STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE HITRANS REGIONAL TRANSPORT STRATEGY

Annex B - Environmental Baseline

Report

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1. ENVIRONMENTAL BASELINE

1.1 A range of baseline data has been collected to enable the current state of the environment in the region to be assessed, and for problems to be identified. This also provides the benchmark against which the forecast and monitored levels of environmental effects will be evaluated. The following aspects of the environment are to be examined in turn:

- Noise;
- Greenhouse gas emissions;
- Local air quality;
- Water, geology and soils;
- Biodiversity;
- Landscape and visual amenity;
- Cultural heritage; and
- Health and other social impacts.

Noise

1.2 The main source of ambient noise pollution in the UK is from road traffic. Noise is not only a disturbance but also poses a threat to human health. Noise guidance provided by the World Health Organisation[1] states "general daytime outdoor noise levels of less than 55 dB(A) L_{eq} are desirable to prevent any significant community annoyance".

1.3 Noise is not a major issue in the Highlands and Islands as a whole due to its predominantly rural nature, however the following sections provide indications of the noise levels experienced from transport in the region and that may impact upon human health.

Noise impacts at key points on the road network

1.4 Table 1.1 illustrates ambient transport noise levels at selected points on the Highlands and Islands road network, in built up areas. These noise levels are intended as an estimate only and were obtained through the use of 18-hour two-way traffic flow data, supplied by the Scottish Executive.

1.5 The model is relatively simple and the results are indicative as the model makes a number of key assumptions:

- Basic noise level 10m from the edge of the carriageway;
- Situation is open field;
- No screening;
- No correction for the surface;
- No correction for gradient;

[1] World Health Organisation Health Criteria Document 12 "Noise" Geneva, 1980

- Road Speed - estimated for each location using the journey planning software Transport Direct; and
- Proportion of HGVs – the Scottish Transport Statistics provides the percentage of HGVs at some of these points on the road network and ranged between 10% and 14%. For the remainder of the sites, an average of 11% was used.

TABLE 1.1 ESTIMATED NOISE LEVELS AT SELECTED POINTS ON THE ROAD NETWORK (L10-18H)

		February	August
Inverness	A82 Friars Bridge	62dB(A)	63dB(A)
	A82 Glenurquhart Road	60dB(A)	62dB(A)
	A82 College RB to A9 Longman RB	64dB(A)	64dB(A)
	A96 Elgin town centre	61dB(A)[2]	
	A96 Forres	No data	60 dB(A)[3]
	A9 Dornoch Bridge	55dB(A)	57 dB(A)
	A9 Aviemore	57dB(A)	59dB(A)
	A834 Dingwall	58dB(A)	59dB(A)
	A87 Kyle of Lochalsh	52 dB(A)	55 dB(A)
	A87 Broadford – Skye	54 dB(A)	58 dB(A)

1.6 Indicative noise levels are shown for both February and August as the volume of tourists visiting the region in the summer months has a significant impact on the volume of traffic on the roads.

1.7 The majority of these locations, show indicative noise levels above the EU level of less than 55 decibels, above which causes 'community annoyance', during both the winter and summer months. The difference in noise levels between February and August is as much as three decibels or more at sites in Broadford and Kyle of Lochalsh (a change of ±3 dB(A) is held to be significant in terms of STAG appraisal).

1.8 Although these noise levels are above those deemed to cause community annoyance, they are not at levels that would impact upon human health and wellbeing.

1.9 The European Union has produced the noise directive (2002/49/EC) known as the Assessment and Management of Environmental Noise. This requires member states to map noise from road, rail and transport. This process is currently underway in the UK but unfortunately has not yet completed the survey work in Scotland and hence the data is not currently available.

1.10 Without the RTS, road traffic volumes in the Highlands and Islands, and in particular, in the more built up areas, are likely to increase. This will in turn result in increases noise levels from road traffic.

[2] Monthly data is not available for Elgin town centre, therefore the yearly average has been shown.

[3] Data for August was not available and so figures for July were used instead

Greenhouse gas emissions

1.11 The UK is currently just about on target to achieve its commitment under the 1997 Kyoto Protocol agreement to reduce its emissions of CO_2 by 12.5% in the period to 2008-12, in comparison with a 1990 baseline[4]. Following a large initial reduction in 1999, CO_2 emissions actually increased in 2003 and 2004.

1.12 Although the Kyoto commitment may be met, the Government says it is highly unlikely to meet the more ambitious 2010 domestic target of a 20% reduction compared to a 1990 baseline[5]. Looking further ahead, the 2003 energy White Paper sets a target of a 60% reduction in the UK's carbon dioxide emissions by 2050[6].

1.13 Detailed information on the level of CO_2 emissions at a local authority level are not available for the Highlands and Islands region, however the Scottish Executive annual publication "*Key Environmental Statistics for Scotland*" shows that in 2000, Scotland as a whole contributed 60.7 million tonnes of CO_2 (10.8%) to the UK total. This represents a fall of 1.6 million tonnes from 1990 levels.

1.14 below shows the contribution of the transport sector to CO_2 levels in Scotland as a whole.

TABLE 1.2 CONTRIBUTION OF THE TRANSPORT SECTOR TO CARBON DIOXIDE EMISSIONS (MILLION TONNES)

Sector	1990	1995	1998	1999	2000
Transport	8.6	8.8	8.5	8.3	7.4
Other emissions from fuel	22.1	18.8	18.5	18.5	17.7
Energy industries	18.8	21.9	23.0	21.6	23.0
Land use change & forestry	11.9	11.9	12.4	12.4	12.2
Other	1.0	0.6	0.6	0.5	0.4
Total	**62.3**	**62.0**	**62.8**	**61.4**	**60.7**
% of transport contribution	**13.8%**	**14.2%**	**13.5%**	**13.5%**	**12.2%**

1.15 Road traffic and aircraft volumes are forecast to increase across Scotland and the rest of the UK into the future. The HITRANS RTS is unlikely to contribute significantly to reducing this overall growth and resulting emissions, however it is supportive of wider government objectives to reduce car traffic and promote more sustainable forms of transport.

