



Engineering and
Highways

**Highway
Infrastructure
Resilient
Network
Strategy**

Foreword

The **Highway Infrastructure Resilient Network** provides the minimum network of roads which will be maintained in Redcar & Cleveland in times of extreme weather. The resilient network will be given priority, in order to maintain economic activity and access to key services during extreme weather.

Document Information

Title (Sub Title)	Highway Infrastructure Resilient Network Strategy
Product Number	AMF-004
Author	Michael Kay / XAIS
Description	Describes the Council's process in creating a resilient network.

Document History

Version No	Status	Author	Date	Changes from Previous Version
01	Draft	JW	Sep 21	First release for Comment

Introduction

If you live, work or pass through Redcar & Cleveland you will use the largest and most visible asset Redcar & Cleveland is responsible for – the Highway Infrastructure Network.

A Highway Infrastructure Network road hierarchy is the foundation of a coherent, consistent, well managed and auditable infrastructure maintenance strategy. It is crucial to asset management planning as it enables different levels of service to be associated with different maintenance categories to ensure key infrastructure assets are maintained appropriate to their use and agreed levels of service.

Recommendation 12 of the Well-managed Highway Infrastructure Code of Practice states; “A network hierarchy, or a series of related hierarchies, should be defined which include all elements of the highway network, including carriageways, footways, cycle routes, structures, lighting and rights of way. The hierarchy should consider current and expected use, resilience, and local economic and social factors such as industry, schools, hospitals and similar, as well as the desirability of continuity and of a consistent approach for walking and cycling.”

A highway infrastructure network hierarchy should be based on asset function, providing the foundation of a risk-based maintenance strategy in line with the risk-based approach detailed in the new Code of Practice. It is crucial in establishing achievable levels of service and to the statutory network management role for developing co-ordination and regulating occupation.

The Resilient Network IS NOT a maintenance hierarchy, it is the network of roads used to maintain economic activity, access to key services and to enable the citizens, businesses and visitors of Redcar & Cleveland to go about their daily business in times of extreme weather, or other significant disruption.

1. Resilient Network Strategy

During periods of prolonged extreme weather, the highway network can be disrupted. This was highlighted during the winters of 2013/14 where many areas of the Country suffered disruption due to the severe weather. In response, the Secretary of State commissioned an Independent Review of the resilience of the nation's transport network, resulting in the 2014 Transport Resilience Review by Department for Transport (DfT). This review made 63 recommendations; 14 of which were directed at Local Authorities.

The Transport Resilience Review recommended that Local Highway Authorities should; "Identify a 'resilient network' to which they will give priority, in order to maintain economic activity and access to key services during extreme weather" (DfT, 2014).

This has been reinforced with the release of the Well-managed Highway Infrastructure Code of Practice.

Recommendation 20 of the Well-managed Highway Infrastructure Code of Practice states that a "Resilient Network" should be identified to which priority is given through maintenance and other measures to maintain economic activity and access to key services during extreme weather. The process for identifying the Resilient Network considers which routes are absolutely essential and those which can be considered less of a priority, and managed without for some time. Its about priorities in a time of difficulty when resources may be limited or otherwise engaged. Its about which roads are key to

- The preservation of life and property
- The protection of those who are vulnerable
- Providing access for emergency services
- The availability of food, water electricity, gas and communications
- Maintaining a viable economy

It is implicit that these decisions will not simply follow road classification or categorisation and that the process in determining the resilient network for Redcar & Cleveland should engage key business, stakeholders, interest groups and involve the community.

It has previously been accepted that the “Resilient network” is generally the primary winter service route. This is no longer the case. The resilient network is based on risk and need. It should also align with the networks of neighbouring areas and be consistent with the wider resilience strategy for Tees Valley and surrounding areas

The Government considers asset management to be a key part of the provision and ongoing maintenance of an available resilient network, as well as effective contingency planning and prioritisation.

The increase in potential for extreme weather events is generally acknowledged to be an impact of climate change and this is likely to increase the severity and magnitude of weather events.

Local authorities are expected to make the best use of the most up-to-date climate change forecasting information available and to consider this in the prioritisation of works to increase the resilience to climate change of the highway infrastructure assets.

