

Appendix D

Lifecycle Plans

Planaichean Cearcaill-beatha

**CARRIAGEWAYS LIFECYCLE PLAN
2010/11**
**PLANA CEARCALL-BEATHA SHLIGHEAN-CARBAID
2010/11**

March 2010

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This document is an appendix of the Road Asset Management Plan 2010/11.

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Carriageways Lifecycle Plan Plana Cearcall-beatha Shlighean-carbaid

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1.0 Current Status

Inbhe Làithreach

1.1 Current Issues

Cùisean Làithreach

The carriageways asset is the Council's most valuable part of the road infrastructure asset. It has been estimated that it would cost £2.56 billion to replace with an equivalent modern asset. Since 2006, approximately £4.5 million has been invested annually on the maintenance of carriageways. Expenditure over the last 5 years has resulted in approximately 533 km of treatment to the road network. On average our roads get resurfaced once every 80 years.

Roads are suffering increasing amounts of damage due to an increasing use of heavy vehicles related to forestry and other activities. This is of particular significance to single track roads which were not designed to take the weight and size of vehicles in use today. However, processes are in place to restrict access and consultations with timber extraction companies and others take place.

In the late 1960s, the Crofters County Scheme provided initiatives to upgrade from single track to single carriageway. These roads included the A832, A835, A837, A861 and the A855. As the roads were constructed around 40 years ago, they will be coming to the end of their life, requiring more maintenance and possibly significant structural works.

Kerbing installed in the 1970's as part of housing schemes are also at the end of their useful life. Kerbing will be dealt with in more detail in the footways and footpaths lifecycle plan.

Similarly, before drivers hours were restricted and budgets were put under pressure, large sections of surface dressing were undertaken. Lengths which are due for renewal will be unachievable within current budgets and the

increasing cost of works due to economic factors. The graph below shows the lengths of surface dressing which have been undertaken since 1996.

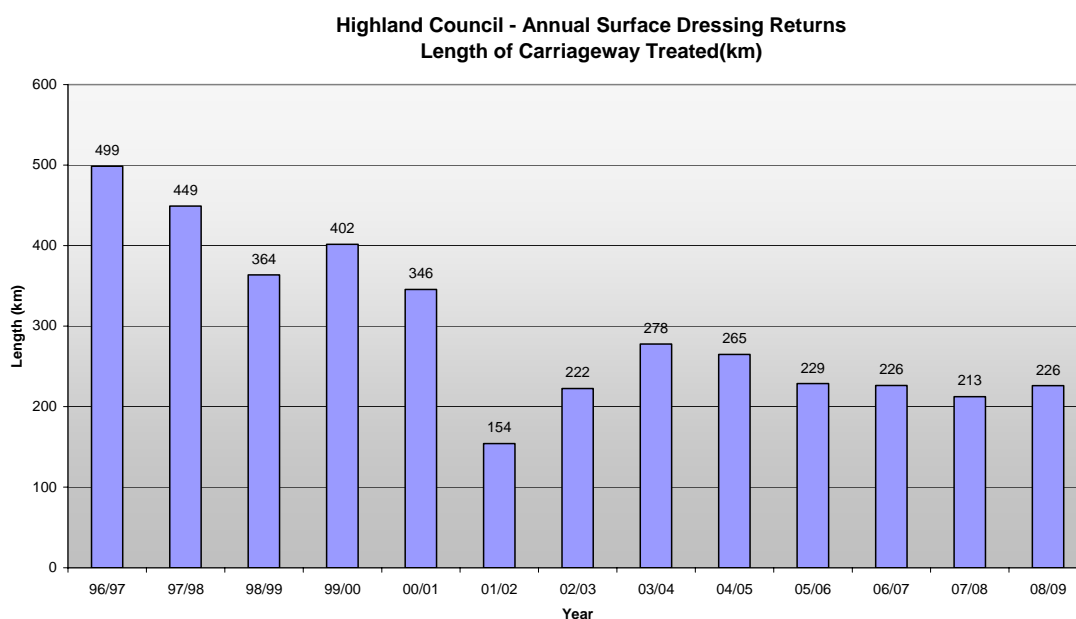


Figure 1.1.1: Annual Surface Dressing Returns

The Scottish Road Maintenance Condition Survey (SRMCS) is undertaken annually by an independent contractor. This provides an indicator of the percentage of the network which should be considered for maintenance. Several factors are taken into consideration and more detail is given in [section 4.3](#).

The Highland Council are taking part in the SCOTS Road Maintenance Backlog Calculations project to assess the financial requirements to maintain the road asset in a steady state. The results were not available at the time of writing this document and will be included in future versions.

Road openings cause damage to structural layers of the road resulting in an increased level of deterioration. In 2008, there was a marked increase in the number of start notices recorded for utility works from the previous year.

The Council does not currently undertake skid resistance tests over the whole network. Testing is undertaken on a selective basis where potential problems have been identified. [\(IA C1\)](#)

As the RAMP and lifecycle plan for carriageways develops, it is expected that further information of significant pressures on the network and the consequences will become apparent.

1.2 Current Strategies

Ro-innleachdan Làithreach

The following strategies are currently in place:

- Policies approved by committee relating to the management of the network
- Local Transport Strategy for Highland (draft when this Plan was written)
- TECS Service Plan
- RCW Operational Plan
- The Programme of the Highland Council 2009-2011

The Highland Council is currently reviewing the capital investment programme which will produce a list of priority schemes for the next 10 years. The amount of money which will be allocated to road projects is currently unknown. The current 5 year capital programme has been agreed up to and including 2011/12. The capital programme funds schemes which are more substantial road improvements, for example, upgrading single track to single carriageway (two lanes).

An annual programme of preventative maintenance treatments on roads is undertaken to prevent further deterioration of parts of the network. This includes surface dressing which, if applied to structurally sound roads, will extend the life and integrity of the road surface. The vast majority of surface dressing is carried out on rural roads.

There is also an annual programme of structural maintenance carried out on the network where more substantial works relating to the foundation layers of a road section are undertaken.

Road condition data, inspection records, maintenance records, insurance claims and reported defects are all considered in the identification and prioritisation of road sections to be considered for treatment. (IA C2)



Figure 1.2.1: Example of Deterioration on Low Trafficked Road

The Highland Council is a partner in the trans-national ROADDEX project. The aim of the project is to facilitate sharing of knowledge and the development of methods to improve maintenance techniques on low volume roads.

2.0 The Asset: Physical Parameters

An t-So-mhaoin: Paraimeatairean Corporra

2.1 General Information

Fiosrachadh Coitcheann

The Highland Council is responsible for maintaining locally adopted roads within its area making it the largest local road authority in Scotland. This equates to nearly 6,730km (4,170 miles) of public road ranging from rural single track to urban dual carriageway. The majority of the network is rural due to the large geographical area covered by the Council.

The road network within the Highland area has been developed over many years. Roads constructed within the last 20 to 30 years were built to the design standards that were current at the time. This results in a significant proportion of the network carrying traffic loading which is greater than their construction can sustain.

There are an estimated 1742 km of roads in the Highlands which are built on peat. Consequently, these roads require frequent maintenance mainly due to subsidence and poor drainage. [\(IA C3\)](#)

Road openings by utility companies, for example, which cause disturbance to the foundation layers of a road can result in increased deterioration of parts of the network. Poor quality reinstatements can reduce the life of a road, resulting in more frequent maintenance treatments. There are no specific areas in the Highland which can be identified as suffering from this problem but urban areas are more prone due to concentrated populations requiring more services.

2.2 Asset Register

Clàr So-mhaoin

The “list of public roads” is the definitive record used to define the scope of the asset. This is held both electronically and in hard copy format. A copy is also available on the [Council website](#)^(RC1). The “list” contains the road name,

description of the road, start and end co-ordinates and the adopted road length. This, supplemented with the inventory records described below, provides the asset register for this asset group.

2.3 Inventory

Clàr-cunntais

The carriageway asset is made up of a range of roads as illustrated below.