4 Climate Change, The UK Problem, DEFRA, 2001
www.defra.gov.uk/environment/climatechange/cm4913/pdf/section2.pdf

5 http://www.defra.gov.uk/news/2004/041208b.htm

6 Our energy future – creating a low carbon economy, Department of Trade and Industry, February 2003, http://www.dti.gov.uk/energy/whitepaper/index.shtml

Local air quality

1.16 The National Air Quality Strategy for England, Scotland, Wales and Northern Ireland has the following objectives relating to NOx and PM10:

- **Nitrogen Dioxide (NOx):** 200µg/m³ (105ppb) not to be exceeded more than 18 times a year. Measured as a 1-hour mean (or 40 µg/m³ measured as an annual mean), to be achieved by 31 December 2005.
- **Particulate Matter (PM_{10}):** 50µg/m³ when expressed as a 24hr hourly mean: not to be exceeded more than 7 times a year by 31st December 2010.

1.17 Under the Environment Act 1995, Local Authorities are required to review and assess air quality within their areas to see if any of the National Air Quality Strategy (NAQS) objectives are unlikely to be met. In this event a further more detailed assessment will be required for areas of concern. Any areas in which air quality will not or is unlikely to meet the NAQS objectives must be designated as an Air Quality Management Area.

1.18 Each local authority in the Highlands and Islands region produced a Local Air Quality Update Assessment and Screening report, which provides information on the presence of Nitrogen Dioxide and Particulate matter in the local area.

Emissions and air quality monitoring – Nitrogen Dioxide

1.19 **Argyll and Bute:** Argyll and Bute Council undertook local monitoring using NO_2 diffusion tubes during 2002. Annual mean concentrations indicate that at this time, there were no annual mean nitrogen dioxide concentrations greater than 22 µg/m³ at any location within Argyll and Bute.

1.20 **Highland:** Nitrogen Dioxide is monitored on a monthly basis at a number of locations in Dingwall and Inverness using diffusion tube samplers. The highest 2004 bias adjusted annual mean was recorded at Queensgate in Inverness and was 40.6 µg/m³. It is however suggested that two other sites in the same area, with annual means of 37.2 µg/m³ and 28.1 µg/m³, are more representative of NO_2 levels in Queensgate. The estimated annual means for NO_2 in 2005 are below the air quality objective of 40 µg/m³, however increases in traffic volumes in Inverness city centre could raise levels to this threshold.

1.21 **Moray:** Moray Council has carried out NO_2 monitoring at 10 sites since 2000. The monitoring locations are located at the most heavily trafficked roads within Elgin town centre and on the main roads through other towns and villages within Morayshire. The monitoring results show that the NO_2 concentrations are well below the NAQS annual mean objective. The highest concentrations are found in Elgin town centre (23.4 µg/m³).

1.22 **Eilean Siar:** no urban background locations exceeded the annual mean targets of 40 µg/m³. The concentrations for urban background sites are low and range from 3.5 µg/m³ to 6.4 µg/m³. The highest NO_2 concentration levels (22.6 µg/m³) were found in a pedestrian area in Stornoway and can largely be attributed to parked vehicles loading and off-loading goods and to local traders. The contribution of road transport to nitrogen oxides emissions have declined in recent years as a result of the declining

population. Further reductions are expected up until and beyond 2010. The estimated background NOx concentration at Stornoway Airport in 2005 is 4.44 μg/m³. This does not exceed the 2005 target of 25 μg/m³.

1.23 **Orkney:** The Orkney Air Quality Assessment and Screening Report states that '*the likelihood of the Air Quality Objective for nitrogen dioxide being exceeded in Orkney is negligible'*. The highest concentrations of Nitrogen Dioxide were recorded as approximately 20 ug/$m^{2.}$ Aircraft volumes and passenger numbers at Kirkwall airport are currently less than 2% of the suggested action threshold of 5 million passengers per year.

Emissions and air quality monitoring – Particulates (PM10)

1.24 **Argyll and Bute:** Argyll and Bute Council has not undertaken any local monitoring of PM10, however UK mapping indicates that background concentrations of PM10 are not expected to exceed 15 μg/m³ at any locations within Argyll and Bute during the period to 2010.

1.25 **Highland:** Particulate levels are measured at Telford Street in Inverness. In 2004, an average annual mean of 15 μg/m³ was recorded with one exceedence of the air quality objective of 50 μg/m³.

1.26 **Moray:** Moray Council does not undertake any monitoring of PM10. The nearest PM10 monitoring site, located in Aberdeen, indicates that NAQS objectives for PM10 are not currently being exceeded in urban locations. It is however estimated that Scottish Executive objectives for PM10 are likely to be exceeded by 2010, namely at busy road junctions.

1.27 **Eilean Siar:** No PM10 monitoring is carried out in the Western Isles. However, estimated annual mean background concentrations for 2004 are 10.9 μg/m³. This does not exceed the national target.

1.28 **Orkney:** The Local Air Quality Update and Screening Assessment for Orkney identifies that it is unlikely that PM10 objectives will be exceeded in the Orkney Islands.

Air Quality Management Areas

1.29 There are currently no designated Air Quality Management Areas in any of the five local authority areas. However, specific problem areas have been identified in Inverness city centre where Nitrogen Dioxide levels are approaching the threshold of 40 μg/m³ and in Moray where Scottish Executive objectives for PM10 are likely to be exceeded by 2010 at busy road junctions.

1.30 Although air quality in the Highlands and Islands is generally very good, there are some areas within the more built up areas where, if road traffic continues to rise, air quality could deteriorate to levels below national targets. The RTS will contribute to stemming this growth in road traffic in built up areas through the promotion of more sustainable modes of transport.

Aviation

1.31 The additional emissions from aircraft to the local environment have very little effect on the overall air quality health impacts. This is due to the existing good air quality in the region. The ten airports in the Highlands and Islands region are situated in areas where air quality is good by UK standards. Concentrations of pollutants such as Nitrogen dioxide, sulphur dioxide and PM10 are low and there is no difficulty in complying with the Governments air quality objectives. Due to the rural nature of these locations, the potentially exposed populations are also significantly lower when compared to population densities surrounding other airports across the UK.

