). A visual survey undertaken in 2015 estimated the cost to bring these roads and footpaths to acceptable standard. When updated to recent prices, this is now estimated to be in the region of £9.5m, although this will not take into account any likely deterioration that has occurred between 2015 and 2025.

A substantial lighting asset, estimated to be approximately 8,800 columns (12% of existing total), is also associated with the 2003 housing stock transfer. No condition data is available however in the absence of any investment it is likely that the majority of this will either have exceeded or be near to exceeding it's 30-year service life and will be in need of replacement. As the asset continues to deteriorate it will pose an ongoing structural and electrical safety risk. The cost to completely replace the lighting asset associated with the Stock Transfer is estimated to be £32m.

10.3 Summary

In the absence of significant investment to repair and upgrade these assets The Council is exposed to an ever-increasing maintenance liability that is likely to increase year on year, the likelihood is that costs to undertake reactive repairs will increase, customer satisfaction will decrease and complaints, Member Enquiries and public liability claims will also increase. To try and mitigate these risks we are proposing to establish cross department working group to review how these assets are maintained and explore options and opportunities to attract additional funding.

11.0 Recommended Investment Options

Asset Group	Investment Option	Projected Outcome
Carriageways	£123.5m Over 10 Years	An annual investment of £12.35m for 10 years would lead to the Glasgow road network being in the best condition since 2006.
Footways	£10.4m Over 5 Years	An annual investment of £2.08m would allow the existing coniditon of our footway network to be maintained.
Street Lighting	£159m Over 15 Years	An annual investment of £10.6m for 15 years would replace up to 37,000 'at-risk' columns and associated cabling which would substantially improve the infrastructure condition.
Traffic Signals	£27.5m Over 5 Years	An annual investment of £5.5m for 5 years will convert all traffic signal junctions with old incandescent technology to LED's and the installation of tactile paving at all junctions and pedestrian crossings.
Structures	£90m Over 20 Years	An annual investment of £4.5m over a 20 year period would allow for the structures in the worst condition to be targeted for repair.
Clyde Tunnel	£8.5m	An investment of £8.5m would allow for the repair of operational infrastructure and structural issues.
Total Investment	£419m	

Asset Group	Additional Revenue Investment	Projected Outcome
Cycleways	£80k per annum	An additional investment of £80k would enable the required levels of gritting, sweeping, rain garden maintenance and surface maintenance to be carried out.
Road Drainage Systems	£750k per annum	An additional investment of £750k would enable us to maintain the road drainage asset and improve the level of customer satisfaction, through a programme of preventative measures rather than through reactive maintenance.
Traffic Signs, Lines and Street Furniture	£100k per annum	An additional investment of £100k over a sustained period would allow for the repair or replacement of all street furniture identified as being in poor condition
Total Additional Revenue Investment	£930k per annum	

Appendix 1 – Cycleways Impact of Recent Investment

Project & Description	Ongoing & Recently Completed Works
Connecting Woodside - area-wide active travel project. Aims to work with the community to improve streets and public spaces for walking and cycling whilst rebalancing streets to reduce the dominance of road traffic.	**St George's Road/Charing Cross** - installation of cycle segregation from Sauchiehall Street to Garscube Road. This cycle facility will provide a direct, safe, and inclusive connection for the communities of Woodside and Woodlands whilst supporting travel options for the recent regeneration of the communities of Hamiltonhill, Sighthill and Port Dundas. The works are currently on site with completion expected by April 2026.
Connecting Battlefield - the provision of dedicated, separated cycle infrastructure on Queens Drive and Langside Road connecting to the existing South City Way cycle segregation route. This cycle facility will also provide a direct, safe and inclusive connection for the communities of Langside and Mount Florida. The works included; installation of a 2-way cycle lane on Queens Drive and Langside Road, upgraded street lighting on Queens Drive and Langside Road, upgraded traffic signals and the introduction of new signalised at Langside Road/Grange Road junction, enhanced footways and the introduction of natural stone paving areas, new areas of soft landscaping and street trees, carriageway resurfacing at junction of Langside Road/Grange Road and refurbishment of Queens Park railing along Queens Drive and Langside Road.	Construction commenced onsite during February 2024 and was completed by November 2024. Funded by Transport Scotland's Active travel infrastructure Fund.
East City Way - will deliver a safer, more comfortable walking and cycling active travel route between the City Centre and Mount Vernon.	Phase 5 aims to upgrade the existing Spaces For People infrastructure along London Road, between Canmore Street and Braidfauld Street. Phase 5 will include the upgrading of bus stops, introduction of kerb segregation, an additional on demand pedestrian crossing and upgrading Braidfauld Street junction. The project will be proceeding to community consultation in early 2026. Applying for ATIF funding for the construction phase in 2026/27.
Flourishing Molendinar - project to improve walking, wheeling and cycling connections in the vicinity of Molendinar Burn in the north east of Glasgow. Flourishing Molendinar is part of changes happening across Glasgow. Early stages of the project were led by St Paul's Youth Forum with support from Sustrans and Glasgow City Council. The first construction phase of Flourishing Molendinar has been funded by Transport Scotland's Active Travel Infrastructure Fund. This first phase will focus on Provanmill Road and consist of: resurfacing footways, installation of high quality permanent kerbing, upgrade of bus stops to high quality permanent standard, raised tables at junctions and new accessible crossing points, re-positioned pedestrian crossing near Langdale Street to be more in line with pedestrian desire paths and new daffodil and flower areas which will improve Glasgow's overall flood resilience.	Project is currently in procurement with a projected start for construction of November 2025 with the first phase being complete in April 2026. Subsequent phases dependent on securing further funding.