Road Lengths by Classification of Road (March 2009)

Class	Environment	Length (km)	Total (km)
A	Urban	74.3	1388.1
	Rural	1313.8	
B	Urban	91.2	979.3
	Rural	888.1	
C	Urban	97.3	1438.3
	Rural	1341.0	
U	Urban	745.7	2923.8
	Rural	2178.1	
Overall	Urban	1008.5	6729.5
	Rural	5721.0	

Table 2.3.1: Carriageway Road Length by Classification

Road Lengths on Peat (March 2009)

Environment	Class	Length (km)
Single Carriageway	A	145
	B	93.3
	C & U	45.9
	Sub-total	284.2
Single Track	A	205.9
	B	360.2
	C & U	891.7
	Sub-total	1457.8
Overall	Total	1742.1

Table 2.3.2: Carriageway Road Length on Peat

Currently, the breakdown of construction types is unavailable. However, the majority of roads are flexible (bituminous material) with a small amount of paved areas which are normally pedestrianised streets. (IA C4)

The lengths of road in each Highland Council Area are reported annually and published on the Council website:-

<http://www.highland.gov.uk/yourenvironment/roadsandtransport/roads/statistics.htm> ^(RC2)

2.4 Road Network Hierarchy

Rangachd Lìonradh Rathaidean

The road network is made up of a series of different types of road ranging from heavily trafficked urban roads to lightly trafficked narrow rural lanes. The Highland network contains many roads which are the only access to more remote communities. To enable the appropriate management of the network, the Council has designated a hierarchy of road types with each carriageway link being allocated to one of these hierarchy types. Lifeline or locally significant roads are specially designated and, as such, have not been prioritised in the hierarchy. The hierarchy categories reflect the function of different roads as adapted for local circumstances from the Code of Practice for Highway Maintenance Management ^(RC3). The Council hierarchy in relation to the Code of Practice is set out below.

ACOP Category	THC Category	Hierarchy Description
1	N/A	Motorway
2	H1	Strategic Route
3a	H2a	Regional Route
		Main Distributor
3b	H2b	Sub-regional Route
		Local Distributor
4a	H3a	Link Road
4b	H3b	Local Access Road
N/A	H4	Minor Rural Road

Table 2.4.1: Road Network Hierarchy 2009

Road length data within each of the designated hierarchies is currently not available. The amended hierarchy was adopted by the Council in November

2009. Work is required to put this information into the asset database to produce hierarchy lengths. (IA C5)

2.5 Quality of Inventory Held

Càileachd a' Chlàir-cunntais a Thathar a' Cumail

The records of the carriageway asset are stored either electronically on the asset management database, in another electronic format or on paper in local offices. As part of the development of this plan, an assessment of the current data held was undertaken.

Basic information on the road network is stored in the asset management database and used as the source for the Scottish Road Works Register (SRWR) and the Council's Corporate Address Gazetteer (CAG). The road descriptions are stored as a Word document and cannot be transferred to the database due to the way network information is stored in the database. This is not an issue specifically in Highland but may be addressed at a future date as systems develop. (IA C6)

Lengths of the network are known but width information is not. An action to collect and record average width data for road sections is being implemented in 2010 and completion is estimated within two years. Carriageway widths are presently estimated if required. (IA C7)

As built records of previous road improvements are available in various electronic forms or as paper records. Details from current schemes are being entered into the asset management database but collating and entering historic data is a large task which is not being implemented at this time. (IA C8) There are, of course, roads where construction details are not known unless investigations are carried out.

Additional inventory details, for example gullies, will be input into the asset management database as resources permit. (IA C9)

2.6 Asset Growth

Fàs So-mhaoin

The asset has grown by approximately 2.5% (164 km) since 1999 (see [figure 2.6.1](#)). Growth has occurred as a result of:

- The adoption of new roads from new developments
- Construction of new roads (upgrading existing alignments or other Council schemes)
- De-trunking of roads

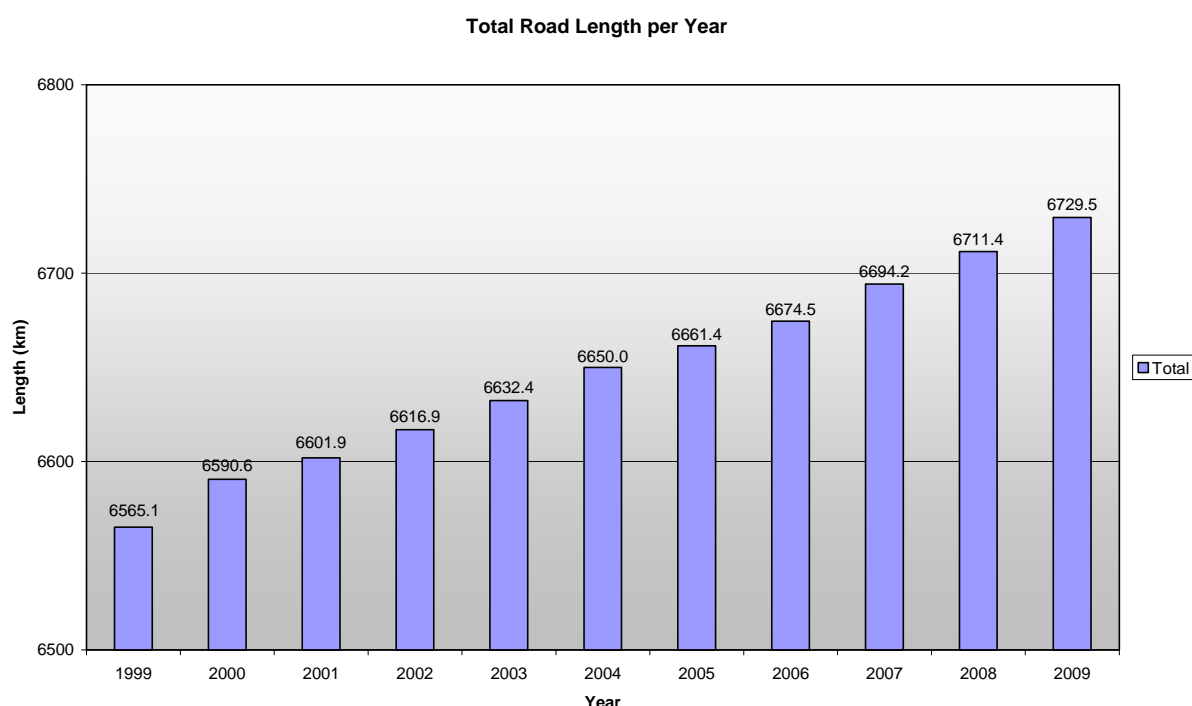


Figure 2.6.1: Total Road Length per Year

Asset growth places increasing demands upon the Council budgets for inspection and maintenance (including winter). It also adds to long term maintenance requirements on the network and emergency works if developments take place in areas subject to flooding.

Although development has slowed due to the current economic climate, it is expected that the asset will continue to grow over the duration of this plan.

This is based on the following assumptions:

1. Continued adoption of roads from new developments
2. Capital schemes in the revised 10 year programme

3.0 Service Expectations

Dùilean Seirbheis

3.1 Customer Perceptions

Tuigse Luchd-cleachdaidh

The Highland Council commissions an independent annual performance survey which is sent to a random sample of householders in its area. In 2009, the survey was issued to 11,000 residents and 1,807 completed questionnaires were returned.

The annual performance survey does not deal specifically with roads related services but gives an indication of the importance of services to the public and how well they think the Council is performing.

The data in the tables below are extracts from the 2009 survey and show the information relating to the carriageway. The full survey is available on the [Council website](#)^(RC4) with the relevant tables reproduced in RAMP appendix B.

Importance of services	2009 %	2008 %	2007 %	2006 %	2005 %	2004 %	2003 %
Road repairs and potholes	49	46	47	48	52	47	55
Winter road maintenance	42	40	41	44	49	53	61
Street cleaning	17	19	17	18	21	22	22

Table 3.1.1: Importance of Services: Appearance in Top 5

From [Table 3.1.1](#) where the importance of services are ranked, road repairs and potholes is consistently reported as being in the top 5 services. Winter maintenance is also a high scoring service with street cleaning ranked lower down.

The data on the satisfaction with these services shows the reverse in their ranking. [Table 3.1.2](#) ranks the satisfaction with street cleaning much higher

than winter maintenance or road repairs. Road repairs and potholes are consistently at the bottom of the complete table (see appendix B).

