

Highways Asset Resilient Network Plan

Updated 2025



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South Gloucestershire
Council

Table of Contents

Record of Amendments

1. Introduction.....	3
2. Definition of the resilient Network	4
3. Specific considerations within the SGC network.....	5
4. Managing Disruptive Events.....	6
5. Resilience.....	7
6. Risk management.....	8
7. Resilient Network detail (plan and road detail).....	9

Introduction

Appropriate management of the highway network requires local authorities to prepare for potentially disruptive events, therefore maintaining a network which is resilient to disruption is a critical function of a local highway authority.

The effects of climate change on our highway assets have already been seen during several wet and windy weather events in recent years, as well as extreme temperatures. Our longer-term approach to highway asset management will need to consider what effect climate change may have on investment priorities and lifecycle costs of our highway assets. We will consider this impact by:

- Working towards climate actions that promote the retention and replenishment of nature and the biodiversity environments, by using SGC climate change decision wheel for all future highway schemes procurement in order to maximise opportunities carbon reduction, Biodiversity Net Gain and implementation of green options (where appropriate).
- Carrying out risk assessments and developing mitigation measures for the effects of extreme weather on our highway infrastructure assets.
- This Resilient Network Plan has been developed to conform to the recommendations set out in the Code of Practice Well-managed Highway Infrastructure, published in October 2016 and founded on the key principles of Best Value and Risk Assessment. It is closely connected to the South Gloucestershire's Highway Asset Management Strategy and follows the principals set out in that document.

We have identified a Resilient Network (RN), which receives priority regarding maintenance and other measures to minimise the risk to the authority both in terms of economy and in access. The highway network routes making up South Gloucestershire's RN are those routes which are deemed essential to the highway network and are loosely based on the road classifications and the road hierarchy.

The RN sets out the following:

- Identifies the network routes that form the RN.
- Identifies critical infrastructure.
- Where possible, directs programmes of work on its highway assets to ensure resilience is maintained.
- Takes a risk-based approach on identifying the hierarchy category to ensure sufficient safety inspections are carried out on all its highway assets.
- Appropriate routine safety inspections are carried out the main highway network and all other major highway assets.
- Informs cyclical maintenance programme priorities, such as gully cleansing regimes, bridge drainage, and other environmental activities to ensure that they are adequate to keep drainage systems functioning to their maximum capacity.
- The basis of the Council's Winter Maintenance Plan pretreated network in its priority gritting routes.

Definition of the Resilient Network

While our winter and severe weather plans are about preparing for and reacting effectively to adverse weather conditions, our RN is defined as the portion of our highway network that is absolutely vital to maintaining economic activity and access to key services during extreme weather emergencies and other major incidents. The purpose of defining this network is to identify the most critical routes and associated highway assets, so that planned whole asset maintenance on that part of the network may be prioritised. In doing so, we can ensure that our defined RN is less prone to failure and in turn improve the council's resilience to extreme weather events, industrial action and major incidents.

The over arching aims of South Gloucestershire Council's RN are:

- To protect economic activity in and throughout the authority
- To protect access to key services and key infrastructure

To achieve this, we have used the following criteria to identify and map a network of our most critical routes and highway assets:

- All roads included in our priority gritting routes.
- All roads included in South Gloucestershire's KRN.
- Roads linking to key service locations, including Critical Health infrastructure (hospitals, national blood transfusion centre ambulance stations, fire stations, police stations).
- Roads linking to critical power distribution sites (Oldbury Power Station)/ water treatment works or telecommunication hubs at risk of an impact from weather.
- Roads providing access to key transport hubs – railway Stations, bus stations/Hubs, metro link route.
- Roads linking to key locations of economic value (major employers and retail/Business Parks)
- Parts of the network that are traditionally prone to flooding which has a major impact on premises and properties.

Plan of our RN is shown in Appendix 1. This is reviewed at least every 5 years or following changes to the highway network to ensure that it is still relevant.

Managing disruptive events

Specific risks to the highway are established by reviewing past occasions when events have affected highways/transport and by assessing how the impacts may become more frequent or severe in the future.

Resilience will be achieved through a combination of activities which will include:

- Pre-planned diversions to allow continued movement of traffic. Eg closure of adjacent motorways M4/M5
- Improved drainage systems.
- Regular maintenance of existing drainage systems.
- Pre-salting of affected routes.

South Gloucestershire has developed an ***Adverse Weather/Incident response plan*** to ensure the protection of property and infrastructure from flooding.

For the wider area our ***annual winter maintenance plan*** is shared with our partnering authorities to ensure cross over major routes match for priority and pretreatment to ensure the regional road networks are prioritised and cleared for throughflow of traffic.

Contained within the winter plan are contact numbers for all key players in reacting and treating any major disruption to the network to ensure a coordinated approach is maintained.

Our Emergency planning team also have corporate strategies and plans to ensure an authority response is controlled at a senior officer level.

Risks and Management

The following table shows the potential events leading to disruption on the Resilient Network, mitigating actions, response and recovery actions:

Event	Mitigating actions	Planning	Response	Recovery
Intense rainfall & flooding	<ul style="list-style-type: none"> • Carry out targeted gully cleansing at flood sites • Prioritise drainage improvement schemes on resilient network • Have action systems in place for internal and external early weather and event warnings. 	<ul style="list-style-type: none"> • Maintain accurate and up to date information about flood incidents • Local Flood Risk incident response plans (includes exceptional heat) 	<ul style="list-style-type: none"> • Coordinated / prioritised response. Based on resilient network threat to homes and properties and economic and social factors network • Ensure new /replacement assets/schemes reflect new threats and or changes in recommended changes in specifications 	<ul style="list-style-type: none"> • Regular review of the response plans - taking on board lessons learnt , adjust accordingly • Monitor and adjust Drainage maintenance programmes.
Extreme winter and severe weather	<ul style="list-style-type: none"> • Designing for resilience • Develop response to exceptional heat 	<ul style="list-style-type: none"> • Winter Service Plan • Incident response plan 	<ul style="list-style-type: none"> • Prioritise on a social economic and practical front • liaise with other stakeholders to ensure continuity 	<ul style="list-style-type: none"> • Review severe weather events / response times and challenges
Asset deterioration or failure	<ul style="list-style-type: none"> • Carry out regular inspections and surveys. • Utilise data to produce prioritised 'planned' maintenance on 'Resilient Network' • Designing for resilience 	<ul style="list-style-type: none"> • Maintain accurate and up to date asset information • Carry out regular inspections and surveys • regularly review methods/ routes and results 	<ul style="list-style-type: none"> • Ensure new /replacement assets reflect new threats and or changes in environment/specifications 	<ul style="list-style-type: none"> • Continue to review lessons learnt and performance of replacement assets
Other major disruptive event	<ul style="list-style-type: none"> • Designing for resilience 	<ul style="list-style-type: none"> • Major and local Emergency response Plans 	<ul style="list-style-type: none"> • Prioritise incident response (e.g. storm damage) on Resilient Network 	<ul style="list-style-type: none"> • Post event analysis and if needed adjust plans accordingly

Appendix A – Resilient Network