1.32 In 2004/05, the total number of aircraft movements across the 10 HIAL airports in the region was 82,764. This was an increase of 2% on the previous year. It has also been calculated that flights to/from and within the Highlands and Islands region emit over 60,000 tonnes of CO2 per year[7]. In comparison, there are approximately 96,082 aircraft movements per year at Glasgow airport[8]. These are predominantly made by much larger aircraft and therefore will have a larger environmental impact than those aircraft typically used in the Highlands and Islands.

Water, geology and soils

Water

1.33 The North of Scotland Water Quality report 1999 – 2002 states that many of the largest rivers in the area have maintained their 'good' quality classification, or better, during this period. Some stretches of river have improved, but most of these have fluctuated within their class for several years.

1.34 Table 1.3 shows the total length of rivers under each classification. The table has been compiled using 2004 river quality data obtained from the Scottish Environment Protection Agency (SEPA) for river catchments that fall within the Highlands and Islands region. It should be noted however, that river catchments do not match the local authority boundaries and there will be some overlap with other local authority areas.

TABLE 1.3 WATER QUALITY - RIVERS[9]

River classification	River length (km)	Percentage of total Length
A1: Excellent	3,191	28%
A2: Good	4,755	42%
B: Fair	266	2%
C: Poor	101	1%

7 Source: The Environmental Impact of Aviation in the Highlands and Islands, Highlands and Islands Enterprise, 2003. It should be noted that the data quoted from this report will include flights to/from and within Shetland.

8 Source: BAA Glasgow – www.glasgowairport.com.

9 Data provided by Scottish Environment Protection Agency (SEPA.).

River classification	River length (km)	Percentage of total Length
D: Seriously polluted	6	0%
Unclassified	2,930	26%
Total	11,248	100%

1.35 The quality of estuaries in the north of Scotland is generally high and the points below provide a summary of estuary quality and their monitoring location[10]:

- Cromarty Firth at Cromarty = Excellent;
- Cromarty Firth at Dalmore Pier = Fair;
- Cromarty Firth at Evanton = Fair
- Cromarty Firth at Rosskeen = Fair;
- Dornoch Firth at Tain storm sewage = Fair;
- Loch Linnhe at Caol foreshore = Fair;
- Lossie at Lossiemouth = Excellent; and
- Spey at Spey Bay = Excellent.

1.36 The quality of coastal waters is also generally high and the length of coastal waters classified as excellent, good, unsatisfactory and seriously polluted is provided in Table 1.4.

TABLE 1.4 WATER QUALITY - COASTAL WATERS[11]

Classification	Length (km)	Percentage of total length
A: Excellent	106	1%
B: Good	355	3%
C: Unsatisfactory	96	1%
D: Seriously polluted	9	0%
Unclassified	9,644	94%
Total	10,210	100%

1.37 With regard to bathing waters, SEPAs 2005 Bathing Waters Quality report states that Nairn East is the only designated bathing waters in the Highlands and Islands region to be classed as 'poor' by SEPA, with the remainder classed as either 'excellent' or 'good'.

1.38 With regard flooding, SEPA is currently working on producing a flood map for the whole of Scotland which will give an indication of the areas in Scotland that are at risk of flooding from either rivers or the sea. Once complete, this tool will provide an important resource in helping local authorities and stakeholders to make planning

[10] Information provided by SEPA.

[11] Data provided by SEPA

decisions in support of SPP7. It is anticipated that this tool will be available to local planning authorities in early 2006 and that this information could feed into the development of the RTS and the Environmental Report.

1.39 The EC Water Framework Directive seeks to achieve the continuous improvement of all water bodies through the implementation in the future of River Basin Management Plans.

Soils

1.40 As with the landscape of the Highlands and Islands, the variety of soil types across the region is diverse. The soil pattern in the Highlands is influenced to a large extent by climate, especially temperature and rainfall and there are marked changes in soil type with altitude. The Highland soil conditions impose severe restrictions on land use and in some parts erosion is becoming increasingly significant. Given the vulnerability of soils, it requires relatively little disturbance to cause damage, particularly on peaty surfaces.

1.41 In the Western Isles huge expanses of peat dominate the landscape. In the Outer Hebrides, most of the remaining land is moorland with grassland more evident in the Inner Hebrides. Most soils in this area are susceptible to damage by recreational activities such as hill walking. Much of Orkney is either cultivated or under permanent pasture, with moorland restricted to the more hilly areas. The soils are vulnerable to physical damage by both animals and machinery.

1.42 In built up areas, soils are compacted and sealed by hard surfaces causing rain to run off rapidly increasing the risk of flooding. Rainfall that does not evaporate or runoff percolates downwards to be stored in the 'zone of saturation', commonly known as the 'water table'.[12] The water table generally follows the ground profile in a uniform soil but if less permeable strata are encountered, water will often emerge at the surface as a spring.

1.43 Due to the extent of soil damage that development can impose on soil, it is imperative that a precautionary approach is taken in the Highlands and Islands to avoid the negative effects on the natural environment. The local plans require development proposals, that are situated on land where the past history of land use / management indicates that contamination may have occurred, will be required to undertake a risk assessment to establish the level of contamination; provide an assessment of the impact of contamination together with provisions for treatment / amelioration and decontaminate the site prior to any further occupation. Transport proposals in particular, which have the most impact on soil quality, should be carefully reviewed for cumulative and synergistic effects.

1.44 The Scottish Vacant and Derelict Land Survey (2004) identifies that there were 98 hectares of land spread over 9 different sites in the HITRANS region known to be

[12] Environment Agency. Groundwater flooding: A guide to protecting your home from flooding caused by groundwater.

contaminated in 2004. This accounts for 4% of the total amount of derelict land where contamination is known in Scotland. [13]

1.45 There is the potential that pollution, loss or damage of soils may occur through construction of transport infrastructure. The RTS should recognise this risk and avoid disturbance of contaminated land. Further mitigation measures may be necessary to negate the effects of new transport infrastructure on soils in the region.