Satisfaction with services	2009 score	2008 score	2007 score	2006 score	2005 score	2004 score	2003 score
Street cleaning	30	25	16	39	42	6	0
Winter road maintenance	-3	-2	-1	-6	-10	-14	-22
Road repairs and potholes	-50	-55	-53	-57	-57	-57	-52

Table 3.1.2: Satisfaction with Services

The 2009 survey included a new question on why respondents were dissatisfied with services. Again, roads and potholes received the most comments, generally as follows:

- poor condition and maintenance
- quantity of repairs required
- time taken to undertake repairs
- quality of repairs including temporary, short lived repairs
- unacceptable road conditions in an area dependent on tourism
- quality and timing of winter gritting (too late in the morning).



Figure 3.1.1: Winter Gritting

Although the annual performance survey provides an indication of public perceptions, it is not detailed enough to provide community priorities regarding the whole road network. An asset specific survey is required to assess the needs and reflect the views of the public (IA C10).

The current Customer Relationship Management (CRM) system was introduced in 2006. Appendix B of the RAMP contains the overall CRM data relating to the road asset. Data relating to the carriageway asset is shown in Figure 3.1.2 below.

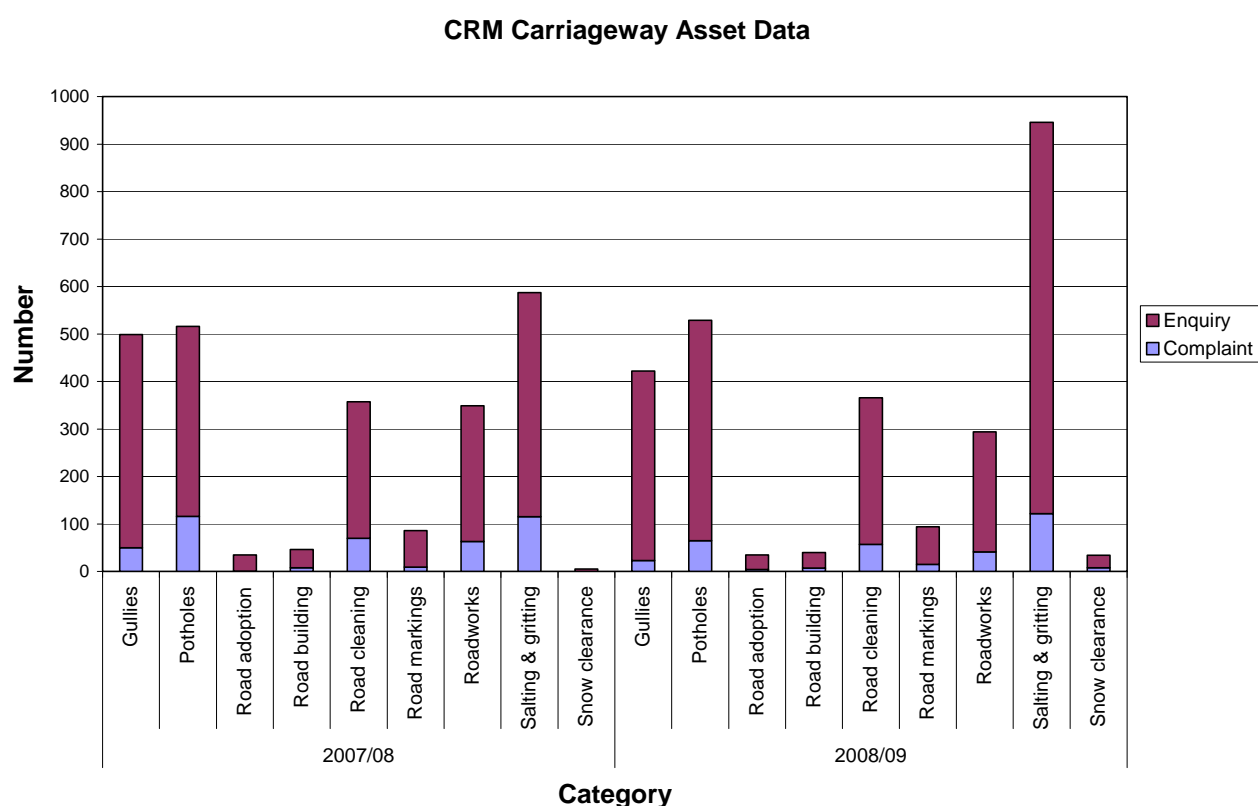


Figure 3.1.2: CRM Carriageway Data

Some of the above categories do not differentiate between the carriageway and footway, e.g. Salting and gritting. Therefore figures shown are overall totals.

3.2 Council Goals and Objectives

Amasan is Mion-amasan Comhairle

The Council has published its objectives in The Corporate Plan; The Programme for the Highland Council 2009 – 2011, Strengthening the Highlands which is available on the [Council website](#)^(RC5).

The TECS Service Plan is a strategic document which sets out how the service will achieve delivery of its commitments in relation to the Programme of the Council. Details of the objectives and actions are available in the Service Plan which can be accessed through the [Council website](#)^(RC6). Operational Plans support the Service Plan.

At the time of writing this version of the RAMP, the Local Transport Strategy for Highland (LTS) was in draft form. The LTS will set out the transport objectives for the area, impacting on a highland wide community to achieve sustainable integrated solutions.

3.3 Use

Cleachdadh

Traffic data is collated by TECS Integrated Transport's Transportation Team. Both permanent and temporary counter sites are used, supplemented by project specific counts when necessary. Traffic growth within Highland varies due to the large geographical area and spread of the population. An improvement action to identify and collate data for a sample of sites across the Highland area has been included to allow traffic growth to be monitored ([IA C11](#)).

The Highland area has a significant tourist industry which has a seasonal impact on the network. For example, Fort William has a high summer traffic volume which decreases significantly in winter.

Annual and 'one off' events also have a significant impact within a short timeframe. Examples would include Rock Ness and the Black Isle Show.

Key issues for traffic growth will be identified, when published, in the LTS and have therefore not been included in this version of the RAMP.

3.4 Safety Considerations

Beachdachaidhean Sàbhailteachd

The Highland Council has joined with the Northern Constabulary, Red Cross Scottish Ambulance Service, Scotland Transerv, BEAR Scotland, Driving Standards Agency and the Highlands and Islands Fire and Rescue Service to form the Highland Road Safety Working Group (HRSWG). The Highland Council participation will ensure delivery of both the national and local safety objectives set out by Scotland's Road Safety Framework to 2020, the Single Outcome Agreement and the Programme for The Highland Council 2009 - 2011.

The HRSWG has produced commitments and is currently working on setting local actions. When completed, the HRSWG Action Plan will be available on the Council website.

Other initiatives the Council has to promote road safety include:-

- Go For It
- Parksmart
- Pass Plus Scheme
- Safer Routes to Schools

Details of these initiatives are available in the Road Safety section of the [Council website](#)^(RC7).

Accident data is collated by the Council's Road Safety Team. Details of killed or seriously injured (KSI) accidents within the Highland area are given in [Table 3.4.1](#).

Year	Accidents			Casualties		
	Fatal	Serious	Total	Fatal	Serious	Total
2008	29	96	125	34	114	144
2007	30	116	146	34	153	187
2006	23	109	132	26	151	177
2005	19	140	159	20	179	199
2004	23	154	177	25	204	229

Table 3.4.1: KSI Accident Statistics

3.5 Utility Activity

Gnìomh Goireis

The co-ordination of road works is undertaken by relevant RCW Area staff. Various members of staff are involved in the North of Scotland Roads Authorities and Utilities Committee (NoSRAUC) local RAUC(S) meetings which provides attendees with the opportunity to discuss and agree programmes of work. The meetings are attended by representatives of utility companies, the Council and the Trunk Road maintenance contractors.

Activity carried out on the network by statutory undertakers (utility companies) and private parties can have a significant impact. Anyone opening a road has the responsibility to reinstate it to the required standard. However, even when that standard is met, it can be demonstrated that disturbing the foundation layers of a road results in an increase in the number and severity of defects found. Therefore, reinstatements which are not undertaken to a satisfactory standard have a more detrimental effect on the life of a road.

[Figure 3.5.1](#) gives the breakdown of start notices by some of the major utilities since the present system started recording them in 2006. Although this does not reflect the actual number of road openings, it is a good indication of the level of activity on the network.

