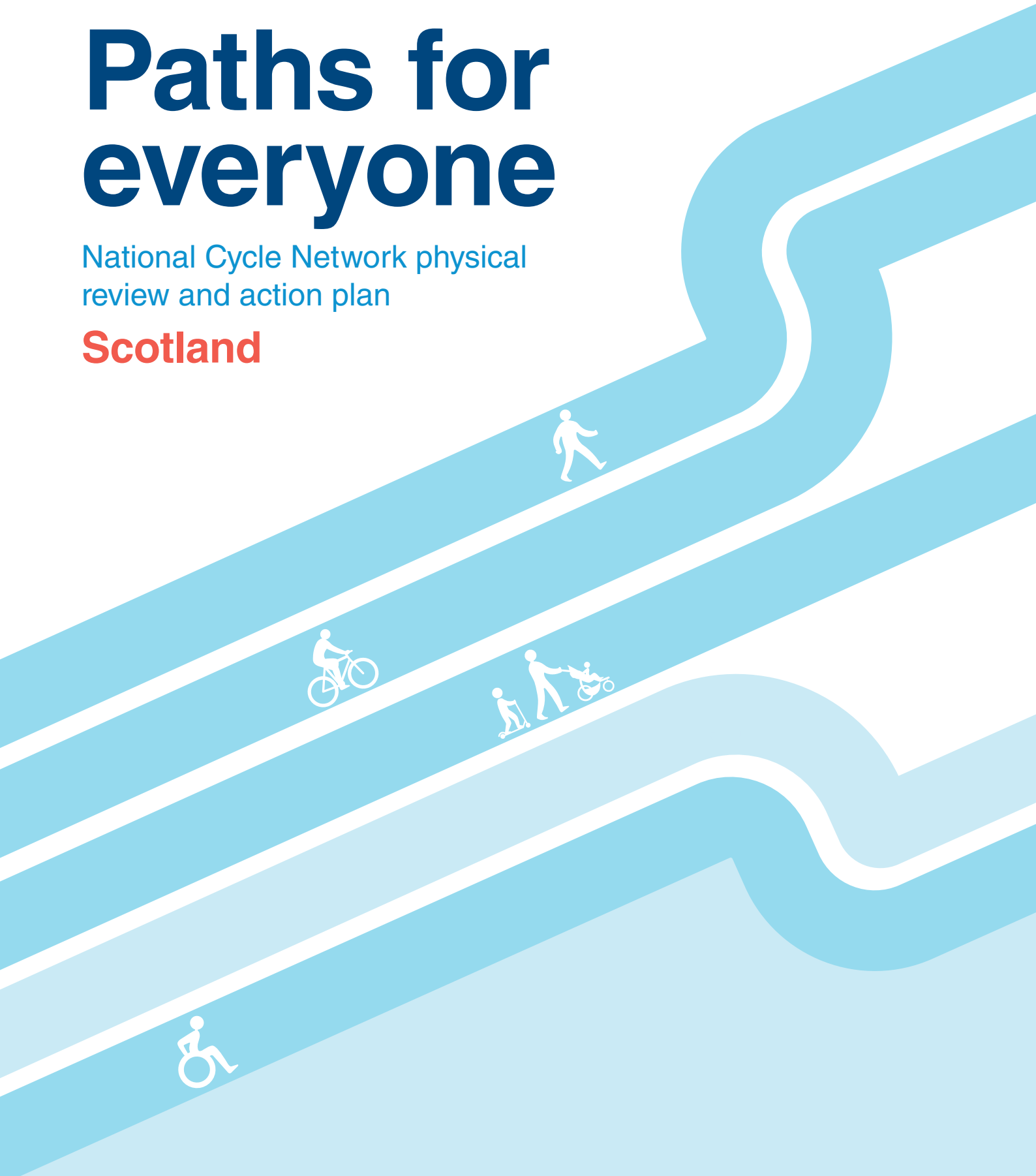
Paths for everyone

National Cycle Network physical review and action plan

Scotland



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Contents

Sustrans is the charity making it easier for people to walk and cycle.

We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute. Join us on our journey. **www.sustrans.org.uk**