Biodiversity

1.46 The Highlands and Islands region as a whole is particularly valued for its biodiversity and habitats and there is a wide range of sites designated for nature conservation under European, national and local legislation. One third of the Highland Council region alone is covered by some form of national or local nature conservation designation.

1.47 The main protected area designations in the region are as follows:

- *Ramsar Sites:* Internationally important wetland sites protecting wildfowl habitat;
- *NATURA:* Habitats and Bird Directives including a major contribution by the European Community to implementing the Biodiversity Convention agreed by more than 150 countries at the Rio Earth Summit. Natura 2000 includes the designation of:
  - *Special Protection Areas (SPA):* These are of European importance for Wild Birds;
  - *Special Areas for Conservation (SAC):* These areas are of European importance for wild flora and fauna;
- *National Parks:* established to deliver better management of some of Scotland's most special areas of outstanding natural and cultural heritage, they also provide protection for the flora and fauna within them;
- *Sites of Special Scientific Interest (SSSI):* These are exemplary places for nature conservation. Designation of an SSSI is a legal process;
- *National Nature Reserves (NNRs):* All of these sites are important nationally for nature, they are also designated SSSIs;
- *Local Nature Reserves (LNRs):* places with special local natural interest, set up to protect nature and for people to enjoy and appreciate;
- *Biogenetic Reserves:* aim to conserve flora, fauna and natural areas especially heathlands and dry grasslands that although common in one country may be scarce in another. In this way, a store of genetic material is kept for the future;
- *Biosphere Reserves:* an international designation made by UNESCO based on nominations made by more than 110 countries. Each reserve is therefore part of a world wide chain of permanently protected areas dedicated to the study and understanding of the changes affecting land and water; and
- *Council of Europe Diploma Site:* this award recognises that an area is of particular European interest from the natural heritage standpoint and seeks to ensure that the area is properly protected.

[13] Source: Scottish Executive Statistical Bulletin, Scottish Vacant and Derelict Land Survey, 2004.