Actual Start Notices

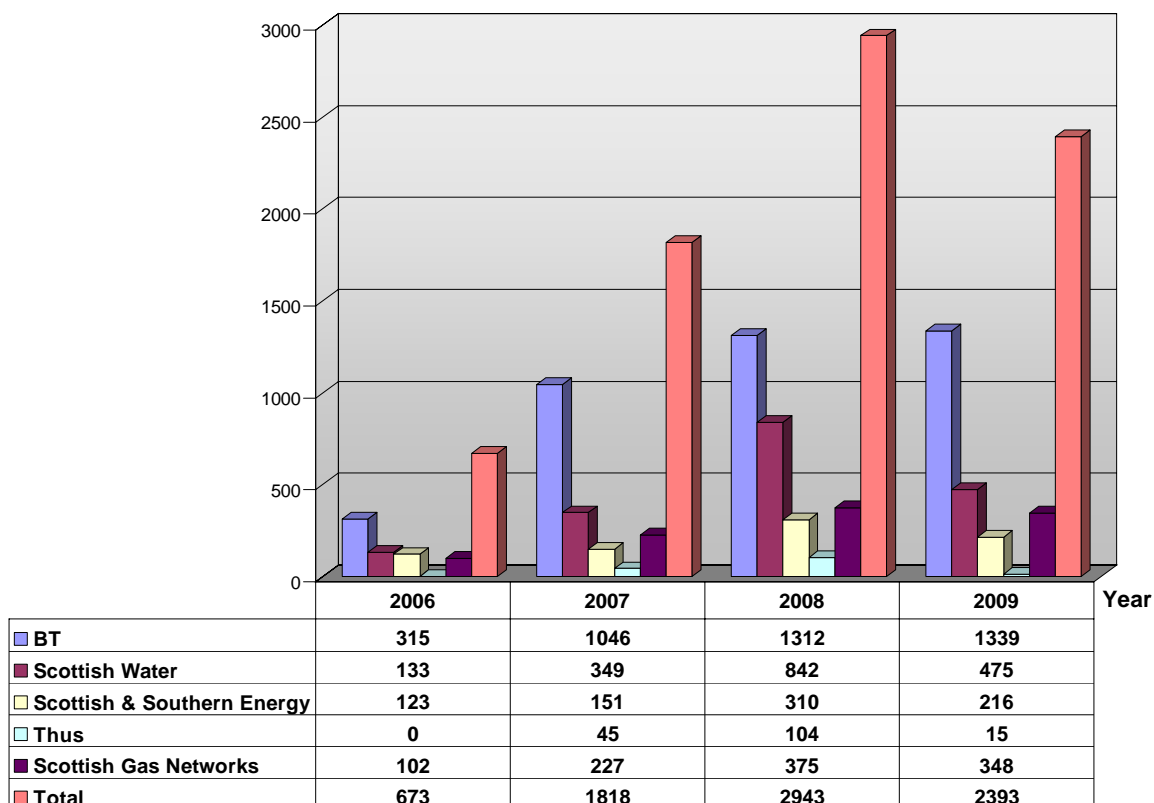


Figure 3.5.1: Statutory Undertaker Start Notices

3.6 3rd Party Claims

Tagraidhean Treas Pàrtaidh

The Council receives third party claims relating to several aspects of the road network. Claims are handled by the Council’s Insurance Section who keep electronic and paper records. When appropriate, incidents of claims are used as a factor in determining works priorities.

The following table shows a summary of the claims relating to the carriageway since 2006. It summarises the total number of claims, the number of claims refuted without paying compensation, the number of claims outstanding with the reserve cost for them set aside by the Insurance Section and the number of claims paid with the total amount.

Year	Total No.	No. refuted	No. Reserve	Reserve Amount	No. Paid	Total Paid
2006	55	41	1	£20,400	13	£30,400
2007	61	49	3	£36,300	9	£29,300
2008	40	23	12	£180,400	5	£1,300
2009	15	4	10	£70,300	1	£200

Table 3.6.1: Third Party Claims – Carriageway

The cost of claims may show a reduced amount being paid out over the years. However, claims which are still outstanding and are being investigated may affect the figures shown. It should be noted that the 2009 figures quoted are incomplete for the year.

3.7 Environmental Considerations

Beachdachaidhean Àrainneachd

When undertaking a road project, environmental considerations are taken into account. These include, for example, regulations such as the Controlled Activities Regulations (CAR) and areas with special designations such as Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).

The Council works with other public bodies such as the Scottish Environmental Protection Agency (SEPA) and Scottish Natural Heritage (SNH) to mitigate any environmental impacts from projects.

3.8 Network Availability Considerations

Beachdachaidhean Comas Lìonraidh

There are a number of streets designated as traffic sensitive within the Highland area. These are detailed in [Table 3.8.1](#) below.

STREET	START Easting Northing	END Easting Northing	RESTRICTION DURATION
High Street, Inverness	336317 951041	336399 950995	0800 - 0915 and 1630 - 1800 Monday - Saturday
Academy Street, Inverness	266491 845597	266887 845401	0800 - 1800 Monday - Saturday
A862 Station Road - Maryburgh Roundabout	255189 858158	254315 857004	0800 - 0915 and 1630 - 1800 Monday - Saturday
Sir Walter Scott Drive, Inverness	265757 841939	268744 844473	0800 - 0915 and 1630 - 1800 Monday - Saturday
Millburn Road Roundabout, Inverness	268145 845731	268162 845693	0800 - 0915 and 1630 - 1800 Monday - Saturday
King Brude Road, Inverness	264846 845205	265271 845921	0800 - 0915 Monday - Saturday
King Brude Road, Inverness	264846 845205	265271 845921	1630 - 1800 Monday - Saturday
Queensgate, Inverness	266567 845388	266672 845449	1800 - 0915 and 1630 - 1800 Monday - Saturday
Church Street, Inverness	266656 845221	266467 845565	0800 - 0915 Monday - Saturday
Church Street, Inverness	266656 845221	266467 845565	1630 - 1800 Monday - Saturday
View Place, Inverness	266630 844858	266673 844968	0800 - 0915 and 1630 - 1800 Monday - Saturday
Crown Road, Inverness	266959 845311	266856 845388	0800 - 0915 and 1630 - 1800 Monday - Saturday
Leachkin Road, Inverness	264868 845278	264782 845265	0800 - 0915 Monday - Saturday
Leachkin Road, Inverness	264868 845278	264782 845265	1630 - 1800 Monday - Saturday
Perth Road, Inverness	268164 845493	268136 845702	0800 - 0915 and 1630 - 1800 Monday - Saturday
Fraser Street, Inverness	266567 845388	266494 845352	0800 - 0915 Monday - Saturday
Fraser Street, Inverness	266567 845388	266494 845352	1630 - 1800 Monday - Saturday
Harbour Road, Inverness	266487 846171	268166 845732	0800 - 0915 and 1630 - 1800 Monday - Saturday
Margaret Street, Inverness	266617 845493	266678 845613	0800 - 0915 Monday - Saturday
Margaret Street, Inverness	266617 845493	266678 845613	1630 - 1800 Monday - Saturday
Inglis Street, Inverness	266781 845363	266810 845285	1100 - 1500 Monday - Friday
Inglis Street, Inverness	266781 845363	266810 845285	0900 - 1700 Saturday