1. Introduction to the National Cycle Network

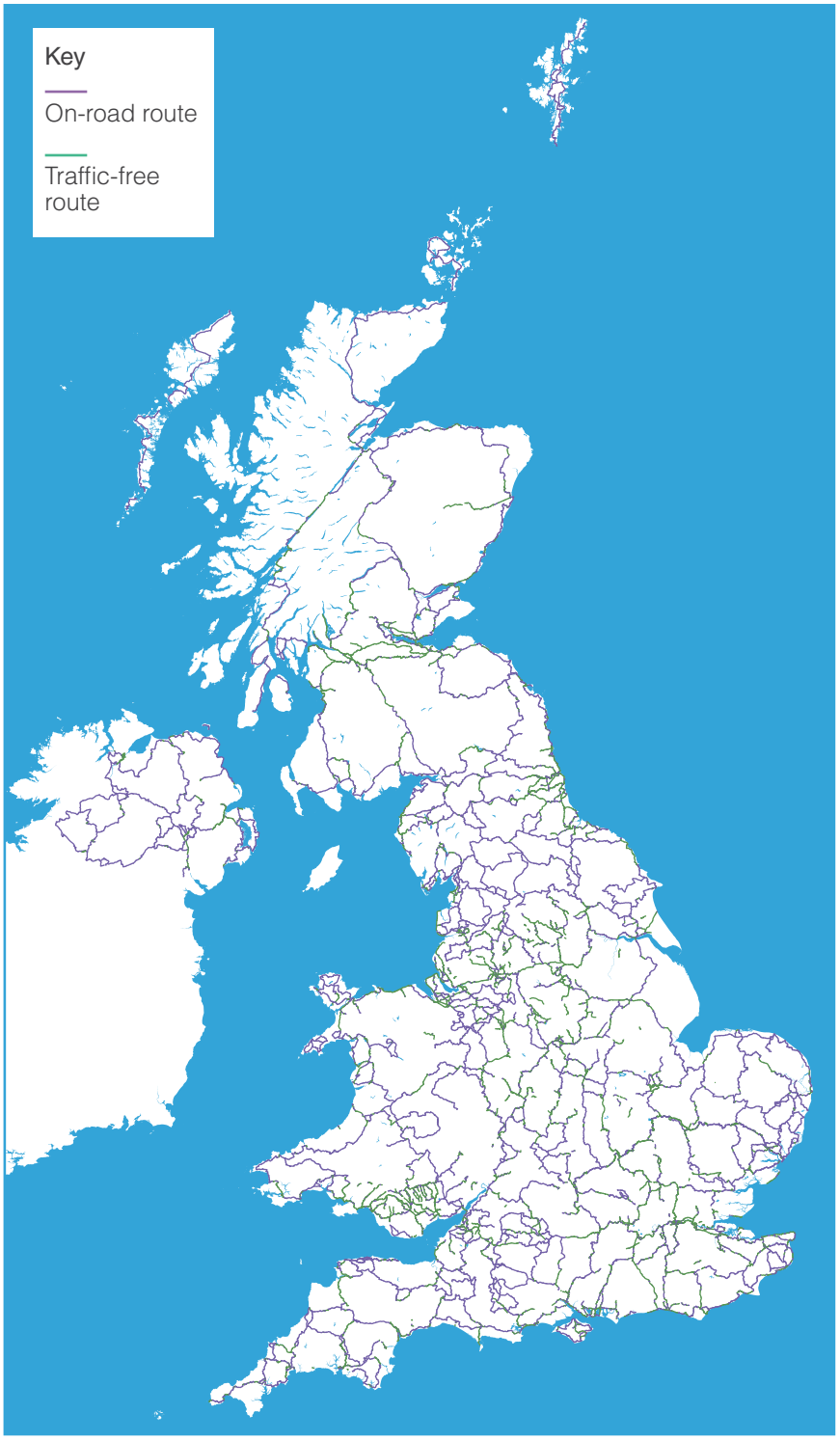
The National Cycle Network is a 23-year-old network of 16,575 miles of signed routes spanning the UK. It is used by walkers, joggers, wheelchair users and horse riders, as well as people on bikes.

It began with a National Lottery Grant (via the Millennium Commission) in 1995 and a pioneering vision to create high-quality, convenient routes for walking and cycling. Since then, we have worked with hundreds of partners to grow the Network into every corner of the UK.

Sustrans has worked with partners, stakeholders, staff and volunteers to conduct a comprehensive review of the entire Network.

A new shared vision has been agreed that will define the revitalised National Cycle Network:

A UK-wide network of traffic-free paths for everyone, connecting cities, towns and countryside and loved by the communities they serve.



The National Cycle Network in Scotland

Sustrans works with a wide group of partners to develop and improve the National Cycle Network in Scotland. Core funding for development comes from Transport Scotland while Sustrans works with partners such as local authorities, national parks, Scottish Canals and local landowners to develop, promote and manage the Network.

Promotion and development of the Network is supported by Visit Scotland and the Tourism Department in Scottish Government.

The physical audit of the Network

All 16,575 miles of the National Cycle Network were surveyed by a team of independent assessors during 2015 and 2016 and all key characteristics recorded, including surface type, width, lighting, barriers and signage, as well as road classification for on-road sections.

The data was captured in the field on hand-held devices, then uploaded to our online geographic information system (GIS) for analysis.

The audit data has created a snapshot of the condition of the Network and provides a level of understanding and overview for the Network that has never been available before.

In order to compare different sections of route, Sustrans has developed a Level of Service Measure scoring system based on four route quality indicators:

- Surface quality
- Way-finding and signage
- Flow
- Traffic-related safety

Surface quality

Is the surface smooth enough for all types of cycle to be used here?

All on-road sections are scored relatively high as they generally have a smooth surface. Traffic-free sections do have poor surfaces in some locations and this is reflected in the score for this measure.

Way-finding and signage

Can this route be followed without a map?

The score reflects whether a section is signed in both directions, one direction or not at all.

Flow

Can a relaxed speed (typically around 8 mph) be continually and safely maintained here?

Path width, pinch points and restrictive barriers are the main constraints under this measure. (A relaxed speed may be lower than 8 mph in some circumstances.)

Traffic-related safety

The question our surveyors had to answer was:

Would most people allow an unaccompanied 12-year-old to cycle here?

This is the most subjective measure as it is based on the surveyor's assessment of whether a section of road is suitable. Due to inconsistencies between surveyors, Sustrans has acquired INRIX traffic data, which gives an objective measure of traffic volume and speed, based on information from commercial fleets, GPS, cell towers, mobile devices and cameras.

This means that we can set threshold criteria for on-road sections and define what would be acceptable for a quiet-way section. The INRIX data was validated using actual traffic count data for all roads in Cornwall, with thanks to Cornwall Council.

Weighting is applied to the safety measure in order to recognise that a traffic-free route should have a higher traffic-related safety score than an on-road route.