1.48 Figure 1.1 and Figure 1.2 detail the designated protected areas in the Highlands and Islands as listed above.

FIGURE 1.1 CORE PROTECTED AREAS

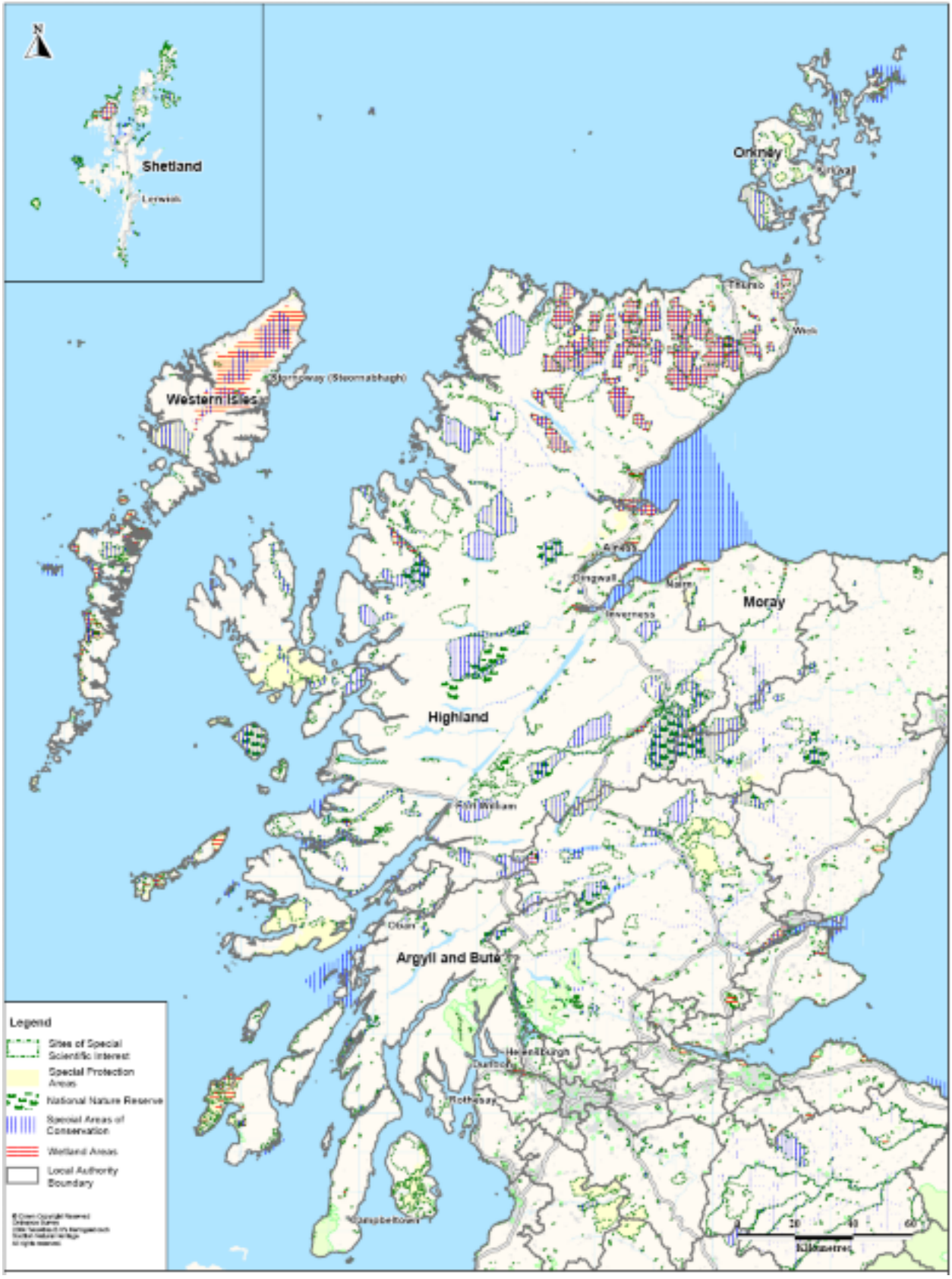
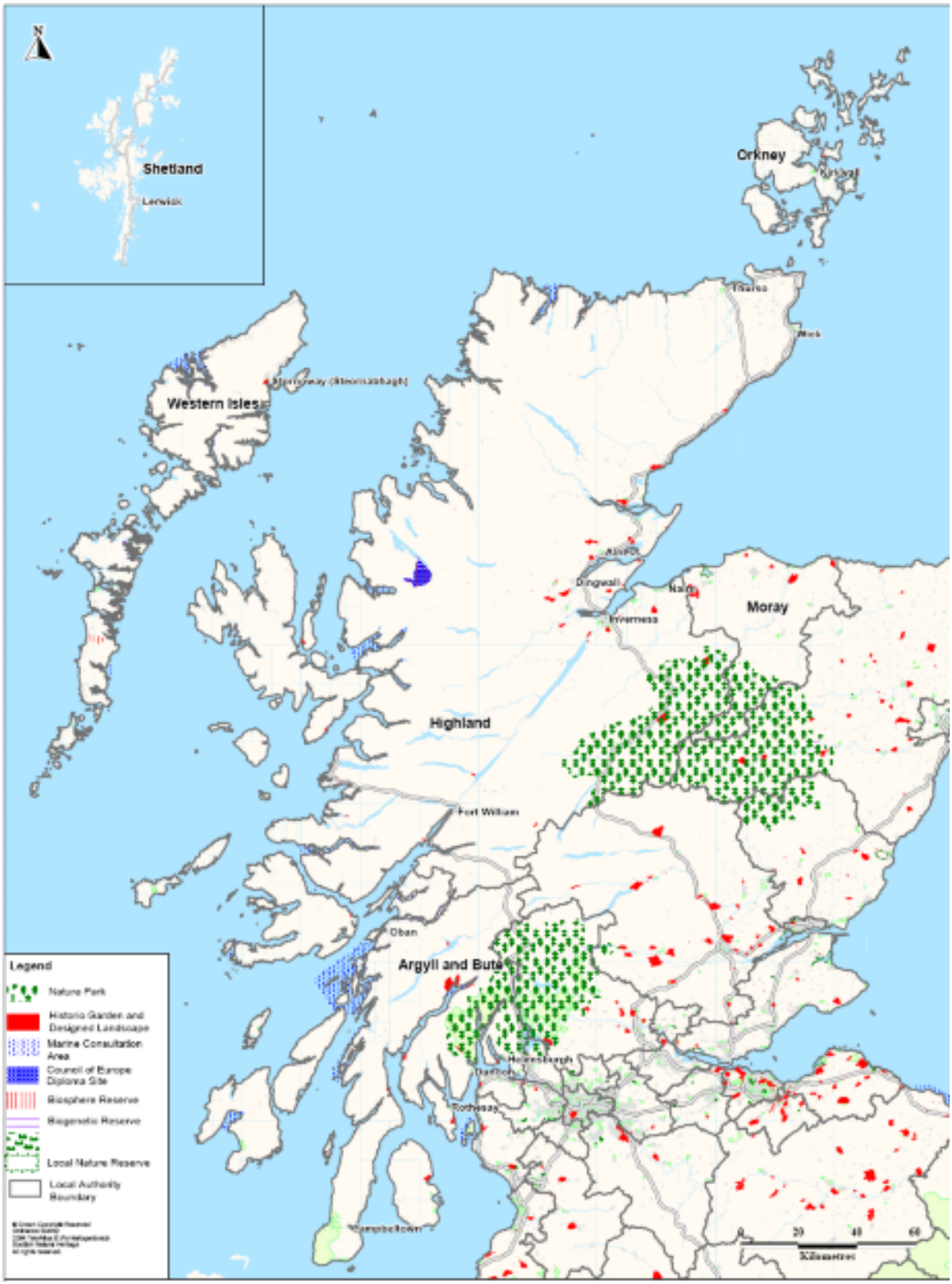


FIGURE 1.2 OTHER PROTECTED AREAS



1.49 Each local authority in the Highlands and Islands has developed their own Biodiversity Action Plan (BAP) that lists the BAP priority habitats and species for each local authority area. As the Highlands and Islands region has such a diverse and important range of habitats and species, there are too many to list here. Many of these habitats and species are covered by the range of protected areas, however it is recognised that important flora and fauna are also located in areas outwith these protected areas and should also be considered when developing strategies for the RTS. This will include the flora and fauna relevant to the water environment where listed in the local BAPs.

1.50 The RTS could assist with the prevention or reduction of adverse effects on biodiversity and nature conservation by ensuring that transport related activities avoid sensitive areas, where practicable, or through careful planning and design implement appropriate mitigation measures.

Landscape and visual quality

1.51 The Highlands and Islands region as a whole is diverse with a wide variety of landscapes and it is not possible to provide a single summary of the regions landscape. The sections below provide a brief summary of the landscape and townscapes of the various distinctive parts of the region provided Scottish Natural Heritage Landscape Character Assessments.

Northern Highlands

1.52 The Northern Highlands encompasses the wild, remote mountains and glens between the coastal plain of the Moray Firth and the rugged west coast. The area is dominated by craggy mountain ridges separated by long parallel glens with large tracts of blanket bog, heather moor and alpine heath. The high mountains are home to rare flora and fauna and the land is mainly used for deer forest and grouse moors. The numerous glens in the area hold large lochs, many of which have been adapted by hydroelectric schemes. The Great Glen is a major feature within the area and Loch Ness is one of the most well known water bodies in the UK.

1.53 Forces of change in the area include the introduction of commercial forestry plantations and increasing levels of tourism.

Western Highlands

1.54 The western highlands is characterised by a greatly indented and rugged coastline, with nine major sea lochs. There is only a small proportion of low-lying or flatter ground and this is where the few towns and villages are concentrated. Forces of change include an increase in urban features in the countryside, including roundabouts, increased street lighting and formal landscaping resulting in a loss of local character.