STREET	START Easting Northing	END Easting Northing	RESTRICTION DURATION
Rose Street, Inverness	266657 845687	266700 845730	0800 - 0915 and 1630 - 1800 Monday - Saturday
Union Street, Inverness	266607 845312	266743 845392	0800 - 0915 and 1630 - 1800 Monday - Saturday
Millburn Road, Inverness	268129 845723	266888 845399	0800-0915 & 1630-1800 Monday - Saturday
Eastgate, Inverness	266920 845307	266810 845285	1100 - 1500 Monday - Friday
Eastgate, Inverness	266920 845307	266810 845285	0900 - 1700 Saturday
Shore Street, Inverness	266512 846220	266484 846173	0800 - 0915 and 1630 - 1800 Monday - Saturday
Grant Street, Inverness	266072 846061	266303 845883	0800 - 0915 and 1630 - 1800 Monday - Saturday
Longman Road - Rose Street Link, Inverness	266660 845733	266655 845686	0800 - 0915 and 1630 - 1800 Monday - Saturday
High Street, Inverness	266666 845213	266810 845285	1100 - 1500 Monday - Friday
High Street, Inverness	266666 845213	266810 845285	0900 - 1700 Saturday
Raigmore Hospital Access Road, Inverness	268490 844661	268483 844607	
A862 A834 Junction - Mineral Bridge, Dingwall	254780 858780	255306 859629	0800 - 0915 and 1630 - 1800
Bank Street, Inverness	266404 845489	266572 845170	0800 - 0915 Monday - Saturday
Bank Street, Inverness	266404 845489	266572 845170	1630 - 1800 Monday - Saturday
Bridge Street, Inverness	266666 845213	266572 845170	0800 - 1800 Monday - Saturday
Chapel Street, Inverness	266376 845783	266491 845597	0800 - 1800 Monday - Saturday
Friars Lane, Inverness	266404 845489	266472 845613	0800 - 1800 Monday - Saturday
Telford Street, Inverness	265927 845546	265446 845765	0800 - 0915 and 1630 - 1800 Monday - Saturday
Young Street, Inverness	266485 845145	266572 845170	0800 - 1800 Monday - Saturday
Young Street, Inverness	266415 845119	266485 845145	0800 - 0915 and 1630 - 1800 Monday - Saturday
Castle Street, Inverness	266673 844968	266682 845222	0800 - 0915 Monday - Saturday
Castle Street, Inverness	266673 844968	266682 845222	1630 - 1800 Monday - Saturday
Culcabock Road, Inverness	267665 844671	267711 844693	0800 - 0915 and 1630 - 1800 Monday - Saturday
Culcabock Road, Inverness	268176 844684	268257 844677	0800 - 0915 and 1630 - 1800 Monday - Saturday
Culduthel Road, Inverness	266719 844643	266673 844968	0800 - 0915 Monday - Saturday
Culduthel Road, Inverness	266720 844643	266673 844968	1630 - 1800 Monday - Saturday

STREET	START Easting Northing	END Easting Northing	RESTRICTION DURATION
Damfield Road, Inverness	267617 844640	267666 844671	0800 - 0915 Monday - Saturday
Damfield Road, Inverness	267617 844639	267666 844671	1630 - 1800 Monday - Saturday
Tomnahurich Street, Inverness	266338 845062	266415 845119	0800 - 0915 and 1630 - 1800 Monday - Saturday
High Street, Fort William	210198 773914	210298 774006	1100 - 1500 Monday - Friday
High Street, Fort William	210198 773913	210301 774007	1000 - 1700 Saturday
Greenhill Street, Dingwall	255076 858557	255211 858406	0800 - 0915 and 1630 - 1800 Monday - Saturday
High Street, Dingwall	255019 858748	254781 858781	11.00 to 15.00 Monday to Saturday
Station Road, Dingwall	255234 858445	255199 858218	0800 - 0915 and 1630 - 1800 Monday - Saturday
A862 A834 Junction - Greenhill Street, Dingwall	254780 858780	255076 858557	0800 - 0915 and 1630 - 1800 Monday - Saturday

Table 3.8.1: Traffic Sensitive Streets

3.9 Amenity Value Considerations

Beachdachaidhean Luach Goireis

The Council does not have a formal policy which dictates the various materials or standards which should be used in different amenity areas. There is a guidance document for new developments being prepared which will set out design standards for new developments. Once complete, the document will be available on the Council website.

Generally, pedestrianised areas are regarded as having a higher amenity value and therefore materials which are more visually acceptable are used. These are not consistent across the Highland area as individual sites require to be considered on their own merits. Higher specifications of materials have an impact on the cost of maintaining amenity areas and this is not formally recognised before projects are approved.



Figure 3.9.1: High Amenity Paving

4.0 Management Practices

Cleachdaidhean Stiùiridh

4.1 Policies

Poileasaidhean

The management of the carriageway asset is governed by the following Council documents and policies:

- Single Outcome Agreement
- The Corporate Plan; The Programme for the Highland Council 2009 – 2011, Strengthening the Highlands
- Local Transport Strategy for the Highlands (under review for 2010)
- TECS Service Plan
- Roads and Community Works Operational Plan (under review for 2010)
- Roads and Transport Guidelines for New Developments (currently under revision)
- Winter Maintenance policy
- Road Network Hierarchy and Inspections policy (adopted November 2009)

There are various others which relate to the road asset such as the Roadside Hazards or Speed Limits policies. All policies will be reviewed and updated as necessary throughout the development of the RAMP. ([IA C12](#))

4.2 Inspection Regime

Rèim Sgrùdaidh

4.2.1. Safety Inspections

Sgrùdaidhean Sàbhailteachd

Safety inspections are carried out to identify maintenance issues on the road network as well as complying with our duty of care in respect of public safety. The inspection frequency is related to the carriageway hierarchy as shown in [Table 4.2.1](#).

Network Category	Hierarchy Description	Inspection Frequency	Method
H1	Strategic Route	1 month	Driven
H2a	Regional Route/ Main Distributor	1 month	Driven
H2b	Sub-regional Route/ Secondary Distributor	3 months	Driven
H3a	Link Road	3 months	Driven
H3b	Local Access Road	1 year	Driven
H4	Minor Rural Road	1 year	Driven

Table 4.2.1: Safety Inspection Frequency

The inspection regime is based upon the recommendations of the Code of Practice for Highway Management ^(RC3). Variations from the ACoP have been made to reflect the large rural area covered by the Council. A review of the hierarchy and related inspection frequencies was undertaken before it was put forward to the TECS Committee.

4.2.2. Service Inspections

Sgrùdaidhean Seirbheis

Service inspections are designed to identify deficiencies that compromise the reliability, quality, comfort and ease of use of the network. Although not intended for identifying defects that could compromise user safety, any such defects observed during service inspections will be recorded and dealt with in the same way as safety inspections. Service inspections are undertaken as necessary with available resources. They include New Roads and Street Works Act (NRSWA) inspections which assess reinstatements of road openings, e.g. by a utility company. A formal, structured service inspection on the carriageway is not currently undertaken. However, detailed inspections of the carriageway are carried out as necessary to assist with the prioritisation of works. [\(IA C13\)](#)

4.2.3. Reactive Inspections

Sgrùdaidhean Ais-ghnìomhach

Reactive inspections are undertaken when a potential defect or issue is reported by the public or from another source, e.g. the police. Defects found

during reactive inspections are recorded in the same way as those from safety inspections. Defects are categorised and repairs undertaken within the appropriate timescales. The public is able to notify the Council of carriageway defect by the following means:

- Website
- E-mail
- Phone (local office, service centre and emergency contact number for out of hours service)
- Personal contact at Council office or service point
- Via their local councillor

4.2.4. Road Inspectors

Luchd-sgrùdaidh Rathaid

Inspections are undertaken by road inspectors or an appropriate officer as necessary. The inspectors are formally trained, gaining the Roads and Highways Inspectors Award SVQ Level F. They also receive supplementary training through the Council and have extensive practical experience as road inspections are only part of their duties.

4.2.5. Inspection Records

Clàraidhean Sgrùdaidh

Inspections are recorded in two ways, electronically and on paper. The asset management database is used as the electronic method to record inspections and any defects found with the resulting action if appropriate. Where an office has not yet moved to electronic recording, paper copies holding relevant information are kept ([IA C14](#)). Inspection records provide a valuable resource in enabling maintenance works to be planned. They also form the basis of the Council defence against 3rd party liability claims.

4.3 Condition Assessment

Measadh Staid

4.3.1. Scottish Road Maintenance Condition Survey (SRMCS)

Suirbhidh Staid Cumail Suas Rathaidean na h-Alba (SRMCS)

The SRMCS measures the condition of a certain percentage of the roads in Scotland on an annual basis. It is undertaken throughout Scotland to give a comparison of the condition of the network across Council areas. Survey vehicles are equipped with technology which measure texture depth, rutting, longitudinal profile and cracking. [Table 4.3.1.1](#) below shows the percentage of roads which are measured. In Highland, this equates to approximately 3,300km (49.2%) of the road network.

Class	% (in one direction only)
A	100
B & C	50
U	10

Table 4.3.1.1:% Road Classes Surveyed

Results from the SRMCS are reported annually as a Statutory Performance Indicator (SPI) and to TECS committee. The SPI is “the percentage of the road network which should be considered for maintenance treatment”. More detailed information on the results can be found in the relevant TECS committee papers. However, the following provides a summary of the statistics.