- Traffic-free route +6
- On-road section meeting quiet-way traffic criteria +4
- Other roads -4

Urban Rural Classification	Section Average Speed[1]	INRIX Volume Index[2]	Equivalent AADT[3] traffic volume
Urban	<=15 mph	<=11	2,500
Rural	<=25 mph	<=9	1,000

Scoring

Each measure has a four level scoring system either Yes, Perhaps, Probably Not or No, with a score of 3, 2, 1 or 0 assigned.

Score	3	2	1	0
Level	Yes	Perhaps	Probably Not	No

Classifications

The highest possible score for a high quality traffic-free section is 15 points and this is considered to meet the Very Good standard. Lower scores are classified as Good, Poor or Very Poor as below:

Score	15	10-14	6-9	0-5
Classification	Very Good	Good	Poor	Very Poor

1. It is recognised that the use of average speeds only provides an approximate indication of the speed characteristics of a road. As part of the improvement of sections of National Cycle Network designated as quiet-way it will be a requirement for there to be a speed limit of 40mph in rural areas (or 20mph in built-up areas).

2. INRIX Traffic Volume Index - measured on a scale 1-16 with 1 being very low traffic volume and16 very high traffic volume

3. AADT - Annual Average Daily Traffic is a measure of traffic flow and is the total volume of vehicle traffic of a highway or road for a year divided by 365 days.

Physical review and action plans

Seven physical review and action plans have been developed, one for each of the Sustrans geographical regions and nations of the UK, as a key element of the 'Fix it' strand of the review.

Each action plan defines the state of the Network for its area, outlines the strategic priorities identified for the region or nation and shows the number of miles that need to be improved in order to get the Network in the area to Good and Very Good.

A number of activation projects are identified in each of the plans, chosen to reflect a range of project types (upgrading existing on-road sections, improving traffic-free routes, dealing with dangerous crossings and junctions, creating new route corridors) as well as geographical diversity and deliverability within a tight timescale.

The implementation of the activation projects will build the momentum of the revitalisation of the Network resulting from the review.

Network development plans

The action plans will be backed up with full Network development plans that set out long-term, detailed plans for the entire regional/national network.

These plans will be developed by the Sustrans Network development teams in each area, in consultation with the advisory panels, volunteers and other stakeholders, and will be live documents that are continually updated, becoming the blueprint for the development of the Network.

Design principles for the National Cycle Network

A key objective for each physical review and action plan is to detail what is required to achieve a Very Good standard for the whole of the Network – that is a standard that offers users a consistent, safe, and fully accessible experience. This will require the essential elements of a route – good signage, a smooth surface, sufficient width, no barriers to interrupt continual movement and safe interfaces with motorised traffic – to be upgraded where this is not currently the case.

The preference for on-road sections will be to create alternative traffic-free routes. These sections will be either off-road (away from the road) or on fully separated infrastructure within the road corridor, with all routes being suitable for an unaccompanied 12-year-old to use.

Where the creation of traffic-free routes is not viable, it may be possible to change the road character to create quiet-way sections. Quiet-way sections will have a speed limit of 40mph or less and a traffic flow below 1,000 AADT in rural areas (20mph and 2,500 AADT in built-up areas). In addition, they will include traffic signs and road markings to highlight the speed limit and to inform people driving a vehicle that they should expect to encounter people walking, cycling or riding a horse in the road and they should provide good visibility to enable all users to see each other.

Where traffic-free routes cross roads, or other busier roads in the case of quiet-way sections, these crossings or junctions will need to allow safe movement for people using the Network.

To achieve the Very Good standard a set of design principles has been created to guide the design of all new and improved sections. These design principles are set out in the National Cycle Network: Paths for Everyone report.

Where it is not possible to improve an existing section of Network it may be necessary to consider de-designation. This process will involve engagement with key stakeholders and reasonable steps would need to be taken to ensure route continuity for the Network as a whole.

2. Overview of the Network in Scotland

Scotland has a total of **2,657 miles** of National Cycle Network routes covering over 30,000 square miles in an area stretching from the English border to the tip of the Shetland Islands

Of the Network in Scotland, a total of **1,895 miles** (71%), is on-road and, of this 936 miles are on A or B roads, with 959 miles on unclassified or minor roads, reflecting the very rural nature of much of Scotland.