Western Seaboard

1.55 The Western Seaboard includes the inner Hebridean islands, which are known around the world for their beautiful landscapes, seascapes and history. The diverse geology,

impressive landscape and wide range of species and habitats are reflected in the high level of national and international protection awarded to the area. The population is widely dispersed and almost entirely in coastal settlements. Commercial forestry, unsustainable marine fishing and built development have all influenced the natural heritage of this area in recent decades.

North Western Seaboard

1.56 The northern half of this area is characterised by the cnoc and lochan landscape of small hills and lochans with mountains, like Suilven, rising in isolation from sea level. The southern half is characterised by a higher concentration of mountains. The area is now experiencing change as a result of human management of the natural heritage, including agricultural practices such as grazing, burning and deforestation.

Caithness and Sutherland

1.57 The peatlands of Caithness and Sutherland are dominated by open, undulating moorland, with physical conditions ideal for the development of blanket bog. As a result this area continues to be the largest and most intact area of this habitat in Scotland. These bogs are home to a unique range of flora and fauna. A few fertile straths extend into the interior with areas of productive farmland. The population is largely distributed along the coastal fringes.

Orkney and Northern Caithness

1.58 Orkney, its 70 islands, and the northern tip of Caithness are characterised by greatly undulating lowland, much of it given over to grassland, heather moorland and peatland, cliffs, shallow bays, sea and lochs. There are also four Urban Conservation Areas in Orkney, in Kirkwall, Stromness, St Margarets Hope and Balfour on Shapinsay.

Central Highlands

1.59 This area of the Highlands encompasses the rolling uplands of the Monadhliath and extends north east to the Moray moorlands. This is an area of high to medium altitude, remote upland plateaux with large tracts of blanket bog and alpine heath. The high mountains provide popular attractions for outdoor recreation and tourism, field sports, agriculture and forestry are key activities in the area.

Moray Firth

1.60 Bounded by the Northern Highlands, Monadhilath and Moray Moorlands, this lowland landscape is dominated by intensive agriculture and forestry and its proximity to the sea. These lowlands are drained by many large rivers and burns, which host remnants of native woodland. Human activities in the area have fragmented many natural habitats and the area has lost much of its peatland, native grassland and woodland. These have however been replaced by forests, which due to their native composition of Scots pine, retain considerable natural heritage value. A large proportion of the total population of the northwest highlands lives in this area and built development is a key influence on natural heritage. Inverness, Elgin, Nairn and Dingwall are major settlements providing services for extensive catchments of rural communities.

The Cairngorms

1.61 The Cairngorms Massif is dominated by vast plateaux and deep corries that support large tracts of alpine heath and blanket bog. The area also contains the largest remaining fragments of ancient Caledonian pine forest. These wild and often remote mountain massifs are nationally renowned for outdoor recreation, including hill walking, climbing and skiing.

East Lochaber

1.62 East Lochaber has a rugged and spectacular landscape, which includes a diverse range of upland and moorland habitats. Three sea lochs penetrate the area from the west and to the east is Rannoch Moor, an internationally important area of blanket bog, with numerous lochs and lochans. There is a very sparse resident population clustered in small settlements in the west and south of the area. Forestry, agriculture and fish farming all have a significant impact on the natural environment.

Argyll West and the Islands

1.63 This area accounts for nearly 20% of Scotland's total coastline and with sea lochs up to 50km long, nowhere in the area is more than 10km from the sea. Much of the coast is rocky with pockets of shingle and several sandy beaches. Upland areas are generally only of moderate height and settlements are small and scattered.

Coll, Tiree and the Western Isles

1.64 These islands are subject to oceanic influences and are wet, windswept and generally treeless. However, the individual islands vary in character from extensive moorland and hills on Lewis and Harris to the machair of the Uists, Barra, Coll and Tiree and the seabird cliffs of the offshore islands. Important wildlife and habitats of international conservation interest exist throughout the islands. Throughout the area the population level varies between islands, but apart from Stornoway, numbers are relatively low and, in many cases, declining.

1.65 The two key designations for landscapes in the Highlands and Islands are:

- *National Scenic Areas (NSA):* These sites are nationally important areas of outstanding natural beauty and represent some of the best examples of Scotland's greatest landscapes, particularly lochs and mountains; and
- *Local Landscape Designations:* a well-established and valued approach to protecting and guiding change in areas of particular landscape importance.

1.66 The RTS can protect the landscape by, where possible, avoiding inappropriate transport developments in sensitive landscape areas and providing mitigation measures to prevent or reduce the loss of important landscape features.

Heritage

1.67 Scotland as a whole has a rich cultural heritage that highlights the country's history from the earliest times. The nations cultural heritage reaches from prehistoric standing stones to medieval castles and formal great gardens through to Georgian

houses, Victorian factories and Second World War defences. Much of this heritage can be found in the Highlands and Islands region. In addition to preserving the history of the region, cultural heritage is important to the economy and the tourism industry benefits from the rich cultural heritage of the region.

1.68 There are two UNESCO designated World Heritage Sites located in the Highlands and Islands, the details of which are provided below:

- **St Kilda:** St Kilda is located in the north Atlantic, 115 miles off the coast of Scotland. The importance of this chain of islands is acknowledged for both its natural and cultural heritage value. The islands represent an authentic example of a crofting community that once lived there with little interference from the outside world.
- **Heart of Neolithic Orkney:** The group of Neolithic monuments on Orkney consist of a number of sites dating back five thousand years. This includes Maes Hows (a large chambered tomb), the Stones of Stenness and the Ring of Brodgar, two ceremonial stone circles and the settlements of Skarra Brae.

1.69 There are also a large number of listed buildings and scheduled monuments within the region and Table 1.5 and Table 1.6 provide a summary of the number of each in the Highlands and Islands region.