The 2 year rolling average Road Condition Indicator (RCI) values for Highland over the last 4 years are shown below:-

Year	RCI (2yr rolling average)
2004/05	34.3%
2005/06	36.6%
2006/07	39.2%
2007/08	34.5%

Table 4.3.1.2: RCI Values

The 2008 results placed Highland 15th in Scotland:-

	Highland	Ranking	Range Best – Worst	Scottish Average
RCI (Red + Amber)	34.5%	15 th	19.5% – 52.2%	34.2%

Table 4.3.1.3: Highland SRMCS Ranking, 2008

Although the overall SRMCS results may show an improvement in the road network, when looking at individual road classes, it can be demonstrated that the U class sample can have a significant effect on the overall SPI depending on the roads surveyed. The SRMCS project is being reviewed to possibly establish two indicators, one for A, B and C classes and another for the U class. This would remove the variation caused each year by the U class sample, giving a better indication of the condition of the main part of the network. (IA C15)

4.3.2. Visual Condition Surveys

Suirbhidhean Staid Lèirsinneach

Types

There are two types of visual condition survey carried out on carriageways. These are the Coarse Visual Inspection (CVI) and the Detailed Visual Inspection (DVI).

CVIs are carried out on roads with inspectors assessing from a slow moving vehicle. Visual defects that are caused by poor surfacing or pavement structure are identified and noted. CVIs enable a high percentage of unclassified roads which cannot be machine tested to be assessed.

DVIs are more comprehensive surveys carried out by inspectors on foot. A higher level of accuracy is gained with a more detailed defect and assessment criteria. This survey type is used on lengths which have been identified by the CVI as needing treatment.

Inspections carried out are mainly driven, supplemented by walked sections if traffic volumes or parked vehicles prevent an assessment.

Frequencies

We do not have a formal procedure for recording CVIs. The sections highlighted from the SRMCS data and reports from inspectors and other officers are used to identify areas which require more detailed inspections. These are then investigated, considered and prioritised for maintenance treatments. The results are not recorded in the asset management database but are held by local offices. (IA C13)

Data Uses

The data from the SRMCS and Visual Condition Surveys are used for the following reasons:

- To allocate the limited road budget
- To assist in producing the structural maintenance programme
- To record the current performance level
- To aid in responding to customer complaints

Data Interpretation

The SRMCS data is loaded into the Pavement Management System (PMS) module of the asset management database where an inbuilt algorithm analyses and provides a report of all roads in terms of condition. The algorithm assesses the pavement defect type and defect area. There is capacity for it to assess the pavement age and type but this information is not always available.

As previously stated, we have commenced entering construction data into PMS which will then show sections of road which have been surfaced dressed and/ or resurfaced. This will allow data on treatment service lives to be developed over the years. (IA C16)

Data Standards

The most critical aspect of any condition survey is ensuring the accuracy of the data.

The SRMCS is undertaken by a vehicle which is calibrated and subject to annual quality control checks.

Our road inspectors were formally trained in 2009 and also have many years of road maintenance experience. It is expected that the formal training will be supplemented annually by a refresher. An internal quality audit is undertaken to ensure a consistent level of information is being obtained and processed.

Handheld devices are available and used by most inspectors to gather defect data in the field. These reduce the double handling of the information which improves accuracy and efficiency. The handheld devices have GPS to ensure an accurate location and drop-down menus to reduce defect type errors. Inspectors who do not currently use hand held devices record defects on paper. It is anticipated that all inspectors will be using hand held devices by the end of 2010. (IA C14)

Data Issues

The following are data issues identified with current systems.

- Inconsistency from the Inspectors has been identified and is being addressed through training and the internal audits.
- Condition data is unavailable or out of date for unclassified roads not recently surveyed by the SRMCS.
- There is a lack of carriageway data in an easily accessible electronic format. Information is being collected but this will take years to complete. A key piece of data is the age profile of assets. If known, it would allow a future maintenance programme to be produced, identifying any peaks in funding required. (IA C17)

4.4 Construction/Asset Acquisition

Togail/Buannachd So-mhaoin

New assets are typically acquired from either adoption or from taking over improvement works completed by contractors on behalf of the Council.

Typically adoption processes will be well detailed. However, similar formality does not always exist in relation to new improvement schemes.

A critical question may be to document how the long term costs of new works are assessed. This is often not an explicit part of the design process and can lead to the addition of new assets that have overly onerous ongoing maintenance requirements. (IA C18)

As part of the handover of the asset all known information is supplied to the Council for analysing and storing. As built information is supplied but needs to be in a compatible electronic format to allow the efficient transfer of information into the asset management database. New assets to be adopted are inspected to confirm they are at an acceptable standard of completion, not to assess the long term costs. The above information allows the new asset to be linked with those with similar attributes, which leads to an allocated maintenance strategy and a corresponding life cycle plan for the remainder of its life. (IA C19)

4.5 Routine Maintenance

Cumail Suas Cunbhalach

Defects recorded are categorised with the responses as follows.

Category	Description	Response
1	Immediate / imminent hazard or risk of short term structural deterioration.	Immediate action to protect public if necessary. At least temporary repair within 24 hours ⁽¹⁾ .
2H	High level of hazard or risk.	7 days
2M	Medium level of hazard or risk.	21 days
2L	Low level of hazard or risk.	42 days
3	Negligible impact	Annual planned work as resources permit.

Table 4.5.1: Defect Categories

There are currently no target compliance rates for these responses as they were reviewed in 2009. It is expected that a target response will be introduced

in 2010 as all inspectors move towards electronic recording of defects, thereby enabling compliance to be measured. (IA C20)

4.6 Operational/Cyclic Maintenance

Cumail Suas Obrachail/Cearcallach

Cyclical activities in relation to the carriageway asset are normally associated with ancillary items. The activities include gully emptying, street sweeping, weed control and grass cutting. Details of these activities will be included in future versions of the RAMP when appropriate lifecycle plans have been developed.

4.7 Planned Maintenance: Renewals

Cumail Suas Dealbhte: Ùrachaidhean

Planned maintenance activities generally comprise asset renewals. It is this area that often becomes the focus of long term asset planning.

Preventative maintenance is defined as maintenance that is economically preventative i.e. the application of the preventative measure prevents large future costs having to be incurred to achieve the same outcome. For example, surface dressing is used to prevent water ingress into the lower layers of the road and increase surface texture (reduce skidding resistance). It is important to make this distinction as most maintenance treatments can be considered to be preventative from an engineering perspective as they may prevent the defect that is being repaired from growing. To determine if an activity is truly economically preventative requires the application of lifecycle cost analysis (LCA). Currently, we do not have the data required to undertake lifecycle cost analyses of assets. (IA C21)

Surface dressing and structural maintenance programmes are produced annually by each Area. Scheme prioritisation is currently undertaken at a local level within available budgets. There is no process in place to prioritise schemes across the whole Highland area.

At a local level the SRMCS results, condition reports from inspectors, defect levels, accident reports and engineering judgement are used to identify sites and prioritise schemes. This is not based on a set level of criteria but engineering experience is used to assess all of the works required to the asset.

Information and systems require to be developed to establish levels of criteria which would be used locally as a prioritisation tool. ([IA C22](#))

4.8 Disposal

Cur An Dàrna Taobh

The disposal of road assets is relatively rare from the perspective of a Council disposing of an entire section of road. This section is included for completeness and to enable documentation of the practices used for those occasions when an asset is disposed of.

The main reason for a section of carriageway to be considered for disposal is that the alignment has been improved, thereby making remaining sections of the previous alignment surplus to requirements. Some sections may require to be left as accesses to properties but others will be transferred, if feasible, back to the landowner. The reduction in vehicle use of a road section would lead to a change in the maintenance strategy.

For some assets, disposal is a significant consideration in terms of the appropriate method of disposing of the redundant equipment e.g. electrical equipment from redundant/ replaced street lighting.

Improvements which result in redundant sections of road being left require a stopping up order and deletion from the “list of public roads”. This removes the future maintenance responsibility for the road from the Council. A stopping up order returns the relevant section to the landowner. This can have consequences for the landowner, especially if a structure is present on the section. In some instances, redundant sections are dug out and the land is returned to its original state.

5.0 Investment

Airgead an Seilbh

5.1 Historical Investment

Airgead an Seilbh gu h-Eachdraidheil

The actual historical investment in £000s for the last 5 years is detailed below.