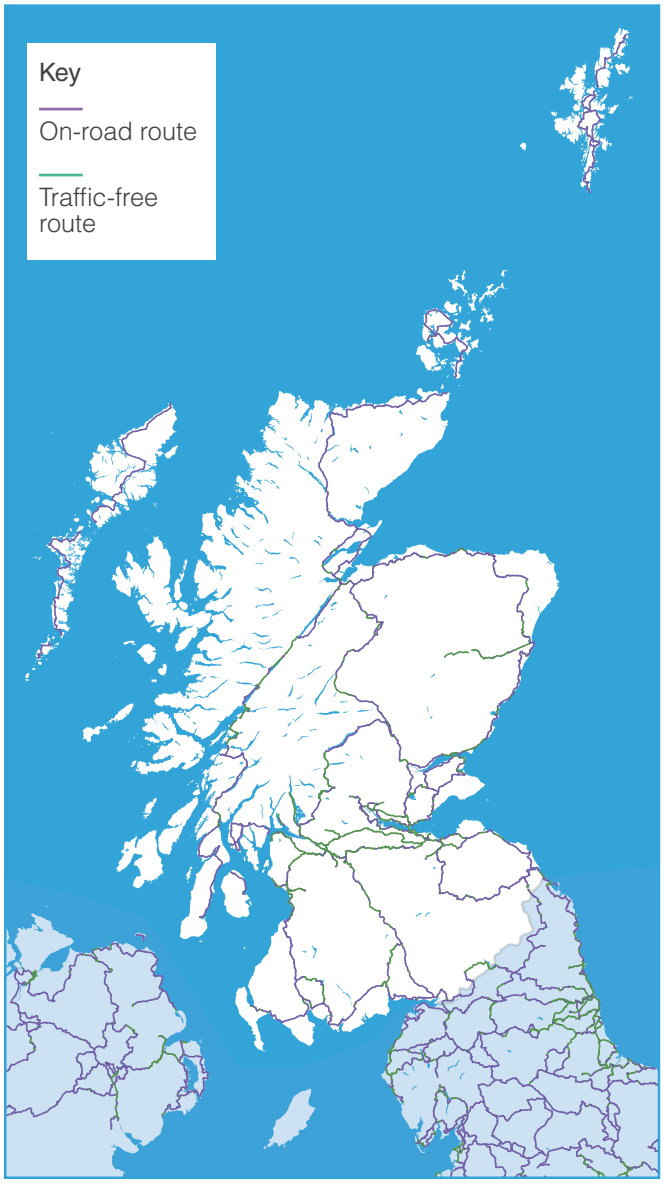
The remaining 29% of the Network, a total of **762 miles**, is on traffic-free paths, which use a mix of railway path, canal towpath, riverside path, forest road, shared-use path and segregated cycle lanes.

The National Cycle Network in Scotland includes several high profile long distance routes. This includes the internationally renowned Caledonia Way cycle route (National Route 78), covering the 237 miles between Campbeltown and Inverness, the Lochs and Glens Cycle route (National Route 7), running north – south between Gretna and Inverness, over 300 miles of Eurovelo Route 1, the Atlantic Coast Route, covering parts of National Route 1 and National Route 7, plus over 500 miles of Eurovelo 12, the North Sea Cycle Route, which is part of a long distance route that circumnavigates the North Sea from Scotland to Norway.

The National Cycle Network also runs through Scotland's two National Parks, Loch Lomond and Trossachs and the Cairngorms and connects all of Scotland's seven major cities.

Currently, funding for construction is distributed either as 100% grants for core sections of the Network or as 50% matched-funding through development opportunities applied for through Sustrans' Community Links funding programme.

Maintenance and management of off-road sections of National Cycle Network is covered predominantly by statutory bodies, local landowners, community groups and Sustrans. The National Cycle Network makes up key elements in Scotland's Core Path Network, which is a sub-set of the Land Reform Act. The National Cycle Network also forms part of the National Walking and Cycling Network (NWCN), which is referenced in the Scottish National Planning Framework (NPF4).

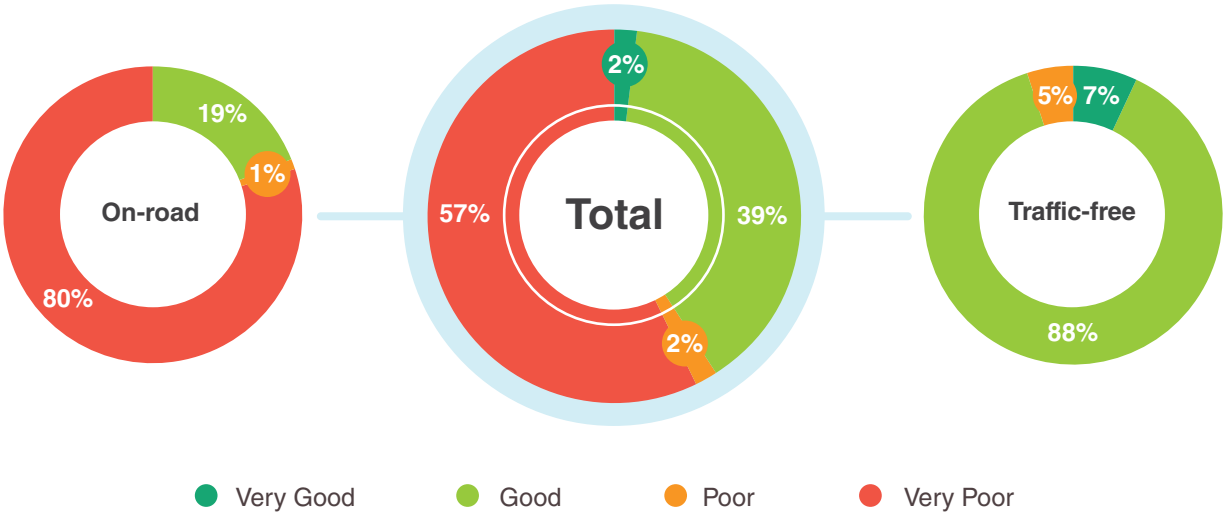


Condition of the Network

The audit has provided a snapshot of the condition of the Network in Scotland, with all sections of the Network rated as Very Good, Good, Poor or Very Poor. Using the audit data the condition of the on-road and traffic-free sections can also be viewed independently as shown below.