Appendix 2 – Clyde Tunnel Operational Safety

SCADA

The existing Supervisory Control and Data Acquisition system (SCADA) was replaced In July 2022 due to obsolete technology and lack of available replacement parts. This SCADA replacement has been installed in a new environmentally controlled server room and provides a modern system for control of pumps, ventilation, lighting, telephones, fire control, and VAID. Further sub-systems can be added later to the fibre backbone provide extra integrated functionality at a lower cost than a standalone implementation.

LED Lighting

LED Lighting installation in both bores of the Tunnel was completed in June 2022 and has been fully integrated into SCADA. This major improvement work provides modern, controllable energy efficient lighting that is compliant with current safety and design standards. Our electricity supplier has indicated a 50% saving has been achieved on our typical 94,000 kWh monthly usage for lighting at the Clyde Tunnel after introduction of LED Lighting.

Telephone System

The aging analogue PABX internal & SOS telephone was updated in September 2022 to a modern IP internal telephony system with enhanced routing features, call recording, fault reporting and integration with SCADA systems.

VAID

The Clyde Tunnel has a variety of critical operational safety systems and equipment. A new Video Automated Incident Detection (VAID) system was installed in October 2021 and later integrated with the upgraded SCADA improving traffic control and incident detection. The system was extended further in July 2022 to enhance ramp & portal visibility. This replaced the old proprietary analogue VAID system that was beyond its design life and provides additional safety functionality and enhanced digital camera coverage along with incident recording and limited archiving of video.

Road Tunnel Fire Detection

Funding has been sourced to upgrade the obsolete ADT Fire Control system which is required to provide compliance with Design & Refurbishment Code of Practice for Roads Tunnels (CD352). An independent Fire Risk Assessment was carried out in September 2022 and plans are progressing to have a new Fire Control system installed mid-2026. This fire control system will also be fully integrated within the new SCADA system.

Clyde Tunnel Yard

Increase of security required for Clyde Tunnel yard to avoid unwanted visitors by installation of remotely controlled vehicle gates and intercom/CCTV system. Additional CCTV was installed September 2025 with plans for gates & intercoms being discussed with contractors.

Electric Vehicle Batteries

An emerging risk is that of potential for Electric Vehicle (EV) fires occurring within the tunnel. The risk of an EV fire within the tunnel is low however the impact is very high should it happen. A working group has been setup to investigate options to mitigate the risks to the public, staff and tunnel structures. We will look at engaging with specialist contractors to assist recovery of vehicles and procedures to deal with contaminated by-products from any fire. As the only road tunnel within Scotland, the working group will be taking the lead in developing new operational procedures and regular review as necessary.

Business Continuity Plan

The Glasgow Operations Centre (GOC) will be updated by end-2026 to include backup facilities for operational control of Clyde Tunnel to ensure business continuity as and when required. On-site backup and training facilities are also available within the meeting room at the Clyde Tunnel. This SCADA integration will be regularly tested to ensure easy transition between operational sites and will be utilised during live exercises to ensure multi-agency responses are fully co-ordinated.

Public Address, Radio Re-broadcast, VMS

The Clyde Tunnel has no public address, voice alarm, Emergency Services Airwave Radio or public radio re-broadcast systems. There is a risk that should there be a major incident within the Tunnel, the efficient and safe management of the emergency services and evacuees could be compromised.

Variable message signing (VMS) and improved traffic control is required to provide compliance with Design & Refurbishment Code of Practice for Roads Tunnels (CD352). Funding of £950k was provided from Capital Investment programme for 2023/24 & 2024/25 to proceed with installation via tender in mid-2026. Procurement of consultancy services to inform the tender process is proceeding in late-2025.

Mobile Telephony

Vodafone in conjunction with local contractors identified the Clyde Tunnel as critical infrastructure and will install upgraded “leaky feeder” cabling late-2025, this will provide mobile telephony signal inside the road tunnel and pedestrian tunnel. It is hoped that other mobile telephony providers will integrate into this system.

Road Tunnel Fire Protection

Comprehensive active fire protection installations are required to provide compliance with Design & Refurbishment Code of Practice for Roads Tunnels (CD352). Refer to the table in Section 9.3.

HV Power Supply

Scottish Power Energy Networks (SPEN) upgraded the dual power supplies (North & South) to the Clyde Tunnel from 6.6KV to 11KV High Voltage (HV) within their national programme in May 2022. The Clyde Tunnel’s cabling, switch gear and sub stations were earlier upgraded to accept the 11KV SPEN HV supply. A designated HV Authorised Person has been appointed, the upgrade works and authorised person improves the resilience of the HV electrical supply to the Clyde Tunnel.

LV Power Supply

Further works are still required on the Low Voltage (LV) Power Supply and Distribution which requires to be upgraded as this is an original installation from the early 1960s. See table in Section 9.3.

Pedestrian & Cycle Tunnel

To promote active, environmental needs and to be attractive and safe for users, several investment requirements are needed to improve the environment are included in the table in Section 9.3.

Replacement Drainage Pumps

The Clyde Tunnel drains any water reaching the road deck during heavy rainfall towards sumps below the pedestrian and cycleway tunnels. This is automatically pumped away, when necessary, by two sets of three pumps which activate in sequence to keep levels under control. This is monitored and controlled by the integration into our SCADA system.

The existing surface mounted pumps are around twenty years old and failing. Several recent attempts to rebuild these pumps to the original design specification has failed as the pumps are still overheating under load. A costing exercise was carried out comparing costs of refurbishment against replacement with new pumps which was significantly cheaper and would prove more reliable. Revenue funding was used to replace the six pumps in late 2025 and these were all integrated with the SCADA Control System.