Cost Category	2004/05	2005/06	2006/07	2007/08	2008/09
Revenue	£000s	£000s	£000s	£000s	£000s
Revenue Structural Works	1,834	837	3,848	3,967	3,055
Surface Dressing	2,033	2,064	1,966	2,114	2,053
Cyclical maintenance	7,387	8,698	7,090	7,743	7,516
Capital					
Capital Structural Works	4,048	3,002	2,596	2,825	6,054
Area Minor works	599	329	252	175	697
Road improvements	4,594	6,374	7,153	6,371	4,990
Total	20,495	21,304	22,905	23,195	24,365

Table 5.1.1: Historical Investment

Safety related reactive maintenance is not specifically separated from the financial budget headings used. It is included in the figures above.

Capital schemes budgets can be spread over a number of years depending on the size and nature of the project. Land may be bought for a project years before construction starts on site. Construction may also extend over several financial years depending on the size of the project. Therefore, capital project funding for a specific year should not be directly related to the output for that year.

5.2 Output from Investment

Toradh bho Airgead an Seilbh

Detailed information relating to the output from investment is not currently available ([IA C23](#)). However, parts of the investment levels above have been able to purchase the following revenue outputs:

Revenue Category	2004/05	2005/06	2006/07	2007/08	2008/09
Resurfacing	92.2	71.4	118.3	100.4	108.0
Surface Dressing	379.8	320.8	310.2	242.0	298.5

Table 5.2.1 Output from Investment

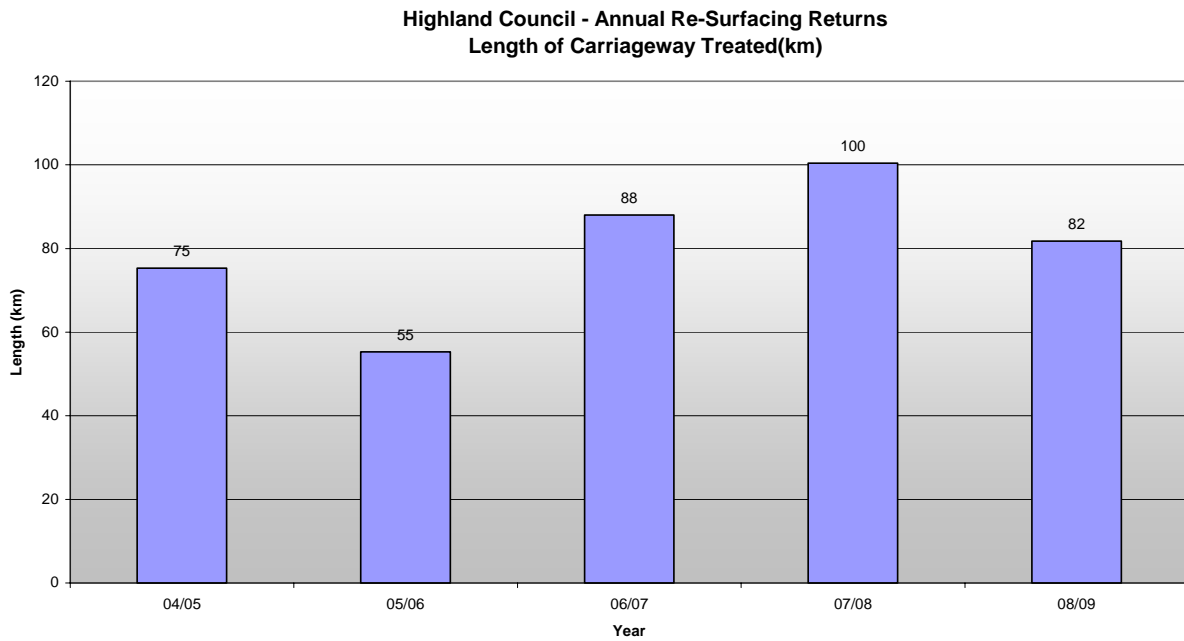


Figure 5.2.1: Resurfacing Length per Year

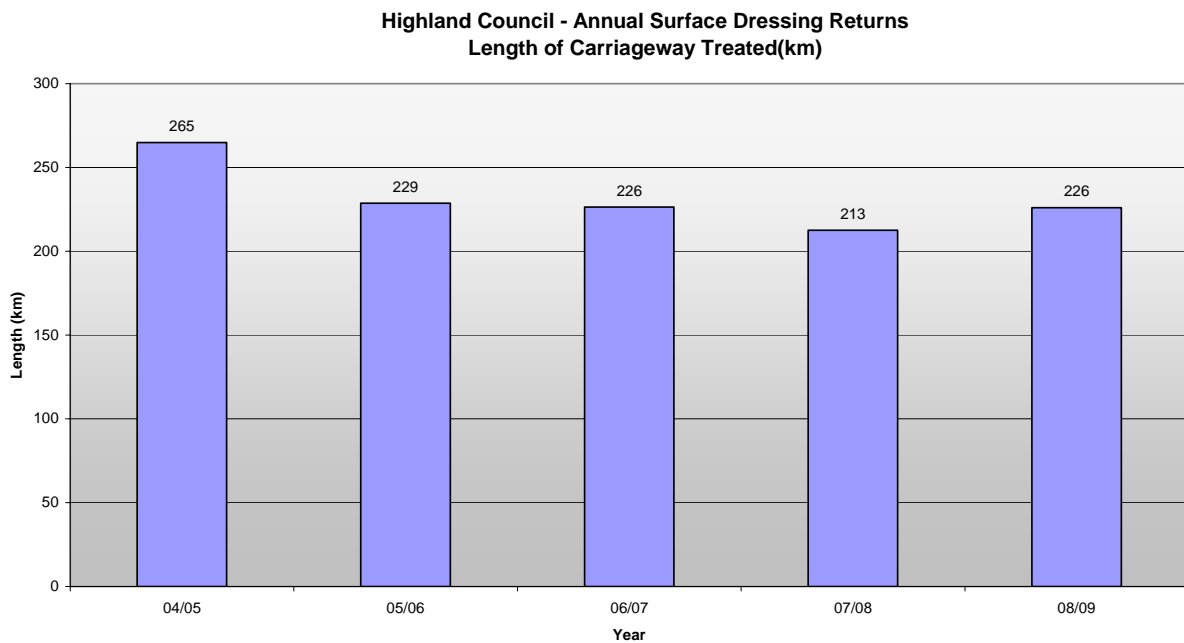


Figure 5.2.2: Surface Dressing Length per Year

5.3 Forecasting Financial Needs

Ro-innse Feuman Ionmhasail

Currently, no formal process for forecasting financial needs exists ([IA C24](#)). Projections would provide information regarding the long term budgetary requirements for the carriageway asset.

5.4 Valuation

Luachadh

An initial valuation for the Gross Replacement Cost (GRC) of the road asset has been completed. The valuation is based on available data and will be refined as data collection progresses.

The GRC for the carriageway asset has been calculated at approximately £2,556,000,000 (£2.56 billion). This is based on the actual road lengths, estimated widths and a unit replacement cost calculated from historic rates. The valuation summary is contained in appendix E.

The valuation will be developed as data is collated. This will result in the eventual production of the Depreciated Replacement Cost (DRC) and Annualised Depreciation cost (ADC). ([IA C25](#))

6.0 Forward Works Programme

Prògram Obraichean Adhartach

6.1 Existing Programmes

Prògraman Làithreach

Currently, schemes are prioritised at a local level as described in [section 4.6](#).

Surface dressing, resurfacing and minor works programmes are compiled annually and presented to Ward Business Meetings (WBM) for ratification. Other types of treatment are also



Figure 6.1.1: Surface Dressing

programmed annually and

circulated for internal use. Works programmes are dependent on budgets rather than necessity.

6.2 Programme Co-ordination

Co-òrdanachadh Prògraim

There is currently no formal process to co-ordinate works programmes within the Council although it is undertaken on an ad hoc basis between elements of the Service. Works are co-ordinated with external organisations on a more local level through the local NoSRAUC meetings as described in [section 3.5](#) above. Works require to be notified through the Scottish Road Works Register (SRWR) which facilitates collaborative working to ensure joint road works are undertaken where possible.

An improvement action has been identified to investigate the creation of a co-ordinated programme of works which incorporates all of the individual asset groups ([IA C26](#)).