In Scotland the National Cycle Network audit ratings are as follows:

Very Good	Good	Poor	Very Poor
52 miles	1,036 miles	45 miles	1,523 miles

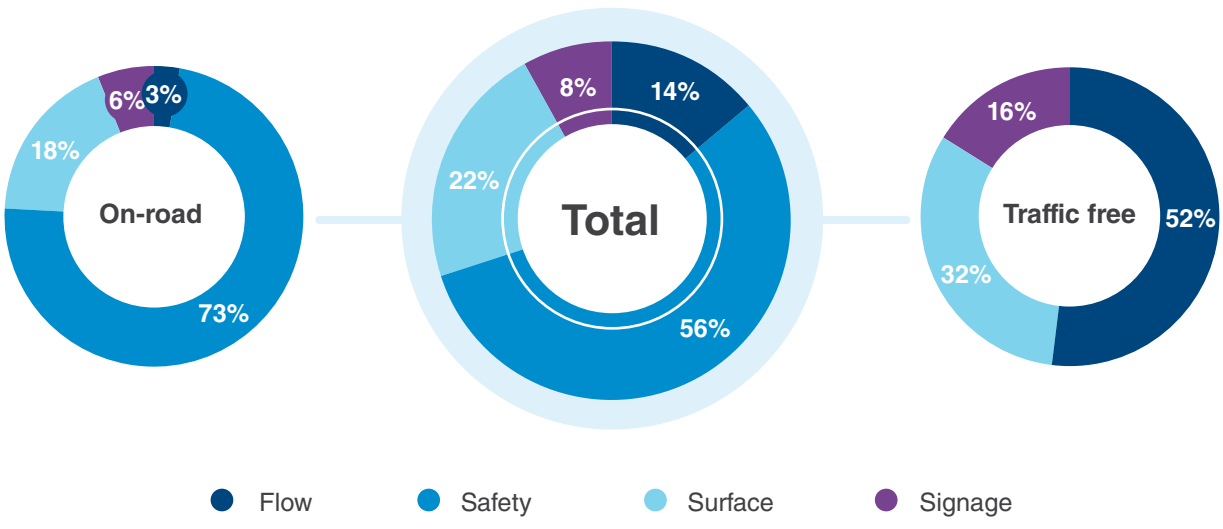


Identifying the issues

It is possible to run reports that show which of the main issues – traffic safety, surface, signage, flow - are causing the routes and paths to under-perform.

More than half (56%) of the issues on the Network in Scotland are due to traffic safety concerns, followed by 22% surface issues, 14% flow issues and 8% signage issues.

These reports can also be run for the on-road and traffic-free sections of the Network independently as shown below:



3. Strategic priorities for Scotland

These are in addition to the UK-wide strategic priorities of increasing accessibility and improving signage that are outlined in section 5.

Improving the existing routes

Safety first

The first priority will be to deal with sections of the Network that are a safety concern and that includes very busy and fast roads, including all A and B roads, and improving dangerous junctions and crossings.

Consistent user experience

The second priority is to ensure a consistent standard of experience for users of the Network. Initially focus will be on improving the traffic-free sections that receive the most complaints and impact on the reputation of the entire Network. Emphasis will be placed on improving the surface, repairing missing or damaged signage and removing restrictive barriers and pinch points.Creating new routes

Creating new routes

Filling the missing links and gaps in routes

The review of the audit data is helping to identify priority missing links. All new sections will meet the National Cycle Network quality standard and will be focused on completing key routes or critical sections, providing strategic coherence for the region and in some cases enhancing intra-regional connections or even national and international routes (e.g. Eurovelo routes)

Creation of new routes to improve connectivity

In some cases new routes or corridors will be required to ensure that there is efficient connectivity.

Improving accessibility

Improving flow

The review of the audit data has shown that flow is a key issue for traffic-free sections of Network, amounting to 52% of recorded issues. Most of these flow issues relate to extraneous or poorly designed barriers such as gates or chicanes that impede flow for users and in some cases, prevent legitimate path users from accessing these routes. A key priority for Scotland is to identify, remove or re-design these barriers to improve accessibility and experience for all users.

De-designation of routes

Route assessment and de-designation

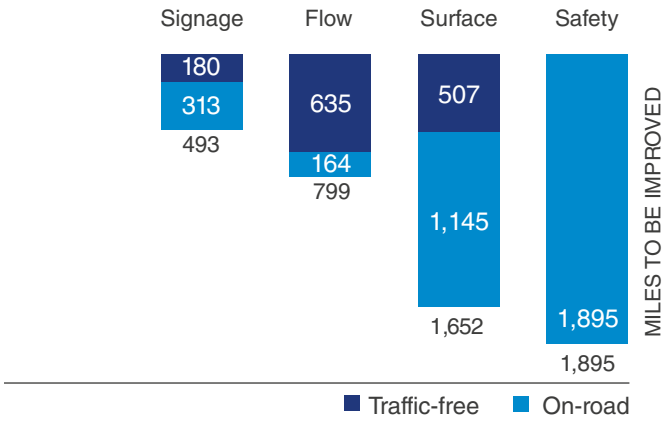
Of the Network in Scotland 1,523 miles (57%) is classified as Very Poor. These sections are all on-road and are mostly on busy roads with high traffic volumes and speed. Where possible, all attempts will be made to create traffic-free alternatives or improve roads to quiet-way status. However, some sections of Network, particularly where the usage is low and other routes exist, may also be considered for de-designation.

4. Quantifying the ambition for Scotland

Closing the gap to Very Good

The graph below shows the minimum number of miles, in each category, and for on-road and traffic-free sections that must be improved for Scotland to qualify as Very Good:

The gap to Very Good



On-road improvements required to be classed as Very Good

1,895 miles
of on-road Network need to be re-routed onto alternative traffic-free routes or have the characteristics of the road changed to create quiet-way sections.

1,145 miles
need surface improvements.

313 miles
need signage improvements.