Drainage is considered an important function in addressing the increase localised flooding issues resultant of climate change and understanding the condition of the drainage network and ensuring its effective maintenance assists in minimising the damage caused by extreme weather events.

The Government response to the Transport Resilience Review identifies the importance of maintaining an effective drainage infrastructure to ensure a reduction of scale and threat of flooding with a focus on known problem areas.

Process in Developing the Resilient Network

In order to develop the resilient network, there is a need to identify routes that can fulfil the more specific role of the resilient network for a range of issues beyond cold weather. The resilient network is the bare minimum a highway authority needs to maintain when resources are scarce, and it should consider;

Key Service Locations

- Highway Depots
- Ministry of Defence
- Police stations
- Ambulance stations
- Fire stations
- Hospitals with Accident and Emergency
- Bus Stations
- Railway Stations
- Access to motorway network
- Critical infrastructure identified in the council's emergency plan
- COMAH sites
- Petrol Stations
- Power Distribution Points
- Communications i.e., essential fibre optic cables etc.

Key locations of Economic value

- Main Business parks
- Main Industrial estates
- Main employment centre

Where appropriate it may also be necessary to consider;

- Care Homes with Nursing Care facilities
- Educational Facilities (weekdays)
- Large Medical Clinics/ non A and E hospitals
- Utility facilities in need of access (on request)
- Town and District Centres
- Large Retail/ Business Parks
- Secondary bus routes and school routes

The resilient network should also consider locations which under certain conditions should be shut and bypassed for safety purposes, i.e. those known to be prone to;

- Sections of road liable to flood.
- Exposed locations in extreme weather conditions.
- ice or snow build up
- strong winds
- Where it is dangerous or impractical to maintain open routes for all road users
- Responses by Potential Event
- When responding to a particular event the council will prioritise clearing/repair of the resilient network routes to keep it open. Redcar & Cleveland will consider the need to minimise the risk of
 - Snow & Ice
 - Flooding
 - Heatwaves
 - High Winds
 - Other incidents

Actions will include but will not be limited to gritting the roads, snow plough (removal of snow and debris), closing roads and defect repairs.

Snow

Issues are likely to arise as part of snow conditions are reduced visibility, reduced surface friction, Failure in road signals, Roads become impassable due to snow and vehicular accidents.

Flooding

A flooding event may result in the closure of roads and footpaths, therefore, to minimise the risk Redcar & Cleveland have consulted on flooding to understand which routes may be affected and therefore consider alternative routes as part of the resilient network.

Drainage hotspots within Redcar & Cleveland

Roads in the resilient network affected by Environment Agency flood zones

Heatwaves

Issues are likely to arise as part of any heatwave emergency, such as power failures and transport disruption, and these will be dealt with by the departments concerned as part of a coordinated response unless they became the overriding concern, in which case the overall central government department lead may transfer responsibility

High Wind

Issues likely to arise as part of high wind include fallen trees or branches, debris in the road, difficult driving conditions (potential increase crash risk), electrical failure.

Consultation on Weather warnings for high winds will provide information on the likelihood of driving in extreme dangerous weather the expectation of widespread uprooting of trees, widespread damage to buildings, with potential for severe structural damage. Public may be advised not to venture outdoors unless really necessary.

Other Incidents

Other incidents not related to weather, i.e., acts of terrorism may impact on the highway and will have the same highway prioritisation applied where appropriate.

Consultation

The following groups have been considered during the formulation of the resilient network.

- Neighbouring Highway Authorities
- Blue light services i.e. Police, Fire and Rescue, Ambulance
- Network Rail
- Bus Operators
- Ministry of Defence
- Emergency Planning department
- Utility Operators
- Highways Maintenance
- Traffic and Safety
- Street lighting
- Structures
- Public Rights of Way

The timeline for this process was.

Date	Description
October 2021	Initial documents produced and data gathering exercise was undertaken
November 2021	All information plotted on a map
December 2021	Network was assessed and logical routes applied
January 2022	Initial resilient network produced
April 2022	Resilient network issued to stakeholders for comment
July 22	Consultation closed and resilient network approved for winter 22/23

The Resilient Network will form part of the annual infrastructure review. The plan below shows the resilient network for Redcar & Cleveland.

Redcar & Cleveland Resilient Network 2022