TABLE 1.5 LISTED BUILDINGS BY CLASS AND LOCAL AUTHORITY AREA

Local authority	Category				Total
	A	B	C	C(S)	
Highland	271	2,231	0	1,436	**3,938**
Moray	146	923	0	908	**1,977**
Argyll and Bute	208	1,618	9	966	**2,801**
Eilean Siar	36	203	0	91	**330**
Orkney Islands	45	430	11	389	**875**
Total	**739**	**5,677**	**20**	**3,998**	**10,434**

TABLE 1.6 SCHEDULED MONUMENTS IN THE HIGHLANDS AND ISLANDS

Local authority	Number of scheduled monuments
Highland	1,147
Moray	80
Argyll and Bute	793
Eilean Siar	210
Orkney Islands	355
Total	**2,949**

1.70 Historic gardens and designed landscapes also form an important part of the cultural

heritage in the Highlands and Islands. Historic Scotland defines Gardens and designed landscapes as '*grounds which are laid out for artistic effect and most often include architectural features, trees, shrubs, flowers, lawns and parklands'*. Such features are safeguarded by Historic Scotland as they are an important cultural asset and are often threatened through inappropriate development. There are 82 sites designated as Historic Gardens and Designed landscapes and the locations of these are shown in Figure 3.2.

1.71 More detailed consideration of historic sites will be carried out once the strategy has identified specific locations that may be affected by the strategy. Potential enhancement measures of the RTS may include improving access to historic sites by sustainable modes of transport and therefore reducing congestion surrounding these sites and in town centres.

Health impacts

1.72 The population of the Highlands and Islands are relatively healthy, with 71% reporting that they feel in 'good health'.

1.73 shows the proportion of the population in each local authority area who stated that they are in 'good health', 'fairly good health' and 'not good health'. The Orkney Islands has the healthiest population, with 73% stating that they feel in 'good health'.

TABLE 1.7 GENERAL HEALTH OF THE HIGHLANDS AND ISLANDS POPULATION[14]

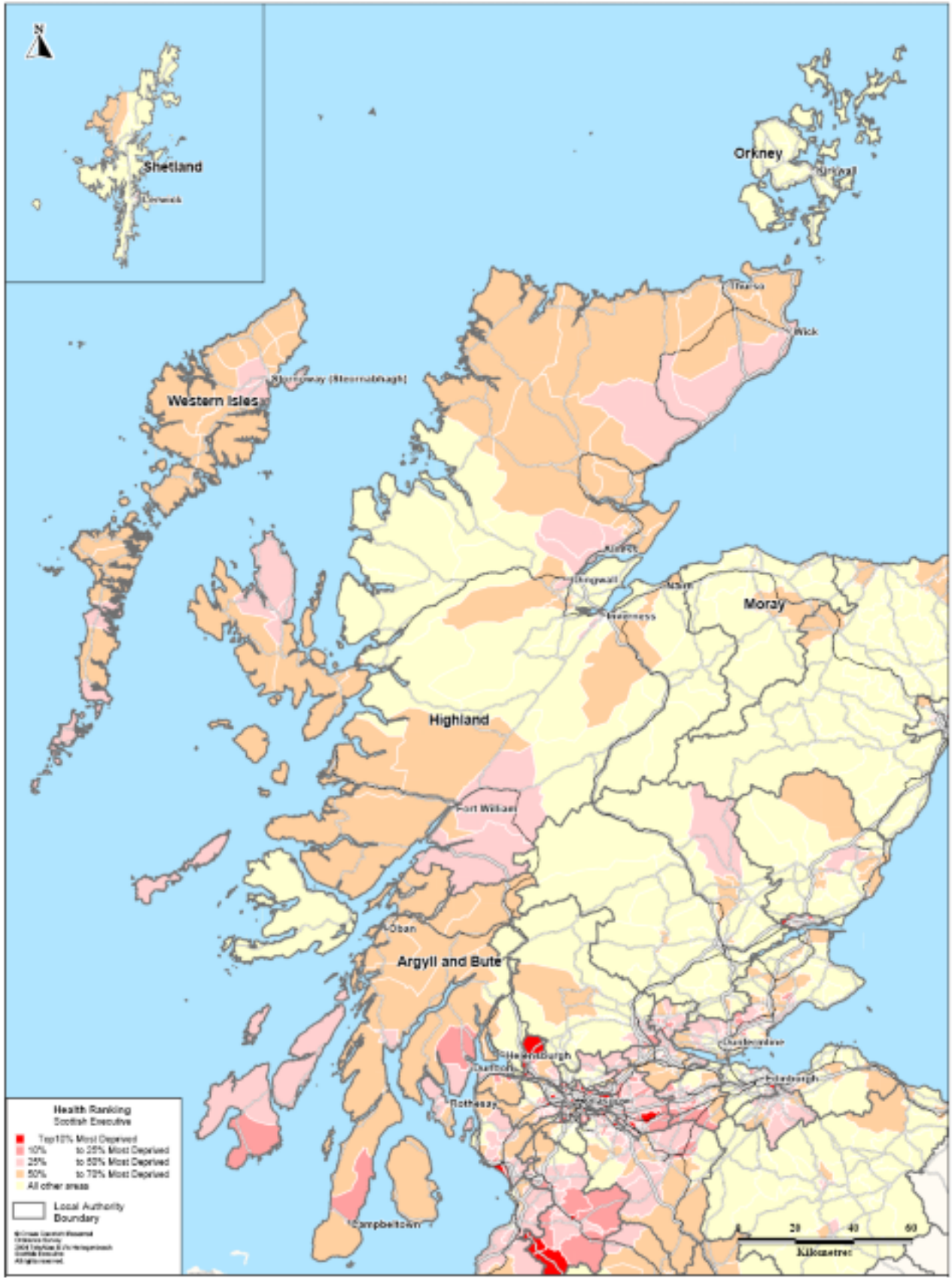
Local Authority	Good health	Fairly good health	Not good health
Argyll and Bute	68%	22%	9%
Eilean Siar	70%	22%	9%
Highland	71%	21%	8%
Moray	72%	21%	7%
Orkney Islands	73%	21%	7%
Total	71%	21%	8%

1.74 below shows the wards within the Highlands and Islands that are among the most deprived when it comes to the health of their population. This indicator forms part of the Scottish Index of Multiple Deprivation and measures health inequalities associated with low income and deprivation. As such it identifies areas with higher than expected levels of ill health or mortality given the age / sex profile of the population. Areas within the Highlands and Islands with the highest levels of health deprivation are found in Argyll and Bute, surrounding Campbletown and on the Isle of Islay.