164 miles
need flow improvements.

Traffic-free improvements required to be classed as Very Good

180 miles
need signage improvements.

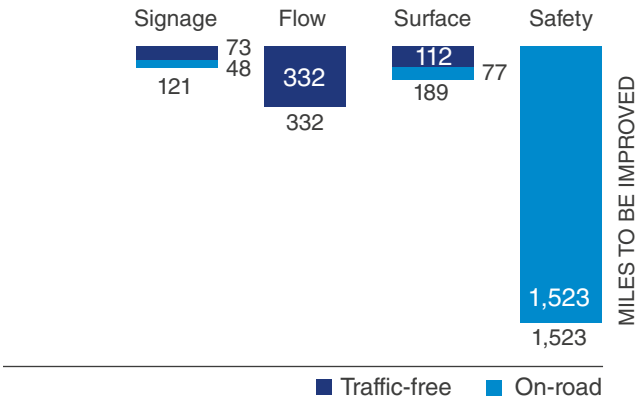
507 miles
need surface improvements.

635 miles
need flow improvements.

Closing the gap to Good

The focus for the first stage of improvements will be to get the Network to a Good standard.

The gap to Good



On-road improvements required to be classed as Good

1,523 miles
need to be re-routed onto alternative traffic-free routes or have the characteristics of the road changed to create quiet-way sections.

48 miles
need signage improvements.

77 miles
need surface improvements.

Traffic-free improvements required to be classed as Good

73 miles
need signage improvements.

112 miles
need surface improvements.

332 miles
need flow improvements.

5. UK-wide priorities

Accessibility

As well as being a Scottish strategic priority, equality of access for all users of the Network is also a UK-wide priority and forms a key element of the vision. We want the entire Network to be suitable for everyone and cater for all types of cycles including trikes, cargo bikes, hand-bikes, trailer bikes, tandems as well as being accessible for those on foot and users with pushchairs, wheelchairs, buggies and mobility scooters.

Restrictive barriers, steep ramps, high curbs and width issues on the Network itself are recorded in the physical audit under the service level measure 'Flow'.

As a first step to addressing this it is recommended that an accessibility working group is established to focus on accessibility issues across the Network. This will involve experts in the field as well as local volunteers and community groups.

Signage

Signage issues are also common to the whole Network and will be addressed through national and regional programmes:

- 493 miles (19%) of the Network in Scotland was assessed during the audit as requiring signage improvements: 313 miles of this is on-road and will need the permission of the Highway Authority
- 180 miles of this is on traffic-free sections

Signage issues can be split into three main areas:

- Signage issues on the Network itself that need fixing or amending including missing, obstructed or damaged signing or unclear, confusing or misaligned signage
- Signage that promotes the Network including educational information, local maps, distances to attractions, local services and other user information.
- Signage that directs users towards the Network – from town centres, train stations, linking routes and other places of interest.

Since completion of the audit in 2016, over 250 miles of Network has been re-signed with a further 200 miles in progress during 2018/19.

6. Activation projects

Identification process

It is important that the results of the National Cycle Network review are backed up by immediate and visible action.

The results of the physical audit have enabled Sustrans teams to identify a number of activation projects that can be delivered by 2023.

These activation projects will become the focus of attention following the publication of the physical review and action plans and will be central to the push for the further resources and time that is required to deliver the improvements to the Network.

In addition the projects will allow for testing of new governance systems, the marketing strategy, funding mechanisms, community and volunteer involvement, maintenance and monitoring developed as part of the National Cycle Network review.

The activation projects have a good geographical spread across the UK and will cover the full range of strategic priority categories as shown in the diagram below.

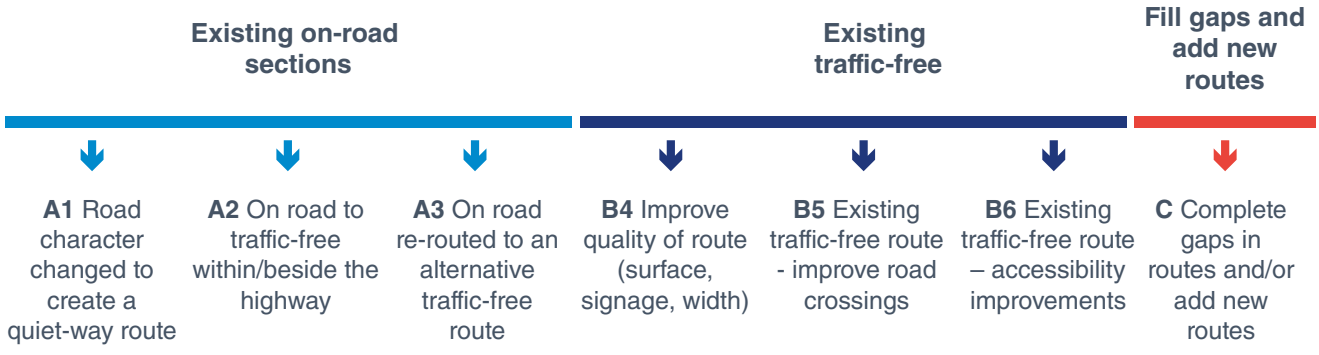
It is expected that where the activation projects successfully resolve key issues within each category they can be used as a blueprint for improvements that will be rolled out across the Network.

The selection process for the activation projects has included consultation with the regional and national advisory panels as well as the volunteer groups and Sustrans staff working on and using the Network.