6.3 Option Appraisal

Measadh Roghainnean

There are no formal documented option appraisal processes. Alternatives are currently assessed by individuals using engineering judgement to determine treatment types and levels.

At the time of writing this document, the Council was currently reviewing the Capital Project Programme and undertaking option appraisal as part of the process. The results were not yet available for inclusion in this version of the RAMP.



Figure 6.3.1: Typical Single Track Road

7.0 Risk

Cunnart

7.1 Risk identification

Comharrachadh Cunnairt

There are various forms of risk from strategic corporate risks to specific asset ones. Corporate risks are identified at the top management level and specific service related risks can be identified either at management or officer level. This ensures that all potential impacts from every level are identified and addressed.

Individual asset risks have not yet been defined and a risk register requires to be developed ([IA C27](#)).

7.2 Risk Evaluation

Measadh Cunnairt

Corporate risks are evaluated using the STORM© methodology discussed in section 8 of the main RAMP document. The evaluation method of individual asset risks requires to be agreed by management ([IA C28](#)).

7.3 Risk Control

Smachd Cunnairt

To manage risks, there are three main options which are used. These are to:-

- transfer risk – through insurance/ outsourcing/ partnerships
- control risk – mitigate through appropriate measures
- accept risk – understand and live with risk

When controls are put in place against risks, the risks will be reassessed and the risk register will be updated with any new information. This will form part of the review process.

7.4 Review and Reporting

Ath-bhreithneachadh is Aithris

An improvement action has been identified to introduce a formal process to review the developing roads risk register ([IA C29](#)).

Current corporate risks are reviewed at the TECS Quarterly Performance Review and reported annually to Members.

7.5 Risk register

Clàr Cunnairt

Individual asset risks registers have yet to be developed ([IA C27](#)). However, the risk register for the service is contained within the TECS Service Plan, May 2009 which is available on the [Council website](#)^(RC6). The risk register is also reproduced in section 8.7 of the main RAMP document.

8.0 Works Delivery and Procurement

Lìbhrigeadh is Solar Obraichean

Reactive maintenance is undertaken internally by the Roads and Community Works Direct Labour Organisation (DLO). This is the internal workforce used to carry out tasks such as patching and drainage works. Sub-contractors may be used to undertake reactive maintenance where budgets allow and the internal workforce is unavailable. Planned works can be either sub-contracted or undertaken internally.

Capital or major works are tendered in line with the Council's Contract Standing Orders (CSO). The Highland Council Procurement Manual provides guidance on the relevant procedures and legislation. European regulations may also apply to the tendering of works or the provision of services. Tenders are evaluated on quality and cost with the majority of the weighting against the former. This ensures that value for money is obtained. The type of contract which is used also has an effect on the cost of works as the proportion of risk to be managed is taken into account by tenderers.

As examples, tenders to procure works across the Highland area include:-

- Road Markings and Studding
- Quarry Products (re-surfacing)
- Footways and Kerbing
- Individual capital projects, e.g. carriageway renewal

9.0 Performance Measurement

Tomhas Coileanaidh

9.1 Performance Measurement

Tomhas Coileanaidh

Carriageway performance is measured nationally by a Statutory Performance Indicator (SPI). The SPI measures the percentage of the road network which should be considered for maintenance treatment. The SPI is measured independently on a percentage of the road network. More detail is given in [section 4.3](#) above.



Figure 9.1.1: Example of Rutting

9.2 Performance Indicators: National

Comharran Coileanaidh: Nàiseanta

The SPI results relevant to the carriageway asset are:-

Performance Indicator	2005/6 %	2006/7 %	2007/8 %	2008/9 %
Overall percentage of the road network that should be considered for maintenance treatment	35.6	37.1	39.2	34.5

Table 9.2.1: SPI results

The data used to produce the SPI can be broken down into classes of roads as follows:

Breakdown of overall results	2005/6 %	2006/7 %	2007/8 %	2008/9 %
Percentage of A class roads that should be considered for maintenance treatment	24.5	28.2	26.8	24.9
Percentage of B class roads that should be considered for maintenance treatment	38.0	35.7	34.7	33.1
Percentage of C class roads that should be considered for maintenance treatment	17.9	23.4	35.6	32.4
Percentage of unclassified roads that should be considered for maintenance treatment	49.1	54.0	48.6	40.7

Table 9.2.2: Breakdown of SPI results

It is difficult to compare the results in the above tables as the method for their calculation has changed a number of times throughout this period. It should also be treated with a great deal of caution as it can be demonstrated that the sample of U class roads surveyed in a year can have a significant effect on the result.

9.3 Performance Indicators: Local

Comharran Coileanaidh: Ionadail

Current internal performance indicators relate to the Programme of the Highland Council and are general statements which do not link directly to the management of the carriageway. An improvement action has been identified to develop internal indicators as part of the SCOTS project ([IA C30](#)).

9.4 Performance Reporting

Aithris air Coileanadh

Performance is reported at the TECS Quarterly Performance meetings and the SPIs are also reported annually to Audit Scotland. All Council performance indicators are published publicly.

10.0 Future strategies

Ro-innleachdan Ama Ri Teachd

The development of lifecycle planning should enable the evolution of improved strategies for the management of the asset. Focusing on achieving a better long term outcome may identify a need to invest in different treatments or in different parts of the asset.

It is the intention to further develop lifecycle plans and link the budget process to levels of service ([IA C31](#)).



Figure 9.4.1: Rural Road Improvement

11.0 Carriageway Improvement Actions

Gnìomhan Leasachadh Rathaidean

The following improvement actions were identified through development of the carriageways lifecycle plan.

IA Number	Action	Proposed Implementation Date	Responsibility
IA C1	Develop and implement a skid resistance policy.	TBC	TBC
IA C2	Formalise scheme optional appraisal.	TBC	TBC
IA C3	Formally identify roads built on peat and record in asset management database.	TBC	TBC
IA C4	Develop an asset information strategy to define the information required including the method for collecting and updating the asset register.	TBC	TBC
IA C5	Enter remaining hierarchy information into the asset management database.	TBC	TBC
IA C6	Develop a method for recording gazetteer and description information together.	TBC	TBC
IA C7	Collect and enter carriageway width data into the asset management database.	TBC	TBC
IA C8	Develop and implement a method for entering 'As Built' information into the asset management database.	TBC	TBC
IA C9	Develop and implement a programme for data collection and update through the asset information strategy.	TBC	TBC
IA C10	Develop an asset specific survey.	TBC	TBC
IA C11	Identify and collect traffic data for a sample of sites across Highland.	TBC	TBC

IA Number	Action	Proposed Implementation Date	Responsibility
IA C12	Review and update roads related policies as necessary.	TBC	TBC
IA C13	Formalise method of recording inspections through asset information strategy.	TBC	TBC
IA C14	Continue supporting remaining offices to move towards using electronic inspection method.	TBC	TBC
IA C15	Continue reporting RCI results as an SPI. Develop local performance indicators to reflect changes in road network condition.	TBC	TBC
IA C16	Develop matrix of standard treatment lives.	TBC	TBC
IA C17	Produce long term maintenance programmes to identify any peaks required in funding.	TBC	TBC
IA C18	Develop a procedure to assess the ongoing maintenance liability of new assets and ensure these figures are included within the design calculations or added to the service plan.	TBC	TBC
IA C19	Identify procedures to incorporate new assets into management systems.	TBC	TBC
IA C20	Develop and implement target response rates for defect rectification.	TBC	TBC
IA C21	Work towards producing lifecycle cost analysis for assets.	TBC	TBC
IA C22	Establish levels of criteria to be used as a prioritisation tool.	TBC	TBC
IA C23	Establish process to record outputs from investment.	TBC	TBC
IA C24	Forecast long term financial requirements for maintenance.	TBC	TBC

IA Number	Action	Proposed Implementation Date	Responsibility
IA C25	Complete valuation as data improves.	TBC	TBC
IA C26	Investigate creating a co-ordinated programme of works which incorporates all of the individual asset groups.	TBC	TBC
IA C27	Develop an asset specific risk register.	TBC	TBC
IA C28	Agree risk evaluation method.	TBC	TBC
IA C29	Define formal process to review asset specific risks.	TBC	TBC
IA C30	Develop internal performance indicators including review and reporting processes.	TBC	TBC
IA C31	Link the budget process to levels of service.	TBC	TBC

Table 11.1: Carriageway Improvement Actions