1.75 Physical inactivity constitutes one of the most widespread health detriments in Scotland. Six out of ten men and seven out of ten women undertake less than the minimum recommended levels of physical activity. In children, three in ten boys and four in ten girls fall short of the amount of physical activity required for good health.

[14] National Census 2001 – http://www.scroll.gov.uk/

FIGURE 1.3 HEALTH DEPRIVATION



1.76 The RTS can contribute to improvements in the health of the population by promoting active forms of travel such as cycling and walking. An increase in the use of these modes and in public transport instead of the private car will also contribute to improving local air quality and reducing traffic related noise and vibration. The RTS can also improve road safety and contribute to a reduction in the number of road accidents.

1.77 Figure 4.4 shows geographic access deprivation levels across the region. Geographic access is one of the indicators that makes up the Index of Multiple Deprivation and measures drive time to a GP, supermarket, petrol station, primary school and post office.

1.78 This indicator captures a set of problems such as financial cost, time and inconvenience associated with accessing such facilities. Large areas of the Highlands and Islands, particularly in the west and on the islands are ranked in the top 5% of the most deprived wards for geographic access.

1.79 In terms of the Regional Transport Strategy, safety is also an important factor relating to human health.

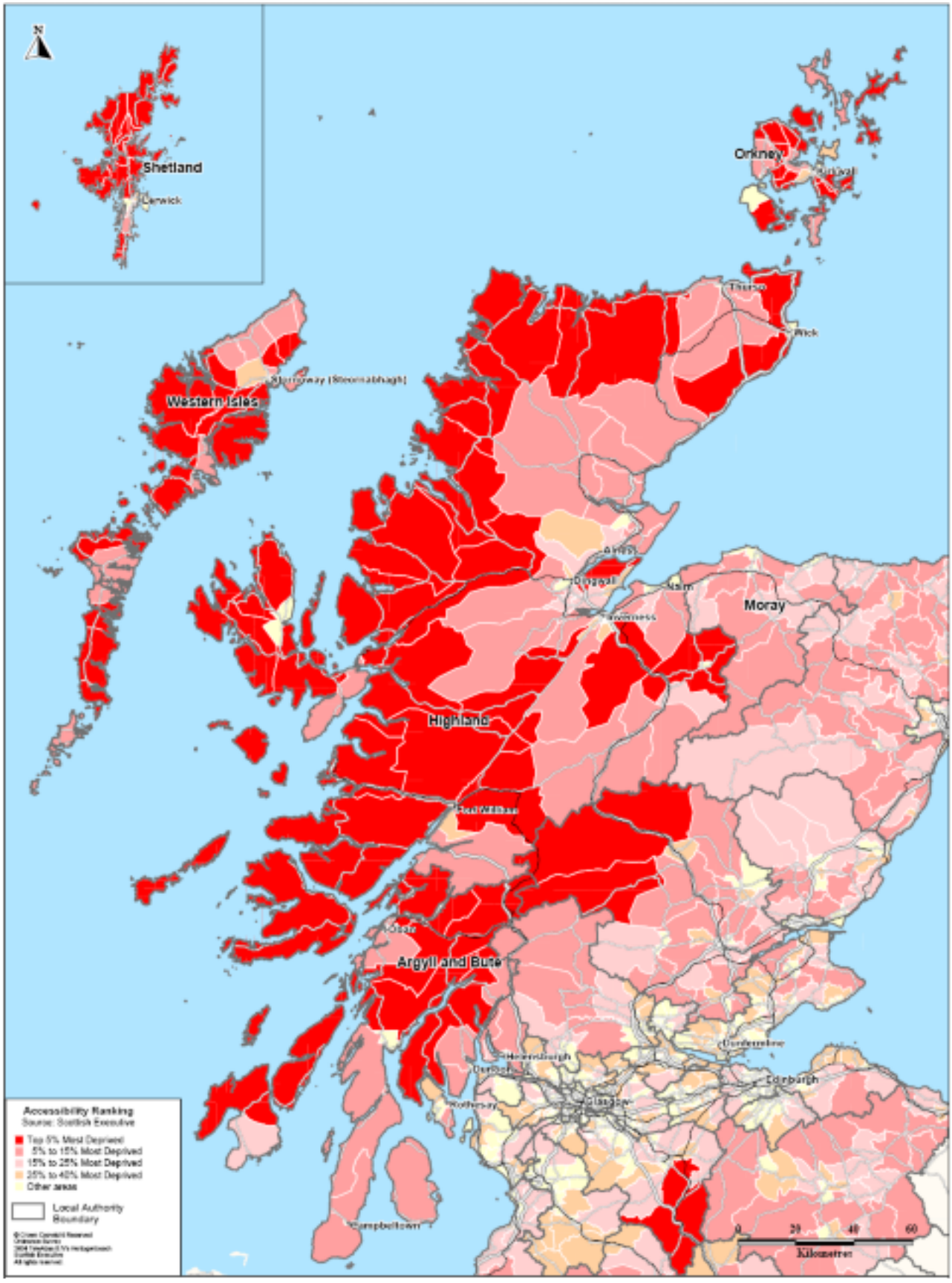
1.80 Table 1.8 shows road accident figures in the Highlands and Islands for 2004.

TABLE 1.8 ROAD ACCIDENTS (2004) [15]

	Injuries			
	Killed	**Serious**	**Slight**	**Total**
Argyll and Bute	15	96	321	432
Highland	25	204	829	1,058
Moray	5	50	181	236
Orkney	-	9	38	47
Eilean Siar	6	18	46	70

[15] Scottish Executive Road Accident Statistics, 2006.

FIGURE 1.4 GEOGRAPHIC ACCESS DEPRIVATION



CONTROL SHEET

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