A prioritisation checklist has been used to help with the identification and prioritisation of the projects:

- Is the project **deliverable** by 2023?
- Does the project support the **strategic aims** of the National Cycle Network in the region?
- Does the improvement support **access for all**?
- Does the project support the delivery of a **traffic free network**?
- Does the project improve the **safety** of the section of National Cycle Network it deals with?
- Does the project improve a section of National Cycle Network that has **high current usage**?
- Is there **good potential for increased usage** in the future?
- Is there land **funding available** for this project?
- Is there **land owner support** for this project?
- Is there **community support** for this project?

Strategic priority categories



Activation projects for Scotland

Category A3: On-road re-routed to an alternative traffic-free route

National Route 76 – Manor Powis roundabout

WHY The Manor Powis roundabout is a key barrier for users of the well-known 'Round the Forth' circuit, heading to and from Clackmannanshire.

PROBLEM Path users exit from a Good rated, traffic-free section directly onto a very busy multi-lane roundabout on the A907, east of Stirling.

SOLUTION A realignment to a traffic-free route, avoiding this difficult roundabout completely, is a key priority for Sustrans, Stirling Council and Clackmannanshire Council and has strong political support.

Category A3: On-road re-routed to an alternative traffic-free route

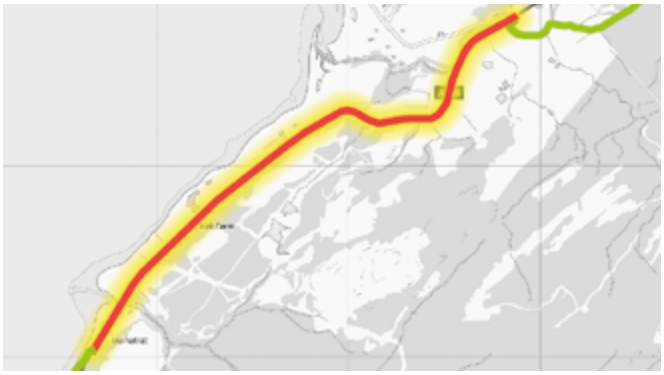
National Route 78 – Caledonia Way, Ledaig

WHY A very heavily used section of National Route 78 Caledonia Way, a strategic tourist route and local functional route linking to North Connel and Oban.

PROBLEM The current alignment, linking to a good section of route, runs on a busy trunk road which does not meet the vehicle speeds/flows standards and has no provision for pedestrians or cyclists.

SOLUTION Identify new preferred alignment, develop and deliver new traffic-free section of route.

Category A3: On-road re-routed to an alternative traffic-free route



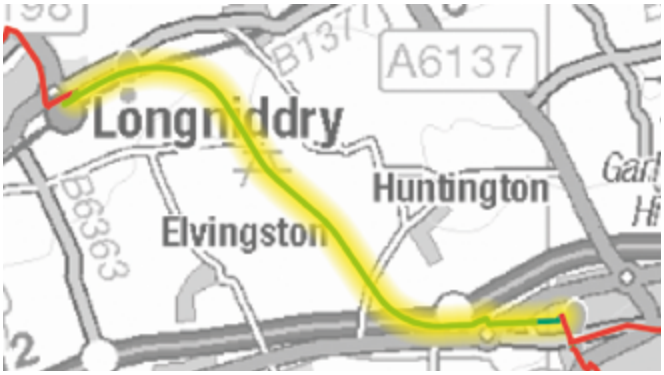
National Route 78 – Caledonia Way, Duror

WHY Very busy part of the Caledonia Way, a key strategic tourist route and local functional route.

PROBLEM Current route is on busy trunk road which does not meet speed/vehicle flow standards and there is no provision for pedestrians or cyclists.

SOLUTION Identify new preferred alignment, develop and deliver new traffic-free section of route.

Category B4: Improve quality of traffic-free route (surface, signage, flow)



National Route 76 – Longniddry to Haddington

WHY Very busy section of National Route 76 Round the Forth and a key commuting route linking Haddington with the railway station at Longniddry.

PROBLEM Below standard surface along the length of the route, not providing a quality year round experience for walkers and cyclists.

SOLUTION Plan and deliver a comprehensive upgrade to deliver a high quality all abilities surface.

Key

Condition of the Network

- Very Poor
- Poor
- Very Good
- Good

- Proposed route realignment
- Crossing/barrier for improvement
- Scope for improvement measures

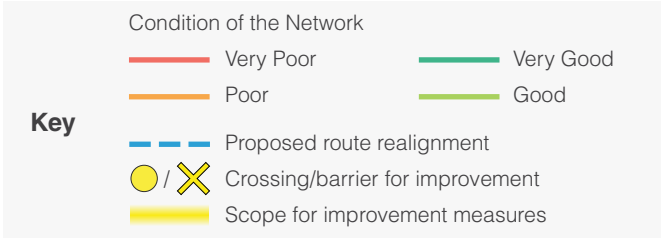
Category B6: Existing traffic-free route – accessibility improvements

National Route 754 – Forth & Clyde and Union Canals

WHY Heavily used functional and recreational route, running across Scotland's central belt and linking towns and cities. Has previously had major investment.

PROBLEM Still contains a large number of historical access barriers which are restrictive to all user groups.

SOLUTION Work with partners to remove or redesign barriers to ensure full compliance with access legislation.



Category C: Complete gaps in routes and/or add new routes

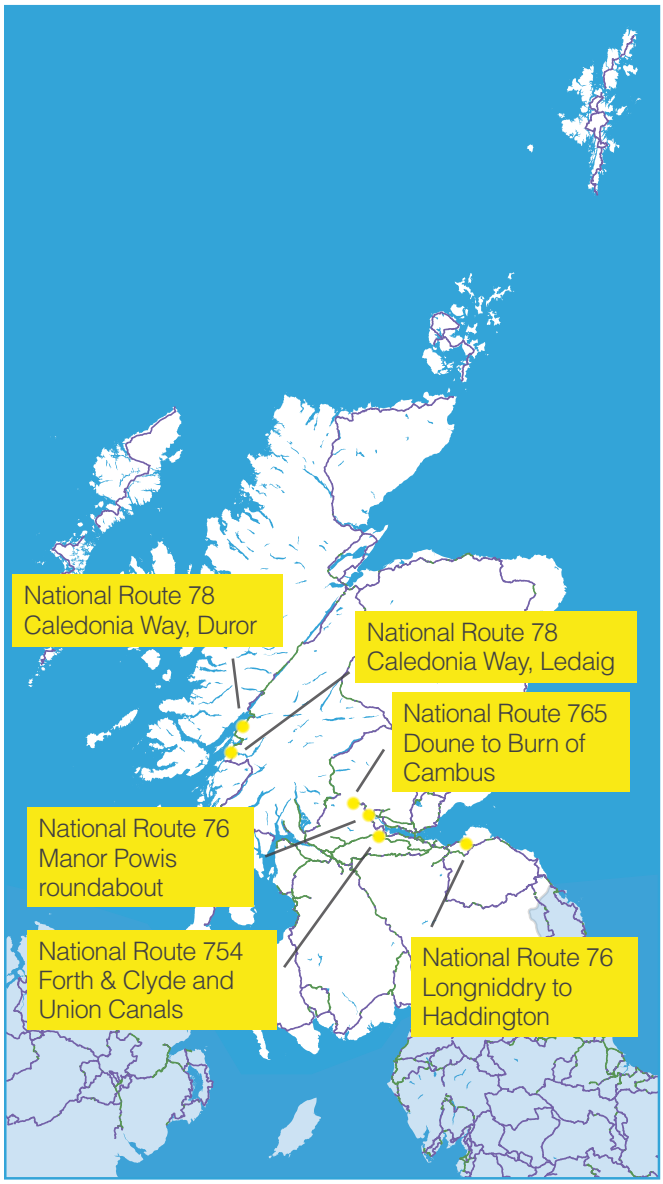
National Route 765 – Doune to Burn of Cambus

WHY Opportunity to deliver new route as part of output from the National Walking and Cycling Network initiative and deliver a key section new tourist and recreation route linking National Route 765 to National Route 7 and the Loch Lomond and Trossachs National Park.

PROBLEM TNo current route between Doune and Callander. Users would have to use A84 trunk road.

SOLUTION Identify new preferred alignment and deliver traffic-free route between Doune and Burn of Cambus as phase one.

Activation project map



7. Conclusion

Of the **2,657 miles** of Network in Scotland, **1,895 miles** (71%) are on-road routes. This reflects the very rural nature of Scotland outside the central belt and the bigger distances between centres of population and trip generators. 80% of the on-road network scores as Very Poor. The biggest determining factor for this categorisation was concern over safety, with safety a factor for 73% of the on-road sections.

Conversely, 95% of the traffic-free Network scores as either Good or Very Good. This is a tremendous achievement and testament to the funding invested by Scottish Government, the work of all partners involved and the impact of the Core Path Network.

The clear imperative for Sustrans and its partners in Scotland is therefore to:

- Improve and retain the quality of the traffic-free sections.
- Improve on-road sections by rolling-out the pilot schemes of off-road and rural minor road traffic calming.

The overall concerns with safety and the poor scores for the on-road sections, underlines the challenges in creating cycle friendly 'quiet-way' routes and supports the overall ambition to make the Network traffic-free.

The Network in Scotland also contains a number of successful routes or route sections that can be considered long distance routes aimed at, and predominantly facilitating, cycle tourism. Careful consideration should be given to how these routes are categorised and dealt with in the future.

We have been developing a number of mechanisms in Scotland to bring about a high quality, connected and inspiring Network. As well as working on a range of regional, long distance route products, we are continuing to commission core Network improvements and increasing community participation and involvement in local infrastructure developments. We also aim to develop principles and guidance in order to mitigate safety concerns along on-road sections of the Network.

Planning for the delivery of the six activation schemes is well underway with three projects at the delivery phase, two at detailed design and the other at feasibility stage. All are on track for delivery within the two-year timeframe. The activation projects selected reflect both Sustrans' objectives of the National Walking and Cycling Network initiative but also key local authority priorities and objectives.

We hope the National Cycle Network will be identified within the Scotland's second Strategic Transport Projects Review as a means for achieving sustainable economic growth. Sustrans Scotland believe the National Cycle Network should be a core component of the next iteration of the National Transport Strategy, in recognition of the importance of the Network within the wider Scottish transport network.

Acknowledgements

Sustrans would like acknowledge the following organisations for their assistance in undertaking the National Cycle Network review in Scotland and involvement with the Scottish National Cycle Network review national advisory panel.

- Transport Scotland
- Highlands and Islands Transport Partnership
- Glasgow City Council
- Scottish Borders Council
- Scottish Canals
- Visit Scotland
- Malcolm Campbell (Sustrans volunteer)

Promotion, development and maintenance of the Network is also aided by Sustrans volunteers, Sustrans supporters and other volunteer groups. Our volunteers and supporters do much to embed the National Cycle Network in the hearts and minds of local